

Presidential Physiognomies: Altered Images, Altered Perceptions

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Digitized facial images of Presidents Clinton, Reagan, and Kennedy were manipulated to test whether subtle feature alterations were powerful enough to shift social perceptions of them. It was expected that exaggeration of facial maturity cues would lead to shifts in perceptions of power (dominance, strength, and cunning) and warmth (honesty, attractiveness, and compassion). Each familiar face was made more neotenous by enlarging eyes and lips, and made more mature by reducing the sizes of these features. Undergraduate perceivers rated one version of each face. Though unaware of feature changes, perceivers were affected by them. In Study 1, neotenous features made Clinton seem more honest and attractive, even to perceivers who did not support him in the 1996 election. In Study 2, mature features made Kennedy, the youngest U.S. president, seem more cunning and made Reagan, the oldest president, appear less powerful and less warm; neotenous features reduced ratings of both Kennedy's and Reagan's power, whereas neotenizing the familiar face of Clinton increased ratings of his honesty and attractiveness without diminishing perceptions of his power. Overall, the results suggested that subtle alterations of proximate physiognomic cues can be used to manipulate perceivers' social perceptions of familiar political leaders.

KEY WORDS: physiognomy, political leaders, face perception, U.S. presidents.

Humans spend an impressive amount of time, energy, and resources managing their facial appearance. Across cultures, parts of the face are painted, molded, pierced, and stretched in order to present a more impressive visage. The facial images of political leaders are also contrived in many countries. Portraits of Iraqi President Saddam Hussein, for example, are commissioned by the government and typically capture a smiling Saddam who looks about half his real age (Weiner, 1998). In the United States, White House officials dispense favorable images of the president by orchestrating "photo-ops" and offering carefully selected presidential photographs to the press and public (Adatto, 1993; Edwards, 1983; Grossman & Kumar, 1981). In short, political instincts as well as academic research

(Budesheim & DePaola, 1994; DePaulo & Friedman, 1997; Exline, 1985; Keating & Heltman, 1994; McHugo, Lanzetta, Sullivan, Masters, & Englis, 1985; Rosenberg, Bohan, McCafferty, & Harris, 1986; Way & Masters, 1996) suggest that physical appearance has a meaningful impact on political power. Can altering facial appearance change perceptions of a president? We studied this possibility by testing whether character judgments of well-known political leaders shifted in response to subtle alterations of facial features.

It is not surprising that people use static facial appearance to make inferences about character: The structure of the face evolved in part by communicating just such social information (Gregory, 1929/1965; Guthrie, 1970; Lorenz, 1943). Physiognomic cues set in motion expectations along such universal dimensions as age, gender, and status (Berry & McArthur, 1986; Cunningham, 1986; Guthrie, 1976; Keating, Mazur, & Segall, 1981). These expectations help perceivers in the triage of social responses. For example, baby faces engender impressions of helplessness and evoke a rise in voice pitch, baby talk, and caregiving (Lorenz, 1943; McCabe, 1988; Zebrowitz, Brownlow, & Olson, 1992). Faces with mature structures convey dominance and elicit deference (Berry & Landry, 1997; Keating et al., 1981; Mazur, Mazur, & Keating, 1984).

Ontogenetic themes underlie the perceptual biases triggered when perceiving unfamiliar adult faces. A tapestry of changes in feature sizes, shapes, and spatial relationships occurs with development (Alley, 1988; Berry & McArthur, 1986; Guthrie, 1970; Lorenz, 1943; Mark, Shaw, & Pittenger, 1988). For example, a baby's face is characterized by proportionally large eyes, a round chin, and thick, pudgy lips (Guthrie, 1970; Lorenz, 1943). Infantile traits like these look "cute" and inspire help (Lorenz, 1943). To some degree, this perceptual bias affects adult faces as well: Perceivers attribute babyish psychological characteristics to unfamiliar adults with relatively babyish facial traits (Berry & McArthur, 1986; Zebrowitz & Montepare, 1992). Despite variability in adult facial structure, maturity generally squares the jaw, thickens the brows, thins the lips, and diminishes apparent eye size (Gray, 1948; Guthrie, 1970). These facial aspects signal traits that accompany the status of age, including dominance and strength (Guthrie, 1970; Keating, 1985a). Cues reflecting extremes in age (extremely young or extremely old) convey little status (Guthrie, 1970). Thus, physiognomic messages are patterned by ontogeny.

Correlational studies indicate that facial maturity cues influence perceivers' impressions of adults, at least when the faces of strangers are judged. When portrait photographs are rated, adults with relatively babyish facial characteristics are attributed greater warmth, naiveté, honesty, and submissiveness than are adults with mature facial aspects (e.g., Cunningham, 1986; Cunningham, Barbee, & Pike, 1990; Zebrowitz & Montepare, 1992). Mature features like small eyes, square jaws, and receded hairlines elicit attributions of dominance, strength, and cunning (e.g., Cunningham et al., 1990; Keating et al., 1981). Thus, power and warmth are conveyed by varying degrees of facial maturity and, in the absence of other

information about a person, these static, proximate facial cues apparently loom large.

However, face perception studies perhaps exaggerate the effect of feature cues on social perceptions because stimulus faces are typically unfamiliar to perceivers. The faces of unknown individuals essentially constitute "blank slates" on which superficial cues like facial features provide the only basis for social judgments. No one has yet determined how feature cues moderate character judgments made in response to faces that come packaged with reputations. We manipulated images of famous faces—specifically, political leaders—to see whether subtle changes in physiognomy were potent enough to shift social perceptions of individuals with established reputations. Our data comprised perceivers' judgments of well-known leaders whose digitized images were subtly altered to increase either babyishness or maturity. Thus, we used an experimental technique to investigate the impact of neoteny (the mimicry of juvenile characteristics) and facial maturity on impressions of familiar rather than unfamiliar adults (see Keating & Doyle, 1999; Perrett et al., 1998). These ideas were explored in the arena of politics, where televised debates and campaign advertisements make physical appearance cues salient (Adatto, 1993; Hellweg, Pfau, & Brydon, 1992; Jamieson, 1984; Jamieson & Birdsell, 1988).

In Studies 1 and 2, digitized images of famous leaders were altered using computer software to produce neotenous and mature visages. Two features were resized to achieve a relatively neotenous or mature look. Familiar faces were neotenized by enlarging eyes and lips and made to appear mature by reducing the sizes of these features (Keating & Doyle, 1999). Perceivers were unaware that faces had been altered.

We manipulated the faces of well-known U.S. presidents. Several researchers have documented the powerful influence of proximate nonverbal cues on the impressions made by politicians (e.g., Budesheim & DePaola, 1994; Exline, 1985; McHugo et al., 1985; Rosenberg et al., 1986; Way & Masters, 1996). For example, Budesheim and DePaola (1994) discovered that physical attractiveness influenced evaluations of political candidates even when information about their political stances and personalities was given. Perceivers' agreement with the candidate's positions on issues mattered less when portrait photographs were provided than when they were absent (Budesheim & DePaola, 1994). On the basis of Budesheim and DePaola's findings, we hypothesized that subtle changes in proximate physiognomic cues would shift perceptions of familiar political leaders, despite their personal reputations and regardless of the perceivers' political biases.

The famous facial images we manipulated were those of Presidents Clinton, Reagan, and Kennedy. In Study 1, we collected ratings of Bill Clinton from both supporters and nonsupporters during the 1996 presidential election campaign. In Study 2, we gathered impressions of Clinton and of two well-known previous presidents, Reagan and Kennedy, who were chosen because they represented extremes in age and facial maturity. In both studies, we captured social perceptions

important to public life, such as power, compassion, and honesty. Perceivers rendered judgments as they viewed either altered or unaltered portraits of the presidents. Feature alterations were designed to be subtle enough so that perceivers would not consciously detect them.

Predictions for Study 1 were based on findings for unfamiliar adult faces (e.g., Berry & McArthur, 1986; Cunningham et al., 1990; Keating, 1985a; Keating et al., 1981; Perrett et al., 1998; Zebrowitz & Montepare, 1992). Neotenous feature substitutions were predicted to enhance impressions of warmth (e.g., compassion, honesty, attractiveness) and decrease impressions of power (e.g., dominance, strength, and cunning) for Clinton. Mature features were predicted to improve ratings of power and diminish ratings of warmth. These perceptual shifts were predicted regardless of raters' political leanings (Budesheim & DePaola, 1994). This idea was tested in Study 1 by comparing judgments made by Clinton supporters and nonsupporters during the 1996 campaign.

Clinton's middle-aged physiognomy, which naturally contained both mature (small eyes, thin lips) and immature (thin brows, round jaw) elements, was ideal as a pallet for maturity effects: His normal face could be manipulated both up and down the physiognomic maturity scale. Normal faces frequenting relatively extreme positions on the physiognomic scale could be affected differently by identical feature manipulations. Thus, in Study 2, we hypothesized that facial maturity cues would affect perceptions of an older, naturally mature-faced political leader differently than they would affect perceptions of a younger, naturally babyfaced leader (Guthrie, 1970).

In Study 2, we collected impressions of Reagan, the oldest U.S. president, and Kennedy, the youngest president, that were based on photographic images of each president while they were in office. Reagan's unaltered face displayed many mature aspects, such as a square jaw, thick brows, thin lips, and small eyes (Guthrie, 1970; Keating, 1985a). Kennedy's normal face was distinguished by several babyish characteristics, especially large eyes and thick lips (Guthrie, 1970; Keating, 1985a). Because Reagan's natural physiognomy conveyed power better than warmth, increased neoteny was predicted to enhance perceptions of his warmth while diminishing ratings of his power. However, increasing the maturity of Reagan's already mature physiognomy was expected to diminish his power ratings, consistent with the status of very elderly people (Guthrie, 1970). For Kennedy, whose normal features manifested warmth better than power, increased maturity was expected to improve appraisals of power. Adding neotenous features to Kennedy's physiognomy was predicted to reduce impressions of his power and increase perceptions of his warmth. As in Study 1, immature features were expected to increase Clinton's warmth, despite the Monica Lewinsky scandal that embroiled him throughout data collection in the spring of 1998.

Study 1

Method

Participants. One hundred and fifty-six undergraduate students (95 women and 61 men) enrolled in an introductory psychology class rated portrait photographs of familiar and unfamiliar people. Each received laboratory credit in exchange for participation.

Materials. An official White House color portrait photograph of President Clinton provided the base image of his face. A color portrait of Hillary Clinton was initially included in the stimulus set but was later dropped from the data analysis because low recognition rates compromised interpretation of her data.¹ The stimulus set incorporated eight unfamiliar faces, which served as foils in the present study. The eight foil portraits depicted white women, black women, white men, and black men (two of each) randomly chosen from four recent college yearbooks.

All 10 portrait photographs were scanned into a Macintosh computer. Photoshop software was used to manipulate the features of these digitized images. A big-eyed, full-lipped "neotenized" version of each face was created by inflating the sizes of eyes and lips by 15%. A second manipulation produced a small-eyed, thin-lipped "mature" version of each face by shrinking eyes and lips by 15%. The third version of each face was left unaltered. Figure 1 (top) shows the altered and unaltered versions of President Clinton's face. Each face was printed in color onto plastic transparencies and presented to raters on a screen via an overhead projector.

Participants indicated their impressions of psychological traits using 7-point bipolar scales. The scales were labeled submissive-dominant, weak-strong, unattractive-attractive, naive-cunning, dishonest-honest, and heartless-compassionate. Poles were reversed for several scales.

Procedure. The rating task was performed in groups of two to eight.² The study was described as an investigation of person perception and political attitudes. Participants were told that they would view unfamiliar and familiar faces and make social judgments about them. Participants first recorded whether or not they were registered voters, what party they registered for, whether they were likely to vote in the upcoming 1996 presidential election (months to weeks away), and which candidate they were likely to support (Dole, Clinton, Buchanan, or "other").

The room was slightly darkened to facilitate projection of the faces. Scales were presented in booklets. To diminish carry-over effects, participants judged all

¹ Recognition rates for First Lady Hillary Clinton's normal, mature, and neotenized faces were only 89%, 64%, and 38%, respectively.

² We ensured that all responses were made independently, but we had no independent measure of whether the size of the group influenced raters' judgments.



Figure 1. Neotenous, normal, and mature versions of the faces of Presidents Clinton, Reagan, and Kennedy. Neotenous versions appear to the left, normal (unaltered) in the center, and mature to the right.

10 faces for a single trait before turning the page to reveal the next trait. Trait scales were presented in different random orders. Each face was displayed on the screen for 3 seconds in a standardized order, with Bill Clinton presented last. After all ratings were completed, participants responded to two open-ended questions asking them to identify the faces they recognized and to report whether they noticed anything about the faces or had any comment to make about them.

Results

All participants recognized President Bill Clinton regardless of which face manipulation they saw. Although each participant was invited to comment about the faces, no one reported anything extraordinary about Clinton's face or seemed to suspect that changes had been made.

Trait ratings. Because each participant rated a particular subset of faces, deviation scores were constructed to equalize within-subject differences in the use of scales (Rossi & Anderson, 1982). For each trait scale, deviation scores reflected differences from the overall mean rating across all versions of all 10 stimulus faces for that attribute. A deviation score of zero represented no difference from the mean rating of an attribute across all faces and all raters.

Table I reports mean trait ratings, in deviation units, for each face manipulation. For each trait rating of Bill Clinton, we computed a 3 (Feature Manipulation) \times 2 (Sex of Rater) analysis of variance (ANOVA). The effects described below are generalized across sex of rater, as there were no significant interactions involving this variable ($ps > .10$).

Perceptions of the president's power were largely unaffected by our facial machinations, whereas perceptions of his warmth were raised and lowered by them. Contrary to predictions, analyses revealed that ratings of Clinton's dominance, strength, and cunning did not shift with face manipulations (Table I). However, perceptions of Clinton's attractiveness and honesty improved significantly when

Table I. Mean Trait Ratings for Normal and Manipulated Versions of President Clinton's Face

Trait	Face manipulation			<i>F</i>
	Neotenous	Normal	Mature	
Dominant	-.132	.021	.160	0.812
Strong	-.024	.122	-.368	2.510
Cunning	-.062	.412	.400	2.601
Attractive	.450 ^a	-.101 ^b	-.411 ^b	7.614***
Compassionate	.840 ^a	.573 ^a	.202 ^b	4.454**
Honest	.460 ^a	-.090 ^b	-.541 ^c	7.784***

Note. Means represent deviations from average trait ratings across all faces and raters. Degrees of freedom for *F* tests were (2, 146). Row means with varied superscripts (a, b, c) differ at $p < .05$ or better. ** $p < .01$, *** $p < .001$.

his eyes and lips were sized 15% larger than normal. He appeared least honest and least compassionate with small eyes (Table I). Thus, neotenous features generally enhanced the appearance of warmth while mature features diminished it, as predicted.

When features talk, who listens? Was the influence of facial features on raters' perceptions enhanced or eroded by previously held evaluations of the president? Given that it was an election year, we explored this possibility by comparing the susceptibility of Clinton supporters, nonsupporters, and undecided respondents to the undetected feature manipulations of the Democratic candidate's face.

Of the 156 participants in our study, 49% ($n = 76$) indicated they would vote for Clinton, 27% ($n = 42$) reported they would vote for a Republican candidate (39 for Dole and 3 for Buchanan), and 24% ($n = 38$) claimed to be undecided. We compared ratings produced by participants from each of these three groups. For each of the six traits judged, the analysis was framed as a 3 (Feature Manipulation) \times 3 (Support: Clinton Supporter, Nonsupporter, Undecided) ANOVA.

Analyses of Clinton's perceived honesty, attractiveness, and compassion revealed similar patterns. For each impression, facial manipulation and support registered main effects but no interaction. The absence of interaction indicated that facial manipulations affected perceptions of Clinton's warmth in similar ways across all three groups of potential voters.

For judgments made about Clinton's honesty, the ANOVA yielded a main effect for manipulation [$F(2, 147) = 6.54, p < .002$] and a main effect for supported candidate [$F(2, 147) = 4.143, p < .018$], but no interaction between the two [$F(4, 147) < 1.0$]. Not surprisingly, Clinton nonsupporters (mean = $-.47$) rated him as less honest than did Clinton supporters [mean = $.31, F(1, 116) = 9.54, p < .003$]. Undecided participants (mean deviation score = $-.22$) also doubted Clinton's honesty relative to supporters [$F(1, 112) = 4.259, p < .041$].

The most interesting finding was that the impact of facial feature manipulations converged for different groups of supporters. Relative to normal features, large, babyish features significantly increased Clinton's perceived honesty [means = $-.09$ vs. $.46, F(1, 103) = 4.80, p < .03$]. Small, mature features (mean = $-.52$) eroded the perceived honesty of the unaltered version of Clinton, though not reliably [$F(1, 97) = 2.45, p > .12$]. Substitutions of neotenous features made the president appear more honest than did substitutions of mature features [$F(1, 106) = 16.12, p < .001$].

Perceptions of attractiveness were modestly influenced by partisan support [$F(2, 145) = 2.594, p < .078$]. Although Clinton supporters and those who supported other candidates did not differ in how they rated Clinton's attractiveness [means = $.17$ and $.21, F(1, 115) < 1.0$], undecided participants gave Clinton lower attractiveness ratings (mean = $-.57$) than did supporters [$F(1, 110) = 9.697, p < .002$] or nonsupporters [$F(1, 77) = 8.963, p < .004$]. Nevertheless, across all groups of supporters, feature manipulation yielded the predicted main effect for perceptions of attractiveness [$F(2, 145) = 4.605, p < .012$]. Regardless of support status,

neotenizing the normal presidential physiognomy improved perceptions of his attractiveness [means = $.47$ versus $-.10, F(1, 101) = 5.90, p < .017$]. Mature feature substitutions lowered attractiveness ratings (mean = $-.40$), but not reliably [$F(1, 96) = 2.079, p < .15$]. Relative to mature feature substitutions, immature features raised attractiveness ratings [$F(1, 105) = 16.26, p < .001$].

For judgments of compassion, a main effect for support [$F(2, 147) = 3.48, p < .034$] indicated that Clinton supporters perceived him to be more compassionate (mean = $.83$) than did nonsupporters (mean = $-.31$) [$F(1, 115) = 8.507, p < .004$] or those in the undecided group (mean = $.25$) [$F(1, 112) = 7.26, p < .008$]. A marginally significant main effect for face manipulation [$F(2, 147) = 2.92, p < .057$] indicated that across support groups, Clinton was perceived as slightly but not significantly more compassionate than normal (mean = $.57$) with neotenous features (mean = $.84$) [$F(1, 103) = 1.84, p < .178$] and marginally less compassionate than normal with mature features (mean = $.20$) [$F(1, 98) = 3.025, p < .085$]. As for honesty judgments, replacing normal features with neotenous rather than mature ones made the president appear more compassionate [$F(1, 105) = 9.221, p < .003$].

Adding partisan support to the analysis of power perceptions made no essential difference: There were no significant main effects or interactions for either support group or feature manipulation across these dependent variables ($ps > .10$). The only exception was a marginally significant main effect for support when strength was judged [$F(2, 146) = 2.706, p < .07$], which indicated that Clinton supporters perceived him as stronger (mean = $.15$) than did nonsupporters (mean = $-.31$) [$F(1, 116) = 4.544, p < .035$] or undecided potential voters (mean = $-.33$) [$F(1, 111) = 4.059, p < .046$].

Discussion

Research has shown that first impressions of *unfamiliar* people are influenced by aspects of facial maturity (e.g., Berry & McArthur, 1986; Cunningham et al., 1990; Keating & Doyle, 1999; Keating et al., 1981; Perrett et al., 1998; Zebrowitz & Montepare, 1992). We demonstrated that subtle changes in facial cues shifted character judgments of a *familiar* individual without perceivers' awareness of their impact. Like Budesheim and DePaola (1994), we found that proximate, nonverbal cues were powerful enough to modify perceptions of a political candidate despite differences in perceivers' political views.

The recognizable face of the president generally benefited from our "designer" features. His normally small eyes and thin lips seemed to us to convey power better than they expressed warmth. As predicted, when we inflated the sizes of these features by 15% to produce a more neotenous appearance, perceivers who were unaware of our manipulations responded by rating the president as more honest and attractive than perceivers who assessed his normal visage. Even political nonsupporters perceived relatively greater trustworthiness and attractiveness in President Clinton's neotenized face. Unexpectedly, feature changes designed to

either diminish or enhance perceptions of Clinton's power failed to affect ratings of the sitting president's status. Nevertheless, for Clinton, facial alterations were a net gain: Neotenizing the familiar face of the president increased ratings of his warmth without diminishing perceptions of his power.

The impact of adding neotenous features to President Clinton's face may have been peculiar to his physiognomy. Clinton's middle-age, baby-boomer status made it possible to shift facial cues both up (older) and down (younger) the facial maturity scale. How would feature manipulations alter the images of very different but equally famous physiognomies? In Study 2, we manipulated two memorable but distinctly different presidential physiognomies: one that belonged to the youngest U.S. president who was naturally babyfaced (Kennedy), and one that belonged to the oldest U.S. president who was naturally relatively mature-faced (Reagan). President Clinton's face, which fell between these two age and structural extremes, was included as the third stimulus face. In terms of social perception, we hypothesized that facial cues that enhanced maturity would primarily benefit the youngest president, whereas enhancing neotenous cues would mostly benefit the oldest president.

Specific predictions were that enlarged, neotenous features would enhance impressions of warmth (e.g., honesty, attractiveness, and compassion), especially for the two presidents, Clinton and Reagan, whose unaltered faces contained relatively few babyish cues (e.g., Berry & McArthur, 1986; Zebrowitz & Montepare, 1992). Neotenous features were generally expected to diminish perceptions of power (i.e., dominance, strength, and cunning) (e.g., Cunningham et al., 1990; Keating, 1985a). Substituting small, mature-looking features for normal ones was predicted to improve ratings of power especially for Kennedy, who lacked many of the dominance features characteristic of his older, more mature-faced presidential peers (Keating, 1985a; Keating et al., 1981). Enhancing the maturity of the oldest presidential physiognomy was expected to reduce perceptions of Reagan's power by conveying the diminished status of the elderly (Guthrie, 1970). Mature features were generally expected to diminish ratings of warmth (Cunningham et al., 1990; Keating, 1985a; Zebrowitz & Montepare, 1992).

Study 2

Method

Participants. Fifty-one male and female undergraduates judged portrait images and received laboratory credit for their participation. Sixty percent of the sample was female.

Apparatus and materials. Portrait photographs of Presidents Clinton, Reagan, and Kennedy were used to construct stimulus faces. President Clinton's color portrait was identical to that used in Study 1 and showed him with a slight smile. President Reagan's color portrait showed him smiling broadly during his second

term of office. The photograph of President Kennedy was in black and white and showed him unsmiling.

Each portrait photograph was scanned into a Macintosh computer. Color-It software was used to manipulate the digitized images. As in Study 1, a big-eyed, full-lipped "neotenized" version of each face was created by inflating the sizes of eyes and lips by 15%. A second manipulation produced a small-eyed, thin-lipped "mature" version of each face by shrinking eyes and lips by 15%. The third version of each face was left unaltered. Manipulation checks confirmed that replacing normal features with resized ones altered perceptions of facial babyishness in the predicted manner for each president. Figure 1 depicts the altered and unaltered versions of the three presidents.

Faces and rating scales were presented on Macintosh computers. Raters indicated their impressions of psychological traits using 7-point bipolar scales. The scales were labeled submissive-dominant, weak-strong, naive-cunning, unattractive-attractive, dishonest-honest, and heartless-compassionate. Poles were reversed for several scales.

Procedure. Participants were escorted to separate cubicles equipped with Macintosh computers. The experiment was described as a study of perceptions of leaders. Raters first recorded whether they were registered Democrats, Republicans, or independents. They were instructed to record their judgments of each person they viewed using scales. Each face was presented at the left of the screen, with scales to the right, until participants made a judgment by using a mouse to click on the scaled response. After all three faces were displayed, the next scale appeared and the same procedure was followed.

Raters viewed only one version of each president. Hence, they were exposed to each of the three manipulations spread across different individual faces, and any single participant was presented with a subset of face-rating scale combinations. Scales and faces appeared in different random orders for each rater.

After all ratings were completed, participants were asked to record the names of the people they recognized. Finally, an open-ended probe question asked them to describe anything they noticed about the faces.

Results

All raters recognized President Bill Clinton regardless of which face manipulation they saw. Identification rates for Reagan and Kennedy were 98% and 96%, respectively (one person identified Clinton but left two identification lines blank; another identified Kennedy as Carter).³ In response to the open-ended question "Did you notice anything about the faces?", two participants mentioned that either

³ Analyses were performed both with and without data from these two participants; because the results were virtually identical either way, we chose to include their data.

Table II. Mean Power Ratings for Normal and Manipulated Versions of Presidential Physiognomies

	Face manipulation			<i>F</i>
	Neotenous	Normal	Mature	
Clinton				
Dominant	-.063	-.289	-.148	—
Strong	-.062	-.578	-.147	—
Cunning	.430	.044	.320	—
Reagan				
Dominant	-.622 ^a	.241 ^b	-.563 ^a	3.838*
Strong	-.244 ^a	.185 ^a	-.875 ^b	3.445*
Cunning	-.756 ^a	.537 ^b	-.313 ^a	4.041*
Kennedy				
Dominant	-.093 ^a	.625 ^b	.911 ^b	3.839*
Strong	-.037 ^a	.938 ^b	.822 ^b	3.397*
Cunning	-.852 ^a	-.125 ^b	.711 ^c	6.466**

Note. Means represent deviations from average trait ratings across all faces and raters. Degrees of freedom for *F* tests were (2, 46). Row means with varied superscripts (a, b, c) differ at $p < .08$ or better. * $p < .05$, ** $p < .01$.

eyes, mouth, or nose seemed unusually large or small for a particular face. Of these two, one person thought features were "enhanced" and the other believed the faces were "composites." Therefore, data from these two participants were dropped from the analysis. The remaining participants who wrote comments (nine responded "no" or "nothing," and eight left the question blank) described other aspects of the stimuli, noting, for example, that all the faces belonged to presidents ($n = 2$) and/or to men ($n = 2$), citing differences in the ages of the presidents ($n = 13$) and/or in expression ($n = 23$), noting that photographs were "better" of some presidents than others ($n = 3$) and/or that one portrait was in black and white ($n = 5$). Thus, ratings were contributed by participants who were not aware that features had been changed.

Trait ratings. As in Study 1, participants viewed different subsets of face-scale combinations and a correction was made for within-subject differences in the use of scales by converting raw scale scores to deviation scores. For each trait, deviation scores were computed by subtracting the overall mean scale score (across all raters and all three versions of all three presidents) from each scaled response. A deviation score of zero represented no difference from the mean rating of an attribute across all faces and all raters. These deviation scores give a relative sense of each president's standing against the others but are not directly comparable to those computed for Study 1.

To reduce the number of statistical tests, we sorted trait ratings into two groups based on the pattern of results from Study 1. Warmth ratings included scales for

compassion, honesty, and attractiveness. Power ratings included scales for dominance, strength, and cunning. For each president, separate multivariate analyses of variance (MANOVAs) were performed on each grouping of related, dependent variables. In this manner, each version of a president's face was compared to an altered version of the same president. The independent variable was feature manipulation (neotenous, mature, normal). Data for male and female participants were combined, as no sex-of-rater effects were found in Study 1.

Table II presents the results for perceptions of power for each president. As anticipated, perceptions of President Kennedy's power were affected by feature manipulations [$F(6, 90) = 2.57, p < .025$]. Kennedy's power ratings were generally reduced by neotenous feature substitutions and increased by mature feature substitutions. As Table II shows, the overall result was supported by univariate *F* tests for dominance, strength, and cunning. For each power attribute, Kennedy's ratings declined in response to enlarged, neotenous features. Substituting mature features for normal ones increased perceptions of Kennedy's cunning, although ratings of his dominance and strength were not reliably affected (Table II).

The overall test for Reagan's power ratings was also significant [$F(6, 90) = 2.65, p < .021$]. Neotenous facial cues resulted in diminished perceptions of Reagan's dominance and cunning (but not his strength; see Table II). Increasing the maturity of Reagan's face reduced the appearance of each measure of power, as predicted (Table II).

As in Study 1, perceptions of President Clinton's power were resistant to facial changes, according to the overall test [$F(6, 90) < 1.0$]. Ratings of the sitting president's status were largely unaffected by our face manipulations (Table II).

The results reported in Table III partly confirm predictions for perceptions of presidential warmth. Consistent with the results of Study 1, face manipulations affected perceptions of Clinton's warmth [$F(6, 90) = 2.89, p < .013$]. The overall result was supported by univariate tests for honesty, attractiveness, and compassion. As predicted, neotenous features made Clinton look most honest and attractive (Table III). He appeared least compassionate with mature features. President Reagan was generally perceived as least warm when made to appear more mature than normal [$F(6, 90) = 2.51, p < .028$]. Consistent with predictions, Reagan appeared least honest and attractive with mature features (Table III). However, neotenizing Reagan's face failed to increase perceptions of his honesty, attractiveness, or compassion (Table III). The omnibus test showed that President Kennedy's warmth was unaffected by feature manipulations [$F(6, 90) = 1.66, p > .14$] (Table III).

Discussion

Undetected feature manipulations shifted the ways in which perceivers rated the characteristics of three familiar presidents. However, the precise impact of feature manipulations on social perceptions varied among presidents. As in Study 1, ratings of Clinton's power were resistant to face manipulations: The perceived

Table III. Mean Warmth Ratings for Normal and Manipulated Versions of Presidential Physiognomies

	Face manipulation			<i>F</i>
	Neotenus	Normal	Mature	
Clinton				
Honest	-.105 ^a	-.764 ^b	-1.170 ^b	4.224*
Attractive	.290 ^a	-.380 ^b	-.783 ^b	5.771**
Compassionate	.190 ^a	-.182 ^a	-.834 ^b	5.562**
Reagan				
Honest	.583 ^a	.501 ^a	-.423 ^b	4.304*
Attractive	-.842 ^a	-.446 ^a	-1.714 ^b	5.511**
Compassionate	.562	.282	-.064	1.650
Kennedy				
Honest	.667	.521	.178	—
Attractive	1.222	1.417	1.221	—
Compassionate	.556	-.125	-.378	—

Note. Means represent deviations from average trait ratings across all faces and raters. Degrees of freedom for *F* tests were (2, 46). Row means with varied superscripts (a, b, c) differ at $p < .08$ or better. * $p < .05$, ** $p < .01$.

power of the sitting president was unaffected by altered facial features. But the power of each former president was perceived differently when facial cues were altered. Substituting neotenus features for normal ones undermined perceptions of power for each former president, as predicted. Replacing normal features with more mature-looking ones affected perceptions of the former presidents differently. With facial maturity enhanced, the youngest, most naturally babyfaced president, Kennedy, was perceived as more cunning than with normal features, whereas the oldest, most naturally mature-faced president, Reagan, aged enough to appear less cunning, less strong, and less dominant than normal.

The pattern for presidential warmth differed from that of power. In this case, Kennedy's ratings were entirely unaffected by facial manipulations. Perhaps his reputation as one of the most charismatic and beloved presidents of our time was responsible for the resilience of his relatively high warmth ratings across facial manipulations. Perceptions of Reagan's warmth revealed a similar resistance to altered physiognomy: Reagan's warmth ratings were diminished but not increased by changes in facial cues. Thus, when eyes and lips were made small and mature-looking, perceivers perceived less honesty and attractiveness in Reagan. Only President Clinton conformed to predictions by appearing significantly more honest and attractive with enlarged, neotenus eyes and lips. In addition, perceivers detected less compassion in Clinton when the maturity of his normal face was enhanced.

Thus, each presidential face provided a different platform for feature manipulations. The maturity of each normal face, perhaps in combination with reputation, determined the specific impact of facial maturity cues. Unfortunately, although the reputation of each president may have moderated the impact of facial cues, we had no direct, independent assessment of this effect.

General Discussion

The complexity of the human face challenges any precise understanding of what our feature manipulations really comprised. Feature changes were operationalized in terms of size and described in terms of maturity. However, every alteration entangled additional perceptual dimensions. For instance, changing feature sizes also shifted spatial relationships among features. Clearly, the impact of shrinking and inflating features in order to increase or decrease maturity was more complex than described.

The implications of this research are complicated by shortcomings in our methods. Perhaps the influence of facial features was exaggerated by the procedure we used: We asked for character judgments in the context of stimulus faces alone, without pairing leaders with policy decisions or issue positions. Future studies should derive impressions of political leaders by including multiple channels of information (e.g., issue positions, personality characteristics), the way Budesheim and DePaola (1994) did, rather than providing facial cues alone. Our emphasis on proximate facial cues may have empowered them by heightening their importance in the minds of perceivers. In addition, we relied on impressions of a unique group of potential voters—college undergraduates—who typically do not vote in elections. Finally, we studied physiognomic messages at a peculiar time in history, during a highly charged election and an ongoing Independent Counsel's investigation of President Clinton that highlighted character issues, especially honesty. In contrast to Reagan and Kennedy, Clinton's integrity was at the core of political debate as data were collected for both studies. The fact that Clinton's truthfulness was at issue may have uniquely increased the saliency of physiognomic cues for his honesty.⁴

Nevertheless, two intriguing findings emerged from this research: First, we discovered that subtle, undetected changes in facial physiognomy were powerful enough to influence perceivers' character judgments of familiar people. As noted above, previous research showed that first impressions of unfamiliar people were influenced by facial maturity (e.g., Berry & McArthur, 1986; Cunningham et al.,

⁴ President Clinton's televised lie had not been discovered at the time of either data collection. Data collection for Study 2 occurred during spring 1998, after Clinton's 26 January televised "finger-wagging" statement of denial that he had a relationship with Lewinsky but before his acknowledgment of the affair in August.

1990; Perrett et al., 1998; Zebrowitz & Montepare, 1992); here, we showed that subtle changes in facial cues shifted perceptions of familiar individuals. Moreover, feature manipulations affected perceivers without their awareness. Second, the power of physiognomic cues to alter assessments of familiar leaders extended to supporters and nonsupporters alike: Both Clinton supporters and nonsupporters perceived him to be more honest and attractive when neotenous features were substituted for his normal ones. These undetected changes in physiognomic cues were powerful enough to influence the character judgments of a president with an established reputation.

It seems that, even in politics, interpersonal appraisals are guided in important ways by visceral responses to proximate nonverbal cues (Budesheim & DePaola, 1994; Hellweg et al., 1992; Jamieson, 1984; Jamieson & Birdsell, 1988; McHugo et al., 1985; Rosenberg et al., 1986; Way & Masters, 1996). The fact that undetected changes in the portrait images of three presidents shifted impressions of them is testimony to the potency of silent, motionless, physiognomic messengers. Human sensitivity to physiognomic cues, conscious or otherwise, may be rooted in age-old signaling systems promoted by face-to-face living in social groups and favored by natural selection (Guthrie, 1976; Keating, 1985b). These facial messages may contribute more than we think to the formula for charismatic leadership.

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