DO BABYFACED ADULTS RECEIVE MORE HELP? THE (CROSS-CULTURAL) CASE OF THE LOST RESUME

Caroline F. Keating, David W. Randall, Timothy Kendrick, and Katharine A. Gutshall

ABSTRACT: The hypothesis that babyish-looking adult faces would elicit help was tested in a field experiment using the "lost letter" technique. Digitized images of African-American and European-American adult male and female faces were made to look babyish (neotenous) by substituting enlarged eyes and lips for normal ones. Eyes and lips were reduced in size to make faces look mature. As expected, neotenous features made adults appear submissive, weak, naive, feminine, compassionate, and honest, but not more or less attractive, relative to mature features. Neotenous or mature faces were printed on (fictional) resumes, attached to stamped, addressed envelopes, and "lost" in the US (n = 408) and Kenya (n = 176). "Helping" was indexed by whether resumes were posted (returned) or not. Most results supported predictions; across nations, resumes depicting neotenous, white and black female faces and neotenous, white male faces were returned more often than were resumes displaying the mature versions of these faces. Returns for neotenous and mature black male faces, however, were not significantly different. Overall, support was found for the hypothesis that neotenous, submissive-looking facial characteristics cue social approach and elicit help while mature, dominant-looking facial traits cue avoidance.

KEY WORDS: cross-cultural; evolution; faces; helping; neoteny.

Who can resist a babyface? Early ethologists proposed that the psychological appeal of pedomorphic characteristics evolved in humans and other species by inspiring successful parenting (Eibl-Eibesfeldt, 1975; Lorenz, 1943). Theoretically, parents responded to the pedomorphic fea-

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tures of their offspring by becoming dedicated caregivers. Genetic influences contributing to this perceptual bias were favored by natural selection and retained. Thus, the morphological characteristics of babyhood look 'cute' and readily elicit our help (Lorenz, 1943).

As in other species, the morphological characteristics of human adults may mimic those of infancy (Guthrie, 1970, 1976). Adult mimicry of prepubescent traits is a phenomenon generally known in evolutionary biology as neoteny (Cunningham, 1986; Cunningham, Barbee, & Philhower, 2002; Eibl-Eibesfeldt, 1975; Guthrie, 1970). This form of mimicry apparently conferred fitness benefits on both mimics and recipients of the message. From the mimic's point of view, neoteny signaled appeasement or submissiveness and elicited social approach and caregiving. From the recipient's perspective, neoteny stemmed costly, inappropriate aggression by signaling vulnerability (Guthrie, 1970; Keating, 2002). In complementary fashion, mature morphological traits evolved, in part, to signal dominance and cue avoidance (Guthrie, 1970; Keating, 1985b; Mueller & Mazur, 1997). Thus for faces, natural selection transformed cues that relayed information about development into social status signals that can be mimicked by faces of any age. This line of argument defines the social status cues approach to the evolution of human nonverbal communication (see Keating, 2002).

Research on human faces has demonstrated that physiognomic cues associated with development influence the impressions perceivers have of adults. For example, adults with immature-looking facial features are judged to be weak, submissive, helpless, dependent, feminine, and warm in different countries and across races (e.g., Berry & McArthur, 1986; Cunningham, 1986; Cunningham et al., 2002; Cunningham, Roberts, Wu, Barbee, & Druen, 1995; Jones, 1995; Perrett et al., 1998; Zebrowitz, Montepare, & Lee, 1993). Some theorists propose that these attributions reflect universal overgeneralizations of inferences that are adaptive in the context of childrearing (Berry & McArthur, 1986; Montepare & Zebrowitz, 1998; Zebrowitz & Collins, 1997; Zebrowitz & Montepare, 1992). From the social status cues perspective, facial status signals evolved by mimicking age-related traits; pedomorphic traits convey submissiveness and cue approach while mature traits convey dominance and cue avoidance (Keating, 2002). Despite their differences, these theoretical perspectives converge when predictions about responses to babyfaced adults are made.

Both the overgeneralization and status cues perspectives imply that babyfaced adults should elicit a disproportionate share of help from others, no matter where in the world they go. Oddly enough, studies of babyfaced adults have mostly investigated perceptions of their role as *givers* rather

than as *receivers* of help (e.g., Collins & Zebrowitz, 1995; Zebrowitz, Tenenbaum, & Goldstein, 1991). We reversed the trend by asking whether babyfaced adults attracted more help than maturefaced adults, and we searched for this bias in a nonwestern as well as a western culture.

Studies done in the US have linked perceptual biases induced by facial appearance with the differential treatment of individuals who display different physiognomies. Zebrowitz, Brownlow, and Olson (1992) found that adults used baby talk primarily with children who had especially babyish faces. Because baby talk enhanced the children's ability to complete a task, in a sense the babyfaced children experienced more help than children with relatively mature faces. The experience of babyfaced and maturefaced male undergraduates has been found to differ, too. Males with babyish faces reported that they had less power over social interactions than did males with mature-looking visages (Berry & Landry, 1997). In the courtroom, the more babyfaced the defendant, the less likely it is that judgments will be made against the defendant for intentional criminal acts (Zebrowitz & McDonald, 1991). Apparently, babyish, submissive-looking facial traits trigger attributions which, when displayed by adults, evoke a level of expectation and response a child might. In contrast, mature, dominant-looking individuals exude social power and independence, and are likely to be treated that way. So, for example, West Point cadets with dominant appearances were disproportionately awarded higher rank at graduation (Mazur, Mazur, & Keating, 1984; cf. Collins & Zebrowitz, 1995). Studies like these are consistent with the logic that facial cues drive social perceptions leading to the differential treatment of individuals with different physiognomies (see Montepare & Zebrowitz, 1998, for a review).

Human morphological development patterned the kinds of facial cues that shift social perceptions along status dimensions. The shapes, sizes, and spatial arrangements of features change with development. The characteristics of youth include proportionately large eyes, a large, protruding forehead, a small chin, pudgy lips, and thin, arched brows (Alley, 1988; Eibl-Eibesfeldt, 1975; Lorenz, 1943; Montepare & Zebrowitz, 1998; Pittenger, Shaw, & Mark, 1979). After puberty, eyebrows thicken and apparent eye size diminishes (Enlow, 1982; Gray, 1948; Guthrie, 1970). The lips thin due to changes in vasculature and the jaw becomes more square with increasing dentition (Gray, 1948; Guthrie, 1970). Investigations in which specific facial features have been either measured or manipulated confirm that immature features, such as large eyes, thin brows, pudgy lips, and round jaws, engender impressions consistent with subordinate status (e.g., helplessness, warmth, dependency, and weakness) (e.g., Berry & McArthur,

1986; Cunningham, Barbee, & Pike, 1990; Keating, 1985a; Keating & Doyle, 2002).[1] Features characteristic of maturity, such as small eyes, thin lips, square jaws, and receded hairlines, evoke attributions related to dominant status (dominance, strength, independence, masculinity, and cunning) (e.g., Cunningham et al., 1990; Keating & Doyle, 2002; Keating, Mazur, & Segall, 1981; Penton-Voak et al., 1999; Zebrowitz et al., 1993), even among young children (Keating & Bai, 1986). Thus human morphological development offers culturally common themes for interpreting physiognomic messages and suggests that these perceptions are universal.

Although research has shown that adults with neotenous facial features are perceived as being relatively submissive, weak, and dependent, and apparently *look* as if they need help, whether they actually *receive* disproportionate amounts of help from others has yet to be directly tested. Studies investigating links between helping and facial maturity have generally tested whether adults *who help others* have babyfaces (Collins & Zebrowitz, 1995; Zebrowitz et al., 1991). So, for example, Collins and Zebrowitz (1995) found that individuals with jobs requiring interpersonal warmth and acceptance (i.e., teacher, clergy, nurse's aide) tended to be babyfaced. We asked a more direct question, one spawned by evolutionary perspectives on social perception: Do adults with babyfaces *receive* more help? Thus we put the babyfaced individual in the role of receiving rather than delivering help.

Instead of relying on correlational relationships between naturally occurring levels of facial maturity and help, we used an experimental approach similar to those used by researchers who explored facial attractiveness by digitizing facial images and altering them using computer software (e.g., Keating & Doyle, 2002; Keating, Randall, & Kendrick, 1999; Langlois & Roggman, 1990; Perrett et al., 1998; Rhodes, Sumich, & Byatt, 1999). Using a similar strategy, we experimentally controlled the degree to which faces displayed neoteny and maturity. We chose two features to manipulate, eyes and lips. The selection of these features was based on research demonstrating that faces could be made to appear more-or-less neotenous and submissive by altering two to four features: brow thickness, eye size, lip size, and jaw shape (Keating, 1985a; Keating & Doyle, 2002; Keating et al., 1999). Eye and lip changes were easiest to quantify because computer software permitted a straightforward, proportional resizing of these digitized features. Brow and jaw line changes often required the application of drawing and touch-up techniques, which were difficult to standardize. Morphing programs, which have also been used to alter jaw shape, can degrade stimulus faces and give them a fuzzy quality. Thus manipulations

of the size of eyes and lips were used to alter facial neoteny/maturity and the basic question, from the status cues perspective, was this: Given a particular individual's face, could we elicit elevated levels of help for them by enhancing their facial neoteny?

Perceivers were given the chance to help people whose digitized facial images were manipulated to appear either neotenous or mature. Images of male and female African-American and European-American adult faces were made to appear more or less babyish. To create neotenous, babyish-looking faces, eyes and lips were proportioned 15% larger than normal to mimic the big-eyed, pudgy-lipped look of babyhood. To make faces appear mature, eyes and lips were reduced by 15% in size. Using a modified version of the lost letter technique pioneered by Stanley Milgram (Milgram, Mann, & Harter, 1965), we printed portraits onto (fictitious) resumes, attached them to stamped, addressed envelopes, and "lost" them in the United States and Kenya. Returns were counted as evidence of helping. The type of face people saw on a resume was expected to affect the motivation to help. Thus, we predicted higher return rates for resumes depicting babyfaced black and white, men and women than for identical resumes depicting the same men and women with mature features.

Our approach was novel in both basic and applied aspects. First, we investigated not whether babyfaced adults were perceived to *give* more help (e.g., Collins & Zebrowitz, 1995) but whether, like children, they *elicit* it. Second, we experimentally controlled extraneous facial cues by manipulating the relative neoteny of stimulus faces rather than simply capturing unaltered faces with varied degrees of babyish owed to an idiosyncratic collection of features. The precision in our methodology meant that each face served as its own control and we could define precisely what we meant by 'neotenous' and 'mature.' Third, we tested the generalizability of the status cues hypothesis by conducting a field experiment in which the race and gender of facial stimuli varied, and the culture of participants differed.

Method

Participants

Potential participants were anonymous individuals who frequented indoor and outdoor suburban shopping and commercial areas located in the Eastern United States (US) (i.e., in New York City metropolitan area suburbs, suburban areas in upstate New York, and in New Jersey suburbs) and

in commercial areas and open-air markets in and around metropolitan Nairobi, Kenya. A total of 584 resumes were "lost" (408 in the US and 176 in Kenya). Individuals participated by posting (or not posting) resumes that appeared to have been lost. The areas targeted for resume drops in the US were predominantly white and middle-class. The areas selected for drops in Kenya were predominantly black and middle to lower-middle class in that country.

Two separate groups of US undergraduate students participated by rating stimulus faces. Forty-eight introductory psychology students (29 females and 19 males) judged the portrait stimuli exclusively for facial structure and age. A second group of 99 students (60% female) rated their impressions of subsets of stimulus faces along a variety of social trait scales. Students received laboratory credit for participating.

Materials

The faces of eight, US college graduates gleaned from six different college yearbooks from the mid nineteen-nineties were ultimately used to generate stimuli. The eight color portraits depicted white women, black women, white men, and black men (two of each). The selection of portraits was random (by number) with restriction: The faces selected were judged (by an independent set of senior research assistants) to be relatively expressionless (no smile or a very slight smile) and devoid of peculiar scars, hairstyles, make-up, clothing or jewelry, and of average attractiveness.

The eight portrait photographs were scanned into a Macintosh computer. Photoshop software was used to manipulate the two features, eyes and mouth, chosen to operationalize the critical construct of neoteny/maturity. Pilot studies and previous research guided decisions about the proportional increases and decreases in eye and mouth sizes that would look natural while having the desired impact on perceptions of neoteny and maturity (e.g., Keating et al., 1999; Keating & Doyle, 2002). For each of the eight people, a big-eyed, full-lipped, neotenized or babyfaced version of their 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%. Examples of the kinds of stimulus faces we used appear in Figures 1 and 2.

To produce resumes, a neotenized or mature version of each face was printed in color on the top of what appeared to be a one page summary of personal qualifications. Resumes were fictitious. Identical information was provided for each face except for first names; "David J. Lawrence" was paired with male portraits and "Susan J. Lawrence" with female portraits.

Figure 1. Examples of neotenous, normal, and mature male faces. Neotenous versions appear to the left, normal faces in the center, and mature to the right. Resumes depicted either neotenous or mature faces.

The resume listed the employment history and skills of the apparent applicant. We attempted to neutralize our resume in terms of gender stereotypes by describing an education, an employment history, career goals, and a set of skills and interests common to both men and women in the US. To engender sympathy, the applicant's career goals were stated as, "to obtain a job in finance that will allow me to relocate near my family." Attached to each resume was an envelope (with correct postage, in local stamps). The envelope was addressed to a potential employer (actually, one of the authors) whose address was in New York. A brightly colored 3 by 5 inch Post-It note was attached which read, "*MAIL TODAY*," handwritten in dark blue ink. An exemplary resume is depicted in Figure 3. Packets of 16 resumes were compiled so that one resume of each type (i.e., the babyfaced and the maturefaced versions of each of the two black males, the two white males, the two white females, and the two black females) was included in each drop.

Figure 2. Examples of neotenous, normal, and mature female faces. Neotenous versions appear to the left, normal faces in the center, and mature to the right. Resumes depicted either neotenous or mature faces.

Procedure

Manipulation check. To ensure that face manipulations had the desired effects, each face was transferred in color onto plastic transparencies and projected onto a screen. A subset of raters judged stimulus faces exclusively for facial structure using 7-point scales labeled "extremely babyish facial structure" to "extremely mature facial structure."

Using the eight faces as units of analysis, mean ratings for maturity of facial structure (produced by the 48 independent judges) comprised the dependent variable. A 2 (sex of face) by 2 (rating of male judges; rating of female judges) by 3 (face manipulation: neotenized, unaltered, mature) Analysis of Variance (ANOVA) with repeated measures on the last two factors was computed. The analysis yielded the anticipated main effect for face manipulation, F (2, 12) = 6.87, $p < .01$, indicating that faces with small features had higher maturity ratings than did faces with large, 'neotenized' features (means = 4.30 vs. 3.59), F (1, 7) = 12.58, $p < .009$. Maturity ratings for unaltered faces (mean = 4.17) were significantly

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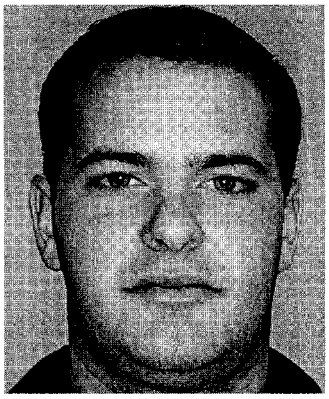
DAVID J. LAWRENCE



OBJECTIVE

To obtain a job in finance that will allow me to relocate near my family in the Syracuse, New York area.

EDUCATION

Plymouth State College, Plymouth, New Hampshire
Bachelor of Arts, 1997 (GPA: 3.09)
• Major: Economics
• Honors: Dean's Award for Academic Excellence (1996)

EXPERIENCE

Nations Bank, Boston, Massachusetts 1997 - 1998
Operations Analyst
• Analyzed daily transaction reports of three separate branches
• Reported monthly trends to branch management
• Aided in the preparation of customer monthly account statements

Plymouth State Student Travel Agency, 1995 - 1997
Travel Agent/Bookkeeper
• Assisted students with travel plans
• Co-managed all financial records and prepared weekly reports

Crisis Hotline, Plymouth State College 1994 - 1997
Coordinator and Operator
• Performed crisis management and helped students cope with academic, personal, or social problems.
• Planned training sessions for new volunteers, managed finances, and organized operator schedules for each semester.

Student Government, Plymouth State College 1996 - 1997
Treasurer
• Maintained financial records of the student government
• Managed over $50,000 in two bank accounts
• Attended weekly executive board meetings to discuss campus issues

Shaw's Supermarket, Weston, Massachusetts 1993 - 1995
Cashier
• Worked part-time during high school and college as cashier
• Managed personal cash drawer on a weekly basis

SKILLS
• Data Entry, Microsoft Word, Word Perfect, Microsoft Excel, Quicken

INTERESTS
• Piano, golf, water sports, and reading

Figure 3. Example of a "lost" resume.

higher than those for neotenized faces, $F(1, 7) = 13.59$, $p < .008$, but not significantly lower than ratings for mature-featured faces, $F(1, 7) < 1.0$. Thus manipulations meant to neotenize faces were more potent (relative to the base face) than manipulations meant to make faces more mature-looking. This pattern was consistent across face gender, as the overall analysis indicated no interaction with sex of face and face manipulation, $F(2, 12) < 1.0$, and no main effect for sex of face, $F(1, 6) < 1$.

We computed a second test to ensure that manipulations generalized across race of face, as well. Given the small sample of faces, the overall analysis was repeated by replacing the independent variable, sex of face, with race of face. The results of this analysis were similar to those for sex. The main effect for face manipulation emerged, $F(2, 12) = 7.91$, $p < .006$, there was no interaction with face manipulation, $F(2, 12) < 1.0$, and no main effect for race, $F(1, 6) < 1.0$.

Taken together, these tests confirmed that across male and female, black and white faces, enlarged features made faces look more babyish relative to the same faces with features reduced in size. Only faces with manipulated (enlarged or reduced) features were printed on resumes. These faces were judged by independent sets of raters for psychological traits.

Trait ratings. Additional raters assessed the faces for traits related to neoteny and maturity (e.g., Keating, 2002; Montepare & Zebrowitz, 1998; Perrett et al., 1998). The measurement of trait perceptions could provide evidence as to why some resumes were returned more often than others. Raters responded to seven-point scales labeled submissive-dominant, weak-strong, unattractive-attractive, naive-cunning, honest-dishonest, feminine-masculine, compassionate-heartless. Poles were reversed for several scales.

The 99 participants who made multiple trait judgments of the stimulus faces rated different subsets of them. A given rater saw one male and one female stimulus face embedded in a standard series of 12 foil faces. Foils were unaltered faces randomly selected from the same yearbooks as the target stimuli. No rater saw the same stimulus person more than once; they saw either the neotenous or mature version of an individual's face. Groups of 10 to 12 raters judged each subset and ratings for male and female raters were combined.

Raters viewed faces in a room that was slightly darkened to facilitate projection of the stimuli. To diminish carry-over effects, raters assessed all faces for a single trait before turning a page to reveal the next trait. Traits were arranged in different random orders for these raters. Each face was displayed on the screen for five seconds in a standardized order.

Resume drops. Over separate, six-to-eight week periods, 408 resumes were 'dropped' in the US and 176 in Kenya. One packet of 16 resumes was dispersed during each drop. Packets contained 16 resumes so that one resume of each type was included in each drop. Once, only half of a drop set (8 resumes comprising one example of each face manipulation for only one stimulus face) was made. Thus in the US, 25.5 drops were made. In Kenya, 11 drops were made.

Pilot studies conducted in the US and Caribbean Islands guided decisions about where and when to make the drops. US drop sites included indoor malls, outdoor sidewalks and parking lots in commercial areas, and public transportation stops and telephone booths. Kenyan drop sites included outdoor public markets, public transportation stops, outdoor sidewalks, telephone booths, and indoor entrances to businesses and restaurants. Resumes were surreptitiously left on floors, sidewalks, benches, and tables near areas judged to have moderate to light pedestrian traffic; during pilot work, we discovered that heavy traffic made it difficult to avoid immediate detection. No effort was made to drop resumes near mailboxes. Drops were made only in good weather, away from litter, and in places protected from wind. Resumes were well spread-out geographically and/or temporally to avoid the possibility that anyone would encounter more than one resume at a drop site. Some US mall sites were visited more than once; in those cases, we waited several weeks before returning.[2] Difference between the US and Kenyan sites included the fact that more US than Kenyan drops were made indoors. Unfortunately, we did not track return rates from specific types of sites.

Helping behavior was measured by counting the number of resumes received at the (fictitious) employer's address. We waited three months for resumes to be returned and counted.

Results

Trait Ratings

Because participants rated different subsets of faces, deviation scores were computed to even-out within-subject differences in the use of scales. This technique essentially standardized trait ratings, making them comparable across faces (Rossi & Anderson, 1982). For each trait scale, deviation scores reflected differences from the overall mean rating across all target faces and raters for that attribution. Faces received a deviation score for each trait and face rather than rater was used as the unit of analysis, similar to procedures followed by Keating and Doyle (2002). A deviation score of

Table 1

Mean Trait Ratings for Faces That Were Manipulated and Printed on Resumes

	Face manipulation		
	Neotenous	Mature	*p*
Trait			
Submissive	.34 (.34)	−.10 (−.01)	.01 (.04)
Weak	.44 (.45)	−.09 (−.09)	.03 (.02)
Compassionate	.02 (.02)	−.41 (−.40)	.01 (.07)
Honest	.15 (.14)	−.23 (−.24)	.02 (.14)
Feminine	−.05 (.04)	−.21 (−.20)	.06 (.16)
Naïve	.26 (.26)	−.07 (−.02)	.03 (.18)
Attractive	−.20	−.41	.12

Note. Means represent deviations from average trait ratings across all faces and raters. Means not in parentheses are unadjusted and tested at $df = 1,7$. Means in parentheses are adjusted for attractiveness; significance levels in parentheses resulted from ANCOVAs with attractiveness controlled ($df = 1,6$).

zero represented no difference from the mean rating of an attribute across all faces and raters.

With face ($n = 8$) as the unit of analysis, deviation scores for each trait were initially submitted to one-way, repeated-measures ANOVAs contrasting mean deviation scores for each level of face manipulation (neotenized or mature) for each trait. Table 1 reveals that compared to the mature version, neotenous faces were perceived as significantly more submissive, weak, compassionate, honest, feminine, and naive, as predicted. Attractiveness did not vary significantly between face types (see Table 1). Nevertheless, we repeated the analysis by covarying out attractiveness ratings from each other trait rating in order to distinguish any overlapping effects. The adjusted means appear in Table 1. Controlling for attractiveness diminished some of the original effects (see Table 1). Given the reduction in degrees of freedom for these tests ($df = 1,6$), several moved out of the range of significance; tests for naivete, femininity, and honesty, in particular. However, faces with neotenous cues remained significantly more submissive, weaker, and, to some extent, more compassionate in appearance than mature faces even when attractiveness was controlled.

To test whether trait judgments generalized across types of stimulus faces, sex of face and race of face were alternately entered as independent

variables into the analysis. Trait judgments showed good generalizability. That is, the 2 (sex of face) × 2 (face manipulation) repeated measures ANCOVAs controlling for attractiveness ($df = 1, 5$), indicated that all main effects for face manipulation were maintained with the exception of honesty, which was reduced from significance to $p < .14$. Sex of face produced three significant main effects ($df = 1, 5$): Females were perceived as more feminine, $p < .001$, more honest, $p < .03$, and more naïve, $p < .05$, than males. Interactions with sex and face manipulation ($df = 1, 5$) indicated that babyfaced females were especially naïve looking, $p < .004$, and that neoteny increased femininity ratings for females, $p < .03$. The femininity ratings for male faces, controlling for attractiveness, did not vary, means = 1.78 vs. 1.79, *ns*. When race of face was substituted for sex of face as a variable in the ANCOVAs ($df = 1, 5$), no main effects for race and no interactions with race emerged, ps $< .11$. However, main effects for face manipulation were again weakened for honesty, which was reduced to nonsignificance ($p < .19$), as were the main effects for masculinity, $p < .20$, and cunning, $p < .24$.

Overall, trait ratings indicated that across sex and race of face, and controlling for physical attractiveness, our neotenous faces conveyed more submissiveness, weakness, and, to a lesser extent, compassion, than faces with mature traits.

Resume Drops

Logistic regression was used to analyze patterns in the types of resumes participants returned by mail. Each resume was treated as an independent event and served as the unit of analysis ($n = 584$). The dichotomous dependent measure was whether or not the resume was received. The data were pooled across examples of each face type so as to generalize across them. Thus the dichotomous independent variables included face manipulation (neotenous or mature), sex and race of the face that appeared on each resume, and country in which the drop occurred (US or Kenya). Independent variables also included the two, three, and four-way interactions between and among these variables. Simultaneous entry of all main effects occurred first, followed by the simultaneous entry of the two-way interactions, then the three-way interactions, and then the four-way interaction.

Overall, 36% (210 out of 584) of the resumes were returned, which was consistent with those for studies employing similar methodologies in similar types of geographic locations (e.g., Bridges & Clark, 2000). With all variables entered into the equation, the regression analysis indicated that

the predicted main effect for face manipulation was not statistically significant, B = .75, $p > .22$, although the percentage of returned babyfaced portraits was greater than that of maturefaced portraits (38% and 32%, respectively). Return rates were roughly comparable for black and white portraits (36% vs. 34%, respectively, B = .74, $p > .23$), and for male and female portraits (37% vs. 33%, B = .19, $p > .75$). Overall, Kenyans posted resumes at a rate that was not significantly higher than that for Americans (40% vs. 33%, B = .04, $p > .94$).

Face manipulation interacted with both race and sex of face in ways that provided qualified support for the hypothesis that neotenous features would engender help. Specifically, face manipulation, race of face, and sex of face combined to produce a significant, three-way interaction, B = 3.20, $p < .015$. This interaction is illustrated in Figure 4. We probed this interaction to uncover qualified support for the status cues hypothesis.

Separate logistic regressions were computed for resumes with male and female faces. For male faces, face manipulation interacted with race of face, B = −1.10, $p < .03$. Planned comparisons were computed on the percentages of returned resumes using chi-square. Consistent with predictions, white males elicited more returns when they displayed neotenous rather than mature features, 42% vs. 25%, chi-square = 5.24, $p < .025$. However, return rates were not significantly different for black male faces with neotenous and mature features, 37% vs. 44%, chi-square = .712, *ns*. The analysis for female faces yielded a simple main effect for face manipu-

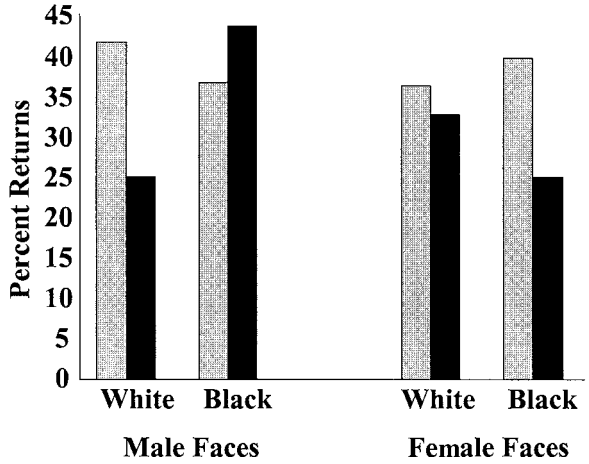


Figure 4. Percentages of returned resumes for black and white, male and female faces with neotenous and mature features.

lation; as predicted, females generally elicited more help when they displayed neotenous than mature features, 38% vs. 30%, B = −.70, $p <$ .05. The interaction of face manipulation and race of face was nonsignificant for females, B = .78, $p <$ .12, although informal inspection of the means revealed that the results for black females (40% vs. 25%) were stronger than those for white females (36% vs. 33%) (see Figure 4).

Discussion

We found qualified support for the hypothesis that adult mimicry of neotenous facial features elicits help. For resumes depicting white male faces and white or black female faces, predictions were confirmed; "lost" resumes were more frequently forwarded to a potential employer if the individual depicted on them displayed neotenous rather than mature features. However, the posted returns of resumes depicting black males revealed no pattern at all. Thus, most but not all of our findings were consistent with the status cues hypothesis. That is, status cues conveyed by neotenous facial traits—especially submissiveness, weakness, and compassion—elicited approach and help for babyfaced individuals while status cues inherent in mature facial traits—dominance, strength, and relative heartlessness—elicited avoidance.

The connection between status cues and helping behavior relied on circumstantial evidence, however. To US undergraduates who rated the black and white faces appearing on resumes, mature features made individuals seem relatively dominant, strong, masculine, heartless, and dishonest while neotenous features made individuals look relatively submissive, babyish, weak, feminine, compassionate, and honest. Did Kenyans interpret facial status cues in the same way? Unfortunately, we had trait ratings only from US (and not from Kenyan) undergraduates. Nevertheless, cross-cultural and cross-racial studies of face perception reveal considerable agreement among perceivers asked to make attributions based on facial structure (e.g., Berry & McArthur, 1986; Cunningham, 1986; Cunningham et al., 1995; Perrett et al., 1998; Zebrowitz et al., 1993). Thus, we inferred that perceivers from Kenya interpreted facial traits just as US perceivers did but never directly verified it. In addition, our premise was that these traits altered people's motives to help, which we never directly tested. So although we put status cues, social perceptions, and helping behavior in roughly the same place at the same time, this confluence of evidence cannot be judged as entirely conclusive.

The most important qualification to emerge from our findings was that

black male faces with neotenous and mature features elicited essentially equal numbers of returns. For these faces, feature manipulations and the impressions they relayed seemed to make no difference. Returns for African-American male faces were not significantly lower or higher than returns for other groups. And because this pattern generalized across countries, it cannot be easily attributed to differences in racial or cultural sensitivities to black faces in Kenya or the US (Anthony, Copper, & Mullen, 1992; Brigham & Malpass, 1985; Shepherd, 1981; Zebrowitz et al., 1993).

Perhaps *cross-cultural* stereotypes affected people's motivation to help African-American males acquire a job in banking. Maybe the perceived fit between the applicant and the job they [apparently] meant to apply for was different for African-American males. In some Western countries, perceivers reliably (though not necessarily accurately) match particular faces with certain vocations (e.g., Secord, Dukes, & Bevan, 1953). More recent laboratory studies have shown that facial appearance affects hiring recommendations made by US undergraduates in systematic ways: Babyfaced job applicants are favored for positions requiring qualities of warmth and submission while maturefaced applicants are favored for positions requiring leadership skills (Zebrowitz et al., 1991). In fact, in the US, babyfaced adults are disproportionately found in jobs such as teaching and nursing that require nurturance and caregiving (Collins & Zebrowitz, 1995). To control for this kind of matching, we balanced the messages of warmth and dominance that the applicant projected in their resume. Applicants were portrayed as having been both a counselor and analyst, as a cashier and treasurer, and as having family ties and management skills. In addition, the applicants' career track was described in very general terms as, "a job in finance." Thus neither dominant nor submissive appearances, or gender, or race should have been favored as a fit for the position. We hoped that what motivated the posting of resumes was simply the physiognomy of the applicant.

However, individuals who found resumes may have sized-up applicants in terms of the job they sought. Informal inspection of return rates for all groups of faces suggested that the anomalous result was generated by mature-faced black males. The returns for this group were high (44%) relative to other mature-faced groups, and comparable to return rates for babyfaced individuals generally. Did mature traits on African-American male faces convey messages that were especially compatible with American and Kenyan stereotypes for a job in finance?

There is evidence that the facial features of African-American males convey strong dominance messages. Lippman and Keating (2002) morphed digitized images of male African-Americans and male European-Americans

together in order to produce white-skinned faces with different gradations of African features. The more African the features, the more dominance and assertiveness US perceivers saw in these white-skinned faces. It may be, then, that the mature-featured, dominant-looking black male faces we printed on resumes violated stereotypes less than did the mature-featured, dominant-looking faces of females or white males. Moreover, the dominance messages conveyed by maturefaced black males may have seemed advantageous in case career advancement required the fortitude to overcome racial prejudice.

Our basic argument that neotenous features comprise status cues eliciting social perceptions that motivate help ran into some contradictions with gender as well as with race. If the basic argument were true, then resumes with female faces on them should have evoked higher return rates than those with male faces on them because female faces expressed more of the relevant qualities. In particular, females appeared significantly more honest, naïve, and feminine than males. These social messages were not converted into more help. Instead, men's resumes were returned as frequently as were women's. It may be that the career goals described for applicants shifted some sympathies in the direction of men. Although we attempted to neutralize resumes in terms of gender stereotypes, the resume we concocted described a career goal in finance, which may have been perceived as more "appropriately" masculine than feminine. This perception, in turn may have motivated the posting of men's resumes, thereby diminishing any feminine advantage. Ideally, more than one type of resume should have been used to test the status cues hypothesis.

Overall, we uncovered some support for the idea that adult mimicry of babyish facial features elicited help. Others have found that babyfaced adults are perceived as help*ful*; understanding, caring, warm, and especially well-suited to a caregiving role (e.g., Collins & Zebrowitz, 1995; Zebrowitz & Montepare, 1992). But how is it that babyish features distinguish both the kinds of adults who are perceived to be socially effective care*givers* as well as socially needy, care *receivers*? Theorists from the "affordances" perspective reason that the attribution of childlike characteristics to babyish-looking adults occurs when perceptions of age-related physical qualities, normally adaptive for childrearing, overgeneralize to adults (e.g., Montepare & Zebrowitz, 1998; Zebrowitz & Collins, 1997; Zebrowitz & Montepare, 1992). But if what fuels these perceptions is an overgeneralization of traits signaling helplessness and dependence, should babyfaced adults be perceived as ideal givers as well as receivers of care? It may be that our understanding of what neotenous cues convey on adult faces requires a new look.

From the social status cues perspective, the basic message conveyed by babyish features is an affiliative one, rather than a signal of helplessness. As in other species, neotenous features may invite approach by conveying submissiveness and non-threat while mature features convey dominance and threat, and cue avoidance (Keating, 1985a,b; 2002). If the basic message is about social status and serves to guide approach or avoidance, then neotenous cues could characterize both those we prefer to take care of and be taken care by; each role relies on inspiring approach (Keating, 2002).

Our research examined the power facial characteristics had on sequestering help in real-world settings. On the theoretical level, we aimed to test a straightforward, pancultural question spawned by evolutionary perspectives on face perception (e.g., Guthrie, 1970; Berry & McArthur, 1986; Keating, 1985b; 2002; McCabe, 1988; Lorenz, 1943; Zebrowitz & Montepare, 1992): Does adult mimicry of babyish features elicit help? Our means of addressing this question, however, were not so straightforward. Many things can and do go wrong in field experiments like ours. Did local breezes (or shop custodians) abscond with resumes? Did unfamiliar-looking experimenters who 'lost' resumes arouse suspicion? Factors like these likely contributed to the variety of return rates reported by researchers who have used the lost letter technique (e.g., Barefoot & Strickland, 1977; Bridges, Anzalone, Ryan, & Anzalone, 2002; Bridges, Williamson, Thompson, Windsor, 2001). Thus, although our overall return rate of 36% was consistent with rates for studies employing similar methodologies in similar geographic locations (e.g., Bridges & Clark, 2000), the question we posed should be asked again in better controlled, cross-cultural settings.

Nevertheless, our study contributes to current thinking about physiognomic effects on person perception, and to babyfaceness/neoteny in particular, in several important and novel ways. In contrast to previous researchers, we probed not whether babyfaced adults are perceived to *give* more help (e.g., Collins & Zebrowitz, 1995; Zebrowitz et al., 1991) but whether, like children (McCabe, 1988; Zebrowitz et al., 1992), they *elicit* a disproportionate level of help from others. Overall, our results are not only consistent with the way in which adults with neotenous and mature faces are perceived (e.g., Montepare & Zebrowitz, 1998), they go a bit further, suggesting that neotenous cues alter how we treat adults who display them. Moreover, because faces were experimentally manipulated, we were able to identify which facial features were responsible for the effect (i.e., eyes and lips) rather than attributing it to an unspecified quality of neoteny or babyishness.[3] And finally, we tested the generalizability of the status cues hypothesis across the racial/cultural backgrounds of both stimulus faces and participants, albeit with mixed results.

The primordial framework from which the status cues perspective emerged was a cross-species one (Guthrie, 1970; Keating, 1985b; Keating et al., 1981; Mazur, 1973). Although the cross-species literature chronicles the evolution of morphological signaling systems, a comparable story for humans has yet to be written. The status cues approach speaks to the evolution of human communication and suggests, as others have (Guthrie, 1970; Lorenz, 1946), that human morphology has multiple functions, including an important communicative one (Keating, 2002). Although we cannot yet decode it, the features of contemporary faces tell an evolutionary tale of cost and benefit, of compromise and strategy, and of honesty and deception in human nonverbal communication.

Notes

1. There are discrepancies in reports of what characterizes a neotenous or babyish face. Zebrowitz and Montepare (1992) found that "babyfaced" males were characterized by relatively large eyes and thin brows whereas "babyfaced" females were distinguished by a small nose bridge. Cross-cultural measurements of faces revealed that females who appeared neotenous (operationalized as appearing younger than their actual age) had wide eyes, full lips, and a small nose (Jones, 1995).
2. At one US mall, several patrons returned resumes to mall security. Security collected five resumes over a period of days and forwarded them in a manila envelope with a note congratulating us on an interesting experiment and wishing us luck. We counted these returns as legitimate examples of helping (patrons had taken the trouble to give lost resumes to mall security) but subsequently abandoned the site.
3. Our feature manipulations were complicated by the fact that manipulating feature sizes also altered the spatial relationships among facial features.

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