

Popularity in Environmental Context:

Facial Feature Assessment of American Movie Actresses

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The relationship between facial features of popular American movie actresses and the social and economic conditions of the United States from 1932 to 1995 was investigated. Facial photographs of popular American movie actresses were located and digitally converted to graphics files to allow measurement of facial features. When social and economic conditions in the United States were stagnant and pessimistic, American movie actresses with mature facial features (small eye size, thin cheeks, and large chins) were popular. When social and economic conditions were prosperous and optimistic, actresses with neonate facial features (large eye size, round cheeks, and small chins) were popular. Results support the hypothesis that popularity and facial feature preference is related to and changes based on environmental security.

A multitude of research findings exists on the importance of physical attractiveness to both men and women (see Berscheid & Reis, 1998, for a review). Clearly, there is variation in what different cultures perceive to be beautiful. For example, the So of northeastern Uganda find a small hole in the lower lip attractive (Allgeier & Allgeier, 1995). Other cultures may deviate in their preferences for skin color, ornamentation, and body weight. Despite cultural differences, Ford and Beach (1951) found universal cues of attractiveness that are consistent with evolutionary predictions. Cleanliness, clear skin, youth, good health, and the absence of disease, sores, or lesions are universally viewed as attractive.

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There are, however, additional sources of attractiveness that appear to be evolutionarily adaptive. Cunningham developed a detailed method of measuring facial features in humans (Cunningham, 1986; Cunningham, Barbee, & Pike, 1990). Work has been done on both the preferences of male facial features (Cunningham, Barbee, & Pike, 1990) and female facial features (Cunningham, 1986). People from different cultures have shown great agreement as to the facial features that comprise an ideal mate when judging different ethnic groups (Cunningham, Roberts, Barbee, Druen, & Wu, 1995). These studies suggest that a combination of neonate and sexual maturity facial features produces the most romantically attractive face.

FACIAL FEATURE CATEGORIZATION

Neonate facial features are those features encountered in a newborn baby. Examples of neonate facial features include large eyes, a small nose, round cheeks, and soft skin. Lorenz (1943) suggested that an infant's wide eyes, chubby cheeks, and soft, rounded features actually make an infant appear cute and lovable, which increases the likelihood of being attended to by potential caregivers. These features are also related to the health and overall fitness of a neonate. The model of a healthy infant includes large eyes and a small nose (Alley, 1983). Facial features such as small eyes and a broad nose are characteristic of genetic and prenatal disorders, such as fetal alcohol syndrome (Smith, 1982).

All infants begin displaying facial and body neonate features, but with age, these features eventually mature (Enlow, 1990). Facial feature changes common to both males and females include cheekbones becoming more prominent and cheeks becoming thinner. Male eyebrow hair becomes thicker and facial hair is more evident (Enlow, 1990; Farkas, 1987; Tanner, 1978). These developments help draw distinctions between sexually mature persons, those displaying mature features, and sexually immature persons, those displaying only neonate features.

Cunningham and colleagues (1995) have suggested that high scores on the facial measurements of eye area, eye height, eye width, forehead height, eye placement, and distance between eyes and low scores on the facial measurements of nose area, nose length, nose tip width, and nostril width place these features in the category of neonate. Cunningham and colleagues have also classified high scores on the following facial features as sexually mature: cheekbone prominence, cheek thinness, facial narrowness, eyebrow thickness, chin area, chin length, and chin width. High scores on eyebrow height, lower lip width, and upper lip width were classified as expressive facial features.

Berry and McArthur (1985) had research participants rate slides on several psychological trait dimensions, including an overall babyfacedness dimension. The individual faces presented in the slides to research participants were also measured to obtain actual physiognomic scores on several facial feature dimensions (see Berry & McArthur, 1985, for the exact measuring scheme). When looking at the relationship between ratings of babyfacedness and the physiognomic scores, the facial features (as defined and measured by Berry & McArthur, 1985) of large eyes, round eyes, narrow chin, and high eyebrows were associated with babyfacedness. In general, this research suggests that human eyes and chins are especially important areas of the face in distinguishing between neonate and mature facial features. Babyfacedness was positively correlated with the psychological traits of warmth, honesty, naïveté, and kindness. In a related line of research, Keating, Mazur, and Segall (1981) suggested that sexually mature features may communicate strength, dominance, competency, and status.

There is a body of evidence to suggest that women with neonatal facial features are more attractive than women with mature facial features. However, preference strength, even for preferences that may have evolutionary antecedents such as preference for babyfacedness, may vary with circumstances. Indeed, Cunningham (1986) has conjectured about historical and crosscultural differences in preferences: "Perhaps those social groups which accorded greater power and autonomy to females also idealized women with more pronounced maturity features, whereas those cultures which emphasized submissive females also may have preferred few maturity cues" (p. 934).

HYPOTHESIS

Babyfaced individuals are perceived to be youthful and honest. However, they are also seen as naïve, inexperienced, and sexually immature. These attributions suggest this: The preference for neonate features may be strengthened when circumstances afford having a playmate or a dependent; the preference may be weakened when circumstances are difficult to deal with and one may need to be taken care of or nurtured him- or herself. Consider the following.

In 1932, the United States economy and social conditions were poor. The Great Depression brought high unemployment rates, scarce and rationed food, mortgage recalls, and bank failures. By contrast, in 1945 the United States economy and social conditions were booming. American troops were returning home from World War II victorious, production of goods was thriving, and nearly everyone was employed. What facial features were considered the most

attractive to people during these two different examples of environmental security?

During social and economic hard times, one may speculate that people find facial features that connote support, independence, help, and maturity most important. These are qualities associated with people possessing predominantly sexually mature facial features. Persons possessing these qualities may promise comfort and security in a time of instability and uncertainty. During this period, a caregiver for the self would have been most desirable.

During social and economic good times, one may speculate that people look for the qualities of fun, youth, and playfulness. These qualities are associated with people possessing predominately neonate facial features. Berry and McArthur (1985) have suggested that persons possessing these qualities may communicate openness and agreeableness and evoke positive and worry-free feelings. During this period, a companion for the self and possible children, not necessarily a caregiver, would have been most attractive.

The current investigation of collective social and economic threat, using archival data, follows a precedent already available in the literature. For example, Sales (1972, 1973) looked at a variety of societal level indices of authoritarian personality. By comparing past threatening and nonthreatening time periods in history, Sales found that people are more likely to join authoritarian church congregations during economic bad times. Sales also reported that during high-threat periods, as compared to low-threat periods, lead characters in American fiction became stronger and more powerful, there was an increase in the number of attack dogs (such as the Doberman pinscher) registered with the American Kennel Association, and there was a rise in the number of heavyweight championship boxing matches. Doty, Peterson, and Winter (1991) followed up on this original work and found results consistent with Sales.

In summary, this study is intended to explore the relationship between social and economic conditions and facial feature preferences. The hypothesis asserts that women who possess predominantly neonate facial features will be more preferred during social and economic good times and less preferred during social and economic hard times. We have chosen to test this hypothesis on a societal rather than an individual level. Variation in socioeconomic well-being is predicted to be associated with variation in facial features of popular actresses.

METHOD

Data Collection

A wide assortment of specific social and economic indicators are recorded each year in the United States, but no single measure of economic and social hard times could be identified a priori as being the "best." Therefore, multiple statistics for each year between 1932 and 1995 from the United States were collected. Specific measures included unemployment rate, disposable personal income, consumer price index, death rate, birth rate, marriage rate, divorce rate, suicide rate, and homicide rate.¹

The motion picture industry is one possible source of information regarding preferences for certain facial features. Watching movies is one of the most popular leisure activities in the United States. American movie actresses have captured the hearts and attention of United States citizens for nearly a century and could be construed as highly visible representations of the qualities and characteristics Americans find attractive. Actresses considered beautiful can be found on covers of popular magazines, in television interviews, on news programs, commercials, billboards, calendars, and even on the Internet. Popular American movie actresses appear to provide a good indication of the facial preferences of the American public.

Success and popularity of American movie actresses can be measured in several ways. Motion picture awards, such as the prestigious Academy Awards, offer one measure of a performer's success but do not necessarily capture the true popularity of a performer. Awards are generally based upon the performance of an actor or actress. Each year, since 1932, the Quigley Publishing Company conducts an extensive poll of movie exhibitors, asking for the biggest box-office draws. Each year, the results have provided a list of the top movie actors and actresses. Generally, sources have reported the top 10 actors and actresses in this poll, but for some years an extended list of the top 25 actors and actresses was provided.

Based on the results of the Annual Quigley Publications Poll, the top American actresses for each year between 1932 and 1995 were identified.² The results of the poll provided an initial total of 85 independent actresses.³ The next step was locating useable photographs for each of these 85 actresses. The criteria used to determine whether a photograph was appropriate included the following: a high quality picture that captured a complete, straight, front, facial view of each of these top actresses.⁴ After locating these images, they were digitally scanned, using a flatbed scanner and saved as computer graphics files.

Facial Feature Measurement

Facialmetric assessments, based on Cunningham's (1986; Cunningham et al., 1995) model of facial feature measurement, were made on a total of 23 facial features for each actress. A complete listing and definition of each facial measurement is presented in Figure 1.⁵ Facial feature measurements for each actress were independently measured by two judges, with the aid of the computer program PhotoMagic (1993). The images were adjusted to make each face perpendicular. Measurements were made by moving the cursor to a beginning point, then to an ending point on the screen. The spatial coordinates for each facial measurement were then recorded. To control for variation in image size, measurements were standardized as ratios to the specified horizontal or vertical axis.

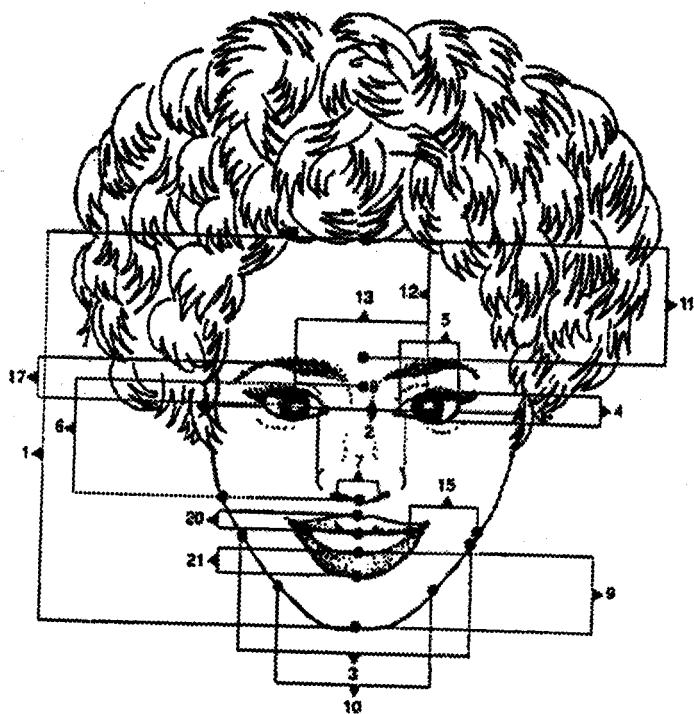


Figure 1. Facial feature measurements. (1) Length of face: distance from hairline to base of chin. (2) Width of face at cheekbones: distance between outer edges of cheekbones at most prominent point. (3) Width of face at mouth: distance between outer edges of cheeks at the level of the middle of the smile. (4) Eye height: distance from upper to lower edge of visible eye within eyelids at pupil center divided by length of face. (5) Eye width: distance from inner corner to outer corner of eye divided by width of face at cheekbones. (6) Nose length: measured distance from bridge at level of inner edge of upper eyelid to

nose tip, at level of upper edge of nostril opening divided by length of face. (7) Nose tip width: width of protrusion at tip of nose divided by width of face at mouth. (8) Nostril width: width of nose at outer levels of nostrils at widest point divided by width of face at mouth. (9) Chin length: distance from upper edge of lower lip to base of chin divided by length of face. (10) Chin width: distance between edges of jaw measured at midpoint of chin length divided by length of face. (11) Forehead height: distance from eyebrow to hairline divided by length of face. (12) Vertical eye placement: vertical location of the eye measured from pupil center to hairline divided by length of face. (13) Horizontal eye separation: distance between pupil centers divided by width of face at cheekbones. (14) Cheekbone prominence: difference between the width of the face at the cheekbones and the width of the face at the mouth divided by length of face. (15) Chin thinness: measured width of cheek from inner corner of smile to outer edge of cheek divided by length of face. (16) Chin area: chin height ratio multiplied by chin width ratio. (17) Eyebrow height: measured from pupil center to lower edge of eyebrow divided by length of face. (18) Brow thickness: vertical thickness of eyebrow above pupil divided by length of face. (19) Facial narrowness: measured length of face divided by width of face at mouth. (20) Upper lip width: vertical distance at center divided by length of face. (21) Lower lip width: vertical distance at center divided by length of face. (22) Eye area: eye height ratio multiplied by eye width ratio. (23) Nose area: product of nose length and nose width at the tip divided by width of the face at the mouth.

Adapted by permission from Cunningham, M. R., Roberts, A. R., Barbee, A. P., Druen, P. B., & Wu, C. (1995). Copyright 1995 by the American Psychological Association.

Based on the measurements provided by the two independent judges, the mean for each facial feature for each actress was computed. To calculate the reliability of facial feature measurements, the correlation between the unique component measurements of two judges was computed and then stepped up with the Spearman-Brown prophecy formula. All reliabilities were satisfactory, (ranging from .92 to .99).

Next, the means of all of the actresses' facial feature measurements for each specific year were used to provide a single set of 20 facial feature measurements.⁶ These measurements were aggregated within years to increase the reliability of the measurements.

RESULTS

Within-Year Consistency of Actresses' Features

If there is any factor that varies across year (e.g., social and economic threat) and systematically influences facial feature preferences, then facial features within each year should resemble each other more than facial features across years.

Thus, a prerequisite to testing the hypothesis that facial feature preferences vary with social and economic factors across years would dictate the investigation of the within-year consistency of feature preferences. If this consistency is not present, it cannot be assumed that any time-dependent variable is having a systematic impact on popular facial features. To assess the within-year consistency of features, the score of the most popular actress was correlated with the score of the second most popular actress for each feature across the 57 years represented. As previous research has determined, the most important features in identifying neonatal or maturity concern the facial areas involving the eyes and the chin. The following measures showed significant within-year consistency⁷; *eye height* ($r(55) = .23, p < .05$), *eye width* ($r(55) = .32, p < .01$), *eye area* ($r(55) = .24, p < .05$), *cheekbone prominence* ($r(55) = .28, p < .05$), *cheek thinness* ($r(55) = .29, p < .05$), *chin width* ($r(55) = .26, p < .05$), and *chin area* ($r(55) = .22, p < .05$).⁸ All three measures associated with the eyes and two out of the three measures associated with the chin demonstrated within-year consistency.

Aggregating Social and Economic Statistics

Because there was no specific theoretical reason to choose one social or economic indicator over another, a single standardized average of all the social and economic indices collected seemed appropriate. First, each of the seven indicators was standardized. Next, the annual percentage change in consumer price index, annual percentage change in disposable personal income, birth rate, and marriage rate were multiplied by negative one (-1) so that positive scores on all measures would reflect hard times. Finally, all of the standardized scores were averaged for each year to provide a single General Hard Times Measure.

Correlation of Actresses' Features with Social and Economic Factors

Each of the seven features that showed significant within-year consistency were correlated with the General Hard Times Measure. We were particularly interested in the relationships including eye height, eye width, eye area, chin width, and chin area, because of their association with babyfacedness. As can be seen in Table 1, all relationships were in the expected direction except cheekbone prominence.

TABLE 1

Correlations of Facial Features with the General Hard Times Measure

Feature	General Hard Times Measure
Eye height	-.39*
Eye width	-.51**
Eye area	-.52**
Cheekbone prominence	-.58**
Cheek thinness	.50**
Chin width	.41*
Chin area	.46**

Note. $N = 57$. All tests were two-tailed. * $p < .01$. ** $p < .001$.

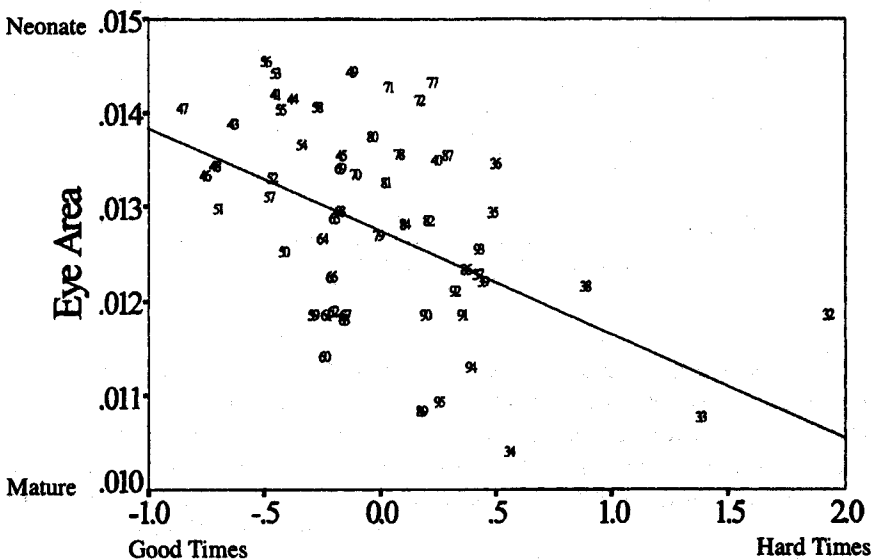


Figure 2. General Hard Times Measure and Eye Area scatterplot. Numbers represent the corresponding year of the individual data points. General Hard Times Measure values are plotted along the X axis, and average measured Eye Area is plotted along the Y axis. Large General Hard Times Measure values represent hard times and small General Hard Times Measure values represent good times. Large Eye Area values are considered neonate, and small Eye Area values are considered mature. A best-fitting regression line was added to illustrate the relationship between these two variables.

For purposes of illustration, Figure 2 presents the General Hard Times Measure and eye area data plotted against each other, and the best fitting regression line was added to this figure. Each data point is labeled by the year it represents (e.g., 47 is the data point for 1947). This figure indicates that as the General Hard Times Measure increases, eye area preferences decrease. Removing the two lowest General Hard Times Measure scores (1932 and 1933) did not change the existing relationship, indicating that no single year drives this relationship (i.e., the relationship is linear across years).

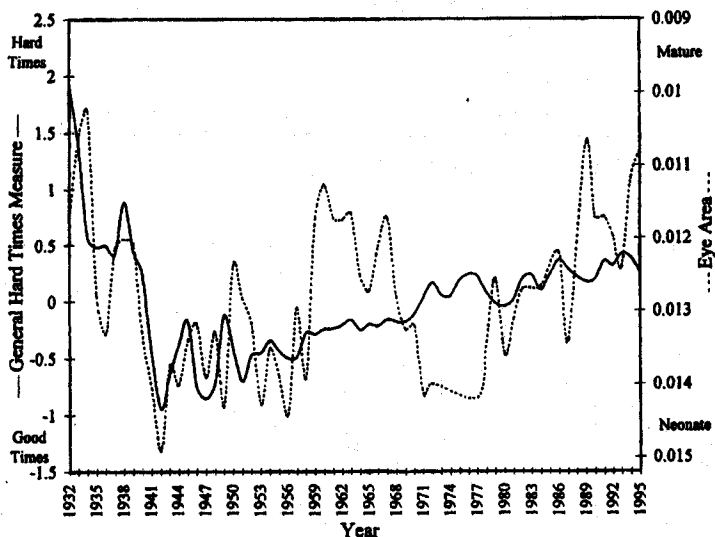


Figure 3. General Hard Times Measure and Eye Area changes across time. The solid line represents the General Hard Times Measure. Along the left vertical axis, large General Hard Times Measure values indicate hard times and small General Hard Times Measure values indicate good times. The dashed line represents average measured Eye Area. Along the right vertical axis, small Eye Area values are considered mature and large Eye Area values are considered neonate. The dashed line was smoothed and missing values for eye area (1973–1976, 1983, 1985, & 1988) were interpolated.

Also for illustration, Figure 3 plots the General Hard Times Measure and eye area preferences as a function of time. There is correspondence between the General Hard Times Measure and preferences in eye area, with a few exceptions. The curves do not match from 1960–1970, during which the impact of increased racial tensions, civil rights movements, and the assassinations of President Kennedy and Dr. Martin Luther King may not have been captured by the

statistics used to measure social and economic times in this study. The curves also mismatch from about 1972–1980. It is difficult to know what to make of this divergence because of missing data. We were unable to obtain at least two actresses' photographs for these years.

Social and economic condition statistics were lagged for 1 and 2 years, and the relationship between these delayed statistics and facial feature preferences was determined. In neither case were the results stronger than the original results. A second concern was that some actresses were popular during more than 1 single year, leading to a dependency in the data. Subsidiary analyses in which each actress was used only once (the initial year of appearance in the poll) yielded results similar to those reported in this paper. A third concern was that the years encompassing the Great Depression (1932–1939) were the driving force behind the relationships revealed in this investigation. Subsequent data analysis, beginning with the year 1940, revealed that this was not the case.

DISCUSSION

Actresses possessing predominantly neonate facial features were most popular during social and economic good times, and actresses possessing predominantly sexually mature features were most popular during social and economic hard times. Based on the correlations between the General Hard Times Measure and facial features, when times are hard, actresses with small measured values of eye height, eye width, and eye area and actresses with large measured values of cheek thinness, chin width, and chin area are popular. Conversely, when times are good, actresses with large measured values of eye height, eye width, and eye area and actresses with small measured values of cheek thinness, chin width, and chin area are popular.

Cheekbone prominence was the only facial feature that did not correspond with the predicted relationship direction between facial feature and hard times. Why was the relationship between cheekbone prominence and hard times opposite to the predicted direction? Two explanations concern facial shape and the relation between cheekbone prominence and other facial measures. Cheekbone prominence was defined by Cunningham et al. (1995) to be a sexually mature facial feature, but consider the actual facial shape of a person registering a high value on measured cheekbone prominence. A high measured value of cheekbone prominence identifies a very angular face as opposed to a rectangular or more rounded face. However, it would make sense that a person with a small measured eye width and a large measured chin width and chin area (all three mature features) would possess a rectangular shaped face because there

is little difference between the width of the face at the eye level and the width of the face at the mouth and chin. Following this logic, the current method for measuring cheekbone prominence would produce a low value for this person, because the face would be rectangular, and thereby classifying this individual as neonate with respect to cheekbone prominence. A rectangular face, not an angular face, may communicate feelings of stability and security.

Also, if cheekbone prominence implies maturity, one would expect mature features to be positively related to cheekbone prominence and neonate features to be negatively related to it. However, cheekbone prominence was positively related with neonate features (such as eye width, eye height, and eye area) and negatively related with mature features (such as chin width, chin area, and cheek thinness). Therefore the current classification of cheekbone prominence as a mature facial feature may be inappropriate.

The current findings suggest an environmental context effect on popularity. To the extent that popularity reflects judgments of beauty, then environmental context has an effect on perceptions of beauty as well. These results are not inconsistent with past theories but add a new dimension. McArthur and Baron's (1983) ecological theory of social perception, as well as evolutionary theories, provides a framework for human mate preferences and perceptions. These theories offer explanations of how humans perceive others and how these impressions influence social interactions and behavior. Interpersonal perceptions provide important information necessary for adaptation and survival, but knowledge of environmental conditions also provides important information. Knowing both pieces of information can help researchers understand and predict human choices, preferences, and behavior under different conditions.

The original hypothesis was inspired by work on mate selection preferences of males for certain female characteristics. The results suggest that United States moviegoers preferred actresses with neonate facial features during good times and actresses with mature facial features during hard times. Audiences are composed of both males and females. Thus, results may not be specific to the preferences of males for the facial features of females alone. Aggregated data, like that involved in the present study, reveals little about the preferences of the individuals involved (King, 1997). Recent studies (Enquist & Ghirlanda, 1998; Perrett et al., 1998) indicate that males and females both find feminine faces more attractive than masculine and average faces. Perhaps the relationship between facial feature preferences and environmental social and economic conditions is more general. An individual, regardless of gender, may prefer actresses, actors, friends, lovers, teachers, clients, employees, and so on, based on whether these persons possess neonate or mature facial features, under different social and economic conditions.

Caveats

Our methodology has produced what we believe to be provocative results, but the approach also raises a number of concerns. When faced with choosing the index of popularity to be used in this study, we were faced with the task of locating a measure that provides sufficient longevity to capture popularity during most of the 20th century. As mentioned previously, we weighed several options. The Academy Awards may reflect popularity of motion picture stars to an extent, but the purpose of these awards is to recognize achievement in acting. Achievement is not the same as popularity, and often the public disagrees with the Academy's choices for awards. Another option was to use public opinion polls, which have the desired advantage of directly tapping popularity of actors with the general public. However, these polls are quite sporadic, and the method by which they are conducted is often not standardized. Most importantly, these polls are not consistently taken on a yearly basis, a required criterion to test the hypothesis envisioned.

Therefore, after considering these alternatives, we chose to use the Annual Quigley Publications Poll, which has been continuously conducted from 1932 to the present. The results of this poll are readily available to the public and published in the annual edition of the *International Motion Picture Almanac*, provided by the Quigley Publishing Company. We argue that this poll indirectly reflects the popularity of stars with moviegoers. Although the general public was not polled, it was the "circuit exhibitors and independent theatre owners in the United States" who were asked which actors are the biggest box office draws. This vote may reflect the extent to which each movie makes money rather than the number of people who want to see a particular actor, but we expect these items to be highly correlated. Fortunately, the unit being voted upon in the Annual Quigley Publications Poll is not movies, but rather individual movie stars. Consider the following passage describing how the *People Entertainment Almanac* (1999) interprets the results of the Annual Quigley Publications poll:

In today's high-pressure movie business, the most valuable commodity is a star who shines so bright that he or she can "open" a movie—filling seats on the basis of pure popularity regardless of the allure of the film's story Quigley Publishing has polled more than 500 moviehouse owners nationwide to determine which stars they regard as the surest-fire box-office draws. (p. 107)

Our independent variable was a gross aggregate measure of good/hard times. Presumably, this gross variable affects some psychological mediator(s) that is (are) crucial to the reported association. The General Hard Times Measure used

in this investigation was based on objective standardized indices of internal socioeconomic threat and hard times. The indices used provide a face valid reflection of what we mean by societal threat (i.e., statistics such as death rate, homicide rate, and unemployment rate). Moreover, positive results of this study provide some validation. On the other hand, these measures are in no way perfect nor comprehensive. Indeed, among the best times we looked at was the period surrounding World War II. On one hand, wartime periods can be very emotionally trying. The possibility of losing loved ones in combat was a very real concern. In addition, World War II placed increased stress on marriages and relationships and caused widespread speculation and preoccupation with war events. These conditions would not characterize this period as socially secure. On the other hand, there are some economic advantages to being engaged in war. During World War II, the United States experienced its lowest unemployment rates in history due to increased production of goods. Our particular index appears to reflect these economic benefits to a greater extent than the social costs involved.

Also, as mentioned earlier, there is a discrepancy between the General Hard Times Measure and eye area preferences between 1960–1970. Political changes in the United States, such as assassinations of important American leaders, the civil rights movements, and racial conflicts may not have been captured in our General Hard Times Measure (i.e., these political events may not have directly effected an individual's wages or marriage plans, but it may have effected an individual's preference for particular actresses). Our General Hard Times measure may not be perfect, but the measures we included have been considered in past studies (i.e., Doty, Peterson, & Winter, 1991; Sales, 1972, 1973), identifying threatening and nonthreatening social and economic time periods, and overall our measure appears to have face validity.

It is interesting to note that during the period of the Great Depression, on average, we found that actresses with more mature features were preferred to a greater extent than during periods of greater prosperity. Leading the list of the Annual Quigley Publications poll, for the years 1935–1939, was a little girl by the name of Shirley Temple. It seems odd that young Miss Temple should be so popular during a period that would be expected to be characterized by mature features. It is hard to know exactly why this is the case. Perhaps there is a distinction to be made between adults and children. It may be the case that the type of processes that relate maturity of facial features to threat are only relevant to adult women and not children. To the extent that these preferences do reflect evolutionary-based preferences, this distinction based on age does make some sense. The earliest dimensions of role differentiation within our species include

gender-related behaviors and adult-child differences. In sum, we have no good explanation for Shirley Temple, but our hypothesis seems to work in spite of her presence in the data.

Future Work

Preferences for neonate faces appear at least in part to be "hard wired," an evolutionary adaptation (Berry & McArthur, 1985; Cunningham et al., 1990, 1995; Enquist & Ghirlanda, 1998; Perrett et al., 1998). Nonetheless, this preference was shown to be strengthened or weakened depending on environmental conditions. The present work opens up a host of additional questions for future work. Our hypothesis, regarding socioeconomic effects on this preference, was based on the attributions associated with variation in facial features. Are such attributions necessary, that is, do they mediate preferences? Must they be held consciously? The present data do not allow answers to these questions, but it is important that they be addressed. Most work in the area of facial preferences has been on the individual level, so it is important to show the relationship between hard times and preferences on this level as well in future research. Even on the aggregate level, we have no way of assessing gender or age effects. If the preference for baby faces has an evolutionary genesis, then age and gender might very well be consequential. Indeed, such variables might even interact with hard times to effect preferences.

What we do with our leisure time reflects our preferences. Our preferences reflect our experiences, our evolutionary history, and present circumstances. Thus, as the present data make clear, not just psychology and biology, but also history, economics, and popular culture operating together help to propel, shape, and reflect even our most mundane behavior.

NOTES

¹Unemployment rate was recorded as the percentage of the work force unemployed. Disposable personal income was recorded as the annual percentage change in the per capita dollar amount of disposable personal income. Consumer price index was recorded as the annual percentage change in consumer price index, or inflation. Death rate was recorded as the number of deaths per 1,000 of the population. Birth rate was recorded as the number of births per 1,000 of the population. Marriage rate was recorded as the number of marriages per 1,000 of the population. Divorce rate was recorded as the number of divorces per 1,000 of the population. Suicide rate was recorded as the number of suicides per 100,000 of the population. Homicide rate was recorded as the number of homicides per 100,000 of the population. Data were taken from *Statistical Abstract of the United States* (U.S. Bureau of the Census, 1977-1996), *Historical Statistics of the United States: Colonial Times to 1970* (U.S. Bureau of the Census, 1975), *International Historical Statistics: The Americas 1750-1988*

(Mitchell, 1993), *Information Please Almanac* (1993–1996), and the *World Almanac and Book of Facts* (1993–1996).

²Results of the Annual Quigley Publications Poll were found in the *International Motion Picture Almanac* (1933–1963, 1968–1997), the *Motion Picture Herald* (1970–1972), *People Entertainment Almanac* (1995–1997), the *Guinness Book of Movie Facts and Feats* (Robertson, 1993), and *Film Facts* (Steinberg, 1980). Initially, five actresses from each year were sought. However, the poll results provided five actresses for certain years, whereas other years provided fewer than five actresses. This difference between annual poll results was due to the inclusion of more actors than actresses represented in the poll results for certain years and the unavailability of extended poll results (the top 25 instead of only the top 10 actors and actresses) for certain years.

³There were 7 years in which only one actress was reported in the available poll results (1973, 1974, 1975, 1976, 1983, 1985, and 1988). These 7 years were excluded from this study because one actress was not considered an acceptable representation of the facial preferences for a given year. Instead, years with two, three, four, or five actresses were included because multiple actresses from each year allows actresses' features to be averaged, reducing the amount of idiosyncratic variability within years. The use of multiple actresses from each year also allows for a test of within-year consistency of actresses' features to be conducted.

⁴Acceptable photographs could not be found for four actresses (Sandra Dee, Tatum O'Neal, Jill Clayburgh, and Kathleen Turner). This unavailability of useable photographs reduced the actual number of actresses used in this study to 81.

⁵Cunningham and colleagues (1995) also provided a means for measuring smile height, smile width, hair length, hair width, pupil width, and smile area. These grooming and expressive features were not included in the present investigation.

⁶The length of face, width of face at cheekbones, and width of face at mouth measurements were only used in calculation of other facial features and not meaningful themselves due to variation in image size.

⁷Although upper lip width demonstrated within-year consistency, it is considered neither neonate nor mature and has been classified by Cunningham et al. (1995) as an expressive facial feature. Therefore, this feature was not included in future analyses.

⁸Because the direction of these correlations was predicted, one-tailed levels of significance are reported here. In addition, the other 13 facial feature measures failed to reach significance at the $p < .05$ level and were dropped from consideration in subsequent analyses.

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APPENDIX

Popular Actresses Identified by the Annual Quigley Publications Poll 1932-1995

Ann-Margret	Sonja Henie	Elizabeth Taylor
Cher	Audrey Hepburn	Shirley Temple
June Allyson	Katherine Hepburn	Lana Turner
Julie Andrews	Betty Hutton	Raquel Welch
Brigitte Bardot	Diane Keaton	Mae West
Candice Bergen	Grace Kelly	Ester Williams
Ingrid Bergman	Deborah Kerr	Jane Withers
Sandra Bullock	Dorothy Lamour	Natalie Wood
Julie Christie	Sophia Loren	Joanne Woodward
Glenn Close	Myrna Loy	Jane Wyman
Claudette Colbert	Jeanette MacDonald	Loretta Young
Joan Crawford	Ali MacGraw	
Bette Davis	Shirley MacLaine	
Doris Day	Majorie Main	
Olivia de Havilland	Bette Midler	
Sandy Dennis	Hayley Mills	
Bo Derek	Liza Minnelli	
Marie Dressler	Marilyn Monroe	
Faye Dunaway	Demi Moore	
Deanna Durbin	Kim Novak	
Alice Faye	Margaret O'Brien	
Sally Field	Dolly Parton	
Jane Fonda	Michelle Pfeiffer	
Jodie Foster	Debbie Reynolds	
Greta Garbo	Julia Roberts	
Ava Gardner	Ginger Rogers	
Judy Garland	Meg Ryan	
Greer Garson	Winona Ryder	
Janet Gaynor	Norma Shearer	
Whoopi Goldberg	Ann Sheridan	
Betty Grable	Sissy Spacek	
Jean Harlow	Barbara Stanwyck	
Goldie Hawn	Sharon Stone	
Susan Hayward	Meryl Streep	
Rita Hayworth	Barbara Streisand	