

Inference from Faces Across White American and Tsimane' Bolivian Cultures

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By

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Abstract

Inference from Faces Across White American and Tsimane' Bolivian Cultures

A thesis presented to the Psychology Department

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Previous work has shown that individuals agree across cultures in impressions of facial attractiveness and babyfacedness and the traits that they infer from faces. However, only one previous investigation has studied relatively isolated ethnocultural groups to eliminate the potential effect of Western media exposure (Jones, 1996). The results showed a lower intergroup agreement between Western groups and two South American Indian groups. The current research also compared a relatively isolated group, Tsimane in Bolivian Amazon, with White Americans, expanding on Jones' research in three ways: 1) we studied intra and inter group agreement in impressions of babyfacedness and trait impressions in addition to attractiveness; 2) we also studied the generalizability of two face stereotypes across cultures; and 3) we improved the methodology by using understandable numerical ratings for Bolivian participants. We would expect substantial agreement in facial stereotypes as there might be an evolutionary basis for those associations, though media influences are reduced with this isolated group. Forty White

Americans and 55 Tsimane' Bolivian male faces were rated on attractiveness, babyfacedness, health, knowledgeability, dominance, and warmth scales by different groups of White American and Tsimane Bolivian young adults. High intracultural reliabilities showed that people of each culture agreed with their in-group on the ratings of own and other-cultural faces. Also, intercultural agreement revealed the high likelihood that people among two totally different cultures shared similar criteria for judging facial qualities and traits. Moreover, participants from both cultures showed a consistent attractiveness halo effect (attribution of positive traits to attractive people) which contributed substantially to the intercultural agreement. When own and other-culture judgments of the attractiveness of the faces were statistically controlled, intercultural agreement on trait ratings were weakened. The babyfacedness overgeneralization effect (attribution of childlike traits to babyfaced people) did not show cross-cultural consensus. In sum, the finding of a universal stereotype of attractiveness across these two different cultural groups is consistent with evolutionary theory. On the other hand, the cultural specificity of the babyfacedness stereotype may indicate that impressions of babyfaced individuals are dependent on particular ethnocultural contexts.

Inference from Faces Across Cultures

Making first impressions of others from their faces is our natural proclivity and is practiced by us subconsciously when we meet a new person, although we keep well in mind that we should not “judge a book by its cover” and we remember some wrong first impressions we made by just looking at others’ faces. Surprisingly, even after a tenth of a second exposure to unfamiliar face we have already made up our mind about the characteristics of this person—attractive, trustworthy, competent, likable, aggressive and so on (Willis & Todorov, 2006). More remarkably, these quick and initial judgments of a stranger’s face show consensus across different perceivers, not only across the perceivers from the same culture group but also across those having different cultural backgrounds (L. A. Zebrowitz, Montepare, & Lee, 1993). In a review of cross cultural studies on facial attractiveness, Dion found that there was a high degree of consensus about judgments of facial attractiveness among judges from different ethocultural groups within a given society and among judges from different societies (Dion, 2002). Despite the consensus found in most of the studies, as Dion also noticed, comparisons between groups of raters from different cultural contexts revealed a low intergroup agreement (Jones, 1996). The two most culturally different groups of judges; namely, the Western cluster (consisting of the United States, Brazilian, and Russian judges) on the one hand and the Ache and Hiwi cluster which are two South American Indian groups relatively isolated from Western cultural influences, on the other hand, showed much less consensus in their judgments of attractiveness. However, given the methodological limitation of Jones’ study, for example, two different rating procedures were applied to the Indians groups and the other three culture groups in the study (see Jones’ study for details), a better design is necessary

and therefore the conclusion may need to be further explored. Besides facial attractiveness, another important appearance quality that influences the social perception, babyfacedness, also produces strong and consensual impression. For example, a cross-cultural babyface study revealed near perfect agreement between U.S. and Korean subjects regarding babyfacedness (McArthur & Berry, 1987). Specifically, larger, round eyes, high eyebrows, a small chin and a rounder face are characteristics of more babyfaced males from infancy through older adulthood (L. A. Zebrowitz, et al., 1993) and these characteristics are shared across perceivers from different cultural groups.

Perceivers not only agree as to who are attractive and babyfaced, but they also share common judgments of the traits possessed by the target faces within and across cultures (Albright, Malloy, Dong, Kenny, & Fang, 1997; McArthur & Berry, 1987; L. A. Zebrowitz, et al., 1993). For example, in a study including three different cultural groups: U.S. White, U.S. Black and Korean students, significant within and between-cultural agreements on personality traits (submissive, naïve, weak, warm and honest) were found for all pairs of perceiver groups judging targets of all three cultural groups (L. A. Zebrowitz, et al., 1993).

Given the strong agreement on facial qualities and personal traits, the next question to ask is whether agreement about appearance mediates agreement about traits. Consistent with this possibility, attractiveness and babyfacedness have been shown to influence trait impressions. In the attractiveness halo effect, people are influenced by “What is beautiful is good” (Dion, Berscheid, & Walster, 1972). Attractive people are often judged as having a more desirable personality than those who are unattractive (Langlois, et al., 2000). For example, in a meta-analysis, Feingold summed that

“attractive people are perceived more sociable, dominant, sexually warm, mentally healthy, intelligent, and socially skilled than unattractive people” (Feingold, 1992). Another stereotype, babyface overgeneralization effect, states that people attribute childlike traits to babyfaced people of all ages, perceiving them as less dominant and less strong as well as warmer and more naïve than their more mature-faced peers (Berry & McArthur, 1985; L. A. Zebrowitz, Fellous, Mignault, & Andreoletti, 2003). Previous cross-cultural research showed that these appearance stereotypes (the attractiveness halo effect and the babyface overgeneralization effect) contributed substantially to intercultural agreement on traits ratings (L. A. Zebrowitz, et al., 1993).

In the present study, we examined these two face stereotypes in Americans’ and Bolivian Tsimane’s impressions of faces from two different cultural groups—young white U.S. men and young Bolivian Tsimane’ men. More specifically, we examined whether both groups of perceivers showed cross-cultural agreement on impressions of four traits: healthy, dominant (respected), knowledgeable and sociable (warm) as well as a similar attractiveness halo effect and the babyface stereotype for those traits. The reason to include these traits is because previous research has shown that they are related to facial attractiveness or babyfacedness or both.

Attractiveness and perceived health

The effect of judging someone by his or her facial appearance is arguably very important when related to health. For example, “having unprotected sex with an HIV positive person who looks healthy could have dire consequences.”(Luevano, 2008). From an evolutionary perspective, the theory that human physical attractiveness judgments are in part driven by correlates of health has been widely accepted (Weeden & Sabini, 2005).

Consistent with the view that attractiveness serves as a signal of health, the perception of health is strongly related to perceived attractiveness (Henderson & Anglin, 2003; Kalick, Zebrowitz, Langlois, & Johnson, 1998). We also expected the participants from our two cultural groups would show this halo effect to target faces of both groups.

Attractiveness and perceived Knowledgeability

Before going into the relationship between attractiveness and perceived knowledgeability, it is necessary to define knowledgeability. Being knowledgeable could be considered as either being intelligent or having knowledge, which is opposite to naïveté. The reason for using ‘knowledgeable’ instead of ‘intelligent’ is because in Bolivian culture, being knowledgeable about plants is valued like intelligence in Western culture. Inference about how intelligent and knowledgeable an individual is also draws researchers’ wide attention. Research showed that facial attractiveness elicits the inference of intelligence for faces in both the upper and lower halves of the attractiveness distributions (L. A. Zebrowitz & Rhodes, 2004). However, this inference may not be very strong. Eagly et al’s review concluded that attractiveness has just a moderate effect on perceptions of intellectual competence, and they argued that people depicted as outstanding in intellect or accomplishment are not uniformly good-looking, nor are good-looking people necessarily portrayed as smart and accomplished (e.g., those labeled as dumb blondes) (Eagly, Ashmore, Makhijani, & Longo, 1991; Jackson, Hunter, & Hodge, 1995). Therefore the impact of attractiveness on impressions of intellectual competence might be weak. Though studies have not studied the relationship between facial attractiveness and perceived knowledgeability, it seems reasonable to predict the same effects previously found for perceptions of intelligence.

Attractiveness and perceived Dominant/Respected

The effect of the attractive halo on impressions of dominance varies in past findings. A meta-analysis finding showed a moderate effect of attractiveness on potency and dominance judgments (Eagly, et al., 1991; Feingold, 1992), although one cross cultural study failed to find a relationship (L. A. Zebrowitz, et al., 1993). Another study found that male faces displaying a full beard were considered the most masculine, aggressive, socially mature and older, while males with light stubble were considered to be the most attractive (Neave & Shields, 2008), indicating that criteria for dominance and attractive judgments are not fully overlapped. Indeed, it has been shown that male faces combining elements of both mature and childlike features are perceived as being the most attractive because both dominant and babyish-appearing facial attributes were associated with different desirability attracting female raters (Cunningham, Barbee, & Pike, 1990). As theorists have noted earlier, dominance is a complex construct, and its behavioral expression has different consequences depending on the social context (Berstein, 1980; Hinde, 1978). In light of the mixed research evidence, we expected a moderate association of attractiveness with perceived dominance for White American raters, with less certainty about the effects for Bolivian raters.

Attractiveness and perceived Sociable/Warm

Research has widely addressed the issue that the perception of social skills may be influenced by the physical attractiveness of the target individual (see review Calvert, 1988). Attractive people are rated as more socially skilled than their less attractive counterparts (Goldman & Lewis, 1977; Guise, Pollans, & Turkat, 1982). As Calvert reported in his review, physical attractiveness was consistently associated with high-

frequency/high-skill dating and was often the best single predictor of social skill (Calvert, 1988). Based on the finding that the impact of physical attractiveness is strongest of variables related to impressions of social competence and social adjustment (Hope & Mindell, 1994) we also expected a significant positive relationship between attractiveness and perceived sociability and warmth.

Babyfacedness and perceived Health

Little research has examined whether babyfacedness predicts impressions of health. However, the babyfaced stereotype suggests that impressions of babyfaced adults tend to correspond with the actual traits of babies (L. A. Zebrowitz & Collins, 1997). Leuvano predicted that more babyfaced adults would be perceived as healthier since infants are usually thought of as being healthy. His study showed that babyfaced individuals of all ages were in fact perceived as healthier, but the relationship was strongest in older adults (Luevano, 2008). In the present study, we also predicted that babyfaced adults would be perceived healthier for both White American and Bolivian targets across raters' cultures.

Babyfacedness and perceived Knowledgeability

Despite previous attempts to identify a negative association of facial babyfacedness and perceived intelligence, the actual findings vary across studies. (McArthur & Apatow, 1983) found that the babyish facial qualities of low vertical placement of features, large eyes and a short nose and ears either alone or in combination served to increase perceivers' impressions of an adult stimulus person's naïveté. On the other hand, (Masip, Garrido, & Herrero, 2004) found that intelligence ratings were not affected by facial babyishness, and the authors argued that intelligence perceptions were actually under the influence of attractiveness, instead of being under the influence of

facial babyishness. As noted above, we used knowledgeable instead intelligent for trait ratings provided by Bolivian raters. High babyfaceness may be associated with impressions of low knowledgeability even though it is not typically associated with impressions of low intelligence, because knowledgeability is negatively related to naïveté, a trait that is strongly associated with babyfaceness (Berry & McArthur, 1985).

Babyfaceness and perceived Dominant/Respected

Just as babies are considered as physically and mentally weak, lacking in power and control, babyfaced adults were also perceived as submissive, socially dependent (Keating, 1985b; L. A. Zebrowitz & Montepare, 1992). Specifically, adults whose faces are characterized by relatively “infantile” feature configurations, i.e., low vertical placement, large eyes, narrow chins are reliably judged to be high in facial babyishness as well as submissiveness. On the other hand, people with more mature facial configurations (i.e., high vertical feature placement, small eyes, broad chins) reliably elicit impressions of strength, dominance and leadership (see L. Zebrowitz, 1997). One study of facial maturity and daily social interaction showed that facial babyishness was negatively related to men’s overall influence and control over their interactions (Berry & Landry, 1997), which may not be due to the fact that they are particularly submissive but rather to the fact that those with whom they interact see them as submissive and attempt to dominant them (L. A. Zebrowitz, Andreoletti, Collins, Lee, & Blumenthal, 1998). Particularly for male faces, high facial maturity was perceived as more masculine which is correlated with perceived dominance. In the present study, we predicted that the more babyfaced, either White American or Bolivian targets, the more dominant they would be perceived by raters from both cultures.

Babyfacedness and perceived Sociable/Warm

Studies have found that warmth, honesty and kindness are attributed to babyfaced individuals, which is consistent with the common view that children are more ingenuous and affectionate than adults (Berry & McArthur, 1985). Specifically, large eyes and short features were associated with perceptions of warmth and honesty (McArthur & Apatow, 1983). So we predicted in the current study that male faces with higher babyfaced ratings would be perceived more sociable and warm by raters from both cultures.

Culture and Inference

As mentioned earlier, numerous studies conducted in Western culture have demonstrated consensus or agreement in stranger's judgments of others' attractiveness, babyfacedness and personality characteristics (Albright, et al., 1997; Dion, et al., 1972; McArthur & Berry, 1987; L. A. Zebrowitz & Montepare, 1992; L. A. Zebrowitz, et al., 1993). Moreover, studies of facial qualities that could serve as the basis of judgments have found that people shared the same stereotypes that link facial features to personality disposition within their culture group. Although the attractiveness halo and babyfacedness overgeneralization effects have been clearly established (L. A. Zebrowitz, et al., 2003), all of the studies have been conducted in Western cultures and recently in East Asian culture more as a comparison. Given the big influence of global media, it is difficult to avoid the assimilation of impression stereotype; indeed, people learn the stereotypes held by other cultural groups from TV, integrate them into their current belief system and apply them when making first impressions of others. Though Jones (1996) selected two isolated group of people to avoid this influence, he only focused on facial attractiveness without examining agreement on facial babyfacedness and the trait

inferences from those facial qualities. The current study fills this gap in the research literature by sampling both White American students and Bolivian Tsimane' young adults, who are relatively isolated from Western culture.

Bolivian Tsimane' Culture

The Tsimane' number about 8,000 people and live in about 100 villages along rivers and logging roads, mostly in the Department of Beni, at the foothills of the Andes, in the Bolivian Amazon. Tsimane' villages are small, with an average of about 24 households linked by bonds of marriage and blood. Tsimane subsistence centers on farming, hunting, fishing, and gathering. Until the late 1940s, the Tsimane' lived like many other pre-contact Amazonian societies. They hunted, fished, gathered wild plants, and practiced slash-and-burn agriculture. They married their cross-cousins, listened to their shamans, drew on myths to explain the universe, and relied on local knowledge to manage their environment. Owing to the recent history of continuous contact with Westerners, the Tsimane' only lately started to trade with Westerners in a continuous way. Since the 1970s, the Tsimane' have faced growing pressure from encroachers, such as colonist farmers, logging firms, cattle ranchers, and oil companies. At present the Tsimane' connect with the market economy through wage labor and the sale of goods. Tsimane' must speak some Spanish. Besides working for loggers and cattle ranchers, Tsimane' with schooling and Spanish fluency also work for the government as teachers in village schools, and as professionals for organizations working in the Tsimane' territory. Those without schooling or Spanish fluency enter the market economy by selling thatch palm from the forest or by selling rice and other crops from their farms; those occupations do not require Spanish fluency, a diploma, or academic

skills. The main market town for the Tsimane' in our research site, San Borja, has a population of 19,000 people, lies along the river Maniqui, and is 18 hours away by bus from La Paz, the capital of Bolivia. San Borja has access to telephones and internet connections, and a public hospital. Tsimane' villages vary in their distance from San Borja; some are only a couple of hours away walking, but others take days to reach by road or rivers.

The Current Work

To evaluate first impressions of faces across cultures, we investigated impressions of both Bolivian Tsimane' faces and White American faces by these two different cultural groups of people. To keep the research question simple, the present study includes only male faces rather than taking into account the different inferences from faces of different sexes. Based on the previous research, we predicted that there would be both intracultural and intercultural consensus in judging facial attractiveness, babyfacedness and four attributes. In terms of the attractiveness halo and the babyfacedness overgeneralization effect, as stated above, we predicted that both White American and Bolivian raters would show positive correlations of attractiveness with healthy, dominant/respected, knowledgeable and warm/sociable ratings of both White American and Bolivian faces; on the other hand, we predicted positive correlation of babyfacedness with healthy and warm/sociable ratings, and negative correlation of babyfacedness with dominant/respected and knowledgeable ratings for both White American and Bolivian faces.

We asked both Bolivian Tsimane' and White Americans to provide ratings on facial qualities and traits from the faces of White American men (Study 1) and Bolivian Tsimane' men (Study 2).

Method

Participants

Study 1A

Sixteen undergraduates (8 men) at a U.S. university participated in the study for course credit in an introductory psychology class.

Study 1B

One hundred and thirty-seven Bolivian adults (64 men) participated in the study as part of the Tsimane' Amazonian Panel Study (TAPS) (1999-present). Participants are from different villages and their age is from 15 to 36.

Study 2A

Fourteen undergraduates (7 men) at a U.S. university participated in the study for course credit in an introductory psychology class. Participants' ages are from 18 to 23.

Study 2B

Forty Bolivian adults (20 men) participated in the study as part of Tsimane' Amazonian Panel Study (TAPS). Participants are from different villages and their age is from 16 to 25.

Face Stimuli

Study 1A and 1B

White American faces were black and white photographs of 40 Caucasian young males with predominantly neutral expressions and a mean age of 18 years drawn from the

Intergenerational Studies archive (IGS), a representative sample of 386 individuals who previously had been rated on a 7-point scale with endpoints labeled unattractive/attractive and maturefaced/babyfaced (Zebrowitz, Olson, & Hoffman, 1993). Ten faces had had previously received attractiveness ratings in the top 20 percent of their sex and age; 10 had received attractiveness ratings in the bottom 20 percent; 10 had received babyface ratings in the top 30 percent of their age and sex; 10 had received babyface ratings in the bottom 20 percent.

Study 2A and 2B

Color images of Bolivian adults were obtained from TAPS. 93 male face images were selected due to the research need.¹ All images were cropped to the smallest frame that included the sides and top of their hair and the bottom of their chin, standardized in size and color-scaled with white background. Age of the face stimuli is from 15 to 36 years old. These faces were sorted into four different age groups, 15-20, 21-25, 26-30 and 31-36 year old groups. For study 2A, two slide orders were applied. One order of slides was from younger face group to older face group and the other was the reverse of the first, within each group faces was at a random sequence. Only rating data of 53 Bolivian faces from two younger age groups were applied in this study in order to be equivalent to study 2B.

Ratings

Study 1A Faces of White Americans were rated by 16 White American college students on 7-point scales with endpoints labeled: dominant/submissive; sociable/unsociable; naïve/shrewd; unhealthy/healthy; intelligent/unintelligent; cold/warm, unattractive/attractive; maturefaced/babyfaced.

Study 1B Faces of White Americans were rated on 4-point scales for attractive (Jamsi' bonito)², babyfaced (Joino' niño), healthy (Rash Saludable), dominant (Ayo' mandon), knowledgeable (Chicacsi Sabe) and warm (Jamdyety Amable). Bolivian raters indicated the degree to which they perceived these qualities in the faces by pointing to one of four points on scales illustrated with piles of stones from 0 to 3. The pile with no stones was labeled "not at all"; 1 stone was labeled "not very"; 2 stones was labeled "little bit;" and 3 stones was labeled "very".

Study 2A Faces of Bolivian adults were rated on 7-point scales with endpoints labeled as not at all attractive/very attractive, not at all babyfaced/very babyfaced, not at all healthy /very healthy, not at all respected /very respected, not at all knowledgeable /very knowledgeable, not at all sociable /very sociable.

Study 2B Faces of Bolivian adults were rated on the same 4-point scales as in Study 1B with one additional scale "how well you know this person" (conoces)³.

Procedure

Study 1A

With MediaLab computer program, 40 White American male faces were displayed on computer. All faces were rated on one scale before proceeding to the next, and faces were shown for 6s during each rating. There were two random orders of faces, and the rating scales were counterbalanced, with appearance ratings always at the end.

Study 1B

The same 40 White American male faces were put into two albums, with fixed random order in one and reverse order in another. Participants were taught to use the scales by practicing making smile judgments on 6 emotional/neutral faces before going into the

real experiment. Two scale orders were generated, one order of scales is: healthy, dominant, warm, knowledgeable, attractive and babyface and the other is: knowledgeable, warm, dominant, healthy, babyface and attractive. There was an investigator who spoke Spanish and conducted the paper-based experiment in the Bolivian villages together with a translator who helped to translate Spanish into Tsimane' local language for the subjects who rated the faces. Subjects rated the faces in the album and the investigator recorded their responses on a paper data sheet. All the data were entered into computer for analyzing afterward.

Study 2A

With MediaLab computer program, each of the 93⁴ face images was displayed on the computer. Faces were blocked by age group, and within each age group, faces were displayed randomly. Each face stayed on the screen for 5 seconds and then disappeared (see Fig 1 for illustration), while the rating scale remained until subjects made their choice and then the next face appeared until all 93 faces were rated on that scale. After making judgments of all the faces on one scale, they saw the same faces again and made another judgment on a different scale. All the faces were seen six times on six different rating scales. Scales orders were counterbalanced. Two orders were generated for each order of slides. One order of scales is: healthy, respected, sociable, knowledgeable, attractive and babyface and the other is: knowledgeable, sociable, respected, healthy, babyface and attractive.

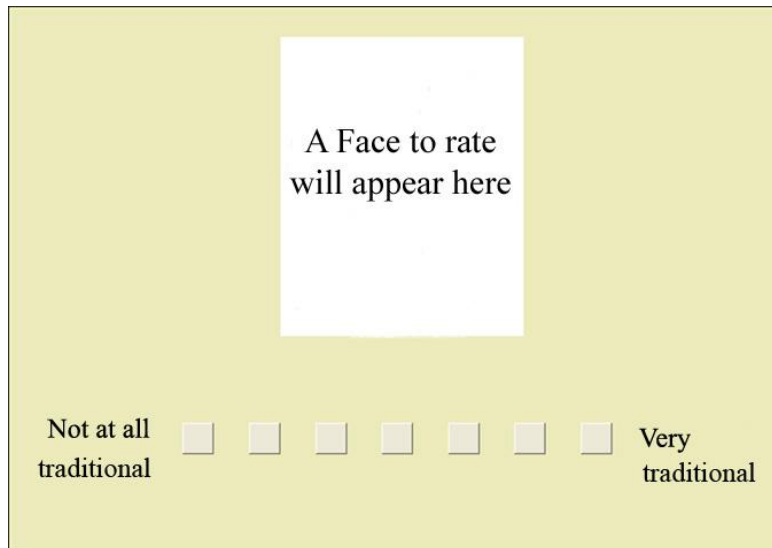


Fig 1 Computer-based face rating on one scale (This scale is only for illustrating the display screen but not a real scale in the study)

Study 2B

The same 93 faces were put into two albums 1 and 2. In album 1, there were 55 faces from 15 to 25 years old, and in album 2, there were 38 faces from 26 to 36 years old. In this study, only the data for the younger faces in album 1 was reported. Faces were blocked into two age groups: 15-20 and 21-25 years old. Within each age block, faces were in a fixed random order. Faces were rated either forward (20 perceivers, 10 men) or backward (20 perceivers, 10 men). Two scale orders were generated, one order of scales is: healthy, respected, sociable, knowledgeable, attractive and babyface and the other is: knowledgeable, sociable, respected, healthy, babyface and attractive. The procedure for data collection was identical to Study 1B.

Results

Intracultural Agreement in First Impressions

Cronbach's coefficients computed for ratings made by White Americans and by Bolivians are shown in Table 1.

Study 1A and 1B: White American faces

Both American and Bolivian raters showed high within group agreement in their impressions of White American faces. Moreover, American raters' judgments across all ratings were generally more reliable ($M=.87$) than Bolivians' judgments ($M=.76$) on the same White American faces.

Study 2A and 2B: Bolivian faces

Both White Americans and Bolivian raters showed relatively high within group agreement in their impressions of Bolivian faces. Similarly, White American judgments were also relatively reliable than Bolivian raters when rating Bolivian faces ($M_s=.79$ and $.73$, respectively). Although, American raters' judgments of Bolivian faces on attractiveness, healthy, respected/dominant and warm/sociable were more reliable than Bolivians' judgments on the same Bolivian faces, they were not more reliable for babyfacedness and intelligent/knowledgable ratings.

Intercultural Agreement in First Impressions

Having demonstrated high intracultural agreement, a second set of analyses investigated whether the standards of judgment differ across perceiver cultures. The first step in addressing this issue was to compute mean ratings for each face across subjects within each cultural group. Between group agreement was then calculated by correlating the mean ratings of the faces provided by raters of the two cultures; for example, the mean attractiveness rating of each American face by American perceivers was correlated with the mean attractiveness ratings of the same faces by Bolivian perceivers. In the case of

Bolivian faces, partial correlations were computed controlling the age of the person depicted and Bolivian judging ratings of how well they knew the person (see Table 2).

Study 1A and 1B: White American faces

As predicted, there was strong American-Bolivian agreement for all judgments with the exception of a non-significant correlation of .26 for dominant/respected rating.

Study 2A and 2B: Bolivian faces

As predicted, there was strong American-Bolivian agreement for all judgments with the exception of a marginally significant correlation of .26 for attractiveness rating ($p < .10$).

Cross-culture Generality of Appearance Stereotypes

The between-cultural agreement in appearance and trait ratings that was documented above suggests that the latter may reflect cross-cultural commonalities in two well-documented appearance stereotypes: the attractiveness halo effect and babyfacedness overgeneralization. To assess the cross-cultural generality of appearance stereotypes, partial correlation coefficients were computed between the mean babyfacedness or attractiveness ratings and the mean trait ratings of faces within each perceiver-target group. In the case of Bolivian faces, partial correlations were computed controlling attractiveness or babyfacedness as well as the age of the person depicted and Bolivian judging ratings of how well they knew the person. We assessed partial correlations in order to determine the independent effects of the attractiveness halo effect and the babyface overgeneralization effect when the other facial quality's impact was controlled. Zero order correlations are also provided for the readers' interest (see Table 3).

The resultant partial correlations between attractiveness and trait ratings controlling for the effect of babyfacedness provide strong evidence for cross-cultural

generality of attractiveness halo effect. Attractiveness continued to predict impressions of high physical health, high knowledgeability, high dominance/respectedness, and high warmth/sociability. An exception to the general tendency for the effects of attractiveness to hold up in the partial correlations was obtained for Americans' ratings of American faces' dominance/respectedness. The partial correlations also revealed some independent effects on impressions associated with babyfacedness when the effect of attractiveness was controlled. Americans judged more babyfaced men from both cultures as more warm/sociable, and they also judged more babyfaced White American faces as less respected/dominant, consistent with the babyface stereotype. However, they did not judge more babyfaced Tsimane faces as less respected. Babyfacedness failed to predict Americans' ratings of less knowledgeability, a finding which is not surprising given the variations in the previous research on this relationship. Babyfacedness also failed to predict ratings of better health among White American perceivers, which is inconsistent with Leuvano's study (2008). Bolivian perceivers did not show any independent babyfacedness overgeneralization effect.

Shared Appearance Stereotypes as Mediator of Inter-cultural Agreement in Impressions

The evidence for cross-cultural generality in appearance stereotypes suggests that between-cultural agreement in trait impressions may be mediated by judgments of facial attractiveness. To investigate this possibility, agreement in trait ratings was assessed with attractiveness ratings partialled out. We examined three different partial correlations: controlling Americans' rating of attractiveness, controlling Bolivians' rating of attractiveness and controlling both Americans' and Bolivians' rating of attractiveness. We focus on the last partial correlation. In the case of Bolivian faces, partial correlations

were computed controlling the age of the person depicted and Bolivian judging ratings of how well they knew the person, because these were other possible influences on intercultural agreement. As shown in Table 4, the results revealed a consistent decrease in intercultural agreement when facial attractiveness was controlled with one exception of impressions of dominance/respectedness for the American faces, which increased with attractiveness controlled.

Table 4 also shows intercultural agreement in impressions of American and Bolivian faces with babyfaceness partialled out. Again, we examined three different partial correlations: controlling Americans' rating of babyfaceness, controlling Bolivians' rating of babyfaceness and controlling both Americans' and Bolivians' rating of babyfaceness. We focus on the last partial correlation. When facial babyfaceness was controlled, there was little change for all ratings for both American and Bolivian faces.

Discussion

Perceivers extract information about others from their facial appearance within and across cultures. Previous studies have shown both within and cross-cultural consensus among perceivers for judgments based on facial cues but, with one exception, they only investigated subject groups that might be influenced by media images (for example, U.S. White, U.S. Black, European, Asian). The exception was a study of impressions of facial attractiveness (Jones, 1996). We extend previous findings on consensus by investigating whether an isolated group of subjects—Tsimane' in Bolivian Amazon -- show within and cross-culture agreement in impressions of two facial appearance qualities—attractiveness and babyfaceness -- and four traits—healthy, intelligent/knowledgeable, respected/dominant, warm/sociable.

Consistent with previous studies on consensus of facial and personality trait judgments, the present finding indicates that the criteria for judging attractiveness, babyfacedness, health, knowledgeability, dominance and warm/sociability are same or similar across perceivers within the same culture when rating both own-race and other-race faces. In addition, for both American and Bolivian faces, American perceivers show higher within culture agreement than Bolivian perceivers do (indicated by the higher average reliability). It is likely that those American perceivers are more familiar with the common criteria which could be due to the influence of media, and on the other hand, Bolivian perceivers lack of shared standards to make facial impressions because they are seldom taught that way.

The fact that individuals of both cultures agree on facial qualities and trait ratings indicates shared common judgments even with the influence of media exposure eliminated. The one exception is the lack of significant intercultural agreement for dominant/respect rating for American faces, which is discussed in a later paragraph. Also, Americans and Bolivians only showed marginally significant agreement on attractiveness for Bolivian faces. Consistent with Jones' finding of cultural diversity in judgments of facial attractiveness, our study also adds some evidence that people judgments about facial attractiveness may depend on the particular cultural context. In the case of impressions that elicited strong agreement across cultures. As mentioned earlier, it is possible that there is an evolutionary basis for the association between facial qualities and traits, which increases the likelihood of intercultural agreement in trait ratings.

Not only did inter-cultural disagreement in trait impressions reflect differences in appearance stereotypes, but also the inter-cultural agreement in trait impressions reflected

cross-race commonalities in the attractiveness halo effect. The universality of the tendency to perceive attractive men as possessing good traits—healthy, knowledgeable, dominant and warm—is consistent with the fact that the psychological attributes as well as the appearance of attractiveness are universal, and it extends past research by adding supportive evidence from an isolated cultural group.

However, as mentioned earlier, agreement between American and Bolivian perceivers was not significant for impressions of how respected/dominant the American faces were. To interpret this finding, different stereotypes of respected/dominant based on facial attractiveness/babyface between two cultural groups may be taken into account. Unexpectedly, we did not find the predicted significant positive correlation between attractiveness and respected/dominant for American perceivers, but that correlation was significant for Bolivian perceivers. In addition, White American perceivers perceived Americans with more a babyfaced appearance as significantly less respected/dominant, as predicted, while an opposite effect was shown by Bolivian perceivers. In short, American and Bolivian raters made different inferences about how respected/dominant a person was from their attractiveness and babyfaceness.

In contrast to a culturally shared attractiveness halo effect, we did not find a culturally shared babyface overgeneralization effect in this study. Although perceivers from both cultures agreed in their impressions of babyfaceness, they did not associate the same traits with babyfaceness. Consistent with past studies, with facial attractiveness controlled, American judges rated more babyfaced American men as less respected and warmer and they rated more babyfaced Bolivian men as warmer. The finding that babyfaced men were not perceived with babyish trait for all Bolivian raters is not

consistent with babyface overgeneralization effect. Thus, certain meanings of babyfaceness seem to be culturally variable across perceiver-target cultural groups.

A fourth set of findings indicated that interracial agreement in trait impressions was diminished when judgments of facial attractiveness were statistically controlled. This finding indicated that the agreements on trait ratings were mediated by agreement on attractiveness perception. For example, Americans and Bolivians didn't agree on knowledgeable rating for American faces if the agreement on American attractiveness was taken away. In other word, the agreement in impressions of knowledgeability between these two cultural groups of raters depends on their inter-cultural agreement in impressions of attractiveness.

Given that babyface overgeneralization effect was only found in certain trait inferences for American perceivers and was not found at all for Bolivian perceivers, there is also no mediation effect for babyfaceness perception on intercultural agreement on traits ratings. It is possible that babyfaceness may have different cultural content in U.S. American and Bolivian cultures. A further study may address this puzzling result by examining what are the specific facial features that convey the babyfaceness impression for Bolivian raters and what trait impressions those are those linked to.

Conclusion

In the present study, we found within and cross-cultural consensus on facial attractiveness and babyfaceness judgments as well as agreement on traits inference from face of own- and other- culture. We also found the universality of attractiveness halo effect across White American and Tsimane' Bolivian cultures. This finding parallel results reported by Zebrowitz (1993), and it indicates that the stereotype exists even when

the media influence was reduced. The cross-culture babyfacedness stereotype results were intriguing for Bolivian raters. Although in Western culture, facial babyishness influences social perceptions and social interactions, this impact of babyfacedness may not be true for Tsimane' Bolivian culture. If so, then babyfacedness among the Tsimane' Bolivian may not be a hindrance to high social status and perceptions of knowledgeability, as it is in Western culture. A further study to examine the link between babyfacedness and actual traits of the targets may help to answer this question and give us a clearer picture about how we should avoid judgments only based on our own experience and culture.

Table 1

Reliability of Facial and Trait Ratings

Face culture and raters	Rating					
	Attractive	Babyface	Healthy	Intelligent/ Knowledgeable	Respected/ Dominant	Warm/ Sociable
White American Faces						
White American						
All=16	.88	.90	.85	.80	.89	.92
Male=8	.76	.82	.73	.68	.75	.85
Female=8	.80	.83	.72	.66	.85	.86
Bolivian						
All=137	.87	.73	.79	.72	.69	.76
Male=64	.79	.54	.59	.54	.64	.65
Female=73	.75	.64	.64	.53	.39	.59
Bolivian Faces						
White American						
All=14	.79	.80	.82	.69	.75	.87
Male=7	.65	.64	.56	.50	.63	.69
Female=7	.63	.68	.78	.67	.58	.82
Bolivian						
All=40	.70 ^a	.84	.78	.70 ^b	.65 ^c	.70 ^d
Male=20	.60 ^a	.81	.64	.56 ^b	.31 ^c	.59 ^d
Female=20	.42 ^a	.56	.65	.45 ^b	.52 ^c	.48 ^d

Note. To increase the reliability of Bolivians rating Bolivian faces, a. 2 male and 2 female raters were dropped on attractive rating, b. 2 male and 1 female raters were dropped on knowledgeable rating, c. 1 male and 2 female raters were dropped on dominant/respected rating, and d. 1 male and 3 female raters were dropped on warm/sociable rating. The data in the rest Tables are based only on the male and female raters included in the reliability coefficients.

Note. Data in the tables are broken down by rater sex for the readers' interest, but will not be discussed.

Table 2

Intercultural Agreement in Facial and Trait Ratings

Face culture and raters	Rating					
	Attractive	Babyface	Health y	Intelligent/ Knowledgeabl e	Respected / Dominant	Warm/ Sociabl e
White American Faces						
American-Bolivian						
All	.53***	.38*	.51***	.47**	.26	.55***
Male	.56***	.35*	.51***	.37*	.34*	.53***
Female	.43**	.30+	.38*	.41**	.08	.44**
Bolivian Faces						
American-Bolivian						
All	.26 ⁺	.56***	.67***	.56***	.46***	.42**
Male	.25 ⁺	.42**	.57***	.35*	.35**	.33*
Female	.23 ⁺	.42**	.56***	.52***	.40**	.31*

*** $p < .001$. ** $p < .01$. * $p < .05$. + $p < .10$.

Note. Agreements for Bolivian faces are partial correlations between White American and Bolivian raters' ratings controlling for how well the Bolivian targets were known by the Bolivian raters and actual age of the Bolivian targets.

Table 3

Correlations of Attractiveness and Babyfacedness With Trait Impressions

Impression and perceiver culture	Attractiveness				Babyfacedness				
	White American face		Bolivian faces		White American faces		Bolivian faces		
Healthy									
White American	zero order	<i>pr</i>	zero order	<i>pr</i>	zero order	<i>pr</i>	zero order	<i>pr</i>	
All	.81 ^{***}	.84 ^{***}	.77 ^{***}	.77 ^{***}	-.34 [*]	-.45 ^{**}	.11	.04	
Male	.75 ^{***}	.77 ^{***}	.68 ^{***}	.67 ^{***}	-.37	-.45 ^{**}	.12	-.02	
Female	.79 ^{***}	.79 ^{***}	.69 ^{***}	.69 ^{***}	-.21	-.25	.06	-.01	
Bolivian									
All	.74 ^{***}	.76 ^{***}	.56 ^{***}	.53 ^{***}	.23	-.34 [*]	.22	.12	
Male	.72 ^{***}	.76 ^{***}	.57 ^{***}	.55 ^{***}	.04	-.35 [*]	.20	.11	
Female	.65 ^{***}	.61 ^{***}	.27 [*]	.24 ⁺	.30 [*]	-.12	.24	.20	
Knowledgeable									
White American									
All	.43 ^{**}	.44 ^{**}	.66 ^{***}	.65 ^{***}	.08	.13	.11	.06	
Male	.54 ^{***}	.57 ^{***}	.58 ^{***}	.56 ^{***}	.19	.29 ⁺	.29 ⁺	.22	
Female	.30 ⁺	.29 ⁺	.56 ^{***}	.57 ^{***}	-.06	-.04	-.11	-.19 ⁺	
Bolivian									
All	.81 ^{***}	.78 ^{***}	.65 ^{***}	.64 ^{***}	.40 [*]	-.13	.17	.03	
Male	.71 ^{***}	.70 ^{***}	.52 ^{***}	.52 ^{***}	.20	-.09	.07	-.05	
Female	.71 ^{***}	.61 ^{***}	.53 ^{***}	.52 ^{***}	.45 ^{**}	.08	.16	.08	
Dominant/Respected									
White American									
All	.16	.17	.84 ^{***}	.84 ^{***}	-.85 ^{***}	-.80 ^{***}	.03	-.12	
Male	.22	.25	.75 ^{***}	.74 ^{***}	-.82 ^{***}	-.82 ^{***}	.30 ⁺	.24 ⁺	
Female	.13	.10	.75 ^{***}	.79 ^{***}	-.75 ^{***}	-.75 ^{***}	-.22	-.42 ^{**}	
Bolivian									
All	.71 ^{***}	.67 ^{***}	.62 ^{***}	.63 ^{***}	.32 [*]	-.14	.02	-.14	
Male	.62 ^{***}	.64 ^{***}	.62 ^{***}	.62 ^{***}	0.06	-.22	.08	-.07	
Female	.59 ^{***}	.50 ^{***}	.40 ^{**}	.40 ^{**}	.37 ⁺	.04	.04	-.03	
Warm/Sociable									
White American									
All	.66 ^{***}	.69 ^{***}	.74 ^{***}	.75 ^{***}	.18	.32 ⁺	.29 ⁺	.32 ⁺	
Male	.69 ^{***}	.70 ^{***}	.71 ^{***}	.70 ^{***}	.11	.24	.35 ⁺	.30 ⁺	
Female	.58 ^{***}	.62 ^{***}	.65 ^{***}	.65 ^{***}	.24	.35 ⁺	.23 ⁺	.22	
Bolivian									
All	.75 ^{***}	.68 ^{***}	.64 ^{***}	.63 ^{***}	.45 ^{**}	.05	.13	-.02	
Male	.69 ^{***}	.67 ^{***}	.60 ^{***}	.64 ^{***}	.21	-.07	-.09	-.28 ⁺	
Female	.62 ^{***}	.43 ^{**}	.47 ^{***}	.46 ^{***}	.57 ^{***}	.34 ⁺	.18	.12	

****p* < .001. ***p* < .01. **p* < .05. +*p* < .10

Note. *pr*=partial correlation controlling the other facial quality

Table 4

Cross-cultural Agreement in Trait Ratings Partialing out Attractiveness or Babyfaceness

Trait	White American Faces		Bolivian Faces			
	Zero-order correlation	Partialing out Attractiveness	Partialing out Babyfaceness	Partialing out age and well know	Partialing out Attractiveness	Partialing out Babyfaceness
Healthy						
All	.51 ^{***}	.23	.61 ^{***}	.67 ^{***}	.50 ^{***}	.70 ^{***}
Male	.51 ^{***}	.10	.62 ^{***}	.57 ^{***}	.30 [*]	.60 ^{***}
Female	.38 [*]	.07	.41 [*]	.56 ^{***}	.45 ^{***}	.58 ^{***}
Knowledgeable						
All	.47 ^{**}	.24	.48 ^{**}	.56 ^{***}	.49 ^{***}	.60 ^{***}
Male	.37 [*]	.06	.45 ^{**}	.35 [*]	.19	.31 [*]
Female	.41 ^{**}	.30 ⁺	.33 [*]	.52 ^{***}	.50 ^{***}	.54 ^{***}
Dominant/ Respected						
All	.26	.42 ^{**}	.24	.46 ^{***}	.25 ⁺	.50 ^{***}
Male	.34 [*]	.34 [*]	.44 ^{**}	.35 [*]	.06	.45 ^{***}
Female	.08	.23	.07	.40 ^{**}	.36 ^{**}	.37 ^{**}
Warm/Sociable						
All	.55 ^{***}	.29 ⁺	.55 ^{***}	.42 ^{**}	.11	.43 ^{**}
Male	.53 ^{***}	.28 ⁺	.53 ^{***}	.33 [*]	.02	.32 [*]
Female	.44 ^{**}	.11	.38 [*]	.31 [*]	.14	.29 [*]

****p* < .001. ***p* < .01. **p* < .05. +*p* < .10

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Footnotes

1 This study is part of TAPS, for the future study, we selected this 93 male who are aged from 16 to 36 years old and have been included in 2006 survey.

2 The first word in apprentices is translations in Tsimane' language and the second one is Spanish translation.

3 Due to the fact that the Bolivian perceivers may know some of the Bolivians in the picture in person, we asked participants to indicate “how well you know the person in the picture” for further control in data analysis.

4 We only used the data of 53 faces aged from 15-25 in the result and discussion.