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Universals and Cultural Differences in Forming Personality Trait Judgments From Faces

Mirella Walker[1], Fang Jiang[2], Thomas Vetter[3], and Sabine Sczesny[4]

Abstract

Previous research has shown high cross-cultural consensus in personality trait judgments based on faces. However, the information that was provided in these studies included extrafacial features, such as hairstyle or clothes. Such styling information can be intentionally chosen by target persons to express who they are. Using a well-developed and validated Western face model, we were able to formalize the static facial information that is used to make certain personality trait judgments, namely, aggressiveness, extroversion, likeability, risk seeking, social skills, and trustworthiness judgments. We manipulated this information in photographs of Asian and Western faces with natural-looking results. Asian and Western participants identified the enhanced salience of all different personality traits in the faces. Asian participants, however, needed more time for this task. Moreover, faces with enhanced salience of aggressiveness, extroversion, social skills, and trustworthiness were better identified by Western than by Asian participants.

Keywords

culture, trait judgments, impression formation, faces

People draw personality trait inferences about unfamiliar individuals on the basis of their facial appearance (Bruce & Young, 1986). These inferences are usually inaccurate (Zebrowitz, Andreoletti, Collins, Lee, & Blumenthal, 1998; Zebrowitz, Hall, Murphy, & Rhodes, 2002), and are therefore regarded as mere perceptual illusions (Bachmann & Nurmoja, 2006).

Reasons for these associations between physical information in faces and certain personality traits are processes of stereotyping and overgeneralization. Regarding stereotyping, consensual beliefs about members of specific social groups (e.g., based on gender, Williams & Best, 1990; or age, Montepare & Zebrowitz McArthur, 1998) lead to the ascription of corresponding personality traits to members of the respective groups. With respect to overgeneralization, information about babyfaceness (Montepare & Zebrowitz McArthur, 1998), fitness (Zebrowitz & Rhodes, 2004), and emotion (Montepare & Dobisch, 2003; Zebrowitz, Fellous, Mignault, & Andreoletti, 2003) is extracted from facial characteristics and influences the ascription of personality trait judgments as follows: Social judgments that are evoked by facial features that characterize babies, low fitness, or emotion are extended to people whose faces resemble the unfit, babies, or a particular emotion (Zebrowitz & Montepare, 2008).

Some research has been done to investigate the cross-cultural consensus in personality trait judgments based on faces (e.g., Albright et al., 1997; Keating, Mazur, & Segall, 1981; Zebrowitz, Montepare, & Lee, 1993): Keating et al. (1981) built pairs of faces consisting of different individuals with different facial expressions and asked participants from different cultural backgrounds to select the person looking more dominant or happy, respectively. They showed significant cross-sample consensus in dominance- and happiness-ratings for almost half of all face pairs. Zebrowitz et al. (1993) let African American, White American, and Korean participants rate African American, White American, and Korean men with respect to different personality traits. They found highly consensual judgments for participants from different cultural backgrounds, as well as almost as high interrater consensus for faces from the other compared to faces from the own cultural background. They also discovered evidence for cultural differences. Dimensions that were differently judged by participants from different cultural backgrounds were naïveté, submissiveness, and attractiveness. Albright et al. (1997) let Chinese and American participants judge Chinese and American target

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persons based on photographs of faces and found cross-cultural consensus in different personality trait judgments, namely extraversion and agreeableness. However, they also found cultural differences in associations between different facial cues and personality trait judgments. For example, smiling was associated with a lack of emotional stability among the Chinese but not among the American participants.

Taken together, these studies circumstantiated cross-cultural consensus and dissent in personality trait judgments from faces. The stimuli they used as a basis for the social judgments were quite heterogeneous with regard to the mode and amount of information provided. For example, the photographs used as face stimuli by Keating et al. (1981) differed with regard to dynamic information about facial expression, whereas the stimuli used by Zebrowitz et al. (1993) did not: They all had a neutral facial expression. Moreover, they were standardized by not showing any facial hair or glasses on the photographs.

Although the different studies differ quite strongly with regard to the information they provided as a basis for social judgments, all of them provided more than just static facial information. Therefore, the social judgments could be based on information extracted from pose, gaze direction, facial expression, or styling, that is, information that can be influenced by the target persons to manifest who they are or who they want to be seen as. For example, all studies used faces showing hairstyle, which is extrafacial styling information that can be intentionally chosen by target persons to shape others' impressions of them (Naumann, Vazire, Rentfrow, & Gosling, 2009). Previous studies have shown that styling information is used to build personality judgments upon (i.e., with respect to conscientiousness, Albright, Kenny, & Malloy, 1988; Borkenau & Liebler, 1992).

So far, not much is known about the impact of mere static facial information on cross-cultural consensus and dissent in personality trait judgments. Therefore, we present a novel method (a) to quantify the static facial information that is used to make personality trait judgments from faces and (b) to systematically manipulate this information in novel photographs of Asian and Western faces (for details, see Method section). This method allows for generating a set of highly ecological face stimuli of the same target person, differing only with respect to the static facial information that is used to make certain personality trait judgments (Walker & Vetter, 2009; see Figure 1). Pairs of faces are built differing only subtly with respect to the salience of one of the six personality traits (see Figure 2). This method allows us to test whether mere static facial information is sufficient to cause cross-cultural consensus in personality trait judgments from faces.

Different research questions are addressed: (a) Are Asian and Western participants able to interpret the subtle differences in Asian and Western faces in the intended way? (b) Are there differences in the performance of Asian and Western participants judging the faces since the information manipulated in the faces is derived from consensual Western associations between facial information and certain personality traits?

In line with previous research on cross-cultural consensus and dissent in forming personality trait judgments based on faces, we hypothesized (a) that there are *cultural universals*, reflected in identification scores significantly above chance level for faces with enhanced salience of the different personality traits for both groups of participants judging face pairs from both cultural backgrounds. However, since indications of cultural differences have been found in previous research (Albright et al., 1997; Zebrowitz et al., 1993), and since we applied a Western face model to manipulate the salience of different personality traits in faces, the task to identify the salience of different personality traits in faces should be more difficult for Asian compared to Western participants. Therefore, we hypothesized (b) that there are *cultural differences*, reflected in higher identification scores and faster judgments given by Western than by Asian participants.

Method

Participants

Participants with Asian and Western background (i.e., grown up in Asia vs. grown up in Europe or North America) were recruited via Internet. A total of 304 participants took part in this study, 68 with Asian, 228 with Western background. In all, 36 of the Asian and 220 of the Western participants did not have any cross-cultural experience, that is, had never lived in any other cultural environment. Participants' ages ranged from 15 to 60 years ($M = 27.55$, $SD = 6.90$). A total of 182 of all participants were female, 114 were male. Three participants were randomly selected to win a CD.

Materials

Face space approach. Our method to formalize physical correlates of personality trait judgments is based on the face space approach (O'Toole, Wenger, & Townsend, 1998; Valentine, 1991). The face space concept assumes that every face is mentally represented as a point in a highly dimensional space, whose dimensions correspond to the physical properties that are used to encode and discriminate between faces. The distance between any two points in this face space represents the similarity between the corresponding faces (Valentine, 1991). This face space concept was used to build physical face models by applying it to empirical image data. The morphable face model (Blanz & Vetter, 1999) that is used in this study is based on the laser scans of 100 male and 100 female heads presented in frontal view, with direct gaze and neutral facial expressions (O'Toole, Vetter, Troje, & Bülthoff, 1997). The 3D shape and 2D texture information were coded and processed separately, but in an analogous way. The faces did not show any makeup, glasses, jewelry, beards, or moustaches. After different preprocessing steps, a principal component analysis (PCA) run over the whole set of 200 faces revealed the dimensions on which these faces physically vary.

To find the physical correlates of certain personality trait judgments, we gathered information about different personality

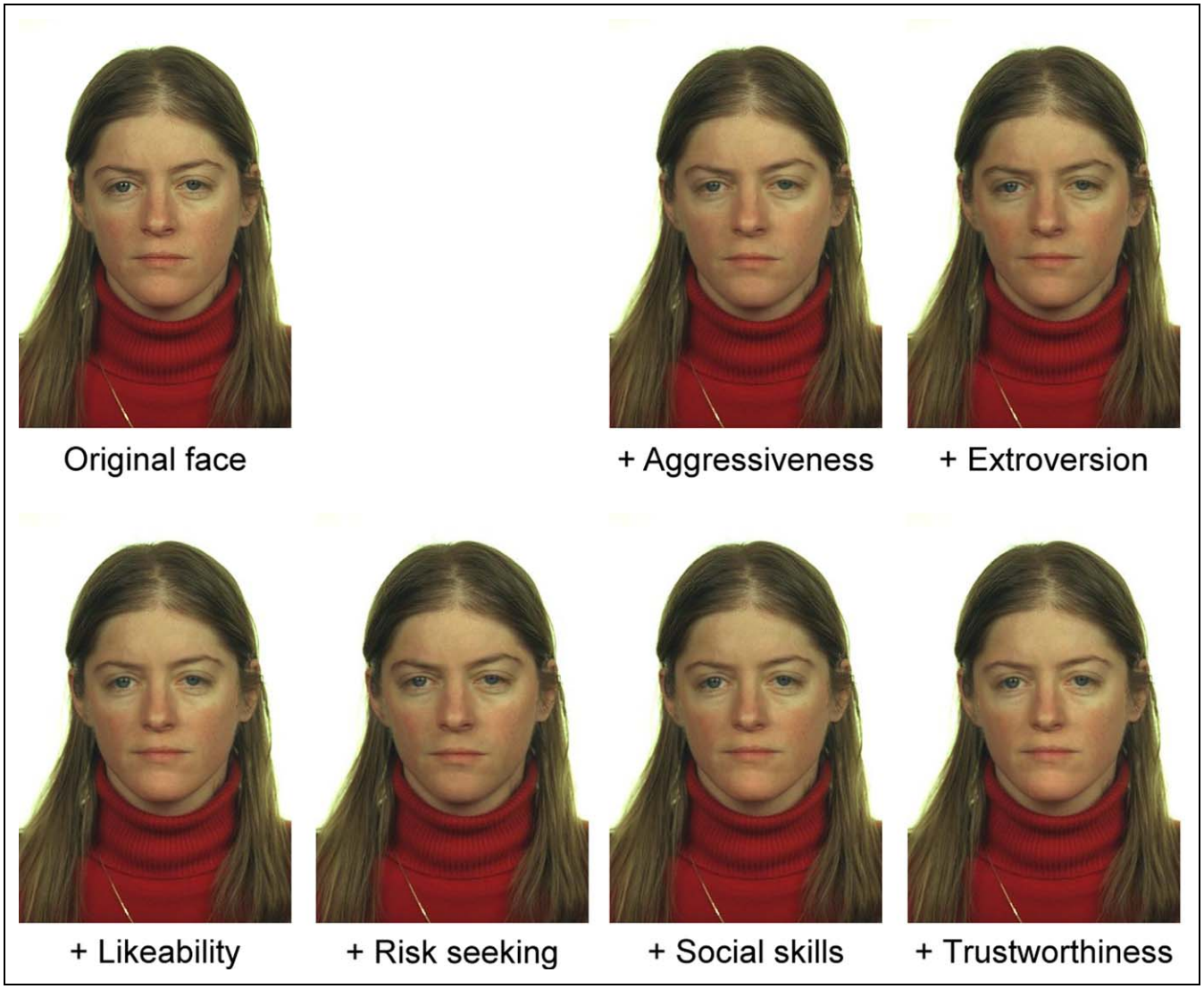

Figure 1. Original face photograph and variations with enhanced salience of different personality traits (Walker & Vetter, 2009)

traits on the basis of all 200 heads the morphable face model is built upon (Walker & Vetter, 2009). Then mean values for every face and personality trait were computed and added to the face representations in the morphable face model. This allowed us to identify the dimensions that capture maximum variability with respect to the different personality traits. Representing these dimensions as vectors in our face model allows for changing the position of any face in the face model on one of these dimensions by adding the corresponding vector to the face. The resulting faces seem to look more or less extreme with respect to the corresponding personality trait.

This approach to manipulate faces was then applied to novel photographs of faces. First, the faces on these photographs were actively reconstructed by linearly combining the 200 heads underlying the morphable face model. This procedure results in estimations of the heads corresponding to the faces on the photographs. Then, these heads were manipulated by changing their position on the dimensions reflecting different personality traits. Finally, the manipulated heads were projected back into the original photographs. Hence, we were able to systematically manipulate how persons are socially perceived based on their faces in a natural-looking way (see Figure 1). It is important to note that this face model was developed on a sample of Western faces that were judged by Western participants along personality dimensions used to describe individuals in Western cultures.

Generating stimuli based on photographs of Asian and Western faces. First, we randomly selected two female and two male face photographs from the Asian Face Image Database PF01 (Je et al., 2001) as well as two female and two male Western-looking faces from the Colour Feret Face Database (Phillips, Wechsler, Huang, & Rauss, 1998). The eight faces were first analyzed by actively reconstructing them on the basis of the 200 database faces the morphable face model is built upon (Blanz & Vetter, 1999). This resulted in estimations of the 3D shape and 2D texture of the faces. Secondly, the different personality trait vectors were separately applied to the shape and texture estimation of all eight faces resulting in 48 pairs

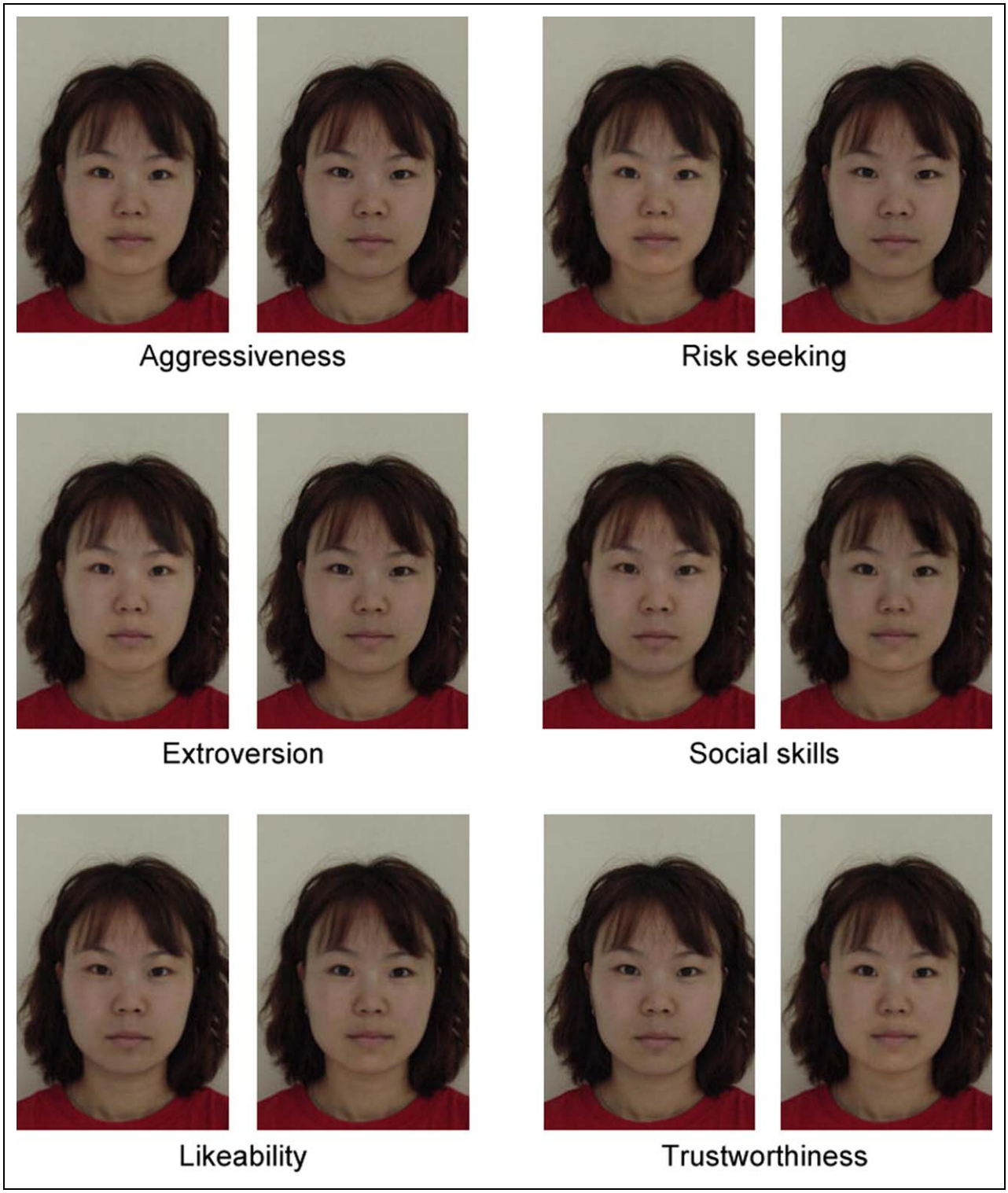

Figure 2. Examples of female Asian face pairs used in the present study. The salience of the six personality traits is reduced in the left image and enhanced in the right image of each pair.

of faces differing only with respect to the salience of the six personality traits. In the last step, the modified shape and texture information were rendered back into the original photographs. The resulting eight pairs of faces were then pretested in order to ascertain that they did not show visible artifacts. Five participants were asked to describe what they saw when presented with different face pairs. All participants answered that the female Asian faces showed facial stubble when the aggressiveness-, extroversion-, and risk-seeking-vectors were added, and when the trustworthiness-vector was subtracted.

Table 1. Identification Scores for Asian and Western Participants Judging Asian and Western Faces With Enhanced Salience of Six Personality Traits Tested Against Chance Level (One-Sample *t*-Tests Against a Hypothetical Mean)

	Asian Faces			Western Faces		
	M (*SD*)	*t* (*df*)	*p*	*M* (*SD*)	*t* (*df*)	*p*
Asian Participants						
Aggressiveness	69.59 (29.54)	4.04 (36)	<.001*	77.42 (24.46)	6.24 (30)	<.001*
Extroversion	70.95 (28.57)	4.46 (36)	<.001*	80.65 (27.16)	6.28 (30)	<.001*
Likeability	80.41 (23.67)	7.81 (36)	<.001*	83.25 (24.44)	7.57 (30)	<.001*
Risk seeking	82.00 (20.06)	9.70 (36)	<.001*	66.94 (30.54)	3.09 (30)	.002*
Social skills	75.64 (23.19)	6.73 (36)	<.001*	69.35 (28.66)	3.76 (30)	<.001*
Trustworthiness	68.01 (23.28)	4.70 (36)	<.001*	83.25 (18.64)	9.93 (30)	<.001*
Western Participants						
Aggressiveness	80.20 (24.86)	13.69 (126)	<.001*	79.26 (22.09)	13.31 (100)	<.001*
Extroversion	84.94 (17.33)	22.72 (126)	<.001*	84.89 (17.94)	19.54 (100)	<.001*
Likeability	85.65 (18.04)	22.27 (126)	<.001*	85.98 (16.95)	21.33 (100)	<.001*
Risk seeking	77.16 (23.58)	12.98 (126)	<.001*	68.56 (32.34)	5.77 (100)	<.001*
Social skills	78.57 (21.76)	14.80 (126)	<.001*	84.64 (17.40)	20.01 (100)	<.001*
Trustworthiness	82.53 (18.87)	19.43 (126)	<.001*	86.48 (16.47)	22.25 (100)	<.001*

Note: All *p*-values are significant for corrected α-levels (Jaccard & Wan, 1996).

Therefore, we added less texture information to the female Asian faces for the personality traits risk seeking, extroversion, and aggressiveness, and subtracted less texture information for trustworthiness. Since we do not compare Asian and Western faces to test our two hypotheses, this different degree of manipulation for Asian and Western faces is not critical. See Figure 2 for examples of stimuli.

Procedure

The experiment was conducted via Internet. Participants' cultural background constituted a quasi-experimental factor. Participants from both cultural backgrounds were randomly assigned to one of two conditions determined by the between-subjects factor cultural background of target persons (Asian vs. Western). On the first Web page, participants were welcomed and informed that the study was about impression formation based on faces. On the second Web page, they were told that they would be shown four pairs of faces and that they were expected to select as quickly as possible the one that looked more extreme with respect to one of six personality traits in each case. The face pairs consisted of faces generated from the same input face which had been manipulated to look more and less extreme with respect to a given personality trait. The horizontal arrangement of the two faces was random. The four pairs of faces were presented on separate Web pages in random order. Participants always had the answer option "I cannot decide which face looks more ..." This procedure was repeated for the other personality traits. The six personality traits were presented in random order. After the last face pair, participants were asked for their cross-cultural experience. Finally, they were thanked for participation and were asked for their e-mail address in order to get more information about this study and/or to take part in the lottery.

Results

Results showed that participants were willing to select one of the faces presented in the pairs, choosing the response option "I do not know ..." in only 9.08% of all cases.

Universals in Personality Trait Judgments From Faces

To test our first hypothesis that participants perform above chance level independent of their own and the face's cultural background, we calculated the percentage of correct identifications for every personality trait and participant. Four one-sample *t*-tests (one-tailed) against a hypothetical mean of 50 were computed for all four conditions. Identification scores for the faces with enhanced salience of the six different personality traits (i.e., aggressiveness, extroversion, likeability, risk seeking, social skills, and trustworthiness) were significantly above chance level in all experimental conditions: $t_{min}(36) = 4.04$, $p_{max} < .001$, $d_{min} = .66$ for Asian participants and Asian faces, $t_{min}(30) = 3.09$, $p_{max} = .002$, $d_{min} = .55$ for Asian participants and Western faces, $t_{min}(100) = 5.77$, $p_{max} < .001$, $d = .57_{min}$ for Western participants and Western faces, and $t_{min}(126) = 12.98$, $p_{max} < .001$, $d_{min} = 1.15$ for Western participants and Asian faces, respectively. Alpha-levels were corrected for multiple tests (Jaccard & Wan, 1996). See Table 1 for details.

In order to be sure that the high scores in identifying faces with enhanced salience of the different personality traits were not caused by participants' experience with the other culture, we conducted a separate analysis for those participants who had never left their cultural environment. Even for the participants without any cross-cultural experience all identification scores remained significantly above chance level.

Cultural Differences in the Identification of Personality Traits From Faces

The identification scores for the six personality trait judgments were included in a 2 (cultural background of participant) × 2 (cultural background of target person) multivariate analysis of variance (MANOVA). We analyzed whether identification scores were higher for Western than for Asian participants, independent of the cultural background of the faces and the trial. At the multivariate level, this analysis revealed the expected significant main effect of cultural background of participant, $F(6, 287) = 4.17$, $p < .001$, partial $\eta^2 = .08$, with Western participants reaching higher identification scores (overall: $M = 78.58$, $SD = 15.75$) than Asian participants (overall: $M = 74.26$, $SD = 17.50$). At the univariate level, the differences in identification scores between Asian and Western participants which reached statistical significance were extroversion (Western: $M = 84.92$, $SD = 17.57$, Asian: $M = 75.37$, $SD = 28.16$), $F(1, 292) = 10.37$, $p < .001$, partial $\eta^2 = .03$; social skills (Western: $M = 81.26$, $SD = 20.13$, Asian: $M = 72.77$, $SD = 25.82$), $F(1, 292) = 9.39$, $p = .001$, partial $\eta^2 = .03$; and trustworthiness (Western: $M = 84.28$, $SD = 17.92$, Asian: $M = 74.95$, $SD = 22.48$), $F(1, 292) = 11.72$, $p < .001$, partial $\eta^2 = .04$. Differences between Asian and Western participants tend to be significant for the personality trait aggressiveness (Western: $M = 79.78$, $SD = 23.63$, Asian: $M = 73.16$, $SD = 27.43$), $F(1, 292) = 3.33$, $p = .035$, partial $\eta^2 = .011$. Alpha-levels were corrected for multiple tests (Jaccard & Wan, 1996).

Besides the hypothesized main effect "cultural background of participants," unexpectedly, the MANOVA revealed a significant difference between Asian and Western target persons, $F(6, 287) = 5.73$, $p < .001$, partial $\eta^2 = .11$, and a significant interaction of cultural background of participant and cultural background of target person, $F(6, 287) = 3.21$, $p = .005$, partial $\eta^2 = .06$. Therefore, we investigated their impact on identification scores for the different personality trait judgments at the univariate level. With regard to the main effect "cultural background of target person," we found two significant effects: Enhanced salience of risk seeking was identified significantly better in Asian ($M = 78.25$, $SD = 22.86$) than in Western faces ($M = 68.18$, $SD = 31.82$), $F(1, 292) = 9.77$, $p = .002$; partial $\eta^2 = .03$, whereas enhanced salience of trustworthiness was identified significantly better in Western ($M = 85.72$, $SD = 16.99$) than in Asian faces ($M = 79.25$, $SD = 20.78$), $F(1, 292) = 13.68$, $p < .001$; partial $\eta^2 = .05$. With regard to the interaction, no effect reached statistical significance at the univariate level. Alpha-levels were set more strictly (i.e., $\alpha = .01$) since these effects were not predicted, and they were corrected for multiple tests (Jaccard & Wan, 1996).

Cultural Differences in Reaction Times Judging Personality Traits From Faces

The reaction times for the six personality trait judgments (averaged over all four trials per dimension) were included in a 2 (cultural background of participant) × 2 (cultural background of target person) MANOVA. We analyzed whether reaction times for correct identifications were shorter for Western than for Asian participants, independent of the cultural background of the target persons. At the multivariate level, this analysis revealed the expected significant main effect of cultural background of participant, $F(6, 255) = 15.97$, $p < .001$, partial $\eta^2 = .273$, with Western participants ($M = 5.42$, $SD = 1.52$) taking less time (in seconds) to make a judgment compared to Asian participants ($M = 6.83$, $SD = 2.51$). At the univariate level, the main effect of cultural background of participant was significant for all six personality trait judgments with shorter reaction times for Western participants (aggressiveness: $M = 5.27$, $SD = 1.36$; extroversion: $M = 5.40$, $SD = 1.53$; likeability: $M = 5.01$, $SD = 1.30$; risk seeking: $M = 5.69$, $SD = 1.49$; social skills: $M = 5.42$, $SD = 1.65$; and trustworthiness: $M = 5.75$, $SD = 1.82$) than for Asian participants (aggressiveness: $M = 6.47$, $SD = 2.16$; extroversion: $M = 7.25$, $SD = 3.01$; likeability: $M = 6.70$, $SD = 2.21$; risk seeking: $M = 6.46$, $SD = 2.27$; social skills: $M = 7.11$, $SD = 3.12$; and trustworthiness: $M = 7.00$, $SD = 2.32$), $F_{min}(1, 260) = 10.40$, $p_{max} < .001$ (one-tailed), partial $\eta^2_{min} = .038$. Again α-levels were corrected for multiple tests (Jaccard & Wan, 1996).

In order to investigate whether the reaction time differences between Asian and Western participants are stable over the different trials per dimension, we computed a 4 (trial: first, second, third, fourth) × 2 (background of participant: Asian vs. Western) mixed ANOVA with the dependent variable reaction time per trial (across all dimensions). There was a significant main effect of trial, $F(3, 287) = 95.56$, $p < .001$, partial $\eta^2 = .500$. Inspection of the mean values revealed that reaction times decrease from the first to the fourth trial (first trial: $M = 6.80$, $SD = 2.28$, second trial: $M = 5.45$, $SD = 1.42$; third trial: $M = 5.17$, $SD = 1.34$; fourth trial: $M = 5.18$, $SD = 1.28$). In line with the results described in the paragraph above, there was also a significant main effect of cultural background of participants, $F(1, 289) = 72.28$, $p < .001$, partial $\eta^2 = .200$, and an interaction of both independent variables, $F(3, 287) = 17.96$, $p < .001$, partial $\eta^2 = .158$. Post hoc comparisons reveal that the interaction effect is only significant between the first and the second trial, $F(1, 289) = 48.57$, $p < .001$, partial $\eta^2 = .144$, but not between neighboring subsequent trials. The difference in reaction times between Asian and Western participants decreased from Trial 1 (Asian participants: $M = 8.92$, $SD = 3.20$, Western participants: $M = 6.18$, $SD = 1.43$) to Trial 2 (Asian participants: $M = 6.19$, $SD = 1.90$, Western participants: $M = 5.24$, $SD = 1.17$, see Figure 3).

Discussion

The main purpose of this article was to investigate universals and cultural differences in personality trait judgments from faces. In line with our first hypothesis, we found cross-cultural consensus in personality trait judgments from faces. Although the task was more difficult for Asian compared to Western participants, presumably since the information that was changed in the faces was derived from Western associations of physical information in faces and certain personality

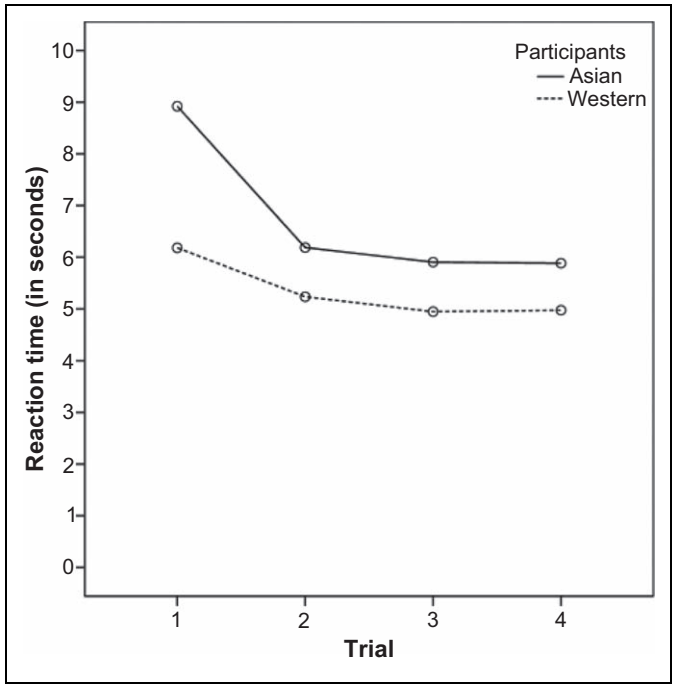

Figure 3. The mean reaction times of Asian and Western participants for the four different trials of the personality trait judgments

traits, Asian and Western participants performed significantly above chance level, independent of the cultural background of target persons. This even holds true for participants without cross-cultural experience. Since participants could not derive any information about the target persons from pose, gaze direction, facial expression, or styling, these results suggest that the associations between mere static facial information and certain personality traits are highly shared among participants from different cultural backgrounds.

Besides cultural universals and supporting our second hypothesis, we also found cultural differences in forming personality trait judgments from faces: Western participants were not only better in identifying an enhanced salience of extroversion, social skills, trustworthiness, and aggressiveness in faces, but they were also faster in identifying all six personality traits, independent of the faces' cultural backgrounds. Further investigations revealed that Asian participants generally needed more time to make the personality trait judgments, but they needed especially more time if they had to judge a personality trait for the first time. This effect indicated that Asian participants needed more time to interpret the questions or to associate a specific personality trait with facial information.

The question why enhanced salience of likeability and risk seeking was not better identified by Western than by Asian participants cannot be answered definitely on the basis of our data. We assume that since the risk-seeking versions of the faces are looking most mature, and the likeable versions are looking most happy, overgeneralizations effects due to facial maturity and facial expressions might have led to the high intercultural consensus found for risk seeking and likeability. Smiling (Albright et al., 1997) and babyfaceness (i.e., the opposite of facial maturity; Zebrowitz et al., 1993) have previously been shown to affect consensus among participants from different cultural backgrounds.

We assume that the better identifiability of risk seeking in Asian compared to Western faces can be due to the fact that the risk-seeking texture-vector is the one that adds most facial stubble to a face. Although the texture-vector was reduced in female Asian faces, the texture information was more salient in male Asian compared to male Western faces, since Asian input faces have a lighter and more homogenous texture. The better identifiability of trustworthiness in Western compared to Asian faces might be due to the trustworthiness-shape vector mainly making the eyes bigger and more roundish (Walker & Vetter, 2009). This may be less salient and therefore more difficult to interpret in Asian faces since Asian and Western eyes are shaped differently.

Taken together, the hypotheses with regard to universals and cultural differences are largely supported by our data. We conclude that the personality trait vectors are universal enough to be applied to faces with different cultural backgrounds without resulting in unnatural-looking faces and that the ascriptions of personality traits to faces are universal enough for the Western personality trait vectors to evoke the intended judgments also in participants with another cultural background. However, there are differences in the processing of the task, which are reflected in longer reaction times for Asian compared to Western participants, especially if a specific personality trait has to be judged for the first time, and in higher identification scores of Western participants on more than half personality traits.

The present study is limited by its use of only two different cultural groups and its conceptualization of these groups as two nominal variables. An interesting question for future research would be whether the effects found can be generalized to faces from other cultural backgrounds. Another limitation of the present study is the use of only one face model, namely a Western face model. A question for future research is whether opposite effects would occur if an Asian face model was applied to Western faces. The results might be different, however, due to a greater salience of Western culture in Asia than vice versa. Therefore, the high cross-cultural consensus found in this study could be caused by a high presence of Western cultural elements within the Asian culture. A third limitation of this study affects the specificity and artificiality of the judgment condition. So far, we have shown that participants manage to identify the face with enhanced salience of a specific personality trait, if two faces of the same identity are given, differing only with respect to the personality trait in question. It would be interesting to investigate, whether results could be replicated, if the task would be, for example, to judge individually presented faces on these personality traits in absolute terms, or to compare faces involving different identities (from different cultural backgrounds).

Given the enormous social impact of impression formation processes based on faces in different contexts, such as hiring decisions (Sczesny, Spreemann, & Stahlberg, 2006), election outcomes (Todorov, Mandisodza, Goren, & Hall, 2005), and criminal sentencing (Blair, Judd, & Chapleau, 2004; Eberhardt, Davies, Purdie-Vaughns, & Johnson, 2006) as well as the tendency to have increasingly culturally mixed work places, neighborhoods, etc., universals and cultural differences in forming social judgments from faces should be studied comprehensively in future research.

Declaration of Conflicting Interests

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References

Albright, L., Kenny, D. A., & Malloy, T. E. (1988). Consensus in personality judgments at zero acquaintance. *Journal of Personality and Social Psychology*, *55*, 387-395.

Albright, L., Malloy, T. E., Dong, Q., Kenny, D. A., Fang, X., Winquist, L., & Yu, D. (1997). Cross-cultural consensus in personality judgments. *Journal of Personality and Social Psychology*, *72*, 558-569.

Bachmann, T., & Nurmoja, M. (2006). Are there affordances of suggestibility in facial appearance. *Journal of Nonverbal Behavior*, *30*, 87-92.

Blair, I. V., Judd, C. M., & Chapleau, K. M. (2004). The influence of Afrocentric facial features in criminal sentencing. *Psychological Science*, *15*, 674-679.

Blanz, V., & Vetter, T. (1999). A morphable model for the synthesis of 3D faces. *Proceedings of Siggraph'99*, 178-194.

Borkenau, P., & Liebler, A. (1992). Trait inferences: Sources of validity at zero-acquaintance. *Journal of Personality and Social Psychology*, *62*, 645-657.

Bruce, V., & Young, A. (1986). Understanding face recognition. *British Journal of Psychology*, *77*, 305-327.

Eberhardt, J. L., Davies, P. G., Purdie-Vaughns, V. J., & Johnson, S. L. (2006). Looking deathworthy. Perceived stereotypicality of Black defendants predicts capital-sentencing outcomes. *Psychological Science*, *17*, 383-386.

Jaccard, J., & Wan, C. K. (1996). *LISREL approaches to interaction effects in multiple regression*. Thousand Oaks, CA: Sage.

Je, H., Kim, S., Jun, B., Kim, D., Kim, H., Sung, J., & Bang, S. (2001). *Asian face image database PF01: Intelligent multimedia lab*. Retrieved from http://imlab.postech.ac.kr/publications/paper/12%20pf01.pdf.

Keating, C. F., Mazur, A., & Segall, M. H. (1981). A cross-cultural exploration of physiognomic traits of dominance and happiness. *Ethology and Sociobiology*, *2*, 41-48.

Montepare, J. M., & Dobisch, H. (2003). The contribution of emotion perceptions and their overgerneralizations to trait impressions. *Journal of Nonverbal Behavior*, *27*, 237-254.

Montepare, J. M., & Zebrowitz McArthur, L. (1998). Person perception comes of age: The salience and significance of age in social judgments. *Advances in Experimental Social Psychology*, *30*, 93-161.

Naumann, L. P., Vazire, S., Rentfrow, P. J., & Gosling, S. D. (2009). Personality judgments based on physical appearance. *Personality and Social Psychology Bulletin*, *35*, 1661-1671.

O'Toole, A. J., Vetter, T., Troje, N. F., & Bülthoff, H. H. (1997). Sex classification is better with three-dimensional head structure than with image intensity information. *Perception*, *26*, 75-84.

O'Toole, A. J., Wenger, M. J., & Townsend, J. T. (1998). Quantitative models of perceiving and remembering faces: Precedents and possibilities. In M. J. Wenger & J. T. Townsend (Eds.), *Computational, geometric, and process perspectives on facial cognition* (pp. 1-38). Mahwah, NJ: Lawrence Erlbaum.

Phillips, P. J., Wechsler, H., Huang, J., & Rauss, P. J. (1998). The feret database and evaluation procedure for face-recognition algorithms. *Image and Vision Computing*, *16*, 295-306.

Sczesny, S., Spreemann, S., & Stahlberg, D. (2006). Masculine = competent? Physical appearance and sex as sources of gender-stereotypic attributions. *Swiss Journal of Psychology*, *65*, 15-23.

Todorov, A., Mandisodza, A. N., Goren, A., & Hall, C. C. (2005). Inferences of competence from faces predict election outcomes. *Science*, *308*, 1623-1626.

Valentine, T. (1991). A unified account of the effects of distinctiveness, inversion, and race in face recognition. *The Quarterly Journal of Experimental Psychology*, *43*, 161-204.

Walker, M., & Vetter, T. (2009). Portraits made to measure. Manipulating social judgments about individuals with a statistical face model. *Journal of Vision*, *9*, 1-13.

Williams, J. E., & Best, D. L. (1990). *Measuring sex stereotypes: A multination study* (Vol. 6). Thousand Oaks, CA: Sage.

Zebrowitz, L., & Montepare, J. M. (2008). Social psychological face perception: Why appearance matters. *Social and Personality Psychology Compass*, *2*, 1497-1517.

Zebrowitz, L., Montepare, J. M., & Lee, H. K. (1993). They don't all look alike: Individuated impressions of other racial groups. *Journal of Personality and Social Psychology*, *65*, 85-101.

Zebrowitz, L., & Rhodes, G. (2004). Sensitivity to "bad genes" and the anomalous face overgeneralization effect: Cue validity, cue utilization, and accuracy in judging intelligence and health. *Journal of Nonverbal Behavior*, *28*, 167-185.

Zebrowitz, L. A., Andreoletti, C., Collins, M. A., Lee, S. Y., & Blumenthal, J. (1998). Bright, bad, babyfaced boys: Appearance stereotypes do not always yield self-fulfilling prophecy effects. *Journal of Personality and Social Psychology*, *75*, 1300-1320.

Zebrowitz, L. A., Fellous, J. -M., Mignault, A., & Andreoletti, C. (2003). Trait impressions as overgeneralized responses to adaptively significant facial qualities: Evidence from connectionist modeling. *Personality and Social Psychology Review*, *7*, 194-215.

Zebrowitz, L. A., Hall, J. A., Murphy, N. A., & Rhodes, G. (2002). Looking smart is looking good: Facial cues to intelligence and their origins. *Personality and Social Psychology Bulletin*, *28*, 238-249.

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