Cross-cultural perception of trustworthiness: The effect of ethnicity features on evaluation of faces' observed trustworthiness across four samples

Béla Birkás[a]*, Milena Dzhelyova[b]*[1], Beatrix Lábadi[c], Tamás Bereczkei[c], David Ian Perrett[b]

[a] Institute of Behavioral Sciences, University of Pécs, Szigeti str. 12, Pécs, 7624, Hungary

[b] School of Psychology and Neuroscience, University of St Andrews, Fife, KY16 9JP,

Scotland, UK

[c] Intistute of Psychology, University of Pécs, Ifjúság str. 6., Pécs, 7624, Hungary

*Corresponding author(s): Béla Birkás PhD, Institute of Behavioral Sciences, University of

Pécs, Szigeti str. 12, Pécs, 7624, Hungary; e-mail: birkasb@gmail.com

Phone: +(36) 72 536 256; Fax: +(36) 72 536 257

Milena Dzhelyova PhD, School of Psychology and Neuroscience, University of St Andrews,

Fife, KY16 9JP, Scotland, UK; e-mail: milena@perceptionlab.com

[1]Present **address:** University of Louvain, Institute of Research in Psychology,

Institute of Neuroscience, 10, Place du Cardinal Mercier, 1348 Louvain-La-Neuve, Belgium

Abstract

People are able to recognize faces from their own ethnic group more easily than faces from other ethnicities. Ethnicity information also easily activates perceptual biases; therefore, the goal of the present study was to examine how ethnicity characteristics affect trustworthiness decisions. We compared the trustworthiness judgments of four samples (two Caucasian and two Asian) to facial images varying along both - trustworthiness level (high, medium and low) and ethnicity (African, Caucasian, South Asian and East Asian). Results showed that trust perception generalized across face ethnicity. More importantly, we found differences in the trustworthiness judgments of other-ethnicity faces between the four samples. Only Caucasian participants showed a bias pro own-ethnicity, especially Hungarian participants when judging medium or low trustworthy looking faces. On contrary, the two Asian samples showed no such bias. Further investigation of the positive own-ethnicity bias suggested that for Hungarian participants, when there are no positive facial expression cues to evaluate, negative ethnicity stereotypes can influence social judgments of faces. Furthermore, this positive bias was highlighted as increased vigilance towards differences in facial cues conveying trustworthiness in other ethnicities coupled with a reduced ability to detect such cues in own-ethnicity faces.

Keywords: trustworthiness; facial ethnicity features; own-ethnicity bias; facial evaluation

1. Introduction

Our face carries information about identity, age, gender and emotional state. Based on such characteristics, others infer behavioral tendencies. Therefore, it is not surprising that face characteristics play an important role in evaluating different personality traits, such as extraversion, emotional stability or amiability (Todorov, Mandisodza, Goren & Hall, 2005; Penton-Voak, Pound, Little & Perrett, 2006). One of the most important attributes we try to glean from appearance is how trustworthy a person is (if he/she is a stranger). Obviously, an individual's welfare and survival may depend on whom to trust or not trust. It has been suggested that participants can identify trustworthiness of pictures of unknown individuals who cheated (were not cooperative) during an earlier experimental game, at a level that is better than chance (Yamagishi, Tanida, Mashima, Shimoma & Kanazawa, 2003; Verplaetse, Vanneste & Braeckman, 2007). This capacity to discriminate between cheaters and cooperators (friend or foe) is argued to be one of the most ancient of evolved mechanisms for interpersonal decision making (Cosmides & Tooby, 1992; Todorov, 2008).

Attributing trustworthiness is a fast and spontaneous process (Todorov, 2008; Dzhelyova, Perrett & Jentzsch, 2012) based mostly on facial appearance and in particular the evaluation of facial expressions (Pessoa, Japee, Sturman, & Ungerleider, 2005; Porter & Woodworth, 2007). During the evaluation of a person's trustworthiness, there is another important feature which affects our judgments – the similarity of that person to us. On meeting a stranger, we consider our common features (e.g. speech, appearance, way of thinking, behavior), and in the case of multiple similarities, positive emotions can arise. For example, urban citizens consider themselves more similar to their friends than to their relatives, when it comes to personality and interests (Kruger, 2003; Pulakos, 1989). Furthermore, the more similar a person is to us, or the more similar we consider that person to be, the more trustworthy we think that person is. This is true even if we have never met him/her before (DeBruine, 2005).

One characteristic of similarity is the membership of the same ethnic group. Cross-cultural research suggests that people recognize unknown faces of their own ethnicity faster and more accurately than faces of other ethnicities (Elfenbein & Ambidi, 2002; Beaupré & Hess, 2003). This phenomenon is known as the 'own-race' or 'same-race' effect (alternatively the 'other-race' effect). Perceivers develop greater expertise in processing and distinguishing between faces belonging to members of their own ethnicity relative to those of other ethnicities (e.g. Hancock & Rhodes, 2008; Heery & Valani, 2010). Ethnicity information also readily activates stereotypes and prejudices which bias social interactions (Stanley, Sokol-Hessner, Banaji, & Phelps, 2011). Recently, in two behavioral studies, researchers demonstrated a robust positive relationship between our evaluation of a stranger's trustworthiness and our implicit bias to his/her social group (Stanley et al., 2011). These effects are thought to reflect experience with other ethnicities. The more often we meet someone, the better we are able to predict his/her reactions and behavior (Carney, Colvin & Hall, 2007; Heery & Valani, 2010). Alternatively, the lack of direct experience and interaction with members of other ethnic groups also affects our impressions about faces in the opposite way.

Collectively, based on these findings, we examined whether ethnic features of the face influence evaluation of trustworthiness. We consider faces of our own ethnicity more similar to us compared to faces of other ethnicities. We therefore hypothesized that participants would rate own-ethnicity faces as more trustworthy than the faces of other ethnicities demonstrating an own-ethnicity bias in judgments of trustworthiness. Furthermore, a more positive perception of own-ethnicity faces can attenuate perceptual differences along features conveying trustworthiness and lead to a worse capacity to differentiate cues from own-ethnicity faces than other-ethnicity faces. Hence one might also hypothesize that the difference between high and low trustworthy faces will be seen as more extreme in other-ethnicity faces. Alternatively, it is also possible that due to increased familiarity with own-

ethnicity faces (mimicking improved recognition rates of own-ethnicity faces), participants will be able to detect subtle changes in trustworthiness easier in own-ethnicity faces. Yet, it is also possible that judgments of trustworthiness are based on universal features, which are not influenced by other facial characteristics such as ethnicity. Under this alternative hypothesis, trustworthy-looking faces should be rated more positively than neutral or untrustworthy faces, independently of the ethnicity.

We devised an online experiment in which we constructed faces of different ethnicities (African, East Asian, South Asian) from Caucasian faces varying along the trustworthiness continuum (low, medium and high trustworthy). Thus, the face shape cues to trustworthiness were equated across the different face ethnicities. We tested two Caucasian samples, one from the USA and one from Hungary, and two Asian samples: East and South, in order to examine possible cultural differences between the groups. We suggest that since Hungarian participants have less direct experience with other ethnicities, their judgments will be affected to a greater extent by an own-ethnicity bias than the judgments of the other three samples.

2. Method

2.1. Participants

Two hundred and sixty-six participants rated the faces, USA Caucasian sample: 66 (50 female; mean age = 31.95, SD = 11.93), Hungarian Caucasian sample: 78 (55 female; mean age = 28.76; SD = 8.16), East Asian sample: 61 (53 female; mean age = 26.94, SD = 10.13) and South Asian sample: 61 (45 female; mean age = 27.72, SD = 9.54.93) people. All participants provided informed consent before completing the online study and completed a demographic questionnaire about their ethnic group and country of origin. More than half of the participants in the East and South Asian samples indicated to be born in America (36.07%

and 45.9%, respectively) or in other West European country (18.03% and 9.84%, respectively).

2.2. Stimuli

To create the experimental stimuli, in a pilot study, 205 Hungarian participants (mean age = 27.65; *SD* = 8.94) were asked to evaluate the level of trustworthiness of 50 (most trustworthy and the least trustworthy versions of the 25 identities) from the original 175 faces (25 identities x 7 levels of trustworthiness) of Oosterhof and Todorov (2008) face-database of images with varying trustworthiness. Taking results of behavioral studies and computer modeling as a basis, Oosterhof and Todorov (2008) developed a 2D model of face evaluation. Their findings suggested that face evaluation is based on two dimensions: dominance and valence. The latter, valence evaluation, is an overgeneralization of the perception of emotional cues, signaling whether to approach or avoid a person. Making the faces look more positive and friendly increases trustworthiness, whereas making the faces appear more negative and hostile lowers trustworthiness. Evaluation of dominance is related to the perception of facial cues signaling the level of physical strength of the person.

Based on the pilot results, one identity with average ratings for the least and the most trustworthy face version was selected. For experimental stimuli, the three levels of trustworthiness (high, medium and low trustworthy) for this starting face identity were selected from Oosterhof and Todorov's FaceGen database. Using FaceGen Modeller 3.2 (Singular Inversions Inc., 2007, http://www.facegen.com.), we constructed African, South Asian and East Asian face versions derived from the original three Caucasian faces differing in trustworthiness (see Figure 1.A). This resulted in 12 pictures: high, medium and low trustworthy in four different ethnicity versions (African, South Asian, East Asian and

Caucasian) (see Figure 1. B). The facial images were cropped so that the inner facial features were more salient.

Figure 1 A and B about here

2.3. Procedure

Participants rated the trustworthiness of the faces on a 7-point Likert scale (1 = not at all trustworthy; 7 = very/extremely trustworthy) except for the participants in the Hungarian sample who used a 6-point scale (1 = not at all trustworthy; 6 = very/extremely trustworthy). Individual faces were randomly presented.

3. Results

The experimental analysis employed a 4 x 3 ANOVA, with ethnicity of target faces (African, South Asian, East Asian or Caucasian) and trustworthiness of target face (high, medium and low trustworthiness) as within-subject factors. This analysis was performed separately for each sample. Greenhouse-Geisser corrections were applied when assumption of sphericity was violated. Follow-up comparisons of means were performed with Bonferroni corrections.

3.1 Evaluations of trustworthiness

As predicted, the ANOVA revealed that the trustworthiness of target face influenced the ratings for all samples (USA sample: $F(1.65, 107.15) = 105.03$, $p < .0001$; $\eta_p^2 = 0.62$; Hungarian sample: $F(1.57, 121.04) = 179.70$, $p < .0001$, $\eta_p^2 = 0.70$; East Asian sample: $F(1.49, 89.59) = 55.59$, $p<0.0001$, $\eta_p^2 = .48$ and South Asian sample: $F(1.73, 103.82) = 61.14$, $p <.0001$; $\eta_p^2 =.51$), indicating that the high trustworthy faces were judged to be more

trustworthy than medium trustworthy faces (all $ps < .0001$) and low trustworthy (all $ps < .0001$). Faces constructed from the low trustworthy Caucasian face were rated as less trustworthy than medium trustworthy faces (all $ps < .001$, see Figure 2).

3.2. Own-ethnicity effect and trustworthiness

A main effect of ethnicity of target face provided some supportive evidence for positive own-ethnicity bias in the two Caucasian samples: USA sample: $F(3, 195) = 15.83$, $p < .0001$, $\eta_p^2 = .20$; Hungarian sample: $F(2.58, 198.33) = 14.89$, $p < .0001$, $\eta_p^2 = .16$. Post hoc comparison suggested that, irrespectively of trustworthiness transform level, Hungarian participants rated the Caucasian faces as the most trustworthy ($ps < .0001$). Similarly, the USA participants rated the Caucasian faces as more trustworthy than South Asian faces ($ps < .012$) but no difference was found when compared to East Asian faces ($p = .46$). In contrast, USA participants rated the African faces as most trustworthy ($ps < .012$).

The main effect of ethnicity of target face was also significant for the East Asian sample: $F(3, 180) = 9.27$, $p < .0001$, $\eta_p^2 = .13$ and the South Asian sample: $F(3, 180) = 11.23$, $p < .0001$, $\eta_p^2 = .16$., although this effect provided no evidence of a positive own-ethnicity bias. Similarly to the USA sample, those participants gave higher ratings of trustworthiness to African faces as compared to East ($ps \leq .016$) and South ($ps < .0001$) Asian faces. Caucasian faces ranked second in trustworthiness and were perceived as more trustworthy than West Asian faces ($p = .004$ for the West Asian sample and $p = .054$ for the East Asian sample).

3.3. Interactions between ethnicity and trustworthiness

The 2-way interaction between ethnicity of target faces and trustworthiness of target face was significant in the Hungarian sample: $F(5.21, 400.83) = 7.22$, $p < .0001$, $\eta_p^2 = .09$, but not in any of the other samples: USA sample: $F(6, 390) = 1.23$, $p = .29$; East Asian sample: $F(4.82,$

289.46) = 1.66, p =.15 and South Asian sample: $F(4.89, 293.66) = 1.11$, p =.35 To follow up the 2-way interaction in the Hungarian sample, three ANOVAs for each level of trustworthiness (high, medium and low) were performed. Ethnicity had no effect on the trustworthiness ratings for faces with high trustworthiness, $F(2.65, 203.46) = 1.82$, $p = .14$, $\eta_p^2 = .02$, but had an effect on the trustworthiness ratings for medium $F(3, 231) = 11.43$, $p <$ .0001, $\eta_p^2 = .13$, and low trustworthiness faces, $F(3, 231) = 16.30$, $p < .0001$, $\eta_p^2 = .18$. For the low trustworthy faces, Caucasian faces were rated as significantly more trustworthy than any other ethnic group, African, East Asian and South Asian (all ps $< .0001$). African faces were also rated as less trustworthy than East Asian and South Asian faces (ps $< .001$). For the medium trustworthy faces, Hungarian participants evaluated Caucasian faces as more trustworthy than South Asian and East Asian (both ps $\leq .002$) but only a trend was found between African and Caucasian faces ($p = .08$). African faces were rated as more trustworthy than East Asian faces ($p = .01$) (see Figure 2).

Figure 2. about here

3.4 The own-race bias

To address further the positive own-ethnicity bias to facial cues conveying trustworthiness difference scores between the three levels of trustworthiness for each facial ethnicity were calculated. We conducted ANOVAs with factor ethnicity of target face (African, South Asian, East Asian or Caucasian) for each of the different scores for all four samples (USA, Hungarian, East Asian and South Asian).

3.4.1 Difference between ratings for high and low trustworthiness faces

Ethnicity of target face did not have an impact on the difference scores between high and low trustworthy faces for the USA sample, $F(3,195) = .36$, $p =.78$; East Asian sample, $F(3,180) =1.99$, $p =.12$ and South Asian samples, $F(3,180) =.45$, $p =.72$. On contrary, Hungarian participants were influenced by the ethnicity of the target face, $F(3,231) =7.20$, $p <.0001$, $\eta_p^2 = .09$. This effect was due to the fact that the difference between high and low trustworthy faces was smallest for the Caucasian faces ($ps \leq .006$).

3.4.2 Difference between ratings for high and medium trustworthiness faces

Ethnicity of target face did not impact on the difference scores between high and medium trustworthy face faces for the USA sample, $F(3,195) = 1.87$, $p=.14$; East Asian sample, $F(3,180) =.72$, $p =.54$ and South Asian samples, $F(3,180) = 1.17$, $p =.32$. Again, Hungarian participants were influenced by the ethnicity of the target face, $F(3,231) =7.94$, $p <.0001$, $\eta_p^2 = .09$. The difference between high and medium trustworthy Caucasian faces was smaller than the difference between high and medium trustworthy East and South Asian faces ($p \leq .032$) but did not differ from the difference between high and medium trustworthy African faces ($p=.99$). Furthermore, the latter were rated more similarly than East Asian ($p=.01$) and West Asian ($p=.052$).

3.4.3 Difference between ratings for medium and low trustworthiness faces

Ethnicity of target face did not impact on the difference scores between medium and low trustworthy faces for the USA sample, $F(3,195) = 1.47$, $p=.23$; East Asian sample, $F(3,180) =2.48$, $p =.063$ and South Asian samples, $F(3,180) = 1.84$, $p =.14$. Similarly to the other two difference scores, Hungarian participants were influenced by the ethnicity of the target face, $F(3,231) =6.70$, $p <.0001$, $\eta_p^2 = .08$. This effect was driven by a much bigger difference between these two levels of trustworthiness for the African faces compared to faces from the other ethnicities ($ps \leq .046$).

4. Discussion

In this study, we investigated the effect of facial configuration and ethnicity on the attributions of trustworthiness. We compared four samples, Hungarian, American, East and South Asian in their evaluation of this trait for faces of four ethnicities: Caucasian, African, East and South Asian. Participants detected the level of trustworthiness in the same way across all four ethnicities. Additionally, Caucasian participants demonstrated a bias for 'own-ethnicity' faces in evaluation of trustworthiness, although, the American sample exhibited an additional positive bias to African faces, rating them as most trustworthy of all. The own-ethnicity bias was especially evident for the Hungarian sample during evaluation of medium and low trustworthy faces. Interestingly, East and South Asian participants showed no evidence of own-ethnicity bias and rated faces from other ethnicities (Caucasian and African) as more trustworthy. Further exploring the own-ethnicity bias showed no evidence supporting the hypothesis that greater expertise with own-ethnicity face will increase the ability to better distinguish trustworthiness features in own-ethnicity faces. On contrary, the results provide some evidence that the positive bias towards own ethnicity is highlighted as a worse ability to detect subtle cues conveying trustworthiness in own-ethnicity faces and/or an exaggerated perception of such cues in other-ethnicity faces.

In accordance with our predictions that trustworthiness cues might not depend on ethnicity, participants were able to utilize the face shape cues to detect the level of trustworthiness of target faces irrespective of ethnicity characteristics. The rank order of ratings for the three levels of the trustworthiness transform in the Caucasian faces was consistent with the study of Oosterhof and Todorov (2008) and was replicated here in East Asian, African and South Asian ethnicity versions of the faces. Our data confirm that trustworthiness is a well detected – perhaps universal – facial attribute that influences our social judgments, independent of ethnic characteristics. This finding is particularly interesting because perceived

trustworthiness affects our interpersonal attitudes, despite the uncertainty about the validity of trust judgments (e.g. Rule, Krendl, Ivcevic & Ambady, 2013 but see Stirrat & Perrett, 2010).

Only Caucasian participants showed evidence of own-ethnicity bias in perception of trustworthiness. Hungarian participants rated Caucasian faces as more trustworthy than other-ethnicity versions. Similarly, the USA sample perceived also Caucasian faces as more trustworthy than West Asian faces. Yet, African faces were perceived as most trustworthy by the USA sample. Since the African faces were positively evaluated by participants in the other samples (including the two Asian samples), the negative evaluation given by Hungarian participants of the same face stimuli suggests that there are cultural differences in stereotypes.

One possibility is that the results reflect experience with other ethnicities. Increased experience with other ethnicities, decreases the 'other-race' effects (Carney et al., 2007; Hancock & Rhodes 2008; Heery & Valani, 2010) including the bias to perceive own ethnicity more positively. Intergroup interactions are prevalent in daily life within the USA as minority ethnicities comprise about 36% of the total population (United States Census Bureau, 2010). These interactions can elevate the familiarity with other ethnicities and thus their positive evaluation. It is likely that Hungarian participants have less interpersonal contact with people from other cultures, compared to participants from the USA. This idea is supported by demographic data. In Hungary, East Asians, South Asians and Africans constitute 0.2%, 0.06% 0.02% of the total population, respectively (Hungarian Central Statistical Office, 2011). By contrast, in the USA, Africans and East Asians constitute 12.6% and 4.5 % of the total population (United States Census Bureau, 2011). There is a caveat in this interpretation as South Asian faces can also be perceived as Roma faces. This ethnicity is more represented in the Hungarian population (about 3%, Hungarian Central Statistical Office, 2011), yet its percentage is also relatively small to lead to more frequent interactions and thus an increased positive perception of this ethnicity.

An alternative or additional possibility is that the USA sample "overcompensated" when judging trustworthiness and provided higher ratings for African faces. Expression of stereotypes and prejudice can be socially stigmatized in the United States, thus USA participants may have overcompensated for this in their evaluations to avoid being judge as prejudiced. Overcompensation has been previously reported in emotional suppression towards stereotyped groups (Burns, Isbell & Tyler, 2008); in an evaluation of Black political candidates (Colleau et al., 1990; Moskowitz & Stroh, 1994) or in reports of health care (Chakraborty & McKenzie, 2002).

Although we have not measured explicitly overcompensation, this interpretation is consistent with the data from the other two Asian samples, which showed no effect of own-ethnicity bias. In fact, similarly to the USA Caucasian sample, they rated as more trustworthy African and Caucasian than East and South Asian faces. Yet, many of the respondents in these samples were, indeed, born in USA or West European countries and could have adopted the social norms in these western societies. Furthermore, in line with our previous interpretation, South and East Asian participants may have had more experience with other ethnicities and thus evaluate faces from those ethnicities more positively. The elevated positive perception of Caucasian and African faces by the East and West Asian participants is intriguing considering the fact that the facial stimuli were created by varying only the ethnic features of the face (chiefly by changing skin pigmentation, although face-shape and configuration were also modified). It is unlikely that Caucasian and African faces benefited more from the trustworthiness manipulation than faces from the other two ethnic groups. Additionally, the Hungarian participants did not demonstrate this positive bias towards the African faces. Thus, our results of no own-ethnicity bias in the Asian samples should not be taken as absolute evidence of no ethnicity bias in those ethnicities. They only suggest that factors other than ethnicity can impact on trustworthiness perception. The latter finding opens venue for further assessment of perception of trustworthiness across ethnicities in samples that have limited contact with other ethnicities.

Perhaps of more interest, our last finding regarding own-ethnicity bias suggest that Hungarian participants' ratings were influenced by the ethnicity features of the faces, particularly when judging low and medium trustworthy faces. Judgments for medium trustworthiness faces are difficult to make since there is little emotional expression to drive socially desirable or undesirable attributions. The negative affect is easy to detect in the low trustworthiness transformed faces, so judgments are relatively easy and likely to be unfavorable. Hence, the ethnic biases for the Hungarian sample appear to be least prevalent when facial demeanor is positive and most dominant when demeanor is neutral or negative. Furthermore, the additional investigation of the own-ethnicity bias suggested that Hungarian participants demonstrated worse ability to perceive subtle differences in trustworthiness in Caucasian faces and yet, they were more vigilant to cues conveying trustworthiness in other ethnicity especially for untrustworthy looking faces. These results complement findings where personal information is more salient for out-group members than for in-group members when trustworthiness is judged (Tanis & Postmes, 2005).

Summing up, our findings indicate that trustworthiness and ethnicity are two facial characteristics that impact on social judgments, suggesting that our expectations and opinions influence the economical and social decisions we take. They hint that complex processes are taking place when trustworthiness is judged which has important implications for social attributions.

References

Beaupré, M. G. & Hess, U. (2003): In my mind, we all smile: A case of in-group favoritism. *Journal of Experimental Social Psychology*, *39*(4) 371–377.

Burns, K.C., Isbell, L.M. and Tyler, J.M. (2008). Suppressing emotions toward stereotyped targets: The impact on willingness to engage in contact. *Social Cognition, 26*, 276-287.

Carney, D. R., Colvin, C. R. & Hall, J. A. (2007): A thin slice perspective on the accuracy of first impressions. *Journal of Research in Personality, 41*, 1054–1072.

Chakraborty, A. and McKenzie, K. (2002). Psychiatrists' perspective is insufficient to root out racism, *British Medical Journal, 324,* 613.2

Colleau, S.M., Glynn, K., Lybrand, S., Merelman, R.M., and Mohan, P. (1990). Symbolic racism in candidate evaluation: An experiment. *Political Behavior, 12*, 385-402.

Cosmides, L. & Tooby, J. (1992): Cognitive adaptations for social exchange. In: Barkow, J.H., Cosmides, L. & Tooby, J. (eds.): *The Adapted Mind: Evolutionary Psychology and the Generation of Culture.* Oxford: Oxford University Press, 163–228.

DeBruine, L. M. (2005): Trustworthy but not lust-worthy: Context-specific effects of facial resemblance. *Proceedings of the Royal Society of London* 272, 919–922.

Dzhelyova, M., Perrett, D. I. & Jentzsch, I. (2012): Temporal dynamics of trustworthiness perception. *Brain Research, 1435*, 81–90.

Elfenbein, H. A. & Ambidi, N. (2002): On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin*, *128,* 203–235.

Hancock, K. J. & Rhodes, G. (2008). Contact, configural coding and the other-race effect in face recognition. *British Journal of Psychology, 99*(1), 45–56.

Heery, E. A. & Valani, H. (2010). Implicit learning of social predictions. *Journal of Experimental and Social Psychology, 46*, 577–581.

Kruger, D. K. (2003): Evolution and altruism: Combining psychological mediators with naturally selected tendencies. *Evolution and Human Behavior, 24*, 118–125.

Moskowitz, D. & Stroh, P. (1994). Psychological sources of electoral racism, *Political Psychology, 15*, 307-329.

Oosterhof, N. N. & Todorov, A. (2008): The functional basis of face evaluation. *Proceedings of the National Academy of Sciences of the United States of America, 105,* 11087–11092.

Penton-Voak, I., Pound, N., Little, A. & Perrett, D. (2006): Personality judgements from natural and composite facial images: More evidence for a "kernel of truth" on social perception. *Social Cognition, 24*, 607–640.

Pessoa, L., Japee, S., Sturman, D. & Ungerleider, L.G. (2005): Target visibility and visual awareness modulate amygdala responses to fearful faces. *Cerebral Cortex, 16,* 366–375.

Porter, S. & Woodworth, M. (2007): "I'm sorry I did it…but he started it.": A comparison of the official and self-reported homicide descriptions of psychopaths and non-psychopaths. *Law and Human Behavior, 31*, 91–107.

Pulakos, J. (1989): Young adult relationships: Siblings and friends. *Journal of Psychology, 123*, 237–244.

Rule, N., Krendl, A., Ivcevic, Z. & Ambady, N. (2013): Accuracy and consensus in judgments of trustworthiness from faces: behavioral and neural correlates. *Journal of Personality and Social Psychology, 104,* 409–426.

Stanley, D., Sokol-Hessner, P., Banaji, M. & Phelps, E. (2011): Implicit race attitudes predict trustworthiness and economic trust decisions. *Proceedings of the National Academy of Sciences of the United States of America*, *108*(19), 7710–7715 doi: 10.1073/pnas.1014345108.

Stirrat, M. & Perrett, D. I. (2010). Valid facial cues to cooperation and trust: male facial width and trustworthiness. *Psychological Science, 21*, 349–354.

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

Tanis, M., & Postmes, T. (2005). A social identity approach to trust: interpersonal perception, group membership and trusting behaviour. *European Journal of Social Psychology*, 35(3), 413-424. doi:10.1002/ejsp.256

Todorov, A. (2008): Evaluating faces on trustworthiness. An extension of systems for recognition of emotions signaling approach/avoidance behaviors. *Annals of the New York Academy of Sciences 1124*, 208–224.

Verplaeste, J., Vanneste, S. & Braeckman, J. (2007): You can judge the book by its cover: the sequel. A kernel truth in predictive cheating detection. *Evolution and Human Behavior, 28*, 260–271.

Yamagishi, T., Tanida, S., Mashima, R., Shimoma, E. & Kanazawa, S. (2003): You can judge a book by its cover. Evidence that cheaters may look different from cooperators. *Evolution and Human Behavior, 24,* 290–301.

Web references

Hungarian Central Statistical Office (2011): Population Census 2011

http://www.ksh.hu/nepszamlalas/?lang= en (last access: 20.04.2013.)

United States Census Bureau (2011): Current Population Survey.

http://www.census.gov/population/race/ (last access: 24.04.2013)

United States Census Bureau (2010): Overview of race and Hispanic origin: 2010.

<http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf> (last access:

24.04.2013).

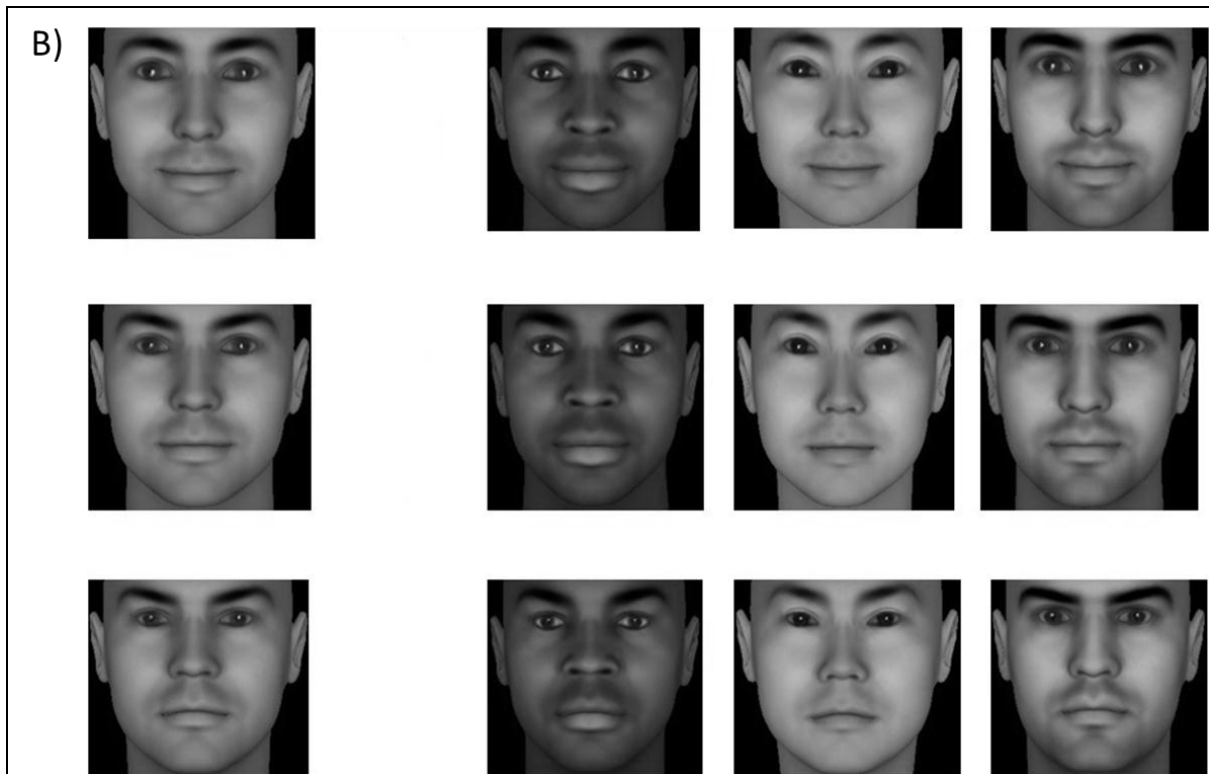FIGURES AND CAPTIONS

Figure 1 A & B
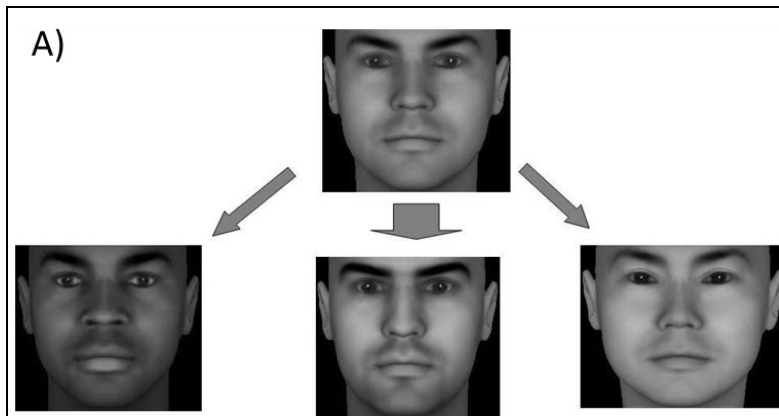
Figure 1. (A) The original Caucasian face from Oosterhof & Todorov's database (first row), and different ethnic versions: African, South Asian and East Asian (second row: left; middle; right). (B) Different trustworthiness levels (first row: trustworthy; second row: medium trustworthy; third row: untrustworthy) for all ethnicities (first column: Caucasian; second column: African; third column: East Asian; fourth column: South Asian).
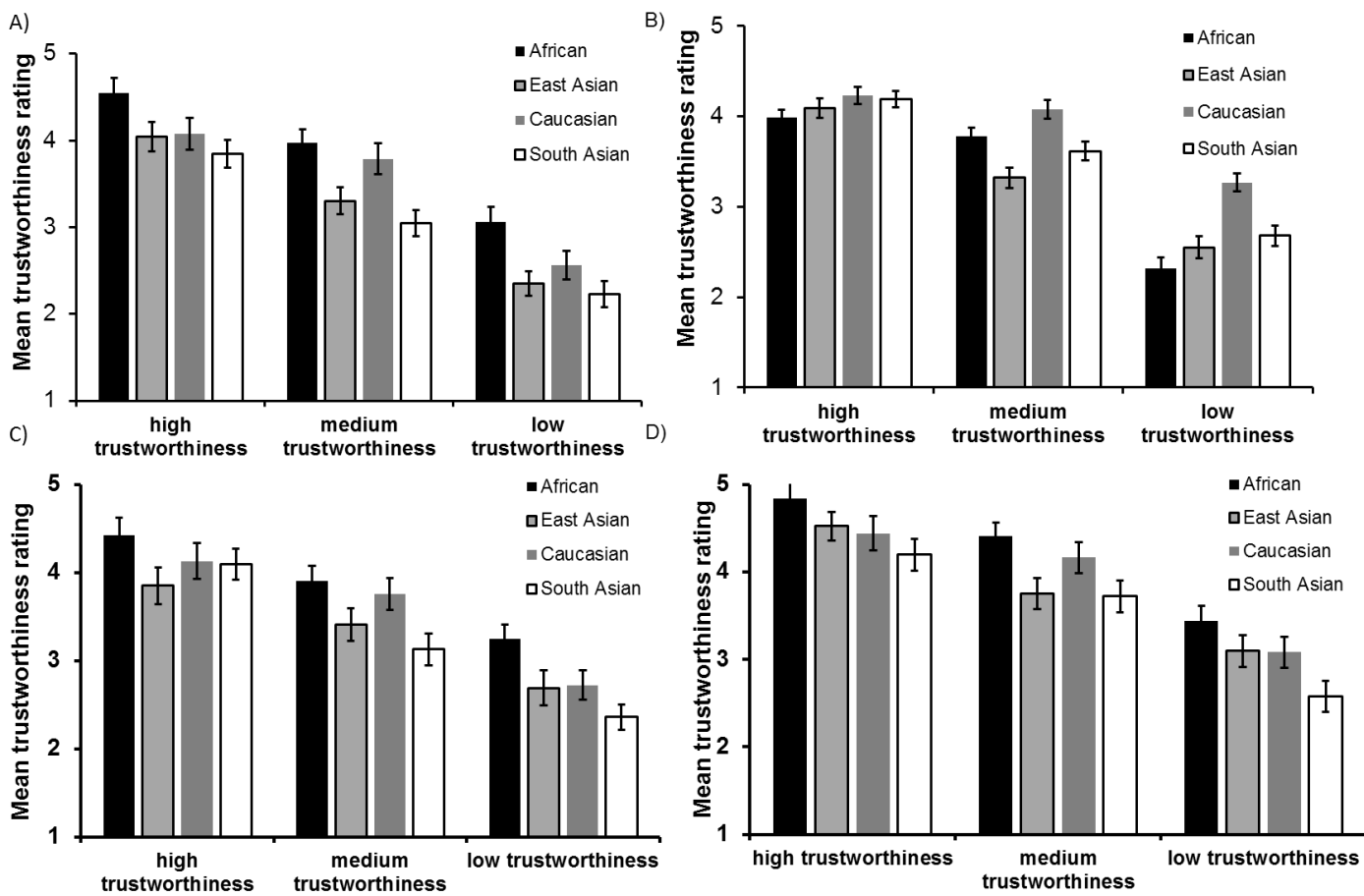
Figure 2. A & B.

Figure 2. Differences in mean ratings between the four samples: (A) Hungarian, (B) USA, (C) East Asian and (D) South Asian.