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SEX DIFFERENCES IN HUMAN FACE ATTRACTIVENESS AND INTELLIGENCE ASSESSMENT

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ABSTRACT

The perception of human face attractiveness and intelligence has been studied from various points of view. This study concentrates on questions whether we take into account the intelligence of the face when we assess its attractiveness and whether this assessment is different according to sex of the human face as well as the sex of the observer. It also analyses the ability to perceive and asses the intelligence from the features of the human face and sex differences in this task.
Subjects were 416 participants (285 females) with the mean age 21,47 years (St.dev.=6,5) all European race. They assessed three female and three male faces according to their attractiveness and intelligence, while these three faces represented three different levels (low, middle and high) of intelligence manifesting in face features.
Result show that the most intelligent female face is universally (in men and women, too) considered as the prettiest: Also, men and women are similarly right when assigning the most intelligent female face. Differences were found in male face assessment; both – men and women - did not clearly differ between middle and high intelligent male face in attractiveness nor in the intelligence assessment task.
Results are discussed within the evolutionary explanations of the intelligence as a marker for "good gens" representing resourcefulness of woman, while for men also the other components of this characteristic (e.g. social status, dominance etc.) may play bigger role.

General Terms
Psychology, Perception, Human Face

Keywords: face perception and assessment, attractiveness, intelligence, sex differences

1. INTRODUCTION

The connection of human face attractiveness and intelligence has been the problem studied mainly within the social psychology. The halo effect (Tavel, 2008) explains the common tendency to evaluate pretty faces as intelligent, too. During the last decades, cognitive scientists, anthropologists, psychologists, philosophers, aestheticians etc. provide more relevant information on the way how faces are perceived.

The assessment of the attractiveness of the human face is connected with various characteristics (for complex review see Perrett, 2010). Researchers report, that the symmetry (Rhodes, Roberts, and Simmons, 1999; Zaidel and Hessamian, 2010), mediocrity or average (Langlois, Roggman, and Musselman, 1994), race (Kramer, Jones, and Sharma, 2013), sex (Perrett, 2010), emotional expression (Golle, Mast, and Lombmaier, 2014; Rubenstein, 2005), age (Mckelvie, 1993), presence of typical fe/male features (Rhodes, Hickford, and Jeffrey, 2000; Little and Hancock, 2002), skin characteristics (Fink, Bunse, Matts, and D´Emiliano, 2012), hair

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(Saegusa, Intoy, and Shimojo, 2015) play the critical role in attractiveness of observed faces as well as sexual orientation (Brewster, Mullin, Dobrin, and Steeves, 2011), age (Foos and Clark, 2011) or the alcohol consumption (Jones, Jones, Thomas, and Piper, 2003; Egan and Cordan, 2009; Lyvers, Cholakians, Puorro, and Sundram, 2011) on the side of the observer.

It is evident, that pretty faces are commonly assessed as intelligent. However, except the halo effect there are also other explanations for the existence of attractiveness-intelligence correlation. It seems that intelligence as well as facial attractiveness are the signs of overall fitness of the organism. Mutual occurrence of these two characteristics in subjects can be the outcome of evolutionary mechanisms. Attractive face is a reliable indicator for good health and fecundity (Thornhill and Grammer, 1999). It is also suggested that attractiveness together with intelligence indicate "good genes" (Miller, 2000; Prokosch, Yeo, and Miller, 2005).This evolutionaryexplanation can be supported by the results of the researches on large populations that prove the strong and statistically significantassociation betweengeneralintelligenceand attractiveness(Kanazawa, 2011).

2. PROBLEM

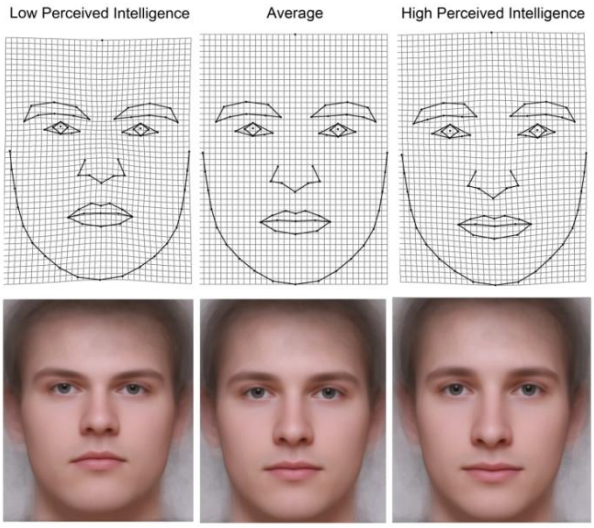
According to scientific findings, there is a correlation between intelligence and attractiveness of the human face. However, the question is, whether we consider the faces that are perceived as intelligent also as attractive and whether this connection is interfered by some other characteristics (e.g. sex of the observer or sex of the face. The aim of this pilot study is to answer some of these questions.

Do we consider the most intelligent face as the most attractive?
Are we able to detect intelligent faces correctly?

3. METHOD

For the evaluation of the intelligence in human face, the stimuli made by Kleisner, Charvatova, and Flegr (2014) were used (see picture 1& 2). Three photographs of male and three photographs of female faces represented three levels of intelligence.

Picture 1. Male face composites representing three levels of intelligence (Source: Kleisner, Charvatova, and Flegr, 2014)



Basically, "faces that garner a higher attribution of intelligence show overall dilations of TPS deformation grid in the area between the eyes and mouth. Further grid deformations cover the distance between the eyebrows, an enlargement at the root of the nose, and a markedly prolonged nose. The area of the chin tends to be constricted. By contrast, faces with a lower attribution of intelligence are characterized by constriction in the area between the mouth and eyes, eyebrows closer to each other, the base of the nose is rather narrowed, the nose is shorter, and the area of the chin is strongly dilated" (Kleisner, Charvatova, and Flegr, 2014).

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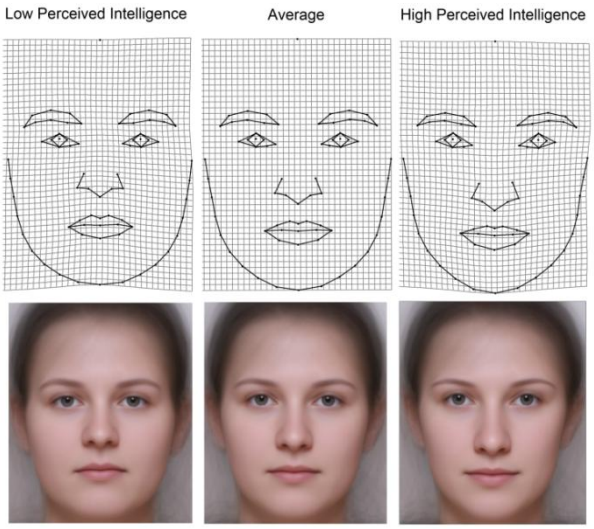
Picture 2. Female face composites representing three levels of intelligence (Source: Kleisner, Charvatova, and Flegr, 2014)



For our purposes the photographs composites (without the upper schematic drawings) were used. Photographs were placed at various places in the test battery that obtained also other tasks (several questionnaires, IQ tests, faces composites referring to dominance/submissivity, extroversion/introversion, masculinity/femininity of both sexes,... etc.) in order to prevent possible comparison with previous ratings. Subjects were asked to mark one of the three female faces which they consider as the prettiest, then (after other tasks) to mark the prettiest face from male composites, later on (again after other tasks) to mark the most intelligent-looking female face and on the end (again after another set of questions) to choose the most intelligent-looking male face.

4. SUBJECTS

Subjects were 416 participants, from which 285 (68,5%) were female. The mean age was 21,47 years (St.dev.=6,5 with minimum 17 and maximum 67 years of age). All participants declared their belonging to European race and enrolled the research on the voluntary basis.

5. RESULTS

5.1 Do we consider the most intelligent face as the most attractive?

Female face
Participants fulfilled the task to choose the prettiest female face from the three composites. They were blind to the fact the composites represent the three levels of intelligence as Kleisner, Charvatova, and Flegr (2014) stated. The table 1 shows the frequencies of choices.

Table 1. Frequency of choices for the prettiest female face

Choice of the female face composite:	N	%
low level of intelligence	16	3,8
middle level of intelligence	87	20,9
high level of intelligence	313	75,2

Intelligent female face is in the majority of subjects (75,2%) considered as the prettiest while the less intelligentfemale face is prettiest only for 3,8% of the sample. Chi-Square Test (Table 2) showed that the most intelligent female face has been rated as the most attractive significantly more often than the less intelligent as well as the middle intelligent one.

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Table 2. Differences in choices of the most attractive female face between the levels of intelligence present in faces

	female face intelligence			
	low	high	middle	high
Observed N	16	313	87	313
Expected N	164,5	164,5	200	200
Residual	-148,5	148,5	-113,0	113,0
Chi-Square	268,112		127,690	
Asymp. sig.	0,000		0,000	

There were no statistically significant differences in choices of the prettiest female face between men and women in the sample (Cramer´s V=0,072; sig.=0,767) as well as between the groups of subjects referring to their sexual orientation (Cramer´s V=0,064; sig.=0,344).

Male face

Similar results considering the choice of the most attractive face composite were gained from assessment of male face (Table 3).

Table 3. Frequency of choices for the prettiest male face

Choice of the male face composite:	N	%
low level of intelligence	30	7,2
middle level of intelligence	176	42,5
high level of intelligence	210	50,5

The biggest number (N=210) of participants rated as the prettiest the most intelligent male face. However, this preference has not been so strong (only 50,5%) as in female faces. 42,3 % of participants considered the middle intelligent male face composite and 7,2% (N=30) the lowest intelligent male face composite as the prettiest.

Table 4. Differences in choices of the most attractive male face between the levels of intelligence present in faces

	Level of male face intelligence:			
	low	high	middle	high
Observed N	30	210	176	210
Expected N	120,0	120,0	193,0	193,0
Residual	-90,0	90,0	-17,0	17,0
Chi-Square	135,00		2,995	
Asymp. sig.	0,000		0,084	

It is obvious that the difference in attractiveness of the middle intelligent and the high intelligent face is not so strong in male faces and is also not statistically significant (Table 4) as we have spotted in female faces.

It seems that subjects differ in evaluation of the attractiveness based on intelligence in male and in female faces.

While the choice of the most attractive female face significantly points to the most intelligent face, in male faces the difference in attractiveness between middle and high intelligent face is not so obvious and significant. This result is valid for male participants as well as for female ones, because after the splitting the sample according to sex we found no significant differences in numbers of choices in the most attractive male face between middle and high intelligent male face in males (Chi-Square=0,217; Asymp. sig.=0,641) neither in females (Chi-Square=3,103; Asymp. sig.=0,078).

The differences between the choices of the prettiest female and prettiest male face are obvious even when we compare these choices one to another (Table 5).

Table 5. Differences between the choices of the prettiest female and prettiest male face composites

	Male vs. female face – ranks:			
	Negative	Positive	Ties	Total
N	153[a]	45[b]	218[c]	416
Mean Rank	98,00	104,6		
Sum of Ranks	14994,0	4707,0		

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Z (based on positive ranks)	-6,976	
Asymp. sig. (2-tailed)	0,000	

Notes:
a. intelligence in the prettiest male face < intelligence in the prettiest female face
b. intelligence in the prettiest male face > intelligence in the prettiest female face
c. intelligence in the prettiest male face = intelligence in the prettiest female face

Nonparametric Wilcoxon Signed Rank test showed that only 218 subjects (52,4% of the sample) considered the same level of intelligence present in the face composites when assessing the attractiveness of male and when assessing the female face. In 153 cases (38,78% of the sample) the prettiest male face had lower intelligence as the female face.

5.2 Are we able to detect intelligent faces correctly?

Female face

On other place of the questionnaire, respondents were asked do guess which female face from the three composites is the most intelligent. This task enabled us to test the capability of subjects to evaluate the intelligence from the human face appearance.

Table 6. Frequency of choices for the most intelligent female face

Choice of the female face composite:	N	%
low level of intelligence	51	12,3
middle level of intelligence	131	31,5
high level of intelligence	234	56,2

There is a clear tendency of growing number of choices with the growing level of intelligence presented in female faces. The differences in choices of the most intelligent female face between the levels of intelligence present in faces are statistically significant (Table 7).Similarly as within the choice of the most attractive female face, subsets significantly often choose the most intelligent face as intelligent according to their opinion, therefore we can assume, that people are able to detect intelligence from the female face features correctly. This result is valid for both sexes; males and females do not differ significantly in this tendency (Cramer´s V=0,031; sig.=0,818).

Table 7. Differences in choices of the most intelligent female face between the levels of intelligence present in faces

	female face intelligence			
	low	high	Middle	high
Observed N	51	234	131	234
Expected N	142,5	142,5	182,5	182,5
Residual	-91,5	91,5	-51,5	51,5
Chi-Square	117,505		29,066	
Asymp. sig.	0,000		0,000	

On the other hand when we compare the choices for the most attractive (Table 1) and for the most intelligent (Table 6) female face, they significantly differ. When subjects are asked to choose the most attractive face, they significantly more often choose the most intelligent face as in cases when they are asked to guess which face is the most intelligent.

Table 8. Comparison of the task to choose the most attractive and the most intelligent female face

attractive vs. intelligent female face – ranks:				
	Negative	Positive	Ties	Total
N	138[a]	57[b]	221[c]	416
Mean Rank	103,93	83,63		
Sum of Ranks	14343,0	4767,0		
Z (based on positive ranks)	-6,502			
Asymp. sig. (2-tailed)	0,000			

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Notes:
a. level of intelligence within assessment task < level of intelligence within attractiveness task
b. level of intelligence within assessment task > level of intelligence within attractiveness task
c. level of intelligence within assessment task = level of intelligence within attractiveness task

Intelligence seems to be strongly present in the assessment of attractiveness, however, when it should be detected in the female faces, the task is more complicated and subjects make more errors. The Wilcoxon test showed (Table 8) that the biggest number of participants (N=221; 53,13%) rated the most attractive female face equally as the most intelligent face. Just in 13,70% (N=57) of cases subjects evaluated the most attractive face with the lower level if intelligence as when they assessed the level of intelligence. Bigger part of the sample (33,17%; N=138) considered as the most attractive female face the composite that obtained higher intelligence level as when they assessed the most intelligent face.

Male face
When the results from the male face were analysed, the similar outcomes as in the assessment of attractiveness of the male face occurred. The most frequently chosen male face assigned as most intelligent was the one with the most pregnant features of intelligence(Table 9), however the difference in assessment of intelligence between middle and high intelligent male face is (again) not significant (Chi-Square= 2,738; Asymp. sig.=0,098).

Table 9. Frequency of choices for the most intelligent male face

Choice of the male face composite:	N	%
low level of intelligence	42	10,1
middle level of intelligence	171	41,1
high level of intelligence	203	48,8

This result is valid for male participants as well as for female ones, because after the splitting the sample according to sex we found no significant differences in numbers of choices in the most intelligent male face between middle and high intelligent male face in males (Chi-Square=0,081; Asymp. sig.=0,776) neither in females (Chi-Square=3,198; Asymp. sig.=0,074). Also, there are no sex differences in the frequency of intelligence assessment between the middle and high intelligent male face (Cramer´s V= 0,038sig.=0,460).

Table 10. Comparison of the task to choose the most attractive and the most intelligent male face

attractive vs. intelligent female face – ranks:				
	Negative	Positive	Ties	Total
N	121	106	190	416
Mean Rank	114,07	112,84		
Sum of Ranks	13803,0	11848,0		
Z (based on positive ranks)	-61,094			
Asymp. sig. (2-tailed)	0,274			

Notes:
a. level of intelligence within assessment task < level of intelligence within attractiveness task
b. level of intelligence within assessment task > level of intelligence within attractiveness task
c. level of intelligence within assessment task = level of intelligence within attractiveness task

The similarities between the attractiveness and intelligence assessment in male faces are visible also within comparison of task to choose the most attractive and the most intelligent male face (Table 10) where no significant differences were detected.

6. DISCUSSION

6.1 Intelligence as a marker of attractiveness in human faces

One of the goals of the pilot study was to observe the role of intelligence perceived in human faces on their attractiveness assessment. First task was orientated towards attractiveness evaluation of faces which discreetly contained features of intelligence presents in three

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levels. Participants chose the most attractive face and analysis was orientated towards the disclosure of how intelligent the most attractive face is.

From the results presented here above, it is obvious that there are big differences in male and female face evaluations. First of all, female faces are evaluated more universally. This means, that the differences between the choices of the most attractive face were the biggest in female face pointing out to the very strong tendency to mark the most intelligent face as the prettiest. This tendency was the strongest within all studied evaluations. Secondly, males and females show the strongest conformity in opinions in this category – there were no statistical differences in the choices of the prettiest female face between males and females. It therefore seems that the appearance of intelligence plays an important role in female face attractiveness evaluation. This finding is in accordance with the presumptions that intelligence indicates "good genes" (Miller, 2000; Prokosch, Yeo, and Miller, 2005) which are very important for the mate choice. Evolutionary mechanism leading to the fact that "healthy is attractive" (Stephen and Tan, 2015; Perrett, 2010) offers a base for the explanation of these results.

It seems that within the male face also other mechanisms play important role. There is a similar tendency to mark the most intelligent face as the most attractive, however it is not so obvious as in female faces. The analysis showed that there is not a significant difference in the assigned attractiveness between middle and high intelligent male faces. It means that subjects do not clearly differentiate the attractiveness of middle and high intelligent male face. This fact applies for both sexes, which points to the finding that males and females judge the attractiveness similarly also in the case of male faces. The difference in judgment of attractiveness of the male and female face could be explained by the option, that within the assessment of attractiveness of male faces the other factors play important role and they are stronger as within the assessment of female face. Such factors of male attractiveness are e.g. dominance, masculinity, features pointing to economic or social status. "Being resourceful" (Etcoff, 1999) is one of the most important factors of attractiveness. Within evolutionary context it means for males to search for the female which is able to become pregnant and to give a birth to as many healthy children as possible to enable the "selfish gene" (Ridley, 1993) to spread as much as possible. On the other hand, for women it means to be attracted by those males who are able to take care of them and their offspring. Therefore for women also the other features as dominance (Ahmetoglu and Swami, 2012) referring to possible higher social status), aggressiveness (Little, Trebicky, Havlicek, Craig, and Kleisner, 2015) enabling better success in gaining resources, economic status (Gouda-Vossos, Dixson, and Brooks, 2015) etc. play important role than simple "good genes" potential so pregnant in female faces.

6.2 Recognition of intelligence in human faces

The second mail goal of the pilot study was to examine the ability to recognize the intelligence of the subjects from the face features. It seems that this was quite an easy task when the female face has been evaluated. Both sexes were very successful and assigned as the most intelligent the face which represented in its features the most intelligent female face composite. We assume that this ability is connected with the previous results pointing to evolutionary importance of detecting the intelligence as a marker of "good genes" in females.

Moreover, we discovered that the intelligence in female face is better spotted when it is tight to attractiveness evaluation as when it should be directly recognised (see the Table 8). From the evolutionary point of view we would expect the same results. If the intelligence is important for the evaluation of the female face, then it should be pregnant in both cases similarly and independently on the task. The results show, that there is a difference – we hypothesize that when subjects are asked to evaluate the attractiveness, they probably use other mechanisms as when they are asked to evaluate the face according to other criteria (e.g. presence of intelligence). Maybe the attractiveness assessment is more implicit and intuitive (Demuth, 2009) while assessing the face according to the given criteria leads to more rational and explicit mechanism of comparison the required features with the perceived object (human face). This hypothesis can be supported by the researches where face attractiveness assessment activated other brain regions than e.g. face age assessment (Winston, O´Doherty, Kilner, Perrett, and Dolan, 2007).

When assessing the male face intelligence, there have been spotted the worse ability to detect it in comparison to female faces. It may refer to already mentioned reason, that it is not so necessary to observe intelligence in male faces as in female ones. Even though this fact applies to both sexes, it is possible to observe, that women are generally better in the face observation (their ability to differentiate between middle and high intelligent male faces has been on the 0,074 level of significance, while in men the result was 0,776) the men. This observation is with the concordance with the findings that females are generally better in face recognition than men (Lewin and Herlitz, 2002). This tendency is magnified by own-ethnicity and own-sex bias (Rehnman and Herlitz, 2006), which has been visible also in our results.

6.3 Limitations and further research

It seems that the problem of the role of intelligence in the human face attractiveness and recognition is very complex. Within the study we found out the need of examination other relating variables. Except the role of intelligence in the human face attractiveness it would be very useful to study also the intelligence of the observer. There have already been few attempts to discover these relationships – e.g. Talamas, Mavor, and Perrett (2016) showed that participants who scored better (higher) on intelligence tasks were more likely to endorse the perceived attractiveness-intelligence correlation. The relationship between measured IQ, perceived intelligence, and facial

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shape has been also tested - both men and women were able to accurately evaluate the intelligence of men by viewing facial photographs, however the perceived intelligence correlated with IQ of the observer only in men (Kleisner, Chvatalova, and Flegr, 2014). Also, when judging the opposite sex, males differentiate self-similar facial cues more than females (Zhuang, Zhang, Xu, and Hu, 2014) what turns an attention towards the features of intelligence present in the face of the evaluator. Looking similarly (having the similar level of intelligence) can enable better evaluation and therefore, on the other hand, the possible differences in the intelligence of the evaluators in our sample might cause difficulties in assessing the opposite sex faces.

There are also other variables influencing the face attractiveness assessment which we did not include into our evaluations. Findings report that e.g. heterosexual women and lesbians as well as heterosexual men show a pro-female gender bias in face recognition, whereas gay men show a pro-male gender bias (Steffens, Landmann, and Mecklenbräuker, 2013). This is consistent with the explanation that differences in face expertise develop congruent with interests and turns an attention towards the need for sexual orientation assessment. Also, the age of the observer and the age of face composite (Ebner, 2008) seems as a relevant factor mediating the facial recognition capabilities together with hormonal activity and regulation (Bobst, Sauter, Foppa, and Lobmaier,2014), handedness (Willems, Peelen, and Hagoort, 2010), and other relevant variables. Enrichment of the research by another variables needs - of course - the sample enlargement together with focus on specific groups of subjects.

7. REFERENCES

[1] Ahmetoglu, G. and Swami, V. 2012. Do women prefer "nice guys"? The effect of male dominance behavior on women's ratings of sexual attractiveness. Social Behavior& Personality: An International Journal, 40(4), 667-672.

[2] Bobst, C., Sauter, S., Foppa, A. and Lobmaier, J. S. 2014. Early follicular testosterone level predicts preference for masculinity in male faces - but not for women taking hormonal contraception.Psychoneuroendocrinology, 41, 142-150.

[3] Brewster, P. W. H., Mullin, C. R., Dobrin, R. A., and Steeves, J. K. E. 2011. Sex differences in face processing are mediated by handedness and sexual orientation. Laterality, 16(2), 188-200.

[4] Demuth, A. 2009. Poznanie, vedenie, alebointerpretacia?[Cognition, knowledge or Interpretation?].PusteUlany, ScholaPhilosophica.

[5] Ebner, N. C. 2008. Age of face matters: Age-group differences in ratings of young and old faces.Behavior Research Methods, 40(1), 130-136.

[6] Egan, V. and Cordan, G. 2001 Barely legal: Is attraction and estimated age of young female faces disrupted by alcohol use, make up, and the sex of the observer? British Journal of Psychology, 100(Pt 2), 415-427.

[7] Etcoff, N. 1999. Survival of the prettiest.New York, Anchor Books.

[8] Fink, B., Bunse, L., Matts, P. J., and D´Emiliano, D. 2012. Visible skin colouration predicts perception of male facial age, health and attractiveness. International Journal of Cosmetic Science, 34, 307-31.

[9] Foos, P. W. and Clark, M. Ch. 2011. Adult age and gender differences in perceptions of facial attractiveness: Beauty is in the eye of older beholder. The Journal of Genetic Psychology, 172(2), 162-175.

[10] Golle, J., Mast, F. W., and Lobmaier, J. S. 2014. Something to smile about: The interrelationship between attractiveness and emotional expression. Cognition and Emotion, 28(2), 298-310.

[11] Gouda-Vossos, A., Dixson, B. J., and Brooks, R. C. 2015. Sexual conflict and gender gap effects: associations between social context and sex on rated attractiveness and economic status. PLoS ONE, 11(1), 1-14.

[12] Jones, B. T., Jones, B. C., Thomas, A. P., and Piper, J. 2003. Alcohol consumption increases attractiveness of opposite-sex faces: A possible third route to risky sex. Addiction, 98(8), 1069-1075.

[13] Kanazawa,S.2011. Intelligence and Physical Attracti-veness.Intelligence, 39(1), 7-14.

[14] Kleisner, K., Chvatalova, V., and Flegr, J. 2014. Perceivedintelligenceisassociated withmeasured intelli-gence in men but not women.PLoS ONE, 9(3), 1-7.

[15] Kramer, R. S., Jones, A. L., and Sharma, D. 2013. Sequential Effect in Judgments of attractiveness: The influences of face race and sex. PLoS ONE, 8(12), e82226.

[16] Langlois, J. H., Roggman, L. A., and Musselman, L. 1994. What is average and what is not average about attractive faces. Psychological Science, 5(4), 214-220.

[17] Lewin, C. and Herlitz, A. 2002. Sex differences in face recognition—Women's faces make the difference.Branin and Cognition, 50(1), 121-129.

GLOBAL JOURNAL OF ADVANCED RESEARCH
(Scholarly Peer Review Publishing System)

[18] Little, A. C. and Hancock, P. J. B. 2002. The role of masculinity and distinctiveness in judgments of human male facial attractiveness. British Journal of Psychology, 93(Pt 4), 451-464.

[19] Little, A. C., Trebicky, V., Havlicek, J., Craig, R. S., and Kleisner, K. 2015. Human perception of fighting ability: Facial cues predict winners and losers in mixed martial arts fights.Behavioral Ecology, 26(6), 1470-1475.

[20] Lyvers, M., Cholakians, E., Puorro, M., and Sundram, S. 2011. Beer goggles: Blood alcohol concentration in relation to attractiveness ratings for unfamiliar opposite sex faces in naturalistic settings. The Journal of Social Psychology, 151(1), 105-112.

[21] Mckelvie, S. J. 1993. Stereotyping in perceptions of attractiveness, age, and gender in schematic faces. Social Behavior and Personality, 21(2), 121-128.

[22] Miller, G. F. 2000. Sexual selection for indicators of intelligence. In: Bock, G., Goode, J., and Webb, K. (Eds.). The nature of intelligence. New York, John Willey, 260-275.

[23] Perrett, D. 2010. In Your Face. New York, Palgrave Macmillan.

[24] Prokosch, M. D., Yeo, R. A., and Miller, G. F. 2005. Intelligence tests with higher g-loadings show higher correlations with body symmetry: Evidence for general fitness factor mediated by developmental stability. Intelligence, 33(2), 203-213.

[25] Rehnman, J. and Herlitz, A. 2006. Higherfacerecognitionabilityingirls:Magnified by own-sex and own-ethnicitybias. Memory, 14(3), 289-296.

[26] Ridley, M. 1993. The red queen.New York, Penguin Books.

[27] Rhodes, G., Hickford, C., and Jeffrey, L. 2000. Sex-typicallity and attractiveness: Are supermale and superfemale faces super-attractive? British Journal of Psychology, 91(Pt 1), 125-140.

[28] Rhodes, G., Roberts, J, and Simmons, L. W. 1999. Reflections on symmetry and attractiveness. Psychology, Evolution & Gender, 1, 279-295.

[29] Rubenstein, A. J. 2005. Variation in perceived attractiveness.Differences between dynamic and static faces. Psychological Science,16(10), 759-762.

[30] Saegusa, Ch., Intoy, J., and Shimojo, S. 2015. Visual attractiveness is leaky: The asymmetrical relationship between face and hair. Frontiers in Psychology, 6(377), DOI: 10.3389/fpsyg.2015.0037.

[31] Steffens, M. C., Landmann, S., and Mecklenbräuker, S. 2013. Participant sexual orientation matters: New evidence on the gender bias in face recognition. Experimental Psychology, 60(5), 362-367.

[32] Stephen, I. D. and Tan, K. W. 2015. Healthy body, healthy face? Evolutionary approaches to health perception. In E. Sheppard and S. Haque (Eds.), Culture and Cognition: A Collection of Critical Essays. Bern, Switzerland: Peter Lang International Academic Publishers, 45-66.

[33] Talamas, S. N., Mavor, K. I., and Perrett, D. I. 2016. The influence of intelligence on the endorsement of theintelligence–attractiveness halo**.**Personality & Individual Differences, 95, 162-167.

[34] Tavel, P. 2008. Clovekmedziludmi.[A Man between the People].PusteUlany, ScholaPhilosophica.

[35] Thornhill, R. and Grammer, K. 1999. The body and face of a woman: One ornament that signals quality? Evolution and Human Behavior, 20(2), 105-120.

[36] Willems, R. M., Peelen, M. V., and Hagoort, P. 2010. Cerebral lateralization of face-selective and body-selective visual areas depends on handedness. Cerebral Cortex, 20(7), 1719-1725.

[37] Winston, J. S., O´Doherty, J., Kilner, J. M., Perrett, D. I., and Dolan, R. J. 2007..Brain systems for assessing facial attractiveness.Neuropsychologia, 45(1), 195-206.

[38] Zaidel, D. W. and Hessamian, M. 2010. Asymetry and symmetry in the beauty of human faces.Symetry, 2(1), 136-149.

[39] Zhuang, J.-Y., Zhang, S., Xu, J., and Hu, D. 2014. Discriminatingmalesandunpredictable females: Males di-fferentiateself-similar facial cues more than females in the judgment of opposite-sex attractiveness. PLoS ONE,9(3), 1-9.