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FACIAL FEATURES AND SOCIAL ATTRACTIVENESS: PREFERENCES OF BOSNIAN FEMALE STUDENTS

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ABSTRACT

This research aimed at testing multiple fitness hypothesis of attraction, investigating relationship between male facial characteristic and female students' reported readiness to engage in various social relations. A total of 27 male photos were evaluated on five dimensions on a seven-point Likert-type scale ranging from -3 to 3, by convenient sample of 90 female students of University of Sarajevo. The dimensions were: desirable to date – not desirable to date; desirable to marry – not desirable to marry; desirable to have sex with – not desirable to have sex with; desirable to be a friend – not desirable to be a friend; attractive - not attractive. Facial metric measurements of facial features such as distance between the eyes, smile width and height were performed using AutoCad. The results indicate that only smile width positively correlates with desirability of establishing friendship, whilst none of the other characteristics correlates with any of the other dimensions. This leads to the conclusion that motivation to establish various social relations cannot be reduced to mere physical appearance, mainly facial features, but many other variables yet to be investigated.

Keywords: social attractiveness, facial features, physical appearance

INTRODUCTION

For thousands of years humans have been trying to identify main features of beautiful and/or attractive persons. When it comes to physical attractiveness, the most prominent authors postulate the most attractive individuals have highly symmetrical faces (Jones, Little, Feinberg, Penton-Voak, Tiedemann, & Perrett, 2004), exaggerated facial features, such as prominent eyes (Perrett, Lee, Penton-Voak, Rowland, Yoshikawa, & Burt, 1998) or are even closer to the population average in facial configuration (Rubenstein, Kalakanis, & Langlois, 1999; Rubenstein, Langlois, & Roggman, 2002). It is without a doubt that facial characteristics are an extremely important predictor of physical attraction. Although factors such as personality traits, similar interest, social status, to name a few, may influence the perception of "beauty", still the physical appearance is the most important for the first impression formation. Regardless of culture it seems that adults and children alike react differently to faces that are attractive or unattractive (Langlois, Roggman, Casey, Ritter, Rieser-Danner, & Jenkins, 1987; Langlois, Ritter, Roggman, & Vaughn, 1991), however, there are mean differences in what is considered attractive based on local environments (Kelly, Quinn, Slater, Lee, & Pasca-

lis, 2007; Principe, & Langlois, 2012). Proponents of evolutionary and cognitive theories of attractiveness differ regarding biological (domain-specific) and environmental factors (domain-general) in development of preferences for attractive faces. Recent research by Connor Principe and Judith Langlois (2012) suggest that experience and affect, or domain-general cognitive mechanism account better for beauty detection.

Although standards of beauty have varied from culture to culture and within culture, people have always been judged and treated differently as a function of their attractiveness (Marlowe, Schneider, & Nelson, 1996). We extract information about facial attractiveness within 150 milliseconds of seeing a face (Schacht, Werheid, & Sommer, 2008), signalling the importance of attractiveness as a biological cue indexing genetic quality (Franklin, & Adams, 2010). Cuter infants were rated more favourably and more competent than less cute infants (Karraker, & Stern, 1990) and number of studies have confirmed the what-is-beautiful-is-good stereotype (Dion, Berscheid, & Walster, 1972), and that attractive faces are perceived as having more positive personal traits and characteristics, for example, they are perceived as more honest than unattractive faces (Berry, & Brownlow, 1989; Zebrowitz, & Montepare, 1992; Langlois, Kalakanis, Rubenstein, Larsen, Hallam, & Smoot, 2000). The fact that physical appearance can actually provide some reliable information on emotional and health status of the person provides at the same time foundation for invalid judgment on other more relevant characteristics such as personality traits which, in turn, can have serious consequences when it comes to interpersonal relationships.

Feminine attractiveness is known to be related to the conservation of neonatal features (Cunningham, 1986; Cunningham, Roberts, Wu, Barbee, & Druen, 1995), whilst male attractiveness (Penton-Voak, Jacobson, & Trivers, 2004) is related to highly masculine faces. Many studies have shown that the degree of masculinity in male facial features is directly related to perceptions of social dominance (Berry, & Brownlow, 1989; McArthur, & Apatow, 1983) and that these perceptions correspond with actual social status (Mueller, & Mazur, 1997). However, the relationship between facial masculinity and perceived attractiveness is inconsistent across studies (Zebrowitz, & Rhodes, 2004). The immunocompetence handicap model of attractiveness proposes that masculine facial traits in human males, such as prominent brow ridges and large jaws, are honest signals of genetic quality because development of these characteristics is dependent on testosterone (Kruger, 2006). In spite of "the good genes", high testosterone levels in men are associated with increased levels of infidelity, violence, and divorce (Booth, & Dabbs, 1993) and men with highly masculine faces may be associated with other traits that are undesirable in a romantic partner (Watkins, 2012) and considered not beneficial for their offspring (Kruger, 2006). It seems even that women are more likely to attribute negative characteristics to masculine men than they are to relatively feminine men (Boothroyd, Jones, Burt, & Perrett, 2007; Perrett et al., 1998; Smith et al., 2009).

Strategic pluralism theory of sexual selection (Gangestad, & Simpson, 2000) postulates that changing circumstances alter the costs and benefits of choosing different partners, which in turn influences women's preferences. Perhaps women

prefer men with facial features that indicate his ability to address their needs, and therefore what women perceive to be attractive in a man would appear to depend on the type of relationship they are currently interested in (Little et al., 2002; Thompson, & O'Sullivan, 2013). That is, if they seek partner for short-time relationship they would prefer more masculine men, and if they are after long-term relationships they would prefer more feminine futures. Recent research on individual differences in women's preferences for masculine mates has presented compelling evidence for the strategic pluralism theory of sexual selection (reviewed in Gangestad, & Thornhill, 2008; Jones et al., 2008).

Multiple fitness model proposed by Michael Cunningham, Anita Barbee and Carolyn Pike (1990) states that women are attracted to men who elicit nurturing feelings, appear social, display characteristics of masculinity and dominance, look approachable and have high socio-economic status. So women do not only want to have men whose masculine features such as broad jaw, strong chin and small forehead indicate dominance and strength as well as capability to protect and provide for them, but also a friend, someone to confide in, caring and trustworthy. Thus they also prefer facial features that indicate capability to meet those needs as well. Since baby-faced individuals are perceived as the most truthful (Masip, Garrido, & Herrero, 2004), neonatal and expressive features such as big eyes, full lips and wide smile are also considered attractive. Socio-economic factors are also important, so grooming attributes (clean shaven, well dressed, good haircut) indicate wealth and high status, in turn sending signal of being able to provide financial security to the woman. Therefore women find attractive those men that possess optimal combination of neonatal, mature and expressive facial features and look well groomed.

METHOD

This research aimed at testing multiple fitness hypothesis of attraction, and it is based on 3 quasi-experiments conducted by M. Cunningham, A. Barbee, & C. Pike (1990), investigating relationship between male facial characteristic (combination of neonatal, mature and expressive features) and female students' reported attraction to men and readiness to engage in various social relations.

Subjects

Convenient sample of 90 female students (N=90) from three student dormitories (age range 20 - 26; M= 22).

Stimulus material

Twenty seven black and white photos (10 x 15 cm) were used as stimuli. Photos were taken portraying the head and shoulders.

Modified seven points Likert scale (-3 to 3) used in the previous research consisted of five bipolar dimensions: desirable to date - not desirable to date; desirable to marry - not desirable to marry; desirable to have sex with - not desirable to have sex with; desirable to befriend - not desirable to befriend; attractive-not attractive.

PROCEDURE

Within the period of three months, in a student dormitory "Bajić" in Novi Sad (Republic of Serbia), 50 students, volunteers, were photographed using a digital camera. None of the participants had jewellery or glasses during the photo session. Since faces perceived as old are typically seen as less attractive than younger faces (Furnham, Mistry, & McClelland, 2004). Only young undergraduate and graduate students were selected (age range 22-27; $M = 23,3$). They all wore white shirts and were asked to smile. If they wore glasses and jewellery they were asked to take them off. Out of 50 photos 27 photos met the criteria set (such as good clarity, light, shadows, posture, wide smile). Second part of the research was conducted in two student dormitories; "Bjelave" and "Nedžarići" in Sarajevo (Bosnia and Herzegovina). Participants were informed that they would be assessing photographs of men's faces and that participation would take approximately 30 minutes. Each photo was rated on a seven-point Likert scale ranging from -3 to 3, on a five dimensions: desirable to date – not desirable to date; desirable to marry – not desirable to marry; desirable to have sex with – not desirable to have sex with; desirable to befriend – not desirable to befriend; attractive - not attractive. Participants did not know the hypothesis and they were unfamiliar with the men in the photos. Sequence of the photos followed the simple rotation principle. First 45 participants evaluated photos from photo labelled No.1 to photo labelled No.27, and other 45 participants from photo labelled No.27 to photo labelled No.1.

Independent experimenter scanned the photos and performed the facial metric assessment in AUTOCAD following the facial metric parameters from M. Cunningham et al. (1990) study³⁰. Three main measures were face length, face width

30 1. Length of face: distance from hairline to base of chin. 2. Width of face at cheekbones, distance between outer edges of cheekbones at the most prominent point. 3. Width of face at mouth: distance between outer edges of cheeks at the levels of the middle of the smile. 4. Forehead height: distance from eyebrow to hairline divided by length of face. 5. Vertical eye placement: vertical location of the eye measured from pupil centre to hairline divided by length of face. 6. Eyebrow height: measured from pupil centre to lower edge of eyebrow divided by length of face. 7. Eye height: distance from upper to lower edge of visible eye within eyelids at pupil centre divided by length of face. 8. Eye width: inner corner to outer corner of eye divided by width of face at cheekbones. 9. Pupil width: measured diameter divided by width of face at cheekbones. 10. Horizontal eye separation: distance between pupil centres divided by width of face at cheekbones. 11. Cheekbone prominence: assessment of relative cheekbone prominence calculated as difference between the width of the face at the cheekbones and the width of the face at the mouth, divided by length of the face. 12. Cheek width: measured width of face at mouth divided by length of face. 13. Nose length: measured from bridge at level of inner edge of upper eyelid to nose tip, at level of upper edge of nostril opening divided by length of face. 14. Nostril width: width of nose at outer edges of nostrils at widest point divided by width of face at mouth. 15. Nose tip width: width of protrusion at tip of nose, usually associated with crease from nostril divided by width of face at mouth. 16. Nose area: calculated as the product of nose length and nose width at the tip divided by length of the face. 17. Smile height: vertical distance between lips at centre of smile divided by length of face. 18. Smile width: distance between mouth inner corners divided by width of face at mouth. 19. Length of chin: distance from lower edge of lower lip to base of chin divided by length of face. 20. Hair colour: 4-point scale, *blond* = 1; *black* = 4. 21. Hair length: 4-point scale; *above ears* = 1, *middle of ears* = 2, *bottom of ears to midneck* = 3, *midneck to shoulder* = 4. 22. Facial hair: *no facial hair* = 1 *moustache* = 2, *beard* = 3. 23. Eye area: eye height ratio multiplied by eye width ratio.

and smile width. In order to control small variations in face size due to distance between the photographer and male models, the measurements were standardized as ratios to the indicated horizontal or vertical axis.

RESULTS

Due to relatively small sample, Spearman's rank correlation coefficient was used. Each of the 25 facial metric parameters for each of the 27 participants was correlated with dominant values of participants' assessments on five dimensions. Only expressive features, such as *smile height*: vertical distance between lips at centre of smile divided by length of face, *smile width*: distance between mouth inner corners divided by width of face and *smile area*: smile height ratio multiplied by smile width ratio were found significant predictors of attraction, desirable to date, desirable to have sex with; desirable to befriend ($p \leq 1\%$; 5%) whilst no correlation was found between these and any of the other 13 facial proportions measured and desirable to merry.

No correlation was found between hair colour (although photos were black and white, one could see the slight differences) hair length and facial hair and any of the five dimensions. *Statistically significant relationship* was found between smile height and desirable to befriend ($r = 0.69$; $p \leq 1\%$); smile height and desirable to date ($r = 0.428$; $p \leq 5\%$); smile height and desirable to have sex with ($r = 0.393$; $p \leq 5\%$); smile height and attractive ($r = 0.396$; $p \leq 5\%$).

Statistically significant relationship was found between smile width and desirable to befriend ($r = 0.453$; $p \leq 1\%$).

Statistically significant relationship was found between smile area and desirable to befriend ($r = 0.494$; $p \leq 5\%$); smile area and desirable to date ($r = 0.470$; $p \leq 1\%$); and desirable for sex, desirable to date ($r = 0.411$; $p \leq 1\%$);

Profiles were made based on dominant values and facial proportions, but since being virtually non-interpretative, dominant values were transformed into z-scores, and participants divided into three groups/categories with first 25% labelled as below the average, 50% in the category average, and 25 percent in the category above the average. However, in few cases this could not be done, since dominant values altered the results in both positive and negative direction, therefore each profile should be interpreted with caution. Since some of the proportions of, for example, nose and mouth define whether face is neonatal or mature, it was to be expected that profiles will reflect the differences between three male groups. Profiles cannot be interpreted as valid indicators of the nature of the relationship among variables, since differences among three groups were artificially formed based on dominant values. Profiles for each of the five dimensions are provided below.

24. Smile area: smile height ratio multiplied 20. Eye area: eye height ratio multiplied by eye width ratio.

21. Smile area: smile height ratio multiplied by smile width ratio.

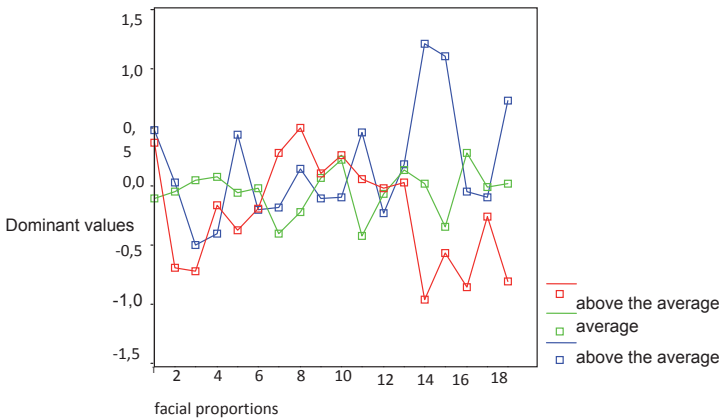


Fig. 1. Relation between facial metric parameters and desirable to be friend – not desirable to be friend.

Source: Own chart.

Based on desirable to be friend profile, males with significantly bigger smile area, smile width and height are considered to be the most desirable for friendship. Males with averagely big smile area, smile width and height are moderately desirable for friendship. In addition, although this has to be interpreted with caution, males considered above the average desirable to befriend also have a bit larger forehead, eyes, cheekbones and nostrils, whilst other parameters are of the average size. Moderately the desirable to befriend have average proportions, whilst below the average have small eyes, low eyebrows, big forehead, cheekbones width and nose, with other proportion about the average.

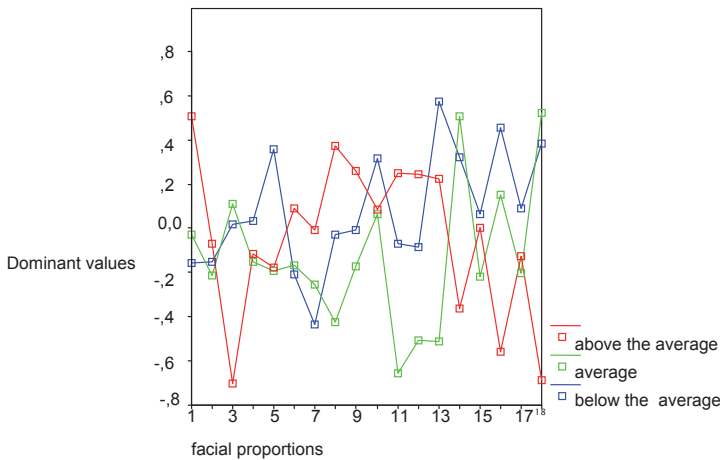


Fig. 2. Relation between facial metric parameters and desirable to date – not desirable to date.

Source: Own chart.

Based on desirable to date profile, males with significantly bigger smile area, smile width and high, but also slightly bigger nose and eyes are considered to be the most desirable to date. Moderately desirable have very similar profile to the desirable ones except the nose being below the average in size. Below the average males have extremely low eyebrows, and small smile area, very high forehead, whilst other characteristics are above the average.

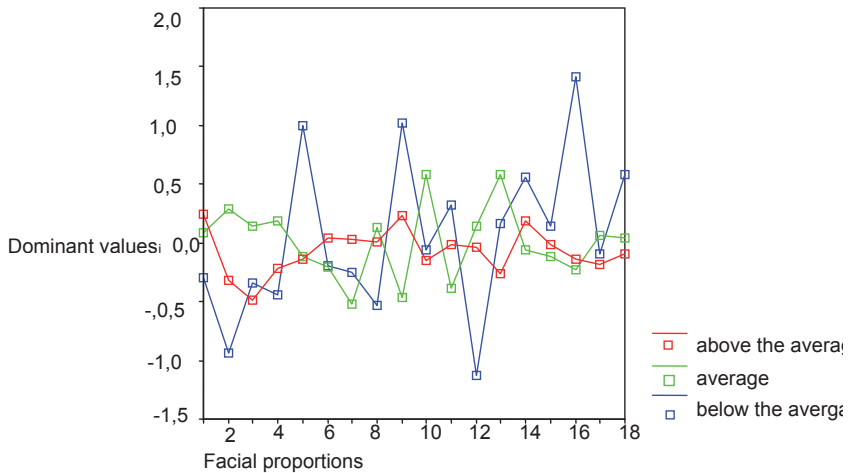


Fig. 3. Relation between facial metric parameters and desirable to marry - not desirable to marry.
Source: Own chart.

Based on desirable to marry profile (where no correlation between any of the facial characteristics was found), above the average have average facial characteristics, with a little bit more prominent eyes and nose. Below the average also have average facial features with the exception of low eyebrows and slightly smaller eyes. Average, on the other hand, have broad cheeks and smile, and narrow nose.

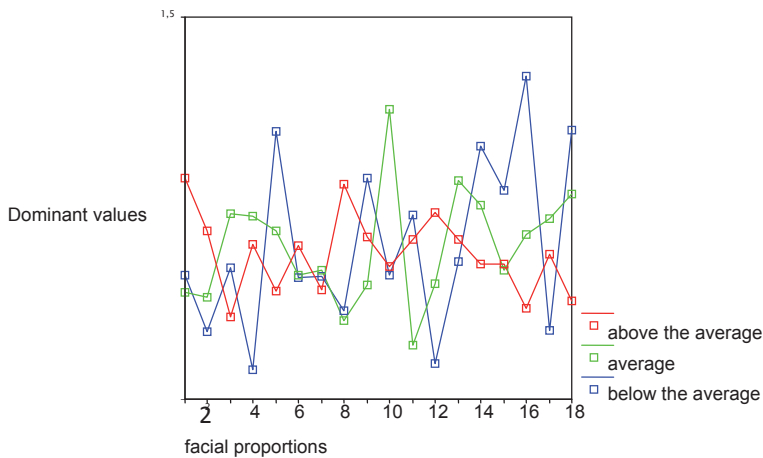


Fig. 4. Relation between facial metric parameters and desirable to have sex with – not desirable to have sex with.
Source: Own chart.

Based on desirable to have sex with profile, males considered to be above the average have high eyes width, broad cheeks, narrow nose, big smile area and small chin. Below the average have high forehead, broad nostrils, whilst other characteristic are about the average size and moderately desirable to have sex with are similar to the above the average group but with longer nose and more narrow nostrils.

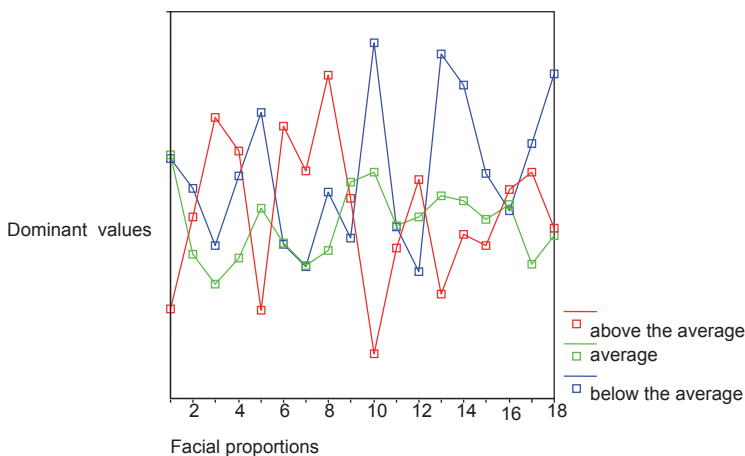


Fig. 5. Relation between facial metric parameters and attractive – not attractive.
Source: Own chart.

Based on the attraction profile, above the average have high eye, broad cheeks, broad and long nose, big smile area, with the averagely attractive with similar characteristic but around the average or slightly above. Below the average have small forehead, small eyes, broad cheekbones, small nose, but also high eyebrows and broad cheeks as above the average.

DISCUSSION

Physical attractiveness and determinants of physical attractiveness are increasingly becoming a popular field in many psychological disciplines. For both psychologists and laymen there is a desire to define what it is that makes people attractive. Although there are differences in what certain cultural and ethnic groups considered attractive, many studies (e.g. Cunningham, Roberts, Barbee, Druen, & Wu, 1985) suggest that there is a cross-cultural consensus when it comes to beauty determinants, at least as far as female beauty is concerned. However, when it comes to what makes men attractive, things seem to be more complicated. While previously it was thought that women are attracted to men with strong masculine characteristics that suggest dominance, protection and power, a series of studies shows that women also want men who will be willing to cooperate, that would be sympathetic to their feelings and needs (Jones et al., 2008). David Buss (1994), explored the tendency that women have when selecting a partner for dating to concentrate on better looks at the first meeting. While the men pointed to tangible assets such as cash, real estate, talking about business success, women were buying new clothes, changing hairstyles, went to see beauticians, etc. There are differences in what was the first quality they saw when they looked at the opposite sex.

In our study, we tried once more to test the hypothesis of multiple motivations. However, the results, as already shown, do not coincide with those obtained in previous studies (Cunningham, Barbee, Pike, 1985, 1987, 1990). We did not confirm the hypothesis that facial features affect the perception of attractiveness in accordance with M. Cunningham's multiple fitness theory according to which women find that the most attractive men are those who possess optimal combination of neonatal, mature and expressive facial features and look well groomed. The reasons for this disparity may lie in the methodological framework. Relatively small sample (N=27) of men's photos were used. Then the way photo sessions took place in which researchers without prior professional experience took the photos with a digital camera, not a professional camera, might be the reason for differences in results obtained in this study and in the theory proposed by M. Cunningham. The conditions varied since photos were taken at different times of the day which resulted in different brightness and clarity of the images. The way in which the measurement is done, in AutoCAD, and pen-and-paper calculations based on the parameters could also affect the validity of the results obtained, since in the previous studies a special program "Identikit" was used to create photo-robots and perform facial metrics assessments. It is significant to point out that we had a lot of problems with making men smile. For some, it did not present any

problem to smile while others succeeded only in the third or even fourth time. It is possible that despite the actual size of the lips and smiles worse evaluated were those who simply did not smile wide enough or those who are not accustomed to smiling.

Furthermore, what will be perceived attractive depends on the standards with which the comparison is made – the contrast effect. After seeing an extremely attractive person of the same sex people themselves feel much uglier than when looking at the average person (Brown, Novick, Lord, & Richards, 1992). The more is one in love with a person of the opposite sex, the better the person seems to look, whilst other persons of the opposite sex are perceived as less attractive (Miller, 1997). Interestingly, three photos of exchange students from Netherland were in the stimuli photo and no participants seem to have noticed they were foreigners, which was found in later query, although their face according to our subjective assessment was very uncharacteristic for this area.

Consequently, in our study as well, photos of men followed immediately after the very handsome ones could therefore be evaluated more strictly regardless of the attempt to introduce control by rotation. Also, those who are perhaps not so handsome and were in a group of handsome ones could have received better evaluations than they did otherwise. Participants complained about the time that was required to evaluate photos (30-45 minutes), so it is possible that those men evaluated at the end were evaluated more strictly while the man evaluated later got better evaluation because of participant's impatience. In an attempt to avoid this order of the presentation of pictures varied, however, it would have been preferable that a more reliable method of variation of the sample has been used. But, due to the complexity of the procedure this could not have been done.

Males put much more emphasis when it comes to mate selection on physical appearance than women (Gould et al., 1990). Also there is a tendency for women to prefer slightly older men; in our study males were approximately the same age as the participants (e.g. Buss, 1994). Men in their 30s and 40s, on the other hand, are considered to be more attractive than men in their early 20s because they are assumed to be more well off, more reliable and better able to provide for their families.

Thus, it is possible that in our study we could have got somewhat different results with older men. It is possible that maybe this is why we did not get any correlation between facial proportions and desirability to marry, because for this kind of relations important factors might be exactly those which do not fall within the sphere of facial characteristics. It is interesting that we did not expect to find any correlation when it comes to the desirable for sex, because participants come from quite a traditional society, but it turned out that they had no inhibitions regarding the evaluation of desirability for sexual intercourse.

With regard to studies (Jones et al., 2005; Penton-Voak et al., 1999) indicating the influence of the menstrual cycle on perception of attractiveness, primarily preferences for masculine characteristics during the ovulation phase, it might be interesting to have asked participants in which phase of the menstrual cycle they were, but there is also the possibility that some girls do not regularly keep records

or that in some cases cycle length varies. Another very important thing to consider is that the participants in our study could have been affected by their emotional state at the time they evaluated photos. When a person is feeling down, it is very likely that she better evaluates those who have neonatal features (soft and gentle face) than those with mature facial features. Also, recent positive or negative experience with a man who has certain features can lead to excessive generalization and affect the evaluation of attractiveness and desirability.

Although we did not get any correlation between grooming features such as hair length, hair colour and facial hair and five dimensions, perhaps altering the clothes (which we controlled by using the white shirt only) as a better indicator of the socio-economic status, would lead to different results. Perhaps it is just like Strategic pluralism theory of sexual selection (Gangestad, & Simpson, 2000) proposes; what women perceive to be attractive in a man would appear to depend on the type of relationship they are currently interested in (Little, Jones, Penton-Voak, Burt, & Perrett, 2002; Thompson, & Sullivan, 2013).

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