

Original Article

Narcissism guides mate selection: Humans mate assortatively, as revealed by facial resemblance, following an algorithm of “self seeking like”

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Abstract: Theoretical studies suggest that mating and pair formation is not likely to be random. Computer simulations suggested that sex among genetically complex organisms requires mate choice strategies for its evolutionary maintenance, to reduce excessive genetic variance produced by out-crossing. One strategy achieving this aim efficiently in computer simulations is assortative mating modeled as “self seeking like”. Another one is selection of “good genes”. Assortative mating increases the probability of finding a genetically similar mate, without fomenting inbreeding, achieving assortative mating without hindering the working of other mate selection strategies which aim to maximize the search for “good genes”, optimizing the working of sex in evolutionary terms. Here we present indirect evidence that in a significant proportion of human reproductive couples, the partners show much higher facial resemblances than can be expected by random pair formation, or as the outcome of “matching for attractiveness” or the outcome of competition for the most attractive partner accessible, as had been previously assumed. The data presented is compatible with the hypothesis derived from computer simulations, that human mate selection strategies achieve various aims: “self seeking like” (including matching for attractiveness) and mating with the best available genes.

Keywords: mate selection, face recognition, assortative mating, sex, evolution

Introduction

What is the adaptive value of love? We certainly do not know, but we might get closer in answering this question by understanding the evolutionary mechanisms underlying mate choice. Although many theoretical studies assume mating to be random, recent computer simulations showed that random mating is very unlikely to

occur in nature (Kalick and Hamilton 1986, Jaffe 1996, 1998). Specifically, theoretical studies have suggested that assortative mating seems to be highly adaptive (Thiessen and Gregg 1980, Davis 1995), as it reduces excessive allelic variance induced by recombination and sex, especially among diploids with a large genome (Jaffe 1998, 1999, 2000). Assortative mating defined as “self seeking like” has a strong stabilizing effect on sex, is evolutionary stable, and has an evolutionary dynamics analogous to kin selection (Jaffe 2000). In addition, assortative mating affects the genetic structure of populations, influencing the evolutionary dynamics of sexual organisms significantly (Dieckmann and Doebeli 1999, Kondrashov and Kondrashov 1999, but see Ochoa and Jaffe 1999) and thus, is a feature that should be taken into account when studying the adaptive value of behaviors related to mate selection. The theoretical works mentioned suggest that assortative mating in itself is beneficial in evolutionary terms to the organism practicing it, and thus is likely to be widespread in nature.

The interpretation of evidence for assortative mating is controversial (Moore 1992). Data can be interpreted in the light of incest avoidance mechanisms or in that of optimizing outbreeding. Living organisms seem to optimize rather than maximize outbreeding (Bateson 1983). That is, mate choice mechanisms avoid maximizing outbreeding and inbreeding at the same time. A complementary theory to an incest-avoidance-outbreeding equilibrium is the optimization of the working of sex (Jaffe 1999, 2000, 2002). This theory accepts that genetic similarity is not only achieved through familiar proximity, and recognizes that genetic relatedness may exist among individuals with no familiar relationship between them. Therefore, assortative mating of the kind “self seeking like” may achieve reproduction between genetically similar mates, favoring the stabilization of genes supporting social behavior, with no kin relationship among them (Jaffe 2001).

Revising the experimental evidence for assortative pairing at the molecular level, Tregenza and Wedell (2000) found evidence that suggests that genetic compatibility limits mate choice. Recent studies with lizards (Dickinson and Koenig 2003, Sinervo and Clobert 2003) showed that after removing all spatial surrogates for kinship, lizards still settle and actively chose to cooperate with phenotypically and genetically similar lizards.

Evidence for assortative mating among humans seems well established. Human's mate assortatively regarding age, IQ, height, weight, nationality, educational and occupational level, physical and personality characters (Buston and Emlen 2003, Buss 1989, Epstein and Guttman 1984, Garrison et al. 1968, Ho 1986, Jaffe and Chacon 1995, Spuhler 1968), and family relatedness (Rushton 1989, Spuhler 1968, but see Genin et al. 2000, Isles et al. 2001). Even Homer in his *Odyssey* (XVII, 218) wrote that “god always joins those who are similar”. Yet, assortative mating is evidently limited by very well known mechanisms of inbreeding avoidance among humans (see for example reviews in van den Berghe 1983, Wolf 1993).

Humans place much weight on the visual aspect of faces. Leonardo Da Vinci (1452-1519) wrote in his notebook, when referring to how to select beautiful faces to

paint, that the artist should search for faces regarded as beautiful by the public rather than by himself, as his own wit might deceive him as it will lead him to look for faces similar to himself. Thus, if he has an ugly face, he will paint ugly faces, unless he searches for the public taste (Da Vinci 1999).

The human face is a complex, unique and characteristic pattern, most familiar to us when distinguishing people (Vezjak and Stephancic 1994). For example, studies have shown that people remember faces of their own race better than faces of other races; that the recognition memory for same-race is superior to other-race faces; and that differential activation in fusiform regions contributes to same-race memory superiority (Golby et al. 2001). Hauber and Sherman (2001) showed how mechanisms of self reference have a neurophysiological basis. Faces seem to be involved in reproductive behavior among humans. Couples faces resemble each other much more than random pair formation would suggest (Griffiths and Kunz 1973, Zajonc et al 1987, Hinsz 1989). Similarities between faces are not likely to arise as a result of pair formation or environmental factors (Rice and Borecki 2001), as facial features have a strong genetic basis (Savoye et al. 1998). Facial resemblance between couples has been extensively reviewed recently (Penton-Voak and Perrett 2000) and can certainly be viewed as an adaptive trait, product of evolutionary forces and not an experimental artefact. Human faces are even considered as a communication device for the advertisement of some kind of heritable quality (Thornhill and Gangestad 1999) and thus should provide reliable signals in the search for mates with “good genes” (Jaffe 1999).

Imprinting, i.e. memorizing in early age the visual images of parents and then using these images for mate choice, as first discovered in birds (Lorenz 1935), also seems to guide assortative mating in humans (Todd and Miller 1993, Penton-Voak and Perrett 2000, Bereczkei et al 2002, Perrett et al 2002, Little et al. 2003). Other evidence, pointing to the existence of parts of the mechanism needed to allow humans “imprint” the faces of their parents, was provided by Le Grand et al. (2001). They showed the need of “early” visual input to develop normal face recognitions later. Children resemble their parents (Nesse et al 1990, Bredart and French 1999, McLain et al 2000, Oda 2002, but see Bressan and Grassi 2004), sometimes even in odd ways: they seem first to resemble more their fathers (see also Daly and Wilson 1982, Regalski and Gaulin 1993). Facial child-parent resemblance mechanisms seem to exist even among chimpanzee (Parr and de Waal 1999). This visual memory may then be used to establish criteria for beauty, which in turn are used to select a mate, producing as a consequence assortative mating. These and other evolutionary effects of parental imprinting have been discussed by Todd and Miller (1993).

Yet how is this assortment achieved among humans? What are the behavioral and psychological processes that achieve assortment of couples in human society? Mainly three theories are known to address this question: The matching hypothesis; assortative mating based on “self seeks like”; and the competition for the most attractive mate which achieves assortative mating as a kind of Nash equilibrium outcome.

The “**self seeking like**” hypothesis, assumes a multidimensional space for individual preferences so that every “self” is unique. Data on assortative pairing based on facial visual cues, favoring the “self seeking like” hypothesis, include the finding by DeBruine (2002) that facial resemblance enhances trust. That is, inborn psychological mechanisms originally evolved for kin selection and mate selection seem to serve as a basis of other more advanced developments of social behavior. One such behavior in humans could well be the outcome of cognitive processes underlying human mate choice, where self-perception seems to modulate mate preference (Buston and Emlen 2003). Evidence that humans look for a self, or that they root criteria of beauty on the self, are also compatible with this hypothesis (Aron. and Aron 1986, Yela and Sangrador 2002).

More commonly accepted, though, is the **competition hypothesis**, where the physical and psychological resemblance between mates is thought to be the outcome of a competition for the most attractive partner. Some evidence supports this assumption as similar degrees of attractiveness have also been found between partners in reproductive couples (Berscheid and Walster 1974, Murstaein and Christy 1976). These and other authors do not regard similar attractiveness between partners of a couple as a unequivocal sign of assortative mating (Kalick and Hamilton 1986) but more likely as the outcome of competition, where more attractive individuals will mate with the most attractive partner available to him or her (Miller and Todd 1998 for example). Other variables are known to also affect attractiveness and thus should influence pair formation. These could be adaptive for basic physiological reasons such as those suggested by Penton-Voak et al. (1999) who showed that menstrual cycle alters face preference.

Under the competition hypothesis, assortative mating is the outcome of a mechanism based on general levels of attractiveness. That is, highly attractive females have a first choice for highly attractive males, and/or vice versa (Miller and Todd 1998). Attractiveness seems to be a rather general and broad attribute applied to different stimuli, visual or not. A specific piece of evidence for this was recently provided by Collins and Missing (2003) who showed that vocal and visual attractiveness are related in women.

A variant of the competition hypothesis is provided by the **matching hypothesis**, which proposes that we don’t seek the most physically attractive person but that we are attracted to individuals who match us in terms of physical attraction (Kalick and Hamilton 1986). This compromise is thought to be necessary because of a fear of rejection (a more attractive person might reject your advances) and/or to achieve a balance between partners (Walster et al. 1966). Murstein (1972) obtained indirect support for the matching hypothesis. The physical attractiveness of engaged couples and those going out together was judged from photographs. There was a definite tendency for the two people in each couple to be similar in terms of physical attractiveness (Murstein and Christy 1976).

One way to discriminate between the various theories is to recognize that attractiveness is a one-dimensional space whereas similarity is a multidimensional

one. That is, if a universal sense of beauty creates a basis for a universal scale of attractiveness, then pairing would proceed from the most attractive extreme downwards in an assortative fashion: the best pair up with the best, then the second-best pair up, and so on. On the other hand, similarity has no universal extremes. If assortative mating is based on similarities (other or in addition to attractiveness), then pairing would not form a hierarchical linear scale of attractiveness.

Thus, if theoretical predictions about assortative mating are correct, and physical features of faces are largely determined by genetic factors, we should detect assortative mating based on facial visual cues. If assortative pairing is the outcome of competition for the most attractive partner, partners in a couple should have similar levels of attractiveness, and little heterogeneities in level of attractiveness between partners of couples should be expected. Here we present evidence that assortative mating based on facial visual cues occurs in human populations, and that these facial similarities seem to be the product of “self seeking like” rather than of the competition for the most attractive accessible partner.

Methods

We photographed 36 randomly selected couples, from a list of addresses provided by a local doctor in the city of Mérida, Venezuela, which either had children and/or were living for at least 3 years together, and which reported to have no known family relationship between them. A digital black and white photograph of each of the partners was taken in or around their homes (Figure 1). The subjects of these 36 couples were not used for any of the behavioral tests performed and we will call them the target subjects.

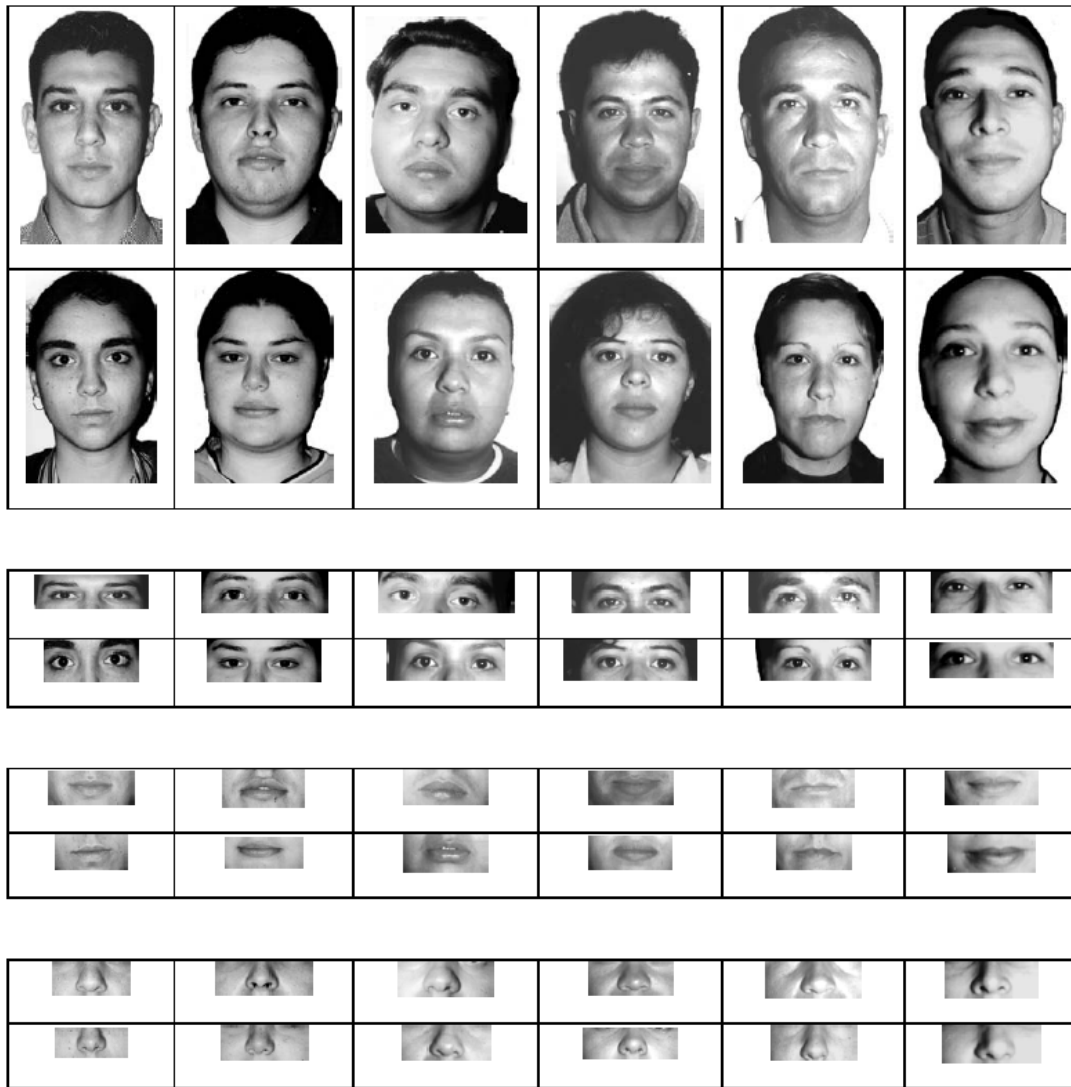
To assess the existence of resemblance between the faces of couples among the target subjects, the photographs of the males were placed on a table and those of the females were randomly shuffled. The test subjects (over 100 volunteers at the universities in Caracas and Mérida) had to assign each of the photographs of female target subjects to one of the males. Test subjects did not know any of the target subjects photographed. The test was performed double blind, as neither the experimenter nor the test subject knew who the correspondence of the photos to the real couples.

The amount of correct guesses, i.e., joining photographs of male and female partners of the same couple, did not differ between test subjects asked to "Choose the female to which the male is most likely to be married" and test subjects asked to "Choose the female that is most likely to be a sibling to the male" ($p > 0.55$, Chi squared test, $df = 19$. The questions given in quotations are rough translations from Spanish). Thus, for further tests, we asked the test subjects to "Join the photographs of the putative couples with the closest resemblance and or the more likely to be married".

In order to simplify the tests and reduce the rejection of test subjects to participate, we built 6 pools of 6 couples (i.e. 12 target subjects each), so that in each

pool, the target males had the same age in a range of ± 2 years if less than 35 years old and ± 5 years if 35 years of age or more. Test subjects were then presented with the 6 photos of the faces (or parts of faces) of the target males placed on a table, and they had to assign the randomly shuffled photos of the 6 target females to their partners.

Figure 1: Photographs of the faces (same background for all faces), and parts of faces, of a selection of 6 couples (Nos. 31, 29, 10, 2, 27 and 4 in Table 4) including the couple receiving the highest score (No. 29). Photos given to test subjects were five times larger than the size shown here.



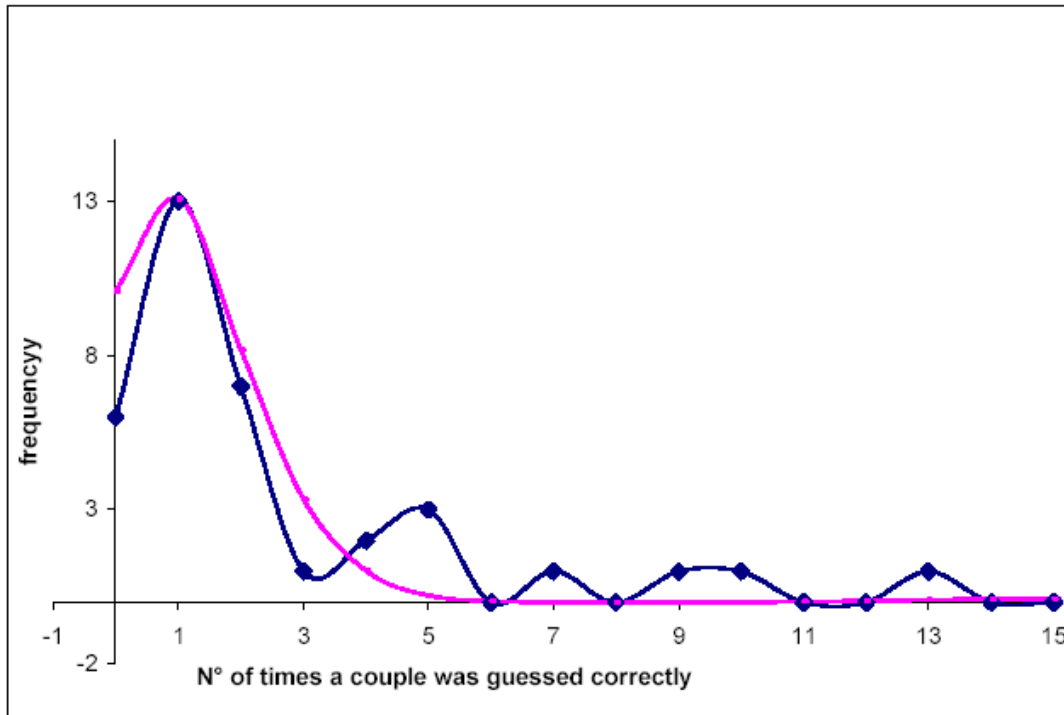
To test for the effect of cues in the background of the photo in identifying correctly couples from photographs of target subjects, we prepared 3 experiments. We manipulated the digital photos so as to provide: 1- the same background for each pair in a couple but which differed between couples; 2- a different background for each of the partners in a couple; 3- no background for all couples which made all photos to have the same background (as in Figure 1). As an additional test to reject a possible effect of background cues in the photographs, we also presented photos of only the mouth, eyes or nose of the subjects (see Figure 1). The test subjects were then asked to pair the photos of the facial features of target subjects according to their similarity.

As face recognition abilities are dependent on early visual experience (Le Grand et al. 2001) and are better between individuals of the same race (Golby et al. 2001), we correlated the number of correct guesses made by test subjects with the skin colour difference between the test subject and the average of the faces of the correctly guessed couples. The colour was assessed by the experimenter for both test and target subjects in 3 distinct categories (dark, slightly dark, white), which were assigned values of 1 to 3 in order to perform statistical correlations on the results. Not all test subjects were used for this test as only skin colour data assessed by one of the experimenters was used

In order to estimate the effect of attractiveness of faces as a possible confounding factor, we assessed the attractiveness of a face, through test subjects from the opposite sex. The attractiveness was registered from less attractive to very attractive in a scale from 1 to 4. Twenty one subjects of each sex were presented with the photographs of 35 members of couples of the opposite sex of the test subject for this assessment. That is, test males were given the photos of target females and test females those of target males to assess the attractiveness. Data was ordered based on increased attractiveness of either males or females.

The statistical analyses performed on the data were applied on the scores of test subjects. That is on the number of correct couples guessed by the test subjects. The analyses were: Pearson correlation coefficient to assess correlations between age and scoring, and between attractiveness and scoring. Chi square test to compare the total number of scores obtained for a given experimental setting with those expected for random guessing. The tests involved that each test subject had to match all photos for all couples. Random guessing under this scenario for either 36 pairs or 6 pairs gives in average one correct guess per test subject. Deviation from one was assumed to be non-random guessing and its significance was assessed by the Chi-squared test. The degrees of freedom were calculated as the number of test subjects used for that given experimental setting, minus one. Another more sensitive way to look at the results was to assess the number of times a given couple was correctly identified as such by test subjects. This distribution of guesses (see Figure 2) was then compared with an expected distribution obtained by random guessing. The outcome of random pair formation plus random guessing was estimated using a simple Monte Carlo simulation model written in basic.

Figure 2: Number of times a couple was correctly guessed by test subjects compared to the expected frequency of correct guesses from a sample of 36 couples, assessed with a Monte Carlo simulation, assuming random pair formation and random guessing (line with small dots).



Results

The number of correct guesses, i.e. guessed pairs of photographs corresponding to actual couples, made by test subjects was far larger than expected by random guessing in most experiments. When females were provided with the photos of the target faces of 36 couples, they guessed correctly an average of 2.5 couples (Significantly different from random, $n = 25$ test females, $p < 0.0001$, Chi-square = 132). Male test subjects placed in front of the same task managed to identify correctly only an average of 0.94 couples (Not different from random, $n = 18$ test males, $p = 0.6$, Chi-square = 15). The amount of correct guesses made by female test subjects was significantly higher than those made by male test subjects ($p < 0.003$, chi-square = 38).

When the test was simplified, so that only the photos of faces of 6 couples were presented at the same time, this difference between the number of correctly guessed couples achieved by female and male test subjects disappeared ($p = 0.11$,

Chi-square = 21). The average number of correctly guessed couples was 1.71 and 1.91 for female and male test subjects respectively (Significantly different from random in both cases, $n = 35$ and 21 , $p < 0.0001$ in both cases).

No significant correlation ($\alpha = 0.1$) between correct guesses and age of the test subjects was found (neither for females $r = 0.009$, mean age = 27, range 19-52, nor for males $r = -0.2$, mean age = 25, range = 18-70).

We correlated the number of correct guesses made by test subjects with the skin colour difference (dark, slightly dark, white) between the test subject and the average of the faces of the correctly guessed couples, and obtained a Pearson's correlation coefficient $r = 0.5$ ($p < 0.01$, $n = 65$). Thus, if test subjects were given same race faces to evaluate, the number of correct guesses increased.

Table 1: Scores, assessed as number of correctly guesses target couples, produced by test subjects when confronted with photographs of faces from partners from 36 couples.

	Number of correct guesses						Total
	0	1	2	3	4	5	
Males	7	6	4	1	0	0	18
Females	4	5	3	4	5	4	25
Total	11	11	7	5	5	4	43

When examining the distribution on the number of correct guesses received by each target couple we found that many test subjects never guessed correctly any couple (Table 1). That is, 39 % of males and 16 % of females never scored a single correct guess, and 28 % of males and 64 % of females scored above one (random). Of the 36 target couples, 64 % were guessed more than once (chance) and 44 % more than two times (Fourth column of Table 4). We compared the number of times each couple was guessed correctly with that predicted by a Monte Carlo simulation based on random pair formation and random guessing. These comparisons, for all the experiments performed, are given in Table 2, where we compare the distribution of correct guesses with that produced by Monte Carlo simulations, using a chi-squared test . The table reads as follows. In the first line, for example, we present the results of tests using photographs of faces having all the same background. The number of photos provided to the test subjects was 72 (36 photos of females and 36 of males, belonging to 36 couples). The test subjects for this experiment were both male and

females and 43 test subjects were tested. The chi-square value obtained when comparing the actual data with that from a Monte Carlo simulation with totally random guessing, as explained in Figure 2, was 352. This value indicates that the actual data differs from totally random guessing significantly, as the odds of obtaining the actual data by chance are $\ll 0.0001$ for a distribution function of guesses with 13 degrees of freedom (see Figure 2).

Table 2: Comparison between a distribution of guesses achieved randomly (Monte Carlo simulations) and the distribution of the number of correct assignments made by test subjects, guessing the partners of couples, based on photographs of faces or parts of faces.

Photos of	Nr of pairs	Test subjects doing the guessing	Nr of tests	X ²	df	p
All couples same background	36	Both sexes	43	352	13	$\ll 0.0001$
All couples same background	36	Females	27	112	10	< 0.001
All couples same background	36	Males	18	16	3	$= 0.001$
Couples with same background but different between couples	6	Females	9	30	5	< 0.001
Couples with same background but different between couples	6	Males	9	95	7	< 0.001
Couples with same background but different between couples	6	Both sexes	18	259	12	$\ll 0.0001$
Couples with different background	6	Females	9	140	7	$\ll 0.0001$
Couples with different background	6	Males	7	115	6	$\ll 0.0001$
Couples with different background	6	Both sexes	16	> 1000	13	$\ll 0.0001$
Mouths of couples	6	Both sexes	60	> 1000	14	$\ll 0.0001$
Noses of couples	6	Both sexes	60	> 1000	15	$\ll 0.0001$
Eyes of couples	6	Both sexes	60	> 1000	18	$\ll 0.0001$

The results presented in Table 2 show that in all cases studied test subjects were able to correctly identify a significant proportion of couples with an accuracy that far exceeded that expected by random guessing or by random pair formation. With this more sensitive test, even male test subject which were much less accurate compared to females in guessing the correct pairs for the couples if the sample of photographs to choose from was large, showed a score that statistically differed from random guessing.

The results in Table 2 also show that the background of the photographs did not affect significantly the correct guessing of pairs. Independently of how the background of the photos was presented, test subjects could pick out the real couples based on facial similarities. Test subjects were even able to correctly guess the real couples if photos of only parts of the faces of target subjects (nose, eyes or mouth) were presented. This recognition was less accurate than if the complete face was presented, but the large amount of tests performed provide for a high statistical significance of this effect.

When ordering couples based on the attractiveness of the faces of one of the sexes, the average value of attractiveness of the opposite sex correlated strongly with the attractiveness of the sex used to order the couples. That is, more attractive females tended to pair with more attractive males, or vice-versa. This tendency can be visualized in Table 3. This table shows that the average attractiveness, as assessed by 20 test subjects of the opposite sex, was lowest for female mates of the most unattractive males and highest for the female mates of the most attractive males, when the couples were ordered according to the attractiveness of the male partner. When the data was order according to the attractiveness of the female partner in the couple, an even stronger result was obtained. The average attractiveness of male mates of the least attractive females was much lower than that of male mates of the most attractive females.

Table 3: Mean attractiveness of the partner of opposite sex, in couples in a given quartile if ordered by attractiveness of:

	Males	Females
Quartile 1 (Less attractive)	1.78	1.35
Quartile 2	1.76	1.73
Quartile 3	2.08	2.03
Quartile 4 (Very attractive)	2.13	2.56

Table 4: Scores obtained by each couple (number of correct guesses), the average attractiveness index obtained by each individual, and the difference in attractiveness between the partners of the couple (absolute difference) as assessed by neutral judges.

Couple	Attractiveness of male	Attractiveness of female	Score: No. of correct guesses	Difference in attractiveness
1	2	2	0	0.00
2	2.11	2.09	8	0.02
3	2.33	2.25	4	0.08
4	2	2.09	16	0.09
5	1.8	1.64	0	0.16
6	1.83	1.64	0	0.19
7	1.5	1.3	4	0.20
8	1.7	1.5	2	0.20
9	2.22	2.42	2	0.20
10	1.5	1.27	2	0.23
11	1.1	1.33	12	0.23
12	1.75	2	0	0.25
13	2.1	1.8	0	0.30
14	1.5	1.8	4	0.30
15	1.7	2	4	0.30
16	1.22	1.56	6	0.34
17	1.6	2	4	0.40
18	2.2	1.79	0	0.41
19	1.8	1.38	0	0.42
20	1.5	1.93	0	0.43
21	1.9	1.44	6	0.46
22	1.13	1.6	0	0.47
23	1.7	1.22	2	0.48
24	2.33	1.77	8	0.56
25	2.1	2.67	2	0.57
26	2.22	2.81	2	0.59
27	2	2.67	4	0.67
28	1.67	2.42	0	0.75
29	1.33	2.18	18	0.85
30	2.44	1.56	8	0.88
31	3.3	2.36	14	0.94
32	1.89	2.92	4	1.03
33	2.2	1	2	1.20
34	3.38	2.08	0	1.30
35	1.4	3	0	1.60

Discussion

Our results confirm that human couples resemble each other significantly more than expected for random pair formation, and that this resemblance can be detected by neutral judges (test subjects). In the sample used here, a significant proportion of the couples studied showed to have conspicuous facial similarities,

detectable by judges. This result confirms that our test was sufficiently sensitive and the sample examined was adequate, regarding the number of couples with conspicuous facial similarities between them, for the assessment of assortative mating.

We wanted to know if this assortment was the product of “self seeking like” or the outcome of competition for the most attractive partner available. Assortment based on attractiveness was certainly at work in our sample as shown with our experiments assessing the attractiveness of the partners of the couples, presented in Table 3. That is, there was a general tendency for more attractive males to pair with more attractive females and vice versa. Yet, attractiveness by itself could not explain our results for various reasons:

1- Test subjects correctly guessed the real couples if photos of only parts of the faces of target subjects (nose, eyes or mouth) were presented. Even though the criteria for attractiveness are not applicable or are much more difficult to apply on only parts of faces, these parts revealed sufficient information on similarities for test subjects to re-assemble photographs of real life couples.

2- The lack of correlation between the scores of correct guesses and the difference in attractiveness between partners in the couples (Table 4) is not compatible with the competition hypothesis or the matching hypothesis. If assortative mating was the outcome of competition for attractiveness, “similarity” and matching for attractiveness should correlate positively. In addition, if matching attractiveness is at work, the assessment of similarity by test subjects should also be based on levels of attractiveness. This was certainly not the case in our study as the scores for similarity and the differences in levels of attractiveness between the partners of a couple diverged conspicuously. Thus, the competition hypothesis by itself can not explain our results.

3- Criteria for attractiveness vary between races and thus, an absolute scale of attractiveness for humans is not likely to exist. This fact has been known for quite a while as discussed in the introduction. Our data confirmed that the ability to recognize similarities in faces was related to race, making it unlikely that assortative mating can be explained solely on the basis of matching universal attractiveness criteria or as the outcome of competition for the most attractive mate available.

The cumulative evidence presented here favors the hypothesis that humans search for couples based on “self seeks like”, using a narcissistic psychological algorithm in assessing the appropriate mate. Yet passive assortative mating could also explain our results. Passive assortative mating occurs when, due to population viscosity, reproduction occurs among spatially proximate individuals that are probably close or distant relatives. In the active sort, individuals choose their mates based on similar phenotypic traits, which reflect similar genes. In both cases the result is assortative mating or breeding among mates that possess similar genes.

Our results showed that females are better than males in assessing facial resemblance between individuals when a large number of choices are presented to

test subjects. This phenomenon is congruent with the fact that females have a much finer discriminatory ability than males (Briceño and Jaffe 1997).

The results of this study are compatible with the notion that humans develop a sense of beauty through imprinting-like mechanisms. This sense of beauty must have a strong narcissistic component, as it is formed through the images of the parents, as discussed in the introduction. When this sense of beauty is applied to mate selection, the outcome is assortative mating in a multidimensional scale, as no universal scale of beauty can be formed through this mechanism. Our results can not discard that assortative mating in humans is at least partially achieved through competition for the most attractive potential partner, or by matching attractiveness. Yet, our results strongly suggest that a multitude of other visual criteria are involved in mate selection. The hypothesis of “self seeking like” explains the experimental results rather well. The fact that these narcissistic criteria seem to be applied also in situation where no pairs for reproductive purposes are involved, such as in the choice of partners for business purposes (DeBruine 2002), strongly support the narcissist hypothesis. A testable prediction to possibly falsify the ‘self seeking like’ hypothesis is that narcissistic criteria should be applied to many other situations in human every day life involving aesthetic or affective assessments. For example the choice of pets should also follow narcissistic criteria. This has been shown to be the case after obtaining our results (Roy and Christenfeld 2004, Payne and Jaffe 2004).

In the present study we seem to have dealt just with one envelop of a rather complex set of mate selection mechanisms. Thus, further research should refine the mechanisms at work that seem to balance assortative mating with inbreeding avoidance and selection for ‘good genes’ (Jaffe 2002). The results might direct future research in focusing on the still unknown intricacies of mate selection mechanisms and the origin of love.

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