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Homogamy, genetic similarity, and imprinting; parental influence on mate choice preferences

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Abstract

Whereas the hypothesis of genetically mediated homogamy has been supported by several studies, certain theoretical and methodological criticisms have been raised against genetic similarity theory. As an alternative approach to assortative mating, we suppose that imprinting-like mechanisms, rather than “direct” genetic detection, are responsible for choosing similar spouses. In a study aimed at comparing more than 300 facial photographs of family members and controls, the judges correctly matched wives to their mother-in-law at a significantly higher rate than expected by chance. Furthermore, a higher degree of similarity was ascribed between the husbands’ mother and the husbands’ wife than between the husbands and their wives. A regression analysis has revealed that men who had been more frequently rejected by their mother during childhood were less likely to choose mates who resemble their mothers in physical appearance. These results suggest that under the influence of childhood experiences, sons internalize their mother’s phenotype as a template for acquiring similar mates. © 2002 Published by Elsevier Science Ltd.

Keywords: Homogamy; Sexual imprinting; Evolutionary strategies

1. Introduction

The studies of so-called assortative mating or homogamy have shown that the majority of mates resemble each other in a high number of traits. Positive correlations have been found between their race, socioeconomic status, age, intellectual ability, education, personality variables, physical attractiveness, vocational interest and anthropometric measures (Ahern, Cole, Johnson, & Vandenberg, 1985; Bereczkei & Csanaky, 1996; Bereczkei, Vörös, Gál, & Bernáth,

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1997; Jaffe & Chacon-Puignau, 1995; Keller, Thiessen, & Young, 1996; Mascie-Taylor, 1988, 1995; Penton-Voak, Perrett, & Peirec, 1999; Susanne & Lepage, 1988; Thiessen, Young, & Delgado, 1997).

Homogamy appears to be under the influence of many cultural factors. It may result from physical propinquity of individuals, economic benefits associated with mating, and psychological comfort and compatibility spouses feel in such marriages (Thiessen, 1999). Although these mechanisms may mediate certain aspects of mate choice, the related hypotheses cannot interpret the ubiquity of homogamy across species and cultures, nor do they address the underlying reason for assortative mating—the ultimate causation. It is not surprising, therefore, that during the past two decades, genetic and evolutionary mechanisms have been described for a deeper and more comprehensive understanding of homogamy.

In their pioneer study, Thiessen and Gregg (1980) suggested an explanation for assortative mating as an extension of kin selection theory. They argued that rather than merely protecting kin at the expense of strangers, individuals have a tendency to detect other genetically similar organisms who are not relatives through common descent. They tend to choose mates on the basis of gene similarity, that is likely to yield reproductive benefits. First, as an extension of Hamilton's kin selection theory, the intensity and direction of altruism are linked to the degree with which interacting individuals share homologous genes. Second, positive assortment increases the degree to which parents share genes with offspring. This is because parents with identical genes will add 50% of their genes to the offspring *plus* portions of genes that are held in common by them (Thiessen, 1999).

In his Genetic Similarity Theory, Philippe Rushton argues that, because of these fitness gains associated with homogamy, selection is expected to have favored a complex psychological mechanism that can detect other, genetically similar organisms and channel altruistic behavior toward them (Rushton, 1989, 1999; Rushton, Russell, & Wells, 1984). The two mechanisms, the detection of similar traits and the mutual preferences of gene-related spouses—as well as of stable friends—have evolved together as a complex adaptive system

The evolutionary theory of homogamy has been supported by several studies. Assortative mating was found to enhance marital stability and fertility that seems supportive of adaptationist argument (Bentler & Newcomb, 1978; Bereczkei & Csanaky, 1996; Mascie-Taylor, 1988; Thiessen et al., 1997; Weisfeld, Russel, Weisfeld, & Wells, 1991). Other studies have shown that married couples were more genetically similar than randomly paired individuals, and the correlations, measured between them, depended on the magnitude of genetic influence on certain physical, personality, and cognitive features (Buunk & Frees, 1997; Rushton, 1988; Rushton & Nicholson, 1988; Russell, Wells, & Rushton, 1985; Tesser, 1993).

Obviously, in order to pursue assortative mating, an individual has to be able to detect genetic similarity in mates. According to genetic similarity theory, *phenotype matching* would be responsible for controlling homogamy without the help of learning from familiarity or proximity. The individuals are genetically guided to respond to specific phenotypic cues in others and direct altruism selectively toward individuals with shared genes. (Dawkins, 1982; Hepper, 1991; Holmes and Sherman, 1983). Obviously, it can occur if there is a high correlation between genetic similarity and phenotypic similarity on traits that individuals use to distinguish potential mates. The individuals, equipped with specific innate algorithms, detect some aspect of their own phenotype, match it to new, unfamiliar individuals, and prefer those who possess the same or similar

phenotype. Much experimental evidence shows that both lower and higher animals, are able to recognize genetic similarity on the basis of shared olfactory and visual cues (Blaustein, Bekoff, Byers, & Daniels, 1991; Holmes, 1995; Pfennig & Sherman, 1995). In humans, there is some indirect evidence that people are able to recognize relatives who share similar detectable features on face or through smell. For example, mothers, who had limited contact with their newborns immediately after birth, could recognize them by olfactory cues alone (Porter, 1987). A possibility of the genetically mediated similarity detection was suggested by an experiment that positively tested adult subjects for their ability to match mothers', fathers', and their newborn infants' photographs (Christenfeld & Hill, 1995).

However, the similarity detection in these investigations on animals and humans was restricted to close relatives who obviously shared similar detectable features by common descent. No studies have yet been achieved as supportive of the recognition between gene-related "strangers". Nor have studies established what perceptual mechanisms are involved in the feature detection, and how genetic similarity is detected through smell, look or behavior in adults.

Furthermore, critics argue that genetic similarity theory via phenotype matching has certain theoretical difficulties (Wilson, 1989). In view of Hamilton's theory, the overall proportion of genes shared by two individuals is irrelevant unless the genes are linked to the crucial gene for altruism (Mealy, 1985). Altruistic behavior is contingent on the likelihood that another individual shares this particular allele at a particular locus, but not on overall genetic or phenotypic similarity. As relatedness decreases, however, the probability that individuals share an altruism-inducing gene will be smaller, and distant relatives or strangers are not likely to carry that gene, even though they may be similar in certain traits (Archer, 1989; Krebs, 1989). Therefore, discriminatory altruism on the basis of phenotypic similarity is uncorrelated with the likelihood of sharing altruism allele, and would be selected out (Daly, Salmos, & Wilson, 1997; Hepper, 1989). Since genetic similarity theory cannot serve as a guiding principle predicting when altruism should occur between unrelated individuals, it should not be regarded as an extension of kin selection theory (Gouzoules, 1989). In fact, similarity may not provide a better estimate of relatedness than any other possible index—spatial proximity, membership of the same family group, etc.—and that gives way to alternative explanations (Dunbar, 1989).

An alternative evolutionary explanation for assortative mating involves *imprinting-like mechanisms* in human mate choice. Homogamous preferences may depend on learning through social interaction during childhood. The same positive correlations between spouses, as seen above, would arise if individuals acquired mate choice criterion templates from exposure to their parents (Daly, 1989). The individual learning on similarity may be confined to a sensitive period when only closely related individuals are likely to be present, especially parents who share half of their genes.

As ethologists stated, the young of many species show an indiscriminative attachment to the particular objects during the sensitive or critical period (Bateson, 1964; Bolhuis & Bateson, 1990; Bolhuis & Horn, 1992; Cook, 1993; Lorenz, 1965). In addition to fixation to the parents, imprinting also plays a crucial role in shaping sexual behavior during adulthood (Warriner, Lemmon, & Ray, 1963). In the case of sexual imprinting, an early exposure to a set of species characteristics will shape mate preferences that persist until late adulthood. Cross-fostering experiments with various species of birds have revealed that during pair formation adult males tend to prefer sexual partners that are similar to the female that reared them (Immelmann, 1971;

Immelmann, Prö, Lassek, & Bischof, 1991; Kendrick, Hinton, & Atkins, 1998; Oetting, Pröve, & Bischof, 1995; Vos, 1995).

Bateson (1983) argues that sexual imprinting enables individuals to learn the characteristics of their close kin and subsequently to choose mates that appear slightly different, but not too different, than their parents and siblings. In other words, individuals have been selected to adopt an optimum balance between inbreeding and outbreeding. This is because both types of mating have obvious reproductive cost and benefits (Blouin & Blouin, 1988; Read & Harvey, 1988; Rees & Harvey, 1991). In his theory of *optimal outbreeding*, Bateson has hypothesized that an adaptive compromise has evolved between the opposing selectionary pressures, with individuals choosing a mate with a particular degree of relatedness (Bateson, 1980, 1983). Indeed, he experimentally proved that Japanese quail prefer to mate with birds that differ slightly in plumage color from their parents (Bateson, 1979, 1980, 1988). Other studies have also revealed mating preferences for familiar conspecifics in various species, such as house mice, mallard duckling, Bewick's swan, etc. (Alcock, 1998; Bateson, Lotwick, & Scott 1980; McFarland, 1993).

Although certain mechanisms of human bonding undoubtedly resemble those that have been found in animal imprinting, there are obvious differences, especially in terms of the duration of the sensitive period and the fixity and irreversibility of learning. Therefore, several authors have suggested the use of the notion *familiarization* for referring to imprinting-like mechanisms in humans (McFarland, 1993). In fact, many aspects of the attachment of mother to infant occurs within a sensitive period of hours or days and produces aftereffects that last for years (Drummond, Letourneau, Neufeld, Harvey, Elliot, & Reilly, 1999; Eibl-Eibesfeldt, 1989; Mehler & Dupoux, 1994). Sexual imprinting-like mechanisms in humans have also been revealed by certain studies. Experiences in the family during early childhood have been found to have an impact on later sexual and reproductive behavior. (Belsky, Steinberg, & Draper, 1991; Bereczkei & Csanky, 2001; Kim & Smith, 1998; Surbey, 1998). The underlying mechanism of incest avoidance between brothers and sisters is considered as a sort of negative imprinting; a long-run sexual aversion develops between persons who lived together when they grew to the age of 6–8 (Bevc & Silverman, 1993; Shepher, 1983; van den Berghe, 1983; Wilson, 1978).

However, very few studies examined the familiarization effect the parents have on children in their later mate choice (Daly & Wilson, 1990). People born of mixed marriages have been found to tend to marry into the ethnic group of the opposite-sex parent more often than into that of the same-sex parent (Jedlicka, 1980). Small positive correlations found between father's age and husband's age demonstrate that daughters of older men subsequently tend to choose older husbands (Zei, Astofli, & Jayakar, 1981). Another study has found that men with whom teenage girls professed to be in love were reported by the girls to match their fathers in eye color more often than their mothers (Wilson & Barrett, 1987).

We hypothesize that sexual imprinting (familiarization) during a sensitive period in early childhood is responsible for shaping one's later mate choice criteria through the observed features of the opposite-sex parent. Focusing on male children and physical traits, young men are expected to prefer those who are sufficiently similar to the representation of their mother's appearance. During their first 6–8 years of life sons internalize their mother's phenotype as a template for acquiring mates with shared genes. In the process of attachment, sons may shape a mental model of their mothers' physical appearance and use it in mate choice after reaching adolescence. They

match the mental image of their mothers to females as potential mates, estimate the degree of similarity and prefer those who resemble their mothers more.

In the light of that hypothesis, a genetically canalized learning process, rather than direct genetic similarity detection via phenotype matching is responsible for the perceived similarity between spouses. Homogamy works, but similarity between spouses will be the *indirect* effect of sexual imprinting; it results from the fact that 50% of maternal genes are shared with sons. That hypothesis avoids the fallacy of genetic similarity theory because it implies a reproductively advantageous familiarization effect rather than an innate detection and altruism between gene-related spouses.

Our present study aims at investigating the maternal effect on their sons' mate choice in the physical features of the face. The following predictions will be tested:

1. In accordance with numerous studies, couples will be more similar in physical appearance than randomly paired individuals.
2. Wives are expected to resemble their mothers-in-law more than women randomly chosen from the population.
3. Positive correlations will be significantly higher for 2 than for 1, that is wives will show a higher degree of similarity to their husbands' mothers than their husbands.
4. The degree of similarity in 2 will be negatively associated with the intensity of mother–son emotional relationship, scored in an adult attachment test; that is the more positive affiliation a man has with his mother during childhood, the higher resemblance will appear between his mother and his wife.

2. Method

2.1. Subjects

Ninety-eight volunteers, of 33 marriages, served as subjects. Photographs of the face of 64 spouses at the age between 22 and 32 were taken (mean age of women = 24.3 years; mean age of men = 25.8 years). The average length of their relationship was 5.73 years. They were instructed to pose naturally, and provide neutral expressions on their face. The background and camera distance was standardized. Besides, we asked for a photograph of the husband's mother at the age when her son was between 2 and 8 years old. One of the 33 married couples could not provide us with a suitable photograph of them at the required age, consequently her whole family was taken out of the sample.

Additional portraits were taken of 238 young women at the age comparable to that of the 32 wives (mean age = 23.8 years). They were randomly chosen from the undergraduate and graduate students at our university. The same camera and technique was used as previously. These photographs were used as controls in the judgment of similarities.

We took black-and-white photographs partly because many of the mothers' portraits were taken several decades ago in such a form. All of the photos were developed and scanned into a computer, using a Corell Photopaint program. Then we made two sets of group photos or tableaux of them. The one kind of tableau showed the husband, his wife and three controls. The

husband was placed on the left side of the tableau and marked with a number. Right next to them, the wife and three controls were placed on the corners of a square, each was marked with a letter between a and d. Tableaus were standardized for the age, length and color of hair, the posture of their head on the photographs and certain other traits, in order to minimize the possible differences between the faces of the wives and others. Of the sample of controls available ($n = 238$), those were grouped on a particular tableau who had the same length and color of hair, were seemingly the same age, looked in the same direction, and were wearing (or not) eyeglasses, as wives were. Finally, individual photographs of wives and controls were equalized in size. Wives were randomly placed among the controls on the right of the tableaus.

The other set of tableaus was made of the same pictures with the exception that the husband was replaced by his mother. Thus, these tableaus consisted of photographs of the husbands' mother (at their young age), wife (that is the mothers' daughters-in-law), and three controls. The mothers were placed on the left side and were assigned a number, whereas the others on the right were assigned with letters (a–d). The same procedures of standardization were made as earlier.

Finally, we had two sets of 32 tableaus, with a total of 300 photographs of individual faces. Then each tableau was printed on an A4 sheet. The sheets were filed into two booklets; each contained one of the two sets of tableaus (husband–wife and mother–wife).

Fifty-two male and female undergraduate psychology students were used as independent judges to evaluate similarity. Twenty-three males and 29 females participated in the studies with mean ages of 22.4 and 22.8 years, respectively.

2.2. Procedure

First, we asked the 52 judges if they were personally acquainted with any of the persons in the photographs. Only those were allowed to take part in the study who were entirely unfamiliar with every individual to be judged. Then they were instructed to look at each of the 2×32 tableaus thoroughly, match the photographs of individuals and set up a preference order on the basis of similarity. There was no time limit to the task. They compared each stimulus picture with four possible matches, one of which was a true match.

In the first experiment, they chose one of the photographs in the right blocks (wife and three controls) they judged as the most similar to the photograph of the husband. Then they selected the photographs of young women who less resembled the husband, until the last choice when the least resembling woman was matched to the husband. As a result, each subject made an assessment about the rank of similarity between the husband and the young women, and marked the degree of similarity with numbers from 1 (the most similar) to 4 (the least similar).

In the second experiment, the same procedure was accomplished, with the exception that the other set of tableaus (with the photos of the husbands' mothers) were used. Matching the number (indicating the husband's mother) to one of the letters (indicating the wife and the three controls), they set up a rank on the basis of similarity. They marked women who were judged to resemble to the husband's mother the most (1), less (2), even less (3), and least (4).

In the third study, the 32 husbands were asked to fill in a retrospective attachment test, named EMBU (a Swedish acronym for *Egna Beträffande Uppfostran*, that means "My memories of upbringing"). It was used as a measure for the assessment of adults' perceptions of their parents' rearing behavior. The short form of the EMBU provides three factorially derived subscale

measures: Rejection (e.g. “It happened that my parents were sour or angry with me without letting me know the cause”), Emotional warmth (e.g. “If things went badly for me, I then felt that my parents tried to comfort and encourage me”), and Overprotection (e.g. “I felt that my parents interfered with everything I did”), with 7, 6, and 9 items respectively (plus one unscaled item). In an examination among samples of 2442 students from four countries, internal consistency and reliability has shown a high magnitude (Arindell et al., 1999). The test was completed in the presence of an inexperienced participant at the subjects’ home. Participants rated themselves on a scale ranging from 1 (No, never) to 4 (Yes, most of the time). Finally, the perceived degrees of similarity between wives and husbands, and mothers-in-law were correlated with the test scores in the EMBU filled in by the husbands.

Additionally, demographic and personal information on the husbands was obtained on an attached short questionnaire. It enquired about their family arrangement during childhood, date of marriage, etc.

3. Results

3.1. Husband–wife matching

The percentage of judges who gave the correct match was computed for each stimulus, and since these scores were not normal (Kolmogorov–Smirnov, $P = 0.032$), non-parametric test (Wilcoxon) was used. Significant resemblance was ascribed between husbands and their wives; the mean rate of the appropriate husband–wife matching was 10.14. In other words, the judges chose the wife’s

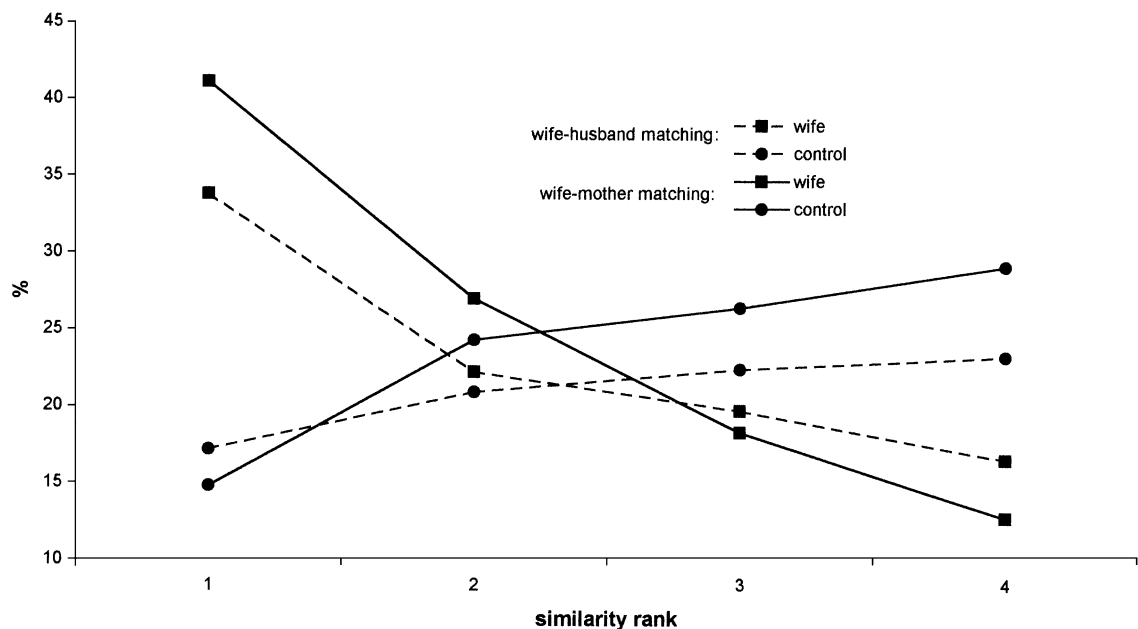


Fig. 1. Percentage of the matchings of mother to husband, and of wife to husband’s mother, compared to controls.

picture as the most similar to the husband, on average, in the 33.80% of the tableaux ($z = -3.004$, $P < 0.01$; Fig. 1). This percentage significantly exceeds the rate at which controls, on average, were chosen first on the similarity scale (33.8% vs. 17.13%, $z = -6.159$, $P < 0.001$). Fig. 1 shows that as the degree of the perceived similarity decreases, an increasingly smaller proportion of wives was selected as resembling the husband the most. Conversely, the probability of choosing a control as the most similar to the husband increased as a function of priority rank; increasingly more controls were placed on the second, third, and fourth rank of similarity ($F = 42.59$, $P < 0.001$). No sex difference was found in the estimation of similarities; approximately the same proportion of male and female judges made the appropriate matches (Mann–Whitney, $U = 215.5$, $P = 0.123$).

3.2. Husband's mother–wife matching

The judges correctly matched wives to their mother-in-law at a significantly higher mean rate than expected by chance. They properly chose the wife as being the most similar to their husband's mother, on average, in the 41.06% of the tableaux (Wilcoxon, $z = 6.535$, $P < 0.001$). On average, wives were ranked first on the similarity scale (41.06% vs. 14.76%, $z = -6.572$, $P < 0.001$) almost three times more likely than controls (Fig. 1). Fig. 1 shows that as priority rank decreases, the probability of matching the wife to her mother-in-law also decreased. At the same time, increasingly more photographs of the controls were judged as the true match on the lower ranks of similarity ($F = 108.56$, $P < 0.001$). No sex difference was found between judges ($U = -398.5$, $P = 0.824$).

When comparing the results of study 1 and 2, a striking difference appeared. The judges correctly matched wives to their mothers-in-law at a significantly higher frequency than to their husbands (Mann–Whitney, $U = 1982$, $P < 0.001$). In other words, a higher degree of similarity was ascribed between the husband's mother and the husband's wife than between the husbands and their wives. Fig. 1 shows that the differences in the percentages decreases as the rank order of similarity decreases, and turns to the reverse on the fourth match (when the lack of similarity is judged between the target persons). Two-factor analyses of variance yield a highly significant interaction effect ($F = 14.75$, $P < 0.001$).

3.3. Maternal influence

In the third study, the association between the mean scores of the three subscales of the EMBU and the degree of perceived similarity between the husbands' mother and the husbands' wife was examined. A regression of Rejection on matching frequencies by judges showed a significant negative relationship: men who had been more frequently rejected by their mothers were less likely to choose mates similar to the mothers on facial traits (beta = -0.422 , $t = -2.248$, $P < 0.05$; Fig. 2). No significant relationship was found in Emotional Warmth, and Overprotection (for Emotional Warmth = beta = 0.146 , $t = 0.869$, $P = 0.390$; for Overprotection: beta = -0.206 , $t = -1.403$, $P = 0.164$).

Then we divided our sample into two parts at the mean of the EMBU scores received. One group included subjects having received parental care below that mean, and the other one above that. Those mothers who tended to reject their sons more were judged as being less similar to their daughters-in-law than those mothers who rejected their sons less ($t = -2.938$, $P = 0.015$). The

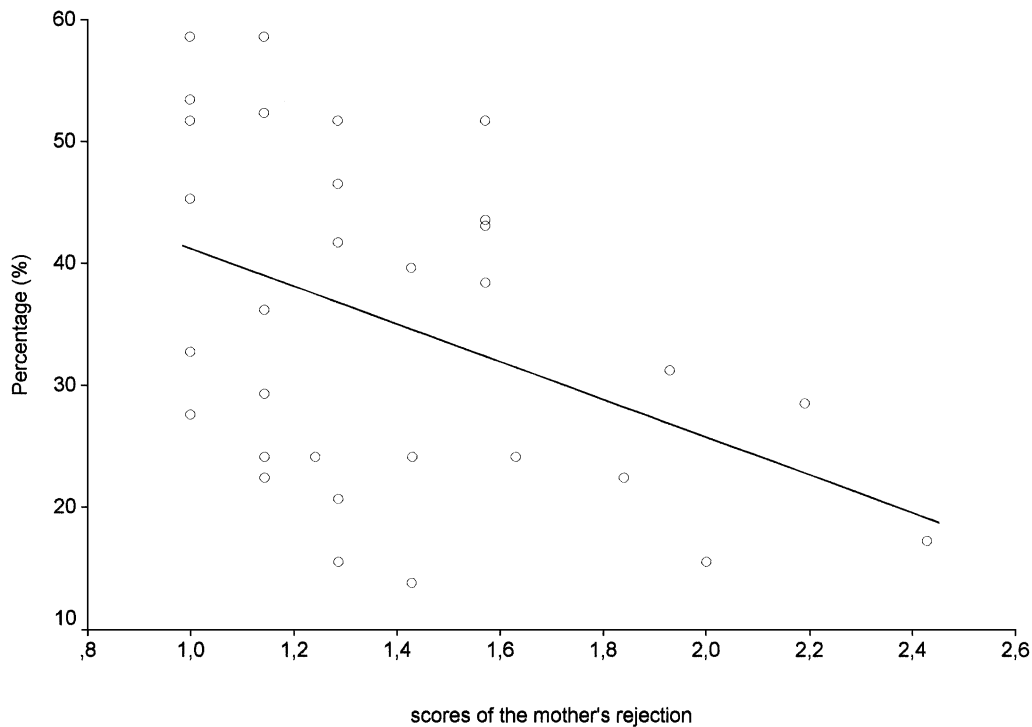


Fig. 2. Percentage of mother–wife matching in the function of the mother's rejection.

Emotional Warmth and Overprotection subscales did not show significant differences ($t=705$, $P=0.494$, and $t=-0.995$, $P=0.340$, respectively).

It appears that the more physical and emotional distance from the mother the sons had experienced during childhood, the less similarity was perceived between their wives and mothers. In other words, those mothers were the most frequent targets of matching to their daughters-in-law who had shown fewer signs of rejection toward their sons when they were children.

4. Discussion

Our results showed that (1) wives were judged to be more similar to both their husbands and their mother-in-law, compared with the chance level, (2) they resemble their mothers-in-law significantly more than their husbands, and (3) the degree of wife-mother similarity correlates with the scores husbands achieved in the Rejection subscale of the parental rearing test (EMBU).

These results suggest that mechanisms other than phenotype matching based on one's own phenotypic template may be taken into account for assortative mating. Familiarization (imprinting) may be responsible for the similarity between couples. In this view, humans have been selected to be sensitive to specific cues coming from their mothers during infancy and early childhood. Children learn the particular features of maternal phenotype across the enduring relationship with their mothers. Their mating preferences are partly shaped in the process of

attachment, and later they prefer long-term mates who show similarity to the woman with whom they had an intimate relationship as children. Rejection, in this respect, is supposed to have a negative effect on the development of the mother's mental image. The limited social interactions may deprive sons of the means to acquire the appropriate mate choice criterion template. Because of the physical and emotional distance from the mother, it becomes difficult for sons to establish precise and detailed recognition of her and to mate with others who resemble that template.

In the light of that hypothesis, genetically prescribed mate selection via phenotype matching may be an *artifact* of the familiarization effect. Assortative mating can express the genetically mediated similarity between mothers and sons, given the 50% overlapping between their genetic material. Therefore, the similarity between spouses may result from the similarity between the husband's wife and mother.

Nevertheless, theoretically, the reverse causation may also exist. Phenotypic—and the underlying genetic—similarity between mating partners is responsible for homogamy. Since the husband resembles his mother on several traits, the wife's appearance is supposed to be similar to that of her mother-in-law. Additionally, it can be argued that subjects judge female phenotype more similar to another female phenotype, compared to a male phenotype. Therefore, female–female resemblance may be more pronounced for a third person even if it is a manifestation of the underlying male–female (husband–wife) matching.

However, we are convinced that the familiarization hypothesis is more plausible and provides a more comprehensive explanation for homogamy. First, it would operate more parsimoniously and generally (see also Daly, 1989). Genetic similarity theory assumes that gene complexes produce both feature detectors and altruistic behavior that lead to the discrimination of individuals who share certain phenotypic traits. Neither the genetic detection of similarity nor the altruistic preferences for genetically similar but unrelated persons have been empirically proved in humans yet. Familiarization needs none of these capabilities, it is rather based on specific learning mechanisms during individual development.

Second, our empirical findings support the long-lasting effect of attachment on later mating preferences. The correlation between maternal rejection and spouse similarity suggests that the husband's mating choice is not independent of the maternal rearing practices. Unfortunately, however, at the moment we are not aware of the particular attachment and learning mechanisms that would be responsible for the assortative mate choice in adulthood.

Third, the theoretical failures of genetic similarity theory, seen above, urge us to search for alternative explanations. The core of the criticism is that genetic similarity theory cannot be regarded as an extension of kin selection theory, because the selection for altruistic behavior among unrelated individuals is highly unlikely. The familiarization hypothesis avoids that fallacy by focusing on different kinds of genetic benefits and different sorts of proximate mechanisms of assortative mating.

As for genetic benefits, the adaptive consequence of assortative mating via imprinting is not to increase inclusive fitness through mutual altruism between spouses but to involve other biological advantages. Homogamy, on the one hand, might reflect a specific adaptation for avoiding excessive outbreeding, that is preventing individuals of the co-adapted genetic complexes being disrupted in the offspring (Bateson, 1983; Read & Harvey, 1988). On the other hand, it may increase the degree to which parents share genes with offspring, and thus enhances the genetic representation in future generations (Thiessen, 1999).

As for proximate mechanisms, genetic similarity theory assumes that we are genetically pre-programmed to detect particular phenotypic cues in unrelated individuals on the basis of their similarity to us in these cues. Sexual imprinting (familiarization), instead, occurs in the context of specific developmental processes through which individuals acquire mate choice criteria from the social contact with their parents. Children shape a mental template of the opposite-sex parent and use it after reaching sexual maturity. Males do not “simply” match their phenotypic traits to their potential mates. They build up an image of their mother’s appearance and behavior, and search for a partner who fits that perceptual schema. An important difference between imprinting-like mechanism and phenotype matching—at least its strong version—is that the development of the former one definitely needs social interaction. Homogamy is shaped during a learning process which occurs in a specific direction that is advantageous to genetic reproduction.

That distinction may be more enlightened by the assumption that parental templating should not necessarily lead to a phenotypic and genetic similarity between spouses. It works not only in the absence of the same gene for altruism but in the absence for shared genes at all. In the light of this hypothesis, familiarization will have a long-term effect on one’s mate choice, even if one and the caring adults do not share genes by common descent. I assume that children who are reared by stepparents will choose a mate who resembles the non-biological parent rather than the biological one. That hypothesis on the non-adaptive consequence of an adaptive mechanism should be tested in the future.

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