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**CITY UNIVERSITY OF HONG KONG**

**Facial Resemblance in Couples**

A Report Submitted to  
Department of Applied Social Studies  
in Partial Fulfillment of the Requirements for  
the Master of Social Sciences in Applied Psychology

by

WONG Wing Wah

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## Abstract

There is a widespread Chinese term “Fu Qi Xiang” used to describe the facial resemblance phenomenon of couples. Investigating facial resemblance in couples as a form of assortative mating is important because appearance affects the outcome of a wide variety of social situations and plays a key role in mate choice (e.g. Buss, 1989; Sigall & Ostrove, 1975). Evidence for “Fu Qi Xiang” is mixed and it is not clear whether “Fu Qi Xiang” is purely contributed by a resemblance of physical features of the partners’ faces or it is contributed by people matching some specific perceptual qualities of the face including perceived age, attractiveness, and perceived personality trait. This study therefore aims to examine whether “Fu Qi Xiang” is valid among couples and to identify potential contributors to “Fu Qi Xiang”. Facial photographs of 60 married couples and 60 randomly paired couples as control were rated by 51 judges on facial similarity, attractiveness, perceived age, and perceived personality traits. Results showed that married couples’ similarity ratings were significantly higher than that of the control group, proving “Fu Qi Xiang” a valid concept. Matching of perceived agreeableness in spouses was supported by two findings: perceived agreeableness was significantly correlated between spouse; and the spousal differences in agreeableness was significantly smaller than that of the control group, suggesting that the spousal similarity in agreeableness is not an outcome of random pair formation. Facial similarity ratings of couples was found to be contributed partially by perceived

age but not attractiveness nor any of the personality traits. It is therefore concluded that “Fu Qi Xiang” is not purely contributed by a resemblance of physical facial features. It could be a result of people’s matching of perceived age of the faces.

*Keywords:* facial resemblance, couples, perceived personality traits

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## Chapter 1: Introduction and Literature Review

### Literature Review

Why two people marry each other rather than marrying other potential mates?

The systematic pattern in human mate selection has been an interesting area that has intrigued investigation by psychological research for decades. Theories of human mating share the notion that mating choice is strategic with a goal to seek equity, similarity, and complementarity (Buss & Schmitt, 1993). Eckland (1968) reported that early psychologists including Freud and Jung views that human are attracted to partners with characteristics resembling those of their opposite-sex parent. It was also stipulated that human select romantic partners to complement what they are lacking (Winch, 1958). Many others have posited the notion of “like attracts like” and that people search for similarity in mates (Cattell & Nesselroade, 1967; Thiessen & Gregg, 1980). According to Berscheid and Walster (1974), exchange and equity theories propose that human mating is a result of exchanging valuable resources between partners in a fair and impartial manner. Empirical evidence have also given support to systematic patterns in mating and use the term “assortative mating” or “homogamy” to refer to the systematic pattern of mating with regard to similarity (positive assortative mating) and complementarity (negative assortative mating) of partners’ characteristics (Thiessen & Gregg, 1980).

In particular, positive assortative mating has been demonstrated extensively for many different characteristics between mates including but not limited to socioeconomic status, physical traits, attitudes, cultural measures, intellectual ability, and personality traits (Botwin, Buss, & Shackelford, 1997; Cattell & Nesselrode, 1967; Feng & Baker, 1994; Gilger, 1991; Luo & Klohnen, 2005; Spuhler, 1968; Watkins & Meredith, 1981). The researchers have found high degree of spousal similarity, as conventionally measured by spousal correlation, in age, education, and cultural measures such as ethnicity. Low to moderate spousal similarity is found for personality traits, intelligence, and physical attractiveness. Investigators have proposed that couples are mating for similarity in genetic composition in positive assortative mating (Rushton, 1995; Thiessen & Gregg, 1980). The evolutionary benefits of mating for resemblance in genotype may include augmenting inclusive fitness and communication (Rushton, 1995; Thiessen, 1993; Thiessen & Gregg, 1980).

Investigating facial resemblance in couples in view of human mating is particularly important because the conspicuous features of the face possess a strong genetic basis (Savoye, Loos, Carels, Derom, & Vlietinck, 1998) and the visual aspect of faces plays a key role in mate selection with attractiveness governing the value of a potential mates (Buss, 1989). Moreover, in this social world appearance affects the outcome of a wide variety of social situations. To name a few, a person's being offered a job (Watkins & Johnston, 2000) and winning votes in an election (Little, Burriss,

Jones, & Roberts, 2007). Along the line, in the Chinese world, there is a widespread term “Fu Qi Xiang” (夫妻相) (facial resemblance in couples) that people used to describe couples who look alike. There are two beliefs embedded in the Chinese “Fu Qi Xiang”. First, it is the belief that romantic partners who look similar have a higher chance of getting married, which is a kind of positive assortative mating. Second, it is the belief that the facial appearance of married couples will increasingly look like each other. The present study focuses on the first belief of “Fu Qi Xiang” which defines it as the facial resemblance of couples due to positive assortative mating.

Nevertheless, is “Fu Qi Xiang” indeed a valid concept? Evidence for “Fu Qi Xiang” is mixed. Engaged couples and couples married for many years were rated as more similar than randomly paired couples in some studies (Griffiths & Kunz, 1973; Hinsz, 1989). However, others have found that facial resemblance was only present after 25 years of marriage but not in their first year of marriage (Zajonc, Adelman, Murphy, & Niendenthal, 1987). It is therefore imperative for additional effort to examine if “Fu Qi Xiang” is really valid. This is the first goal of our study.

If “Fu Qi Xiang” is valid, then what contributes to this phenomenon? More recently, Little, Burt, and Perrett (2006b) has investigated assortative mating for facial similarity in married couples. They reported that married couples have higher similarity in perceived age and perceived attractiveness. They then controlled these two facial qualities in their analyses and found that married couples were perceived to

have similarity in a range of personality traits. This result leads to a question that whether the facial resemblance phenomenon is purely contributed by a resemblance of physical features of the faces, or it is contributed by people matching some specific perceptual qualities of the face including perceived age, attractiveness, and perceived personality trait as suggested by Little et al. (2006b). We aim to address this question to find out what may contribute to “Fu Qi Xiang” and this is the second goal our study. Our study does not aim to explain why this assortative mating happens such as reasons including imprinting and evolutionary adaption, etc., but we are more interested in the perceptual-level contributors to “Fu Qi Xiang”. We are interested in “Fu Qi Xiang” that is robust enough to be revealed from static facial photographs of people with neutral expression and of whom the naïve judges do not know of personally.

To recap, the potential factors contributing to “Fu Qi Xiang” include firstly physical features resemblance which refers to the resemblance of the conspicuous facial features between couples such as the resemblance in size and shape of eyes (e.g. Hinsz, 1989); secondly, the matching of attractiveness which may be a result of people’s preference to have mates with similar level of attractiveness (e.g., Bailey & Price, 1978). Thirdly, the assortment of perceived personality traits which may be resulted from people’s preference of mates having similar personalities and hence are attracted to people with facial cues to similar personality traits. Couples therefore may look to have similar personality traits or were matched for facial cues to personality,

for example, both partners have extravert-looking faces (Little, et al. 2006b). Fourthly, it may be an outcome of people matching for age in partners because attractiveness and personality traits may change over time with age (Little et al, 2006b). Last but not least, even a mixture of these potential contributors may interplay with each other to contribute to “Fu Qi Xiang”. In the following, we will review literatures on physical features resemblance, matching of physical attractiveness and assortment of perceived personality traits.

### ***Physical Features Resemblance***

Only four empirical studies have examined “Fu Qi Xiang” in real-life romantic couples and the evidence is mixed. Three experiments adopted an indirect assessment of facial resemblance by assessing the observers’ ability to correctly match photographs of romantic partners and found mixed results (Alvarez & Jaffe, 2004; Griffiths & Kunz, 1973; Zajonc et al., 1987). Alvarez and Jaffe (2004) is the only study showing that the number of correct matches of romantic partners made by participants was far larger than expected by chance. Griffiths and Kunz (1973) asked participants to match photographs of partners in couples and found that only couples married for less than 10 years and over 20 years were matched with accuracy above random guessing; however, couples married for ten to twenty years were not matched correctly. Inconsistent with Griffiths and Kunz’s (1973) results, Zajonc et al. (1987) found that married 3 couples married for 25 years were correctly matched by

participants at a level above chance; however, the same couples were not matched correctly when they first got married. Couples were thus proposed to have facial features growing more similarly as they live with each other for a long period of time instead of positive assortative mating. On top of the mixed results, these indirect method of assessing facial resemblance was criticized to have assessed people's ability to match pairs in couples rather than assessing the facial resemblance (Hinsz, 1989). Hinsz (1989) has thus introduced a direct assessment of facial resemblance in couples by asking judges to rate the degree of similarity between partners. He found that romantic partners have a higher degree of facial similarity than randomly matched pairs. Because of mixed evidence, we therefore would like to strengthen the empirical evidence for facial resemblance in couples by providing another piece of evidence from a Chinese angle adopting the direct assessment of facial similarity in couples similar to Hinsz's (1989).

Most of these studies utilized photographs showing non-facial features such as hairstyle and glasses in the rating tasks. These stylistic cues may have biased the judgments of facial similarity as people may be matching these non-facial features or things like how trendy their appearances are, etc.. In this study, we try to prevent this potential bias by removing all non-facial features in the photographs by using Photoshop to obscure hair, ears, neck and clothes and to provide them with a uniform black background so that all judgments made were solely based on facial features.

### *Matching of Physical Attractiveness*

Matching of attractiveness is an area which receives the most attention in mating preference and cannot be ignored when examining facial resemblance in couples (e.g., Cavior & Boblett, 1972; Murstein, & Christy, 1976; Silverman, 1971). It may potentially account for part of the resemblance in appearance in couples. A meta-analysis on physical attractiveness conducted by Feingold (1988) showed that attractiveness in romantic partners are moderately correlated ( $r = 0.49$ ). It was also reported that matching in attractiveness may predict relationship success for dating couples as reflected in the higher correlations of attractiveness found between married partners than for dating partners (Cavior & Boblett, 1972). A study by Alvarez and Jaffe (2004) has showed that romantic partners exhibit higher similarity in facial appearance than can be predicted by random pairing. He has also found that females and males tend to pair with each other with similar level of attractiveness implying that the higher similarity in facial appearance may be an outcome of matching for attractiveness. Similarly, married couples were found to have similar attractiveness level in another study by Shepherd and Ellis (1972). Penton-Voak, Perrett, and Pierce's (1999) utilized computer graphic image manipulation to generate facial photographs from participants' images and found that self-resembling faces were rated higher in attractiveness. This preference for self-resembling faces may result in facial resemblance and matching of attractiveness in couples. These previous studies all

pointed to the possibility that similarity in attractiveness may result in some perceived facial resemblance in couples though no study has yet provided evidence for the linkage between matching of attractiveness and facial resemblance in couples. Our study will try to examine the connection between the two.

### *Assortment of Perceived Personality Traits*

Little, Burt, and Perret (2006a) found that people appeal to faces exhibiting their desired personality traits and they regard those faces as more attractive. This preference may result in people choosing mates with faces perceived to have their desired personality. In another study by Little et al. (2006b), they attempted to explore assortative mating through the linkage between matching of perceived personality traits and facial resemblance in married couples. The term “personality traits” discussed in the present study refers to the perceived personality traits, which are not necessarily the same as the actual personality of the individuals (Hassin & Trope, 2000). The judges were asked to rate a variety of personality traits from photographs of couples with neutral facial expression and it was found that various perceived personality traits including openness, conscientiousness and extraversion were significantly correlated between married couples’ faces even when controlling levels of attractiveness and perceived age, both of which were found to be correlated between partners in couples in the same study and were found to associate with personality judgments in some previous research (Dion, Berscheid, & Walster, 1972; Berry &



McArthur, 1986). Little et al. (2006b) suggest that assortment in perceived personality traits may attribute to some extent of the facial resemblance in couples found in earlier studies, though they have not investigated the correlation between matching of perceived personality traits and facial resemblance of couples to support the claim. Study by Little et al. (2006b) may also be challenged for lacking of a control group comparison to verify that the matching is only valid among couples but not among “friends”, “acquaintances” or even random pairings.

### **Research Questions and Hypotheses**

To recapitulate, the current study aims to answer two questions including whether “Fu Qi Xiang” is a valid concept in support of positive assortative mating in facial appearance and whether “Fu Qi Xiang” is purely contributed by a resemblance of physical features of the faces, or it is contributed by people matching some specific perceptual qualities of the face including perceived age, attractiveness, and perceived personality trait (the potential contributors to “Fu Qi Xiang”).

We will answer the first question whether “Fu Qi Xiang” is a valid concept in married couples by comparing the facial similarity ratings of the married couples group with a control group comprising randomly matched fake couples. As past studies have provided certain evidence that couples tend to resemble each other (e.g., Alvarez & Jaffe, 2004), it is therefore hypothesized that “Fu Qi Xiang” is valid which would be

supported in this study and we predict that the similarity ratings for married couples will be significantly higher than that of the control group.

If ‘Fu Qi Xiang’ is proved to be valid, we will then proceed to examine the potential contributors to “Fu Qi Xiang” including the matching of perceived age, attractiveness and perceived personality traits in couples. There are two steps involved to answer this question. The first step is to demonstrate that the spouses are indeed matched on these three facial qualities. The second step then is to show that the matching of these three facial qualities does contribute to “Fu Qi Xiang”. In the first step to demonstrate a real matching of perceived age, attractiveness and perceived personality traits in couples, there are two sub-questions involved. Firstly, whether these facial qualities are associated between partners; and secondly, if these facial qualities were associated between partners, then we need to answer whether the couples are perceived to have higher facial similarity than randomly matched pairs on these three facial qualities.

We will answer the first sub-question on whether there the three interested facial qualities are associated between partners by computing spousal correlations for three interested facial qualities. Previous study has found significant spousal correlations for attractiveness, perceived age, conscientiousness, openness to experience and extraversion (Little et al., 2006b). We therefore hypothesize that association does exist between partners in the interested facial qualities. We predict

that significant positive correlations will be found in married couples in attractiveness, perceived age and certain perceived personality traits.

To answer the second sub-question on whether couples are perceived to have higher facial similarity than randomly matched pairs on these three facial qualities, we will compute and compare the mean difference scores in attractiveness, perceived age, and perceived personality traits for real couples with a permutation control group (see Methods). We hypothesize that real couples are perceived to be more similar in the facial qualities than can be expected by random pairings. We therefore predict that the mean difference scores for real couples in attractiveness, perceived age, and certain perceived personality traits to be significantly smaller than that of the permutation control group, showing that real couples are more similar in these facial qualities.

Going back to second step to investigate whether matching of attractiveness, perceived age and perceived personality traits contribute to “Fu Qi Xiang”, regression will be conducted. Though no previous studies have done this analysis, matching of attractiveness, perceived age and perceived personality traits in couples were assessed based on facial images and it is reasonable to believe that it may potentially explain part of the facial resemblance in couples which was also measured based on facial images. We hypothesize that “Fu Qi Xiang” is partially contributed by people matching some specific perceptual qualities of the face which may include perceived age, attractiveness, and certain perceived personality traits. Hence, we predict that the

matching of perceived age, attractiveness and certain personality traits (as measured by difference scores) would predict the degree of “Fu Qi Xiang”.

## Chapter 2: Methodology

### Participants

Fifty-one participants comprised 10 men ( $M = 25.49$  years,  $SD = 7.35$ , range = 20–46) and 41 women ( $M = 24.54$  years,  $SD = 6.59$ , range = 18–41) were recruited from a pool of students studying Basic Psychology course at the City University of Hong Kong (hereafter referred to as judges) to rate on various perceived facial characteristics and facial resemblance of couples for course credit.

### Stimuli

One-hundred and twenty individual photographs were collected on a convenience basis representing 60 pairs of married couples (hereafter referred to as real couples). Digital photographs of the faces were taken by either the individuals or the experimenter. Couples were asked to relax their facial muscle so as to present a neutral expression. The 60 couples provided information on their ages and length of marriage. Marriage length ranged from 0.5 to 35 years ( $M = 8.13$  years,  $SD = 7.57$ ). The actual age of couples ranged from 26 to 55 years old ( $M = 36.64$  years,  $SD = 5.84$ ) for wives and from 28 to 60 ( $M = 38.29$  years,  $SD = 6.39$ ) for husbands. The photographs were firstly scaled so that the eyes are aligned on the same plane and are separated by a roughly the same distance in all photographs. We use Photoshop to conceal hair, ears, neck and shoulders and to provide them with a uniform black background so that all judgments made were solely based on facial features (Figure 1).

## Procedures

After giving consent to participate in this experiment and providing some basic information on age and sex, judges were shown 120 pairs of faces side by side on a computer screen randomly for making facial similarity ratings. Among the pairs of photographs, 60 pairs of couples are actual married couples and the other 60 control pairs are fake couples composing of individuals randomly matched up from the actual married couples. Similarity was rated on a 7-point Likert scale where 1 represents no similarity and 7 represents extremely similar (like brother and sister with highly similar looking).

The 120 individual photographs were presented to the judges for rating various scales including attractiveness, perceived personality traits and perceived age in two single-sex blocks in random order. To avoid potential interference between ratings, judges were requested to rate attractiveness for all faces before they move on to rate for perceived personality traits, then perceived age. For example, people perceived to be attractive may be viewed to be more extraverted (e.g., Maynard, 1996), hence judging these two characteristics at the same time may interfere with one another.

Physical attractiveness was assessed with a 7-point Likert scale (1 = very unattractive and 7 = very attractive). Perceived personality traits including the Big Five Personality factors (e.g., McCrae & Costa, 1987) were measured using bipolar semantic scale improving on the design adopted by Little et al. (2006b). Little et al. (2006b) used a

bipolar scale on only one facet of the traits which may not adequately represent the comprehensive concept contained in the five personality factors. Therefore, in the present study, the Big Five Personality factors were given with bipolar descriptions below which contain the top five definers of the traits with the highest factor loadings from the original article by McCrae and Costa (1987). Judges were asked to rate from 7-point bipolar rating scale for each personality trait: Openness to experience (original, creative, daring, imaginative, and broad interests) versus closedness to experience (conventional, uncreative, unadventurous, down to earth, and narrow interests), neuroticism (worrying, nervous, emotional, insecure, and self-conscious) versus emotional stability (calm, at ease, unemotional, secure, and comfortable), extraversion (sociable, affectionate, talkative, fun loving, and friendly) versus introversion (retiring, reserved, quiet, sober, and aloof), agreeableness (soft-hearted, forgiving, sympathetic, acquiescent, and selfless) versus antagonism (ruthless, vengeful, callous, antagonistic, and selfish), conscientiousness (careful, conscientious, reliable, well organized, and hardworking) versus undirectedness (careless, negligent, undependable, disorganized, and lazy).

Lastly, the judges were asked to rate perceived age by choosing age in decade (ranging from 20s to 80s) and position within that decade (early, mid, late). On the same screen, judges had to indicate if they know the person as a control, and if so, they were required to choose the relationship with the person among friends, relatives,

colleagues, and classmates. This question helps us eliminate those judges who were confounded by actual interaction with the participants.

### **Statistical Analysis**

Independent-samples t-tests and one-way analysis of variance (ANOVA) were conducted to test difference between the facial similarity ratings of the real couples and the control group. Pearson's correlations were conducted to assess the relationships of perceived age, attractiveness and perceived personality traits between partners.

Absolute value difference scores (difference scores) were calculated by taking the absolute value of the difference calculated by subtracting female partner's individual score from the male partner's individual score on the measures. These absolute difference scores will be used to measure the degree of similarity between partners.

Multiple regressions were also performed to examine the relationships between the degree of facial resemblance and the various difference scores to identify potential contributors to "Fu Qi Xiang". All statistics are reported 2-tailed.

To determine whether difference scores for real couples were significantly different from randomly paired couples, we conducted permutation tests. Ten thousand samples (permutation control group) were generated by randomly shuffling male member's and female member's scores for each couple. Significance values were calculated as the proportions of samples for which the mean difference scores were smaller than that of the real couples group.



## Chapter 3: Results

### Reliability of Ratings

For couples' facial similarity, very high inter-rater agreement was found ( $\alpha = 0.94$ ). In terms of the various individual facial ratings, very high agreement was found among raters for both female faces (age  $\alpha = 0.99$ , attractiveness  $\alpha = 0.97$ , agreeableness  $\alpha = 0.93$ , conscientiousness  $\alpha = 0.75$ , extraversion  $\alpha = 0.93$ , neuroticism  $\alpha = 0.89$ , openness to experience  $\alpha = 0.94$ ,) and male faces (age  $\alpha = 0.99$ , attractiveness  $\alpha = 0.94$ , agreeableness  $\alpha = 0.89$ , conscientiousness  $\alpha = 0.82$ , extraversion  $\alpha = 0.93$ , neuroticism  $\alpha = 0.82$ , openness to experience  $\alpha = 0.93$ ,). These inter-rater reliability may be a result of a well-controlled experimental design that people can focus on the facial features (with all stylistic cues such as glasses and hairstyle being removed) and get a better understanding of the concept of the different traits with top 5 descriptors of the traits presented.

### Facial Resemblance in Couples

Independent-samples t-tests were performed to compare the facial similarity ratings between real couples ( $M = 3.03$ ,  $SD = 0.65$ ) and randomly paired control group ( $M = 2.46$ ,  $SD = 0.58$ ). Actual couples were found to have higher facial resemblance than random pairs,  $t(118) = 5.03$ ,  $p < .001$ . Because matching of attractiveness and perceived age may account for couples' facial similarity (Little et al., 2006b), we have also conducted ANOVA controlling for matching of perceived age and attractiveness

by including the difference scores in attractiveness and perceived age as covariates.

Significant difference still exists between real couples and the control group,  $F(3, 116)$

$= 10.13, p < .001$ , partial  $\eta^2 = .21$ . These results provide empirical support for Fu Qi

Xiang, and are consistent with previous studies (Alvarez & Jaffe, 2004; Hinsz, 1989).

The Chinese concept of “Fu Qi Xiang” is therefore supported as a valid concept.

### **Matching of Facial Characteristics between Partners**

Recalling that demonstrating a real matching of perceived age, attractiveness and perceived personality traits in couples, there are two sub-questions to answer.

Firstly, to answer whether these facial qualities are associated between partners,

spousal correlations will be computed; and secondly, to answer whether couples are

perceived to have higher facial similarity than randomly matched pairs on these three

facial qualities, difference scores for real couples will be compared with the permutation

control group.

#### ***Spousal Correlations of Perceived Age, Attractiveness and Personality traits***

Perceived age and attractiveness were found to be significantly correlated

between partners in many previous studies (e.g. Feingold, 1988; Little et al., 2006b). In

the current study, perceived age between partners was found to be significantly

correlated ( $r(58) = .59, p < .001$ ), which is consistent with the findings in previous

research. However, to our surprise, no significant relationship was found between

partners for perceived attractiveness ( $r(58) = .09, p = .49$ ). Though attractiveness was

not correlated between partners, it was found to be significantly correlated with many of the perceived personality traits for female faces (conscientiousness:  $r(58) = .27, p = .036$ ; extraversion:  $r(58) = -.55, p < .001$ ; openness:  $r(58) = -.74, p < .001$ ) and with all traits for male faces (agreeableness:  $r(58) = -.31, p = .015$ ; conscientiousness:  $r(58) = .48, p < .001$ ; extraversion:  $r(58) = -.29, p = .024$ ; neuroticism:  $r(58) = .30, p = .022$ ; openness:  $r(58) = -.43, p < .001$ ).

Among all spousal correlations on perceived personality traits, only agreeableness was found to be very close to significant between partners ( $r(58) = .25, p = .053$ ). Because matching in perceived personality traits may be an outcome of people matching for age or attractiveness in partners (Little et al, 2006b), perceived age and attractiveness were then being controlled to compute the partial correlations.

Agreeableness became significant between partners ( $r(54) = .32, p = .017$ ). Spousal correlation for extraversion also approached significant ( $r(54) = .23, p = .089$ ).

Interestingly, though both our study and study by Little et al. (2006b) found that some perceived traits were similar between partners, we differ in the matched traits found: openness, extraversion, and conscientiousness in Little et al. (2006b) versus agreeableness (and marginally extraversion) in our study.

Because significant positive spousal correlations were only found in perceived age and perceived agreeableness but not in attractiveness and other personality traits,

our hypothesis that association does exist between partners in the interested facial qualities is only partially supported.

### ***Comparison of Real Couples and Permutation Control Group***

Difference scores of the three interested facial qualities for real couples were compared with the permutation control group. Real couples have shown to have significantly smaller difference scores in most of the facial characteristics (perceived age,  $p < .001$ ; agreeableness,  $p < .001$ ; neuroticism,  $p < .001$ ; extraversion,  $p = .049$ ; openness,  $p < .001$ ) except attractiveness and conscientiousness. The significantly smaller mean differences in four out of the five personality traits in the real couples group were consistent with our prediction, showing that real couples are more similar in these facial qualities, however, as contrary to our prediction, significantly smaller mean differences were not found in attractiveness and conscientiousness. Our hypothesis is therefore only partially supported that real couples are perceived to be more similar in the interested facial qualities than can be expected by random pairings.

Summarizing the results from spousal correlations and difference scores comparison with permutation control group, we can conclude that real matching exist between partners in perceived age and perceived agreeableness as these two perceived facial qualities are the only ones which were found to have significant results in both tests.

### **Potential Contributors to “Fu Qi Xiang”**

Correlations and multiple regression were used to explore the relationship between facial resemblance in couples and potential contributors including assortment in perceived age, attractiveness, and the five perceived personality traits. Among the seven potential predictors, only the difference scores in conscientiousness ( $r = -.33, p = .005$ ), attractiveness ( $r = -.26, p = .022$ ) and perceived age ( $r = -.24, p = .031$ ) exhibit significant negative correlations with couples' similarity scores. That means the smaller the difference between partners in these facial characteristics, the higher the similarity scores. Similarity scores were then regressed on the difference scores of couples for all of the potential contributors (Table 1). The regression with seven predictors was found to be significant,  $F(7,52) = 2.39, p = .034$ . The seven predictors in total accounted for 24% of the variance in the similarity ratings ( $R^2 = .24$ ). However, only the difference scores on perceived age ( $\beta = -.32, p = .031$ ) and conscientiousness ( $\beta = -.30, p = .021$ ) demonstrated significant effects on the similarity scores. Though the difference scores in attractiveness is correlated with the similarity ratings but it was not found to be a significant predictor in the regression. Its contribution may be accounted for by the difference scores in perceived age and conscientiousness, with which the difference scores in attractiveness are correlated (perceived age:  $r = .28, p = .015$ ; conscientiousness:  $r = .28, p = .017$ ). Difference score correlations have to be evaluated with caution because difference scores may be confounding with their constituents (individual scores) and hence have to be interpreted in light of the

correlations of the individual scores (e.g., Edwards, 1994; Johns, 1981). For example, if the individual scores of a perceived personality are found to be correlated between partners and further significant coefficients are found for the difference score for the same perceived personality trait in regression, we can be certain that that matching in that particular perceived personality trait in partners contribute to “Fu Qi Xiang”.

Because only the perceived age for the spouses are significantly correlated ( $r(58) = .59$ ,  $p < .001$ ), it is therefore reasonable to accept the conclusion that only the difference in perceived age of spouses predicts the degree of facial similarity of couples. Although the matching of perceived conscientiousness (measured in difference scores) in partners was found to be a significant predictor in regression, the non-significant correlations between spouses’ individual conscientiousness scores brings concerns on the regression results. We therefore cannot draw a firm conclusion that matching of conscientiousness predicts the degree of facial similarity in couples. Our hypothesize that “Fu Qi Xiang” is partially contributed by people matching some specific perceptual qualities of the face which may include perceived age, attractiveness, and perceived personality trait is partially supported as only matching in perceived age was found to partially account for the observed “Fu Qi Xiang”.

## Chapter 4: Discussion and Conclusions

The present study aims to examine if the widespread Chinese term “Fu Qi Xiang” for describing facial resemblance in couples is a valid concept and identify potential contributors to “Fu Qi Xiang” with a focus on matching of perceived age, attractiveness and perceived personality traits.

“Fu Qi Xiang” was found to be valid in the current study which demonstrates that married couples are perceived to have higher facial similarity than randomly matched fake couples. Further examination has shown that partners were matched on perceived age and perceived agreeableness because: firstly, individual scores on these two facial qualities were found to be significantly correlated between partners. Secondly, the difference scores between partners in perceived age and perceived agreeableness were found to be significantly smaller than randomly matched pairs. This matching between partners provides evidence for positive assortative mating on facial cues to perceived age and perceived agreeableness. Regression results demonstrated that the matching between partners in perceived age partially explain the observed “Fu Qi Xiang” but the same conclusion cannot be drawn for attractiveness nor any of the perceived personality traits. Summing up the above, we have succeeded in providing additional evidence that “Fu Qi Xiang” is a valid concept among couples from a Chinese angle with a better controlled design. It is also supported that “Fu Qi

Xiang” is not purely contributed by a resemblance of physical facial features as it could be a result of people’s matching of perceived age of the partners’ faces.

### **Facial Resemblance in Couples**

The higher facial resemblance of married couples than randomly matched couples corroborated previous studies that couples’ facial appearance tend to resemble one another (Alvarez & Jaffe, 2004; Hinsz, 1989) and provided additional support to validate the Chinese “Fu Qi Xiang” concept. Because of the removal of all stylistic non-facial cues in the photographs, the current study provides further support for facial resemblance in couples with a better controlled design than previous studies which include hair and other stylistic cues in the photographs (Alvarez & Jaffe, 2004; Hinsz, 1989; Griffiths & Kunz, 1973). This is also the first empirical evidence for “Fu Qi Xiang” under a Chinese context.

### **Matching of Facial Characteristics in Couples**

#### *Spousal Correlations of Perceived Age, Attractiveness and Personality traits*

Perceived age and attractiveness were typically found to be matched in couples (e.g. Feingold, 1988, Little et al., 2006b). Our study has replicated previous findings that perceived age were significantly matched between partners. However, attractiveness was not found to be matched between spouses. Though contrary to the findings in most previous research on attractiveness, this is consistent with Burriss, Roberts, Welling, Puts, and Little, (2011) who found no significant spousal correlation



in attractiveness. Burriss et al. (2011) suggest that the specific focus on facial attractiveness with all non-facial information in the photographs such as hairstyle, glasses, and clothing being masked from the judges will be a reason for this findings because previous studies which found assortment for attractiveness as included in Feingold's (1988) meta-analysis used self-ratings or real-person assessment by judges. Using other-rated scores are preferred in this kind of analysis because of two reasons. First, other-rated scores are believed to be more objective than self-rated scores and consensus scores can be computed across judges to further increase the objectivity. Secondly, self-ratings is likely to be influenced by non-facial traits. Our study design is indeed very similar to Burriss et al. (2011), which also focus on facial features adopting neutral expressions, non-facial traits were not available to raters and other-rated scores were used without the presence of the person, we therefore provided additional support to Burriss et al. (2011) that spousal facial attractiveness ratings were not correlated and there is limited assortment in facial attractiveness in couples. Previous studies which found significant correlation in spouses' attractiveness may be a result of matching of non-facial stylistic cues. Future studies may confirm whether non-facial cues contributes to the attractiveness matching by using two versions of photographs (unmasked vs. masked) and test for the correlation on attractiveness between spouses.

Correlation analysis controlling for matching of perceived age and attractiveness has found that agreeableness was significantly correlated between partners. This is inconsistent with Little et al. (2006b) who found significant matching in openness, extraversion, and conscientiousness. There are two possible reasons causing the variations. First, the current research has been stringent in eliminating non-facial stylistic cues such as hairstyle whereas photographs used in Little et al. (2006b) may contain these stylistic cues and impact raters' perception of the personality traits (Naumann, Vazire, Rentfrow, & Gosling, 2009). It is also possible that the different descriptors used for the personality traits may explain some of the differences between Little et al. (2006b) and our study. In the research by Little et al. (2006b), the wording "broad interests" was used instead of openness in their study 1 and significant correlation between partners was found. However, in their study 2, when they changed the questions to ask for ratings for openness, no significant correlation between partners was found, which is in fact consistent with our study. As for agreeableness, extraversion and conscientiousness, Little et al. (2006b) did not provide any description of the personality traits for raters whereas the top five descriptors were included in the current study for raters to fully grasp the rich meaning of the traits. This may result in a differential understanding of the traits in these two studies and hence a variation in results. Nevertheless, these two studies have shown that partners in married couples are matched at least in some perceived personality traits. It may be a

matter of how these personality traits were being communicated and understood which would require further research to investigate the possibility.

### ***Comparison of Real Couples and Permutation Control Group***

When comparing with the permutation control group, married couples were found to have smaller differences in four out of the five perceived personality traits (openness, extraversion, neuroticism, and agreeableness) and also in perceived age. The overall pattern suggests that the judgments made tend to be systematic and relate to the idiosyncratic characteristics that appear to link to the marriage relationship. Conscientiousness was the only trait not showing a significantly smaller spousal difference than the control group. It may be that conscientiousness is really not matched between spouses, however, previous study did find contradictory results that support the matching of conscientiousness in couples (Little et al., 2006b). Our inability to notice the matching effect may be a result of fact that conscientiousness is more difficult to be perceived from static facial photographs without any stylistic cues. Previous research stipulates that the style of clothing, which was not available in the present study, has been used by people to judge conscientiousness (e.g., Albright, Kenny, & Malloy, 1988; Borkenau & Liebler, 1992). Naumann et al. (2009) also found low accuracy in perceiving conscientiousness from photographs. Future research interested in studying conscientiousness with photographs may need to include stylistic cues for a more accurate assessment.

Summarizing the above, two lines of evidence were provided by the current study for the matching of perceived age and perceived agreeableness in married couples. These two facial qualities were found to be positively and significantly correlated between partners in married couples and when comparing with the permutation control group, significantly smaller difference between spouses was also found in these two perceived facial qualities. This is the first empirical evidence for matching of certain perceived personality traits in married couples with a control group comparison.

### **Potential Contributors to “Fu Qi Xiang**

As discussed, matching for perceived age and perceived agreeableness were supported in the current study and these may account for facial resemblance in married couples. Although regression results have shown that matching of both perceived age and conscientiousness (as measured in difference scores) were significant predictors of couples' facial similarity, conscientiousness was not found to be correlated between partners. As mentioned in the result section, several researchers (e.g. Edwards, 1994; Johns, 1981) have postulated that difference score correlations and regression results have to be evaluated with extra caution because difference scores may be confounding with their constituents (individual scores). Therefore, significant results have to be found in both the difference scores and its constituent individual scores in order to substantiate a true significant effect in the difference scores. In our case, the individual

scores correlations between partners in conscientiousness are not significant, to be prudent, we cannot conclude that matching of perceived personality traits account for the observed “Fu Qi Xiang”. As discussed earlier, the difficulty in perceiving conscientiousness accurately may affect our results here. The fact that conscientiousness was found to be significantly correlated between partners in the previous study by Little et al. (2006b) may worth a replication of the current study with photographs showing the stylistic cues of couples to revisit the results. Perceived age on the other hand was found to be significantly associated between partners which is consistent with previous findings (eg. Little et al., 2006b), we therefore can conclude that the facial resemblance phenomenon is not purely contributed by a resemblance of physical facial features as it could be a result of people’s matching of perceived age of the partners’ faces.

### **Limitations and Future Studies**

When evaluating the results of the study, although it provides a well-controlled evidence for matching in perceived age and agreeableness with a neutral expression in married couples. It is possible that we were not able to detect some relationships which do exist due to some limitations. Firstly, as mentioned before, stylistic cues may affect the judgment of conscientiousness and attractiveness, future studies may confirm whether non-facial cues contributes to these two attributes by using two versions of photographs (unmasked vs. masked) and test for the difference in correlation on

attractiveness and conscientiousness between spouses. Secondly, the different descriptors used in describing the five personality traits may have resulted in a different understanding of the traits and hence the different perception of the traits from the faces. Future study may be carried out with different descriptors used to examine this possibilities in differential results. Thirdly, two-dimensional facial photographs are unlikely to fully capture perceived personality traits reflected on a three-dimensional face image. Three-dimensional facial images may be considered in future studies.

Separately as an interesting extension of the current study, faces with emotional expression could be utilized to analyze if the contributors to “Fu Qi Xiang” would be different. It is because people in reality do carry emotional expression and they may look differently from their neutral faces. It was also suggested that a close relationship exist between emotions and personality traits (Izard, 1977). Trierweiler, Eid, and Lischetzke (2002) reported relatively strong associations between personality traits and facial emotional expression and indicated personality might to certain extend regulate an individual’s emotional expression. Therefore, a subsequent study could extend the applicability of the current study by including faces with different emotional expressions.

## **Conclusions**

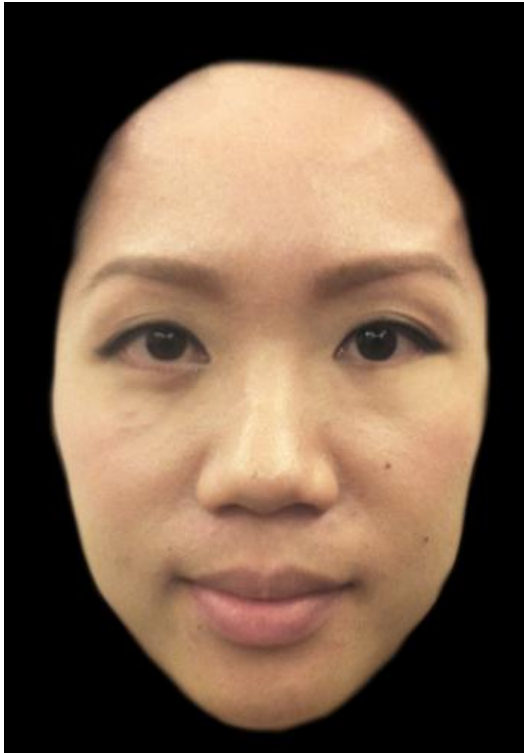
In summary, the results of this study, combined with data from other sources, warrant the conclusions that 1) married couples do look more similarity than randomly matched pairs and provided evidence for the popular Chinese concept of “Fu Qi Xiang”. 2) Matching of perceived agreeableness and perceived age in couples were found, reflecting assortative mating in these facial qualities which may contribute to “Fu Qi Xiang”. 3) Although no matching of perceived attractiveness nor perceived personality traits was found to account for “Fu Qi Xiang” in married couples, matching in perceived age was shown to be a significant predictor to “Fu Qi Xiang”. “Fu Qi Xiang” is therefore not purely contributed by a resemblance of physical facial features as it could be a result of people’s matching of perceived age of the partners’ faces. These findings are not only important for us to get a better understanding of “Fu Qi Xiang” as a form of positive assortative mating theoretically, but it also add practical value to our daily life as online match-making services, such as Soul2match and FindYourFaceMate, have been leveraging this ”Fu Qi Xiang” phenomenon to match people together based on facial resemblance. A better understanding of what facial qualities are contributing to “Fu Qi Xiang” may potentially help provide a more accurate matching of potential mates in real life.

Table 1

*Multiple Regression for Variables Predicting Facial resemblance in Couples (N = 60)*

Difference Scores in	Wives		
	<i>B</i>	<i>SE B</i>	<i>B</i>
Perceived age	-.16	.07	-.32*
Attractiveness	-.10	.16	-.08
Openness (O)	.49	.29	.39
Neuroticism (N)	.08	.24	.05
Extraversion (E)	-.41	.31	-.30
Agreeableness (A)	-.28	.23	-.17
Conscientiousness (C)	-.66	.28	-.30*
<i>R</i> <sup>2</sup>		.24	
<i>F</i>		2.39*	

\**p* < .05.



*Figure 1. A masked photograph: How the photographs of participants appeared in the rating task*



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