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The Association between Life History Strategy and Mate Preference in Men

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***Highlights (for review)**

> Mate preferences that facilitate reproductive goals vary with LH strategies.
> Good genes mate preference was positively correlated with fast LH.
> Good parenting mate preference was negatively correlated with fast LH.
> Men of fast life history strategies were sensitive to female facial neoteny.

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Abstract: The function of life history (LH) strategies acquired in response to ambient conditions during childhood is to maximize reproductive success. Mate preferences that facilitate reproductive goals should thus vary with LH strategies. In two studies, male participants completed measures of LH and mate preferences regarding fertility and good genes, fidelity and good mothers, and modernity and good provisioning (Study 1) or a face identification task designed to assess perceptual sensitivity toward neoteny representing fertility (Study 2). Results showed that men identified as of fast LH preferred physically attractive women and prioritized fertility and good genes over fidelity and good mothers in their mate selections. Moreover, they were sensitive to female fertility features, as evidenced by them spending less time identifying odd faces that differed from other faces in terms of neoteny. These findings suggest that men of faster LH are more likely to invest in mating than parenting and preferred mates of high reproductive potential over those representing high parental investment.

Keywords: life history; mate preference; good genes; good mothers; good providers

Introduction

Parental investment determines the direction of sexual selection. When females are the investing sex, males compete for access to females and females select among males, whereas males and females can be equally selective when both sexes contribute to parental investment (Trivers, 1972). Trivers' parental investment theory explains interspecific variations as well as individual differences within a single species. Men being highly parentally invested fathers (Geary, 2000) should therefore be selective like women in long-term relationships. At both levels, mating behavior including mate choice is the result of life history (LH) tradeoff strategies. Parental investment versus mating investment represents two LH strategies, with the former being a slow LH strategy that focuses on the quality of both parenting and offspring, and with the latter being a fast LH strategy that trades parenting quality for offspring quantity (Del Giudice & Belsky, 2011). In this light, why men are selective and what they select in long-term relationships are ultimate LH questions. Whereas women's mate choice has received much attention in the literature (e.g., Buss & Shackelford, 2008), the purpose of the present study was to investigate the association between LH strategies and men's mating preferences.

LH and Mating Behavior

LH refers to organisms capturing energy from the environment and using it to produce more organisms (Ellison, 2016). Some of this energy must be employed for the growth and maintenance of the energy-capturing organism, as well as for reproduction and raising offspring. Because of environmental constraints arising from limited resources and such extrinsic risks as predation, disease, and intraspecific violence that hinder the energy-capturing process, amounts of energy are seldom sufficient to meet all the demands. Trade-offs must be made between aspects of growth and development such as parenting and reproduction, resulting in two broad LH trade-off strategies: a fast strategy involving fast growth, early maturation, and a long mating tenure relative to the life span and a slow strategy associated with slow growth, late maturation, delayed reproduction, and a longer life span. The implementation of these strategies depends on the resources and risks in a species' environment (Ellis, Figueredo, Brumbach, & Schlomer, 2009). When resources are abundant or fluctuate between periods of prosperity and scarcity, organisms enjoying prosperity adopt fast LH strategies by freely exploiting the rich resources for fast development and early reproduction. Such organisms produce high quantities of offspring who can survive and thrive in a resource-rich, competition-free environment with little parental investment (MacArthur & Wilson, 1967; Pianka, 1970). When high reproductive rates increase population density to the point of resource depletion, organisms adopt slow LH strategies by shifting energetic investment from mating to parenting. Such organisms produce lower quantities of high quality offspring, and teach them the skills required to compete for available resources. Similarly, high frequencies and variations of such extrinsic risks as predation, war, and disease cause mortality and morbidity despite survival efforts. Under such conditions, organisms implement fast LH strategies to accelerate development and reproduction before extrinsic mortality or morbidity occurs (Promislow & Harvey, 1990).

Correspondence between environmental conditions and fast–slow LH is determined during evolution and continues to regulate organisms' responses to their current environments (Pepper & Nettle, 2017). For example, using a within-species individual-difference approach, numerous studies on human LH have shown linkages among environmental conditions, LH strategies, and various sexual outcomes (Lu, in press). People growing up in harsh and unpredictable environments tend to experience the early onset of puberty (Belsky et al., 2010; James, Ellis, Schlomer, & Garber, 2012), risky sexual activity at an early age, and premarital pregnancy (Ellis et al., 2003), with many becoming parents at young ages (Nettle, Coall, & Dickins, 2011; Sheppard & Sear, 2012). Experimental manipulation of mortality and morbidity (e.g., stories about impending uncertain harsh times) directly and indirectly correlates with such fast LH outcomes as short-term mating motivation and the desire for early reproduction (Dunkel, Mathes, & Decker, 2010; Griskevicius, Tybur, Delton, & Robertson, 2011). However, cues of resource-depleting environments alter mating behaviors, making them more characteristic of slow LH. College students in hungry state liked female mates with mature features (e.g., relatively taller, heavier, and older) that represent parental investment potential and they paid little attention to body shape that implies fertility and good genes (Pettijohn Sacco Jr, & Yerkes, 2009; Swami & Tovée, 2006). After being primed with impoverished living environments, men (Little, Cohen, Jones, & Belsky, 2007) and women (Lu, Zhu, & Chang, 2015) preferred mate values representing good parental investment over those representing good genes in long-term relationships, and women also preferred good provisioning (Lee & Zietsch, 2011). These mating preferences suggest slow LH orientation. Similarly, correlational studies have shown that slow LH strategies correlate with less effort invested in acquiring sexual partners (Gladden, Figueredo, & Jacobs, 2009), a weaker orientation toward short-term relationships (Dunkel & Decker, 2010; Olderbak & Figueredo, 2012), and more restricted attitudes toward sexual intercourse (Brumbach, Figueredo, & Ellis, 2009).

Mating Preference and LH

Mate choice is similarly calibrated by LH. As an ongoing topic of human mating, mate preferences have been investigated using methods such as textual analysis of mate-searching advertisements (Pawlowski & Dunbar, 2001) and questionnaires measuring the importance of various mate attributes in mate selection (Buss & Schmitt, 1993) or the likelihood of marrying a person with particular characteristics (Sprecher, Sullivan, & Hatfield, 1994). Three categories of preferences for long-term mates appear to have remained stable over time and in various locations. These categories are attractiveness or attributes of good genes and fertility, domestic virtues or attributes of good mothers and fidelity, and desirable economic conditions or attributes of good providers and modernity (Buss & Schmitt, 1993; Buston & Emlen, 2003; Chang, Lu, & Zhu, 2017; Lu et al., 2015; Schmitt, Shackelford, & Buss, 2001). Such preferences represent various LH strategies; for example, fertility-related attributes represent a fast LH strategy by contributing to immediate reproductive success (RS) upon insemination, whereas attributes of good parenting have a delayed effect on RS only after childbirth (Lu et al., 2015), thereby serving a slow LH function. Therefore, mate selection is a question of fast versus slow LH.

Men pursuing a fast LH strategy focus on immediate fertility opportunities before mortality-morbidity strikes. A crucial indicator of female fertility is age, with potential reproduction peaking during the midteens and actual reproduction peaking during the mid-20s (Johnston, 2006). Age can be identified from facial appearance (Jones et al., 1995). Features associated with youthfulness include smooth skin, lustrous hair (Gangestad & Scheyd, 2005), and facial biomarkers such as large eyes, full lips, and a small jaw region (Jones et al., 1995). As people become older, eyebrows descend from above to below the supraorbital rim, ears become larger, noses become longer and wider, and lips become thinner (Jones et al., 1995). Maintenance of youthful facial features is called “facial neoteny,” and implies a high level of estrogen. High estrogen levels in women indicate high reproductive capacity (Roberts et al., 2004) and high gene quality (Thornhill & Gangestad, 1999), both of which are manifested in facial attractiveness. Therefore, youthful faces and attractive faces share common features (Cunningham, 1986), and it is reasonable to assume that men pursuing fast LH should prefer attractive women and can quickly identify youthful female faces.

The main challenge of men pursuing slow LH strategies is to improve the competitiveness of their offspring in resource-scarce environments (Chang & Lu, in press). Intensive parenting is crucial for nurturing competitive offspring; therefore, men pursuing slow LH strategies should prefer women who exhibit attributes of being a good mother. Moreover, because slow LH strategists emphasize investing more in parenting than in mating to produce high-quality offspring (Kaplan & Gangestad, 2005), when paternity is not inevitable, such men can incur far greater losses than those pursuing fast LH strategies, who produce high quantities of offspring with little parental investment. Therefore, men pursuing slow LH strategies should prefer women who can dispel paternal uncertainty by being home-oriented and who exhibit domestic virtues.

Attributes of good provision are beneficial to one's partner at the premating stage and are beneficial to one's offspring at the postmating stage. Therefore, such attributes may be involved in both fast and slow LH strategies. Fast LH strategists may seek immediate material rewards from a mate, especially in uncertain environments that prevent future resource-based planning, and may be accustomed to exploiting windfalls of competition-free resources (Chang & Lu, in press). However, slow LH strategists who are future-oriented (Frankenhuis et al., 2016) and who focus on parenting and training of offspring (Kaplan & Gangestad, 2005) may prefer extra resources from a partner to increase indirect parental investment. Compelled by depleting resources, slow LH strategists may also be eager to extract and hoard available resources (Chang & Lu, in press). Because the functional effect of provisioning serves both ends of the fast-slow LH continuum, when measured in one direction of fast or slow LH, the construct is expected to be uncorrelated with good provisioning mate attribute.

Present Study

In contrast to extant mating research that has focused almost exclusively on women's mating preferences within the sexual selection framework of female choices, the present study examined men's mating preferences within the LH framework because extensive human paternal investment in offspring renders men selective about their long-term partners. In two studies, we tested a set of hypotheses regarding the relationships between LH strategies and mating preferences over attributes of good genes, good mothers, and good providers. In Study 1, we conducted structural equation modeling to examine the structural relations between fast LH strategy and mating preference consisting of preferences over fertility and good genes, fidelity and good mothers, and modernity and good providers. We expected fast LH to be positively correlated with fertility and good genes, negatively correlated with fidelity and good mothers, and uncorrelated with modernity and good provisioning mate attributes. In Study 2, we conducted a facial identification test, where the participants were required to identify female faces with various neotenic features. We hypothesized that men with faster LH strategies would be faster at identifying faces because they would focus more on neotenic features representing fertility.

Study 1

Participants

We took a convenient sample of 121 male employees (M_{age} = 28.33 years, *SD* = 10.59) from multiple workplaces located in one industrial building in Hong Kong. They held different jobs in different industries but we did not obtain their employment information because it was deemed unrelated to the questions under investigation. The participants completed the questionnaires on site and received a monetary reward for their participation.

Measures

Fast LH Strategy. Fast LH strategy was measured by the 18-item Fast Slow Scale (FSS) that is rated on a 6-point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*), with higher scores indicating faster LH. Sample items include "When I was growing up, I was the kind of person who tended to make decisions quickly without thinking too much about them" and "when I was growing up, I was the kind of person who would not care about offending others to get my way." Validation of the FSS was based on a sample of 266 Chinese migrant workers. Internal consistency reliability estimate was .80. Validity evidence included correlations between FSS and mini-K (r = -.40, p <.001), future orientation (r = -.31, p <.001), and impulsivity (r = .29, p <.001). Internal consistency reliability estimate in the present study was .85.

Mate Preferences. The participants rated on a 6-point scale ranging from 1 (*very unimportant*) to 6 (*very important*) the importance of 12 female mate attributes covering fertility and good genes (e.g., nice body, attractive), fidelity and good mothers (e.g., faithful, caring), and modernity and good provisioning (e.g., capable, high salary), which were used in previous studies (Chang et al., 2017; Lu et al., 2015). Internal consistency reliability estimate was 0.81 for fertility and good genes, 0.73 for fidelity and good mothers, and 0.81 for modernity and good provisioning, respectively.

Desire for Physically Attractive Women. The participants rated on a 6-point scale ranging from 1 (*very unimportant*) to 6 (*very important*) 12 physical descriptions of female attractiveness (e.g., a slim waist, a big round butt, lustrous lips). The internal reliability estimate was .91.

Contrast among fertility and good genes, fidelity and good mothers, and modernity and good provisioning. To measure whether men prioritize a specific dimension among the three dimensions of fertility and good genes, fidelity and good mothers, or modernity and good provisioning, the participants were asked to select among four matched options that compared two of the three dimensions at a time. Four levels of mate value (very low, low, high, and very high) were prepared for each dimension. Different levels of fertility and good genes were represented using 16 Asian female photographs with four photos representing each of four levels of attractiveness. Prior to the study, we selected 30 female Chinese photographs of varying attractiveness from different sources that had no copy right protection and had 22 Chinese men rate these pictures into four categories of very attractive, attractive, unattractive, and very unattractive. We then selected 16 photographs that received the highest number of consistent ratings in each of the four categories to represent different levels of the fertility and good genes dimension. Different levels of the fidelity and good mothers dimension and different levels of the modernity and good provisioning dimension were represented using verbal descriptions. Sample descriptions include “She has no regular income” (very low provisioning), “Her salary barely meets her basic living expenses” (low provisioning), “She already made the down payment for an apartment” (high provisioning), and “She lives in a luxurious apartment that is already paid for” (very high provisioning). To contrast one dimension with another, we paired the highest value in one dimension with the lowest value in the other dimension, and vice versa. For example, in the fertility and good genes versus modernity and good provisioning contrast, a very attractive photo was paired with a description of very low provisioning (score = 4), an attractive photo was paired with a description of low provisioning (score = 3), an unattractive photo was paired with a description of high provisioning (score = 2), and a very unattractive photo was paired with a description of very high provisioning (score = 1). The participants were asked to select one of the four options as the optimal choice for a long-term partner. The fertility and good genes versus fidelity and good mothers contrast, fertility and good genes versus modernity and good provisioning contrast, and fidelity and good mothers versus modernity and good provisioning contrast each included two trials with different stimuli. The mean of the two trials was used for the analysis. Higher scores in the fertility and good genes versus fidelity and good mothers contrast indicate a greater tendency to prioritize the former over the latter. The scores were interpreted similarly for the other two contrasts.

Results

Table 1 shows the correlations, means, and standard deviations of the fast LH and the desire for physical attractiveness, as well as the results for the contrast among fertility and good genes, fidelity and good mothers, and modernity and good provisioning. The results showed fast LH strategy was positively correlated with desire for physical attractiveness ($r = .27$, $p < .01$) and prioritizing fertility and good genes over fidelity and good mothers ($r = .32$, $p < .01$), and was negatively correlated with prioritizing fidelity and good mothers over modernity and good provisioning ($r = -.20$, $p < .05$).

We also conducted SEM to examine the structural relations between LH strategy and mate preference. The model is depicted in Figure 1. We used the relevant sub-scales as indicators to measure the corresponding latent constructs. The measurement model was deemed adequate with significant and substantial factor loadings. The overall model also showed adequate goodness of fit of the data (χ^2 (87) = 118.71, $p = .01$, comparative fit index = .95, Tucker–Lewis index = .94, root mean square error of approximation = .05, standardized root mean square residual = .08) according to different model-fitting criteria (Hu & Bentler, 1999; Kenny & McCoach, 2003). The χ^2 test was significant but the χ^2–to-degree of freedom ratio ($\chi^2/df = 1.36$) was adequate according to the more stringent criterion (Kline, 1998). All of the structural equations were in the expected directions and most of them were statistically significant. For example, fast LH was positively correlated with fertility and good genes ($\beta = .25$, $p < .05$), was negatively correlated with fidelity and good mothers ($\beta = -.38$, $p < .01$), and was uncorrelated with modernity and good providers.

Study 2

Because LH affects not only individuals' cognitions and behaviors but subconscious and automatic processes (Mittal, Griskevicius, Simpson, Sung, & Young, 2015), Study 2 was conducted to examine whether fast LH strategy was associated with more automatic processing such as the identification of neotenic faces that indicate fertility. A critical indicator of fertility is young age (Johnston, 2006; Jones et al., 1995), which can be manipulated by showing faces that differ in neotenic features. Because men with faster LH strategies prefer fertile women, they are hypothesized to be more sensitive to fertility indicators such as neoteny. Their sensitivity could be demonstrated by them efficiently differentiating between younger faces and older faces. In Study 2, the participants were asked to identify a face that differed from other faces in terms of neotenic features. Faster responses in the identification task indicated higher sensitivity toward fertility.

Participants

We recruited 64 male students from a university in Hong Kong (M_{age} = 20.14 years, *SD* = 3.16) for the face identification task, which was completed on a computer, and to fill in the fast LH questionnaire.

Materials

Stimuli of the face identification task were from four young women who were approximately 20 years old. Prior to the study, the four faces were rated as average in attractiveness. The original faces were modified with a Java-based program (version 1.8) to generate eight faces differing in their degrees of neoteny. Neoteny was represented by a high forehead; large eyes; and a shorter, narrower nose, all of which are cephalofacial age markers of youth (Jones et al., 1995; Mark, Shaw, & Pittenger, 1988). Those markers can be approximately simulated by mathematical transformations converting original coordinates $\{x, y\}$ of each pixel of a face picture into new coordinates $\{x', y'\} = \{x*(1\text{-}k*y/r), y*(1\text{-}k*y/r)\}$ where $r^2 = x^2 + y^2$ and and x and y are coordinates of pixels of a photograph (300 × 300 pixels). From left to right, x ranges from 0 to 300, and, from top to bottom, y ranges from 0 to 300. In the transformation formula, k can be regarded as an indicator of the degree of neoteny. When $k > 0$, an original face can be modified to appear older by expanding the lower facial area outward and contracting the upper facial area inward after the pixel transformation. When $k < 0$, the original face could be modified to appear younger by expanding the upper facial area outward and contracting the lower facial area inward. The original face photo had a k value of 0, and the eight generated photos had k values ranging from −0.08 to +0.08 (in increments of 0.02). The original photos, together with the generated photos, were used to constitute matrices of faces.

Photo matrices (3 × 3 or 4 × 4) were used as stimuli. In a baseline trial, the 3 × 3 matrix contains eight identical photos of the same woman (i.e., the degree of neoteny was identical in all photos) placed together with a photo of another woman (Figure 2a). In a test trial, the 3 × 3 matrix contains nine photos all of the same women, with one that differed from the other eight in the degree of neoteny (Figure 2b). The difference in neoteny was constant with $k = 0.08$ (e.g., $k = -0.02$ for the odd photo and $k = 0.06$ for the other eight photos) because a previous study showed that people were able to distinguish two faces with a neoteny difference of $k = 0.10$ and our pilot test showed that people had great difficulties in identifying an odd face differing from other faces with a neoteny difference of $k = 0.06$. The position of the constant distance of $k = 0.08$ varied from trial to trial along the k-ordinate between -0.08 and +0.08 (e.g., $k = -0.02$ for the odd photo and $k = 0.06$ for the other eight photos versus $k = -0.06$ for the odd photo and $k = 0.02$ for the other eight photos) and was counterbalanced and randomly presented to the participants. The task for the participants was to identify the odd one from the remaining identical ones as accurately and fast as possible.

Procedure

The participants completed all tasks individually. The participants first completed a measure of fast LH strategy which is the same as that in Study 1. They were then seated in front of a computer in a quiet room and asked to complete the face identification task by using the mouse to select the odd face (they were informed that the odd face could be a different woman or the same woman with a slightly different appearance). The participants first completed the 3 × 3 and then 4 × 4 matrices. For each type of matrix, the participants completed two baseline trials and two or more test trials until correct responses were provided for two successive trials. The participants then completed four baseline trials followed by eight test trials. The accuracy and reaction time (RT) were recorded for each trial.

Results

For each participant, the means and standard deviations of RT as well as the accuracy rates for the baseline and test trials were calculated. The participants responded correctly in all baseline trials. The mean RT for the baseline trials was 1.44 s (SD = .32). In the test trials, the mean accuracy rate was 78%. Trials with incorrect responses were penalized by replacing the actual RT with a longer RT that was two standard deviations above the mean for each participant. Replacing the RT for incorrect responses with a longer RT as a penalty was an alternative to discarding the incorrect trials, particularly because the number of total trials was low and the incorrect response rate was high (e.g., Greenwald, Nosek, & Banaji, 2003; Ibáñez et al., 2011; Van Nunspeet, Ellemers, Derks, & Nieuwenhuis, 2014). Before the penalty was applied, the mean RT for the correct test trials was 8.30s (SD = 5.31) and it was negatively correlated with fast LH ($r = -.33$, $p < .01$). After the penalty was applied, the mean RT for the test trials was 11.43 s (SD = 8.87) and it was negatively correlated with fast LH ($r = -.31$, $p < .05$). To obtain the pure reactions of the participants' sensitivity to the nuances of neoteny, the RTs of the baseline trials, which represented the participants' general ability to identify a different face, were subtracted from the RTs for the test trials. The difference in RTs between the baseline and the test trials correlated significantly with the fast LH strategy ($r = -.37$, $p < .01$). Table 3 presents correlations among fast LH, RT of the baseline, RT of the test, RT after subtracting the baseline from the test, and accuracy rate of the test. These results suggest that men with faster LH strategies are more sensitive to facial neoteny, which is a strong indicator of age and fertility.

Discussion

All behaviors are manifestations of LH strategies adopted to optimize various trade-offs between somatic and reproductive efforts (Del Giudice & Belsky, 2011). Because of extensive human paternal investment, men are expected to be selective just like women in choosing a mate, especially in long-term relationships. As manifestations of LH, men's mating preferences are central to the trade-off between fast and slow LH strategies that differ in the pace and intensity required to complete somatic development and commence reproduction. Constrained mainly by environmental unpredictability, fast LH strategists have a shorter time orientation because they designate more energy and time to mating than to parenting, growth, and development. Similarly, such strategists' mating preferences for good genes over good parenting attributes represent short-term orientation and a desires for immediate reward because the benefit of fertility on RS is instant, taking place at insemination (Andersson, 1994), whereas the benefits of good-mother mate attributes on men's RS are delayed, being realized only after childbirth. In an unpredictable environment of high mortality and morbidity rates that shape fast LH (Ellis et al., 2009), the ability to bear offspring supersedes the ability to raise them under uncertain conditions. Good genetic endowment also presents the best defense for offspring in environments with high mortality and morbidity rates due to pathogens and diseases that are insensitive to preventive efforts. The results show that the mating preference for fertility and good genes was positively correlated with fast LH strategies, which in turn were positively correlated with the desire for physical attractiveness and prioritization of fertility over fidelity. These results support the LH theory presented in this paper.

Similarly, the results showed that preference for attributes of being a good mother was negatively correlated with fast LH strategies. Slow LH strategists prioritize parenting over mating, exhibiting long-term orientation shaped by more predictable and more competitive environments (Chang & Lu, in press), By contrast, under extremely uncertain conditions, either a mother or her offspring may not live sufficiently long to deliver or receive parental investment (Del Giudice & Belsky, 2011). In such conditions, organisms switch to a fast LH strategy by seeking immediate rewards from good genes and precluding the benefits of good parenting, because there may not be sufficient time to realize such benefits. Therefore, environmental predictability versus uncontrollability evokes slow versus fast LH, which is associated with different mate preferences such as good-mother attributes versus good genes. Whereas parenting is central to slow LH strategies because it helps to ensure that offspring receive the necessary training to compete for limited resources, instant reward of fertility and good genes is more crucial for fast strategists who may not have another mating opportunity before mortality-morbidity strikes.

The effect of provisioning mate preference was neutralized when correlated with fast LH strategy because the construct was expected to be positively correlated with both ends of the fast-slow LH continuum. The two functional effects of provisioning mate attributes could take the following form: Primarily, slow LH strategists should favor resources for long-term parental investment. Shaped by low levels of resources and high levels of competition (MacArthur & Wilson, 1967), slow LH strategists are motivated to compete for, hoard, and conserve resources (Chang & Lu, in press). The otherwise relatively stable environment and longer time frame, both characteristics of slow LH, reward resource-garnering and hoarding efforts because the strategists receive future payoffs realized mainly through parental investment. Therefore, slow LH strategists should select long-term partners with similar resource-garnering abilities. Secondarily, high mortality and morbidity rates due to such extrinsic risks as disease and war and consequently shorter life spans diminish the correspondence between resource acquisition and future benefits. However, shaped by such high risk and shorter time frames, fast LH strategists may seek immediate rewards from partners' resources to benefit themselves rather than their offspring.

Finally, the findings of this study demonstrate LH manifestation through implicit processes in men's perceptual sensitivity to facial attractiveness indicating fertility. The results of Study 2 show that individuals who adopt faster LH strategies spend less time differentiating between female faces with different neotenic features representing degrees of fertility. Facial neoteny is a strong indicator of age (Jones et al., 1995) and is related to facial attractiveness (Cunningham, 1986; Gangestad & Scheyd, 2005). Through identifying neotenic faces, fast LH strategists can select women who are fertile and can reproduce, thereby facilitate the fast LH strategy by mating opportunistically and frequently before extrinsic mortality and morbidity occur.

There are several limitations of this study. First, FSS was a new instrument to measure fast LH strategy that requires additional validation even though FSS was supported by reliability and validity evidence separately collected from a different study. Because childhood environments are particularly instrumental in shaping LH strategies (Belsky, Schlomer, & Ellis, 2012), FSS that focuses on such childhood factors more than existing LH measurements may provide additional information for understanding LH strategies. Second, only neoteny was used to test the participants' sensitivity to fertility. Facial symmetry, which indicates good genes, could also be considered in future studies. Similarly, in addition to neoteny indicating both current and future reproductive ability (Confer, Perilloux, & Buss, 2010; Lu & Chang, 2012), waist-to-hip ratio, which indicates current fertility, could be adopted to test for fertility sensitivity. Finally, this study enrolled a Chinese sample. Future studies using individuals from other cultural groups could contribute to determining universal evolutionary hypotheses. Despite these limitations, the present study provides insights into the LH-based understanding of individual differences, and the findings show that men's mating preferences for fertility and good genes, fidelity and good mothers, and modernity and good provisioning vary throughout the fast–slow LH spectrum.

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Table(s)

Table 1. Correlations, Means and Standard Deviations of All Variables in Study 1

	1	2	3	4	5
1 Fast Life History	-				
2 Desire for Attractiveness	0.27**	-			
3 Fertility/Good Genes over Paternity/Good Mother	0.32***	0.26**	-		
4 Fertility/Good Genes over Modernity/Good Provisioning	-0.08	-0.09	0.02	-	
5 Paternity/Good Mother over Modernity/Good Provisioning	-0.20*	-0.10	-0.31**	0.15	-
Mean	2.65	3.43	2.46	3.08	2.94
SD	0.64	0.73	0.65	0.50	0.48

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2. Correlations among Indicators in the Model Representing Relationships between Life History and Mate Preferences in Study 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Fast Life History 1	-													
2 Fast Life History 2	.64***	-												
3 Fast Life History 3	.69***	.68***	-											
4 Good Body	.22*	.18*	.21*	-										
5 Attractive Face	.19*	.17	.20*	.45***	-									
6 Smooth Skin	.18*	.20*	.19*	.68***	.34***	-								
7 Sexy	.23*	.19*	.23*	.58***	.47***	.59***	-							
8 Caring	-.19*	-.20*	-.18*	.10	.06	.10	.06	-						
9 Faithful	-.28**	-.31**	-.22*	.05	.09	.14	.08	.33***	-					
10 Loving Children	-.21*	-.22*	-.20*	.14	.02	.06	.08	.58***	.25**	-				
11 Good Housekeeper	-.16	-.25**	-.19*	.23*	.33***	.22*	.40***	.27**	.34***	.36***	-			
12 High Salary	.21*	.22*	.23*	.30**	.17*	.22*	.34***	.20*	-.14	.24**	.26**	-		
13 Capable	.02	.06	.05	.05	-.10	.04	.18*	.36***	.05	.45***	.34***	.43***	-	
14 From a Wealth Family	.02	.03	.05	.16*	.28**	.18*	.34***	.25**	.06	.27**	.37***	.54***	.29**	-
15 Successful Career	.04	.03	.03	.19*	.16*	.17*	.36***	.27**	.02	.29**	.33***	.66***	.49***	.69***

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3 Correlations Between Fast Lift History and Reaction Times of the Face Identification Task in Study 2

	1	2	3	4
1 Fast Life History	-			
2 RT of the Baseline Trials	-0.01	-		
3 RT of the Test Trials	-0.31*	0.18	-	
4 RT Subtracting Baseline from the Test	-0.37**	0.12	0.96***	-
5 Accuracy Rate of the Test Trials	0.12	-0.13	-0.54***	-0.43***

RT = Reaction Time. * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure(s)

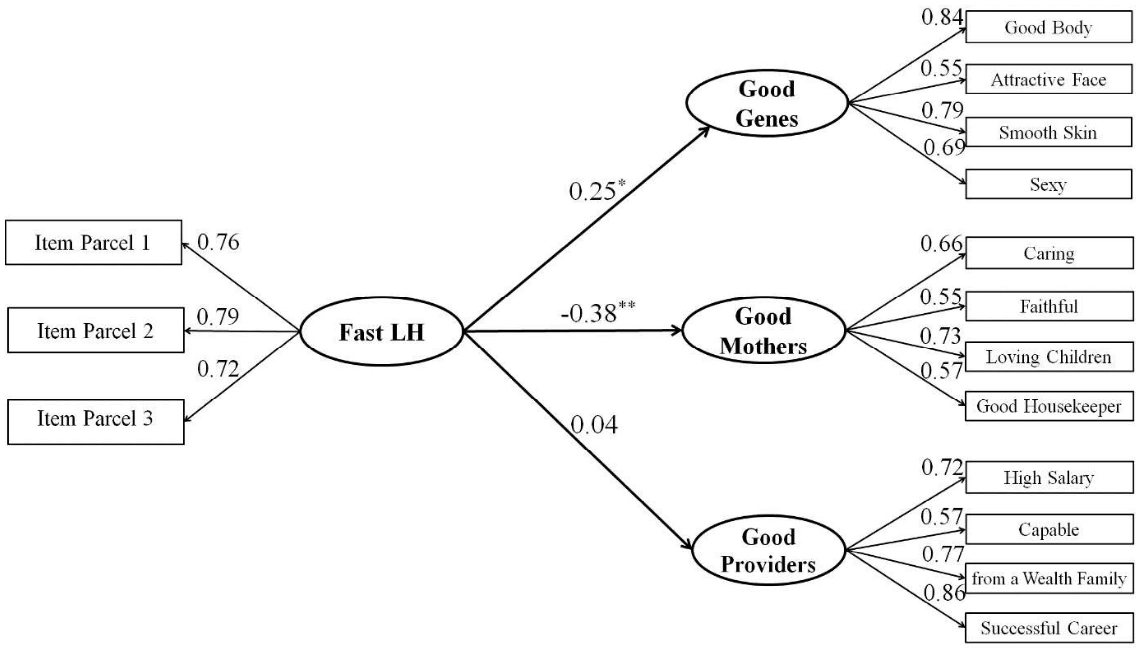

Figure 1. Relationships among Fast Life History and Good Genes, Good Mothers, and Good Providers. * $p < .05$, ** $p < .01$, *** $p < .001$

Figure 2a. An Example of a 3 × 3 Baseline Trial. It Has Eight Faces of the Same Woman and an Odd Face of a Different Woman. The Odd Face is at the Second Row Third Column.

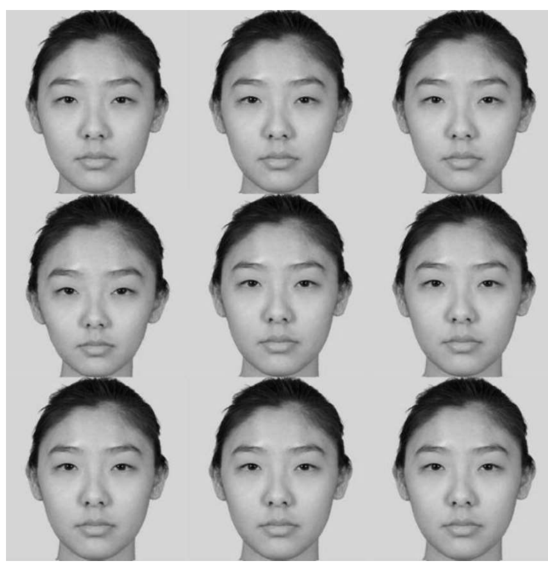

Figure 2b. An Example of a 3 × 3 Test Trial. It Has Nine Faces of the Same Woman. The Odd Face is at the Second Row First Column.