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# Why do women not prefer much older men? A hypothesis based on alterations in male reproductive physiology related to increased age

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## Abstract

Evolutionary Psychology studies suggest that women prefer slightly older or similarly aged partners, although to date few hypotheses have been put forth to explain this pattern of choice. Several recent studies have shown changes in male reproductive parameters as a result of increased age. In the current review of medical literature, we found evidence that much older men are more likely to be infertile, women with much older partners are more likely to experience problems during pregnancy, and children of much older men are more likely to have genetic abnormalities. Based on these findings, we suggest that reproducing with much older men does not represent the best reproductive option for women, which would explain the female preference for only slightly older or similarly-aged mates.

**Keywords:** sexual selection; mate choice; reproductive behavior; age preference.

## Resumo

*Por que mulheres não preferem homens muito mais velhos que elas? Uma hipótese baseada em alterações da fisiologia reprodutiva masculina relacionadas ao aumento da idade.* Estudos de Psicologia Evolucionista sugerem que as mulheres preferem parceiros um pouco mais velhos ou de idade semelhante, embora apresentem, até agora, poucas hipóteses para explicar esse padrão de preferência. Recentemente, vários estudos têm demonstrado alterações nos parâmetros reprodutivos masculinos como resultado do aumento da idade. Em revisão da literatura médica atual, encontramos evidências de que homens muito mais velhos são mais susceptíveis de serem inférteis, mulheres com parceiros muito mais velhos são mais propensas a sofrer com problemas durante a gravidez e filhos de homens muito mais velhos são mais propensos a ter anomalias genéticas. Com base nestes resultados, sugerimos que reproduzir com homens muito mais velhos não representa a melhor opção reprodutiva para as mulheres, o que explicaria a preferência feminina por parceiros apenas um pouco mais velhos ou de mesma faixa etária.

**Palavras-chave:** seleção sexual; escolha de parceiros; comportamento reprodutivo; preferência de idade.

## *Age Preference and Reproductive Male Parameters*

A number of Evolutionary Psychology studies suggest that age is an important variable in human sexual selection. As Pawlowski (2000) stated, age is a universal and indisputable trait that influences human mate market decisions, because it is a trait of crucial reproductive significance, that is, as analysis of the human mate market cannot be run without considering age. The pattern of choice for men seems clear: regardless of their own age, they prefer young women with high reproductive potential (fecundity and fertility). On the other hand, data from the literature suggest that women prefer slightly older or similarly aged partners (Buss, 1989, 1994; Buunk, Dijkstra, Kenrick, & Warntjes, 2001; Kenrick & Keefe, 1992).

The adaptive reason for the male preference pattern was soon related to female reproductive value, and it was assumed

that over the course of evolution the preference for reproductive-age women would have implied greater reproductive success for men exhibiting this selectivity (Kenrick & Keefe, 1992).

With respect to the adaptive reason for the female preference pattern, the evolutionary literature has so far presented few hypotheses. Buss (1994) suggests that the preference for slightly older men is related to the desire for greater maturity, resource availability and willingness to long-term commitment. The non-preference for much older men was explained by the presumption that these men would be less likely to invest in the offspring, considering the possibility of a more imminent death, when compared to younger men (Buss, 1994; Kenrick & Keefe, 1992; Pawlowski & Dunbar, 1999a). In addition, from the male reproductive potential perspective, all the evolutionary writings of the mid 1990s are based on the assumption that male fertility

is not affected by increased age and that there are no reproductive reasons underlying female choice for a mate's age (Buss, 1994).

A number of recent studies have shown changes in male reproductive parameters as a result of increased age. In the current essay, we will review recent papers published in the medical literature; most in the last decade. Our aim is to support the hypothesis that, from the biological point of view, reproducing with much older men does not represent the best

reproductive option for women, which would explain the female preference for only slightly older or similarly-aged mates.

Several studies suggest that fertility in men decreases with age, taking into account the changes found in semen quality parameters considered to be indicators of male fertility (sperm motility, semen volume, sperm concentration and normal sperm morphology), pregnancy rates and the results obtained from assisted reproduction techniques (Table 1).

Characteristic	Age effect	References
<b>1. Semen quality</b>		
Sperm motility	decrease	1, 2, 3, 5, 6, 7 and 8
Semen volume	decrease	1, 2, 3 and 5
Sperm concentration	decrease	1
	no effect	2, 3 and 8
Normal sperm morphology	decrease	1, 2, 3 and 5
	no effect	8
<b>2. Pregnancy rates</b>		
Pregnancy rate	decrease	3
	no effect	6
Time-to-pregnancy (TTP)/Sub fecundity	increase	3 and 5
Birth rate	decrease	5
<b>3. Pregnancy rates using assisted reproduction techniques</b>		
In vitro fertilization (IVF)	decrease	4
	no effect	5
Gamete intrafallopian transfer (GIFT)	decrease	4
Intrauterine insemination (IUI)	decrease	5
Intracytoplasmic sperm injection (ICSI)	no effect	5 and 6

References: (1) Henkel et al., 2005; (2) Jung, Schuppe, & Schill, 2002; (3) Kidd, Eskenazi, & Wyrobek, 2001; (4) Klonoff-Cohen & Natarajan, 2004; (5) Kühnert & Nieschlag, 2004; (6) Plas, Berger, Hermann, & Pflüger, 2000; (7) Slotter et al., 2006; (8) Winkle, Rosenbusch, Gagsteiger, Paiss, & Zoller, 2009.

Figure 1. Decreased fertility with increased male age

It is important to point out that increased male age becomes an especially critical factor in treatments that require higher spermatozoid quality (intrauterine insemination, for instance), whereas for more invasive treatments such as intracytoplasmic sperm injection (ICSI) or in vitro fertilization (IVF) increased male age is less important (Kühnert & Nieschlag, 2004). In general, the data suggest that the onset of decreased fertility occurs in the late thirties, although there is no limit similar to that of female menopause.

#### *Paternal age, miscarriage, and offspring abnormalities*

Studies have related the increase of paternal age with the occurrence of complications during pregnancy, suggesting an increased risk of premature delivery (Zhu, Madsen, Vestergaard, Basso, & Olsen, 2005a) and of spontaneous abortion (Andersen, Hansen, Andersen, & Smith, 2004; de La Rochebrochard & Thonneau, 2002; Kühnert & Nieschlag, 2004; Slama et al., 2005). Another study supports the association between increased paternal age with increased miscarriage (Kleinhaus et al., 2006), even though some variables were controlled, such as maternal age, maternal smoking habits, maternal diabetes, number of deliveries (parity), and occurrence of previous spontaneous abortions, especially when associated to older women (Chen et al., 2008).

The review of the literature also suggests that increased paternal age is a risk factor for the occurrence of genetic abnormalities in offspring, such as chromosomal alterations, autosomal dominant inherited diseases and genetic diseases of complex etiology (Table 2).

In 1912, Wilhelm Weinberg suggested an association between achondroplasia and increased paternal age (Crow, 2003; Thacker, 2004), and since the 1950s studies have pointed to this type of association, although they have been largely ignored (Malaspina, 2001). It is currently suggested that the effects of advanced paternal age, as well as of maternal age, may also be responsible for various genetic abnormalities in offspring; nevertheless, they are still often underestimated (Benzacken et al., 1998; Fisch et al., 2003). Some authors suggest genetic counseling about the risk of older men, especially from the age of 50 years, having children with some genetic disorder, even though individual risks are difficult to estimate (Bordson & Leonardo, 1991; Jung, Schuppe, & Schill, 2003). Given the increased possibility of genetic abnormalities in children, the British Andrology Society [BAS] (1999) and the American Society for Reproductive Medicine [ASRM] (2002) established the age of 40 years as the maximum limit for sperm donation.

The increase in genetic disorders related to aging likely has multiple causes (Crow, 2003; Thacker, 2004). One of the most common hypotheses in the literature is that it increases

Parameter/Results	Age effect	References
<b>1. Chromosomal alterations</b>		
Numerical chromosome anomalies	increase	4, 5, 7, 9, 10 and 14
	questionable	6
Structural chromosome anomalies	increase	7
	no effect	6
Gene mutations	increase	6
<b>2. Autosomal dominant inherited diseases</b>		
Achondroplasia, Apert's syndrome, Crouzon's syndrome, Pfeiffer's syndrome	increase	7 and 12
<b>3. Genetic diseases of complex etiology</b>		
Schizophrenia	increase	2, 3, 7, 8, 11, 12 and 13
Oral clefts (congenital malformation)	increase	1

References: (1) Bille et al., 2005; (2) Brown et al., 2002; (3) Byrne, Agerbo, Ewald, Eaton, & Mortensen, 2003; (4) Fisch et al., 2003; (5) Girirajan, 2009; (6) Jung et al., 2003; (7) Kühnert & Nieschlag, 2004; (8) Malaspina, 2001; (9) Martin, 1998; (10) Penrose, 1933; (11) Sipos et al., 2004; (12) Thacker, 2004; (13) Tsuchiya et al., 2005; (14) Zh05; (14) Zhu et al., 2005b.

Figure 2. Increased paternal age and risk of genetic abnormalities for the offspring

the possibility of errors in reproducing male germinative cells, since they are replicated more often than cells that give origin to the eggs. In men, germinative cells undergo 30 mitotic cycles before puberty and then continue to divide every 16 days, for a total of 23 annual replications. At 30 years, the cells that create the spermatozooids undergo 380 mitotic divisions, at 40 years 610 and at 50 years 840 replication cycles. Each cycle could create a new opportunity for error. There would then be a gradual increase in DNA damage over time (Thacker, 2004), that is, the continual replication of male germinative cells after puberty might cause increased frequency of chromosomal anomalies with advancing age (Girirajan, 2009; Slama et al., 2005).

#### *Evolutionary approach of female mate choice: material and genetic benefits for the offspring*

Human pair-bond formation involves several evolved psychological mechanisms, that is, mate choice is a complex process involving manifold evaluations (Todd, Penke, Fasolo, & Lenton, 2007). One trait used by humans in romantic partner selection is age, clearly because it reveals much more than the number of years since a person was born (Pawłowski, 2000). The association between age and mate choice has been studied from the evolutionary perspective for decades, especially because of its importance in male mate selection decisions – for men, youthful partners could mean fecundity and fertility (Buss, 1994).

Given the crucial informational aspect of age, it is equally important to both women and men. Indeed, it has been more than two decades since the evolutionary literature suggested that women preferred slightly older mates (Kenrick & Keefe, 1992). Nevertheless, the evolutionary reasons for the pattern of female choice have so far not been clearly identified, except the hypothesis of the older mate's early death or the positive correlation between partner's age, wealth and/or social status (Buss, 1994; Kenrick & Keefe, 1992; Pawłowski & Dunbar, 1999a).

According to the Sexual Selection Theory, mate choice is essentially related to possible material or genetic benefits for the offspring. From the material point of view, much older men may

be better providers (Buss, 1994; Pawłowski & Dunbar, 1999b), but considering the data related to genetic gains, the potential costs may be greater than the benefits.

In this sense, the data presented in this essay call for a review of evolutionary psychology concepts. We suggest that the preference of women for slightly older or similarly aged men can be explained from an evolutionary perspective because this selectivity ensures greater mate fertility and better genetic potential for the children. The argument is similar to the one that has been used to explain the underlying reasons for the non-preference of men for older women as mates, based on the premise of decreased fertility with increasing age, considering of course the physiological particularities of each sex. In light of current studies, the old assumption that men are not much affected in their reproductive capacity with increased age seems extremely fragile. Men, as well as women, also have decreased reproductive capacity with aging; in addition, there are increased risks of genetic abnormalities in their children. Despite the possibility of increased resources, worse reproductive characteristics may be considered disadvantages associated to reproducing with much older men, which may explain the non-preference of these mates.

However, women have to meet considerably older men to make the choice of a much older partner an option, making it an evolutionary problem to be solved. Therefore, the question that must be answered is: 'were there much older men in the environment of evolutionary adaptation?' Adjusting this question to our hypothesis, it would be 'is the lifespan of modern societies still representative of ancestral human society environments?' In order to answer this question, Gurven and Kaplan (2007, p. 322) investigated "how robust is the occurrence of a post-reproductive life span and how likely is it that older adults were alive and available in human populations?", assessing and analyzing demographic data in relatively isolated, small-scale foraging-based populations (i. e., hunter-gatherers and forager-horticulturalists). They hypothesized that the human body is designed to function well for about seven decades in the environment of evolutionary adaptation. They concluded

that the adult lifespan is 72 years, ranging from 68 to 78 years.

This explanation helps us to understand why most women choose men with similar ages to their own, but does not rule out the existence of cases in which women choose much older mates. However, from the biological point of view, much older men do not seem to offer the best reproductive option for women. Older men mating with much younger women seems to be the exception rather than the rule. It is possible that only high status older men manage to attract women at peak fertility (Buunk et al., 2001), since, from the reproductive (physiological) point of view, their value tends to be decreased, as shown in the current essay, when compared to younger men. Pawlowski and Dunbar (1999a), in a study of personal classified ads, suggest that men reach their maximum market value in their late 30s. A marked fall occurs from the age of 45 years, which is in accordance with the hypothesis suggested here.

We did not approach the proximal causes involved in female choice in relation to male partner age; for example, possible alterations in male attractiveness with increasing age or the more frequent chances of encounter between individuals of similar age, but we presume that they must contribute significantly to this pattern of choice. We must also consider the influence of the mating systems of different societies on the age difference patterns between mates, given that polygynous societies have larger age differences if compared to monogamous societies (Buss, 1989, 1994). Low (2005) observes that even today female choice options are limited by the society in which the women live. Indeed, women in many societies do not effectively choose their sexual mate; modern western democracies, where women have more freedom of choice, are an exception. Another proximal cause that may be related to the preference for a slight age difference between partners is the difference in sexual maturation between the sexes, given that the onset of hormonal changes in puberty is around the age of nine years for girls but only two or more years later for boys (Bogin, 1994; Kenrick & Keefe, 1992).

Future studies that specifically analyze relationships between partners with large age differences would help explain how older men are successful on the "love market". Do these men have significantly different resources and social status? Do they look younger than they really are? Is there an identifiable limit to the fall in male market value with increased age? The number of specific questions that approach the age difference between partners, considering the perspective outlined here, seems to be extensive.

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