

Marrying up: field experimental and household survey evidence of competitive search for a taller and richer spouse

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Couple's heights tend to match. However, whether such matching is for the sake of height or the many desirable traits associated with stature (e.g., income) is unclear. We contribute novel experimental and empirical data to identify gender differences in search behavior for mate height and income. We recorded clicks on profiles with randomly assigned height and income information on a major online dating website. These clicks reveal that taller men prefer taller women. By contrast, women not only prefer taller men but also higher income men, permitting the calculation of their willingness to pay (WTP) for mate-height. Surprisingly, short women have the highest WTP for mate-height. We confirm this heterogeneity in preference for mate-height by applying the method of Chiappori et al. (2021) for multidimensional matching to data on married couples. Short early mothers drive these results. Our evidence is consistent with short women attempting to match non-assortatively to increase the height of their children. We contribute to the search and matching literatures with one of the few papers on multidimensional search which integrates directed online search behavior with outcome data on marriages.

Key Words: directed search, matching, marriage, anthropometry, height, online dating, field experiment, gender differences

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Introduction

Couple's heights tend to match (Weitzman & Conley, 2014). However, whether such matching is for the sake of height or the many desirable traits associated with height as indicated by the positive association with the synonym for height, "stature" is yet to be established. Stature is correlated with many desirable traits (RH Steckel, 1995), especially for males: cognitive ability (Case & Paxson, 2008), non-cognitive ability, e.g., self-confidence (Persico, Postlewaite, & Silverman, 2004), health (Lundborg, Nystedt, & Rooth, 2009), educational attainment, occupation and industry (Case, Paxson, & Islam, 2009), career prospects (Herpin, 2005), happiness (Deaton & Arora, 2009), and through these factors, or by itself, socioeconomic status (Cavelaars et al., 2009; Hatton & Bray, 2010; Peck & Lundberg, 1995; Singh & Mitra, 2017; Walker, Shaper, & Wannamethee, 1988) and income (Case & Paxson, 2008; Gao & Smyth, 2010; Harper, 2000; Heineck, 2005; Persico et al., 2004). Moreover, stature, unlike those other traits, is readily observable and may, therefore, function as an important basis for the initial sorting among couples. Indeed, there is evidence that taller men are more attractive to women (Hitsch, Hortagsu, & Ariely, 2010b; Oreffice & Quintana-Domeque, 2010; Pierce, 1996; Tao & Yin, 2015).

Given the associations between height and other desirable qualities, assortative matching on height alone could contribute to the increase in economic inequality across families (Schwartz, 2013; Schwartz & Mare, 2005) and across generations for associated traits, because height, as well as being readily observable to potential mates, is also highly heritable (McEvoy & Visscher, 2009; Stulp & Barrett, 2016). The heritability of height ranges from 0.80 in developed countries to 0.60 in developing countries, like China, which has a heritability quotient of 0.65 (Li et al., 2004). In developing countries, nutrition and other environmental factors could exert a greater influence on realized height based on genetic potential. Assortative mating on height alone could, therefore, also contribute significantly to the intergenerational persistence of inequality and the continued association between height and social class, even more so than birth weight (Currie & Moretti, 2007). However, despite the importance of assortative mating by height, there is little work in the economics literature on how people might search and match on height, and whether such matching is the result of a preference for mate-height or the other associated factors (SE Black & Devereux, 2011).

We contribute to the understanding of the preference for mate-height by randomly assigning heights and incomes to 360 unique artificial profiles on a large online dating website in China. The

heights were one standard deviation below, at, or above the average heights of each gender: 160 cm for women and 172 cm for men in the cities of the experiment.¹ These we refer to respectively as “short”, “medium” and “tall” heights. We also randomly assigned these profiles “low”, “middle”, and “high” incomes. We then counted “visits” or clicks on abbreviated profiles from search engine results, which display the height and income information. Because we independently manipulated income and height with online dating data, we can identify the effect of height on visits separated from income and income separated from height, and thus, cleanly test for the *pre-matching* (in other words, before the opposite sex’s preferences and intra-sexual competition becomes significant) willingness of men and women to tradeoff between mate-income and height.

First, we show that both men and women prefer tall members of the opposite sex independently of income, educational attainment, and even beauty, and health—as revealed through profile pictures. Second, we confirm prior work that men are indifferent to women’s incomes, whereas women prefer higher income men in China (Ong & Wang, 2015). Thus, we can find women’s tradeoff between mate-income and height. Moreover, our design allows us to test for the possibility that women (men) of different heights may vary in their willingness to pay for mate-height. To test for potential heterogeneity among women (men) in their preferences for mate-height, we calculated how much women (men) of different heights are willing to pay for mate-height at each of the male (female) profiles’ heights.

Surprisingly, women's preference for mate-height, as reflected in how much mate-income they are willing to give up for it, in other words, the willingness to pay for mate-height—what we term as ‘willingness to pay’ (WTP) for mate-height—forms a “U-shaped” envelope on their height. For short men, an incremental increase in their height significantly increases their attractiveness to short women in terms of the income the women are willing to give up for an incremental increase in the men’s height. An incremental increase in short men’s height increases their attractiveness less to medium women than it does to short and negligibly to tall women. However, we observe the reverse ranking of WTPs among women for men’s height at the tall men’s height. An incremental increase in the tall men’s height significantly increases their attractiveness to tall women, but less so to medium, and a negligibly to short women. Moreover, short women’s WTP at the short men’s height is greater than tall women’s at the tall men’s height. Hence, whereas

¹ These are: Beijing, Shanghai, Chengdu, and Shenzhen. Adult men are on average 5 cm shorter in China than in the US, where they are on average 177 cm in height. Adult women are 3 cm shorter in China than in the US, where they are on average 163 cm in height.

men's preference is assortative on mate-height in the sense that the taller the man, the stronger his preference for height, women's preference for mate-height is non-assortative; the shorter the woman, the stronger is her preference for height.

We test the predictiveness of these preferences revealed in online dating data by analyzing the income and height characteristics among married couples using the Chinese Family Panel Studies (CFPS) household survey data. To find the WTPs of height across women of different heights for these realized matches that resulted in marriage, we used the methodologies developed by Chiappori, McCann, and Pass (2021) for multidimensional matching and that of Vella (1993) to control for unobserved selection in our simultaneous equations model. Consistent with the U-shaped envelope of WTPs found with online dating data, the WTP of height for short wives is significantly higher than medium and insignificantly higher than tall wives. For short wives, a 1 cm increase in husband height is equivalent to between a 14-17 percent increase his income, which is more than twice that of the husband of the medium wife.

We hypothesized that this demand for a taller husband, which at some level is inversely related to their height if the women are short enough, can be driven by short women's desire for taller children. Such a desire may reflect their wish for their children to escape their own hardships from widespread height discrimination in China (Kuhn & Shen, 2013). One way to test for this is to look at the WTP for height among women who have children earlier when men are more plentiful.

Confirming this conjecture, we find that whereas all early mothers' WTP for mate-height increases with the availability of men, as measured by the local sex ratio, short early mothers increase weakly more than medium and significantly more than tall early mothers. Short early mothers are willing to give up 3.8 percentage points more income for every 1 cm increase in height than medium mothers. We find none of these effects for fathers.

Our findings with online dating and marriage data reject a general preference basis for assortative mating by height. Instead, they suggest that women's preference for mate-height is reference dependent. However, unlike the case with a reference-dependent preference (RDP) for mate-income, where high-income women exhibit the strongest preference for high-income men (Ong & Wang, 2015; Ong, Yang, & Zhang, 2020), women's preference for male height may be inversely related to their height if they are short. Our findings are also consistent with the hypothesis that women's marginal utility for mate-height may reflect concern for the height of their children, and moreover, that there may be a gender difference in intergenerational altruism.

Given that short women have the highest intensity preference for mate-height, prior work on reference-dependent preference (Ong et al., 2020) suggests that they could lose out in the competition for taller men when those men become more plentiful, because the increase in the numbers of those men may disproportionately increase the competitive entry of other women who might have been satisfied with shorter richer men when taller poorer men were less available. Indeed, only short women's probability of marriage decreases with local sex ratios, both relative to medium women and in absolute terms. A 10 percent increase in the sex ratio decreases the marriage probability of short women by 1.8 percentage points in absolute terms and 5.7 percentage points compared with medium women, who are more likely to marry when sex ratio increases.

The local sex ratio does not affect older mothers, including wives who are not mothers, up to the age of 45, in their willingness to pay for husband height. These findings extend previous work on RDP (Ong et al., 2020), which focused only on income by showing that women also have an RDP for mate-height and one that may be inversely related to their height.

We contribute to the search and matching literatures with one of the few papers on multidimensional search which integrates directed online search behavior with outcome data on marriages. We identify a vertical preference for mere height on the part of both men and women. In the case of women, we can calculate their WTP for mate height. Moreover, we show a gender difference. While men's preference for mate height increases on their own height. Women's preference for mate height, as indicated by their WTP, forms U-Shaped envelope on the men's heights. We confirm prior work within directed search framework showing that those who value matching with mate characteristic the most may lose out to competitive entry with the greater availability of those mates (Ong et al., 2020).

An important concern to rule out for identifying preferences is to rule out possible strategic behavior. In our case, because visits to profiles are visible to owners, the visitors may condition their visits on expectations of likely reciprocal visits of the owner of the profile (Bapna, Ramaprasad, Shmueli, & Umyarov, 2016; Cheremukhin, Restrepo-Echavarria, & Tutino, 2020; Egebark, Ekström, Plug, & van Praag, 2021). However, we can rule out this confounder because we find, like Ong and Wang (2015), find that men of all income levels click on women of all income levels with equal probability. This pattern is not consistent with a strategic motive to avoid rejection implied by non-reciprocation of visits. Such a motive would imply higher rates of visits to higher income women from higher income men, which we do not find. We identify women's

preference for taller and higher income men. Strategic avoidance of rejection would predict that short women click rate on taller men should be lower than tall women. However, we find that short women's WTP for height is greater than tall women's at the short and medium man's profile height. So, while we cannot rule out strategic avoidance of non-reciprocity on the part of short women at the tall man, we can at the short at the medium men's heights.

A fear of rejection could, however, bias the size of coefficient downward resulting in an underestimation of the intensity of short men's and women's preference for taller mates.

While we do not observe the degree of strategic behavior across height and income upon which our calculation of the WTP depends, our main finding is that WTP is U-shaped on the women's height. Short women have the highest WTP, followed by the medium women at the short and medium man. Only at the tall man is the pattern of WTP consistent with strategic behavior.²Related literature

A vast literature on matching has grown out of Becker's (1973) seminal work on the reasons why people form families (Schwartz, 2013; Schwartz & Mare, 2005). Recently, Becker's theory has given rise to a nascent literature on matching by anthropometric characteristics such as body mass (Oreffice & Quintana-Domeque, 2010) and height. Prior empirical studies suggest that women prefer taller men in online dating and marriage data in the US (Hitsch, Hortaçsu, Ariely, Hitsch, & Ariely, 2010), in speed dating data (Stulp, Buunk, Kurzban, & Verhulst, 2013; Stulp, Buunk, & Pollet, 2013), and in marriage data from the UK (Belot & Fidrmuc, 2010). Apart from the aforementioned correlation between height and other desirable qualities, especially in men, mere height in men is considered an attractive feature, and attractiveness increases earnings in Western countries (Hamermesh & Biddle, 1994). Height has less of (Case & Paxson, 2008) or insignificant (Heineck, 2005) effect on women's wages. Height raises earnings for both genders

² Prior attempts to identify the preference for actual or potential mate incomes are consistent for women, but conflicting for men. Generally, women prefer higher absolute and relatively higher income men (Hitsch, Hortaçsu, & Ariely, 2010a; Ong & Wang, 2015). There is some evidence that men may also prefer higher income women, though the preference is weaker than women's for higher income men (Hitsch, Hortaçsu, & Ariely, 2010a). Indeed, men may be indifferent to women's actual (Ong & Wang, 2015) or potential income, as indicated by educational attainment (Neyt, Vandenbulcke, & Baert, 2019; Ong, 2016). There is even evidence that men are averse to higher potential income women (Egebark et al., 2021; Fisman et al., 2006).

Men's ambivalence towards higher income women might due to the demonstrated lower relationship stability if their wife out earns them (Bertrand et al., 2015; Folke & Rickne, 2020; Foster & Stratton, 2021; Goussé, Jacquemet, & Robin, 2018). This lack of stability may be due to women seeking mates who can compensate them for the labor market opportunity cost of marriage (Ong et al., 2020). In that case, men should tradeoff the consumption gains afforded with a higher income mate with the greater risk of dissolution of the relationship. Recent evidence using regression discontinuity analysis at exogenous admissions cutoffs suggests that the high level of correlation between couple's educational attainment is largely due to meeting opportunities, in particular, sorting by educational institutions rather than preferences (Belot & Francesconi, 2013; Kirkebøen, Leuven, & Mogstad, 2021; Nielsen & Svarer, 2009). Hence, the correlation we find in married couple's education and income could be driven by women's preferences alone or by sorting by educational institutions.

because it is an indicator of increased human capital in China (Gao & Smyth, 2010) and Taiwan (Tao, 2014). This correlation between height and human capital may contribute to the widespread labor market discrimination by height in China (Kuhn & Shen, 2013). All of the advantages associated with height may persist for many generations, due to the heritability of income, educational attainment (Schwartz & Mare, 2005), and height (Cole, 2003), so that height becomes the visible indicator of class (Cardoso & Caninas, 2010; Harper, 2000; Hatton & Bray, 2010; Singh-Manoux et al., 2010), and therefore, a possible basis of assortative matching by class, and thereby, a contributing factor to the continued stratification of societies by socioeconomic status. Despite the adoption of communism in China, class exerts a considerable influence on life outcomes (Gregory Clark, 2014), in addition to educational attainment and occupation (Jia & Li, 2016).

Unsurprisingly, height increases mating success and fertility for men in Taiwan (Tao & Yin, 2015). However, the effect of height alone in matches can be difficult to identify, owing to the previously mentioned correlations between height and many other desirable traits. Women (men) may be reacting to these other characteristics of men (women), e.g., income when they appear to be matching on height. More important for the social science of marriage matching is the inverse possibility that a preference for mate-height can be exerting a significant but unobserved influence in speed dating or marriage data. Height can be the driving factor in women's apparent preference for more ambitious men (Fisman, Iyengar, Kamenica, & Simonson, 2006), who may well be taller than the average man. Conversely, height can be the basis for less ambitious men's dis-preference for more ambitious women, who may be taller than the average woman, and even the average man.

The "chemistry" of spontaneous characteristics that arises when couples meet presents a further problem for disentangling the preference for mate-height from other preferences in empirical data. For example, a woman's reaction to men who happen to be taller than her may make her more attractive to them. Her pupils may dilate (Tombs & Silverman, 2004). Her voice may soften (Fraccaro et al., 2011). Hormonal changes may also occur on meeting (Grillot, Simmons, Lukaszewski, & Roney, 2014; López, Hay, & Conklin, 2009), which may increase the attractiveness of couples to each other at that moment in ways that are not captured by standard measures (Fraccaro et al., 2011). See Van Anders, Grey and Anders (2007) for an academic and Alexander (2012) for a popular survey of the academic literature. Women's preference for taller

men, which could make them more attractive to those men, could then induce a preference in taller men for shorter women.³

The self-reported preferences revealed in surveys may seem a natural remedy for these problems of separating height from non-height preferences. However, surveys of preferences for ideal mate characteristics have not been predictive of revealed preferences based on speed dating experiments (Eastwick, Luchies, Finkel, & Hunt, 2014). Indeed, there is no reason to expect that people can separate their preferences through introspection any better than social scientists can from their choices. For example, subjects may always imagine tall men as also being more healthy/handsome/athletic/intelligent, because that is true of the tall men they know. As a consequence, they misreport a preference for mate-height when they actually cared about those other characteristics. Beyond confusion in the understanding of one's own preferences, people may not be aware or may be reluctant to reveal their preferences in surveys. In an empirical study of online dating behavior, Hitsch et al. (2010) find a within-race preference revealed by women in their first contact emails to men, which was not revealed by the women's stated preferences.

These simultaneity and omitted variable problems in identifying non-height mate preferences from speed dating experiments are exacerbated in marriage data. Spontaneous characteristics from the chemistry that arises from well-matched statures (or the lack thereof from mismatched statures) could give rise to permanent relationship advantages (or handicaps). Height alone, or through its correlation with income, can contribute to the diminished marital satisfaction in couples in which the husband has a lower income than his wife, but in which relative heights were not controlled for (Bertrand, Kamenica, & Pan, 2015; Brown & Roberts, 2014). Few studies have attempted to separate the effect of income and height on matching behavior. Belot and Fidrmuc's (Belot & Fidrmuc, 2010) empirical study of the effect of height in cross-ethnic marriages using real marriage data controlled only for educational attainment. To our knowledge, only Hitsch et al. (2010) controlled for mate-income when they tested for the effect of height on attraction.

We overcome these endogeneity and omitted variable issues by identifying gender differences in preferences for mate-height *ex-ante* to any interactions in a field experiment on one of China's largest online dating websites. Our field experiment is in the tradition of the large correspondence studies literature on labor market discrimination. To our knowledge, this is the first field

³ Note that this problem is distinct from the well-recognized problem of men seeming to prefer women who are shorter than themselves because they expect higher rates of rejection from women who are taller than themselves.

experimental study of the effect of height and income on mate preferences with random assignments of both.

The mutual selection of married couples presents a significant challenge for identifying the willingness to pay WTPs for mate characteristics of each member. Chiappori, Oreffice, and Quintana-Domeque (2012) derive an index condition theoretically which allowed them to identify the couple's WTP for their mate's BMI empirically. Chiappori, McCann, and Pass (2021) extend the theoretical results in Chiappori et al. (2012) by developing a theoretical basis for the identification of the WTP of couples even if the index condition is not met. Based on the theoretical results of Chiappori et al.'s (2021), we extend the empirical results in Chiappori et al. (2012) by testing for whether men's and women's willingness to pay for mate-height in China varies with their own height. We do this by estimating the WTPs for men and women for three height groups and applying the estimator of Vella (1993) to control for unobserved selection by the spouse across different height groups on our simultaneous equations.

Online Dating Field Experiment

Experimental Design

We conducted our experiment on one of the largest online dating websites in China, with a reported membership of 100 million in 2016. This website advertises itself as a matchmaking website for white-collar professionals between the ages of 25 and 45 years of age. Prior work (Ong et al., 2020) on website users in a similar set of cities suggests that the users of this website are demographically similar to the surrounding population of singles in the same city. Users can create a profile without a paid membership. These profiles must include demographic (e.g., age and gender), socioeconomic (e.g., income), and physical characteristics (e.g., height) information, at least one photo, and a free-text personal statement. Such requirements are common to most online dating websites. Users may also add information, particularly, verifiable information, which would increase the "credibility" of their profile.⁴ Users can browse, search, and interact with other

⁴ The credibility of the profile is indicated by a score. This score can be increased with phone verification of the registered phone number, a government-issued ID, extra photos, email and phone verifications...etc. All our profiles have a low credibility score, because they have only phone verification and one photo. However, the low score does not appear in user search results, and hence, would not affect visits to our profiles. To affect visits, users would have to search specifically for low-credibility profiles. Even then, such searches would not affect visit rates across our profiles, which is the basis for our findings.

members after registration. Typically, users begin by inputting their preferred age range and geographic location of partners into the search engine. The query returns a set of abbreviated profiles which include: ID, picture, nicknames, age, city, marital status, height, income, and the first two lines of a free-text statement. Users can then click a link and “visit” the full profile.⁵ They can signal interest for free. However, emails require a payment of 10 CNY/month membership at the time of the experiment, when 1 USD was approximately 6 CNY. We only recorded visits.

We constructed 360 (180 for each gender) profiles by collecting nicknames, pictures, and statements from inactive real profiles from *another* website that would have automatically hidden them after a month of inactivity.⁶ We posted our constructed profiles for 24 hours to a randomly assigned city, which is unlikely to be the same as that from which the depicted user originated. At the end of the 24 hours, we closed the account.

For the profile’s fixed traits, we assigned male profiles the age of 27 and female profiles the age of 25, which are the average ages of marriage of men and women, respectively, in China. Birthdays were within eight days of each other and under the same zodiac sign. We assigned our profiles a college educational attainment, a marital status of “single with no children”, and no house ownership.⁷

The main treatment consisted of a block-random assignment design with three heights and three incomes for each gender. “Short” male profiles are 166 cm in height, one standard deviation below the average of “medium” male profiles, which are 172 cm (Zhang & Wang, 2011). “Tall” male profiles are 178 cm, one standard deviation above medium. These male profiles were block-

⁵ Visits are necessary for any further interactions. They are costly in so far as they require time. Hence, we expect people to reveal their preferences through their observed tradeoffs between profiles to visit. On the other hand, we do not expect these visits to be made strategically to avoid rejections. A visit reveals only an *ex-ante* desire to see the full profile, and not necessarily an *ex-post* desire for more interactions. Thus, we also do not expect visits to be made strategically to avoid humiliating rejections, because visits do not imply an offer to be rejected.

⁶ To our knowledge, no legal restrictions exist on the noncommercial use of user-created content uploaded to social media websites in China. We assume that such restrictions, if they exist, are weaker in China than in the United States, where our research activities would also fall under the “fair use” exemption to the US copyright law. Major US social media websites explicitly announce terms of use that effectively makes uploaded user-created content public domain. See, for example, “publish content or information using the Public setting” in <https://www.facebook.com/legal/terms>.

We do not expect users to provide more than a brief glance at our profiles, which contain little information beyond what was already revealed in the search engine results. Indeed, no one pursued further contact with any of our profiles. Moreover, our profiles are spread out among many other profiles on any given day. They are also spread out across many days. Users of this website are unlikely to encounter our profiles more than once (if at all).

Chinese universities, similar to European universities, do not have IRBs to approve the ethics of experiments. However, to the best of our understanding, our design falls under the “minimal risk” exemption from IRB approval. “Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.”

See here: [http://www.virginia.edu/vpr/irb/sbs/resources_regulations_subparta.46.101.html#46.102\(i\)](http://www.virginia.edu/vpr/irb/sbs/resources_regulations_subparta.46.101.html#46.102(i))

⁷ 30-40 years old men who are college graduates in Beijing and Shanghai earn approximately 8k/month. The lowest income profile in our experiment is 3-5k/month, which is approximately between the 20th and the 50th percentiles, according to CFPS data for 2010. However, the sample is quite small (44 observations for male 30-40 years old college graduates in Beijing and Shanghai). The comparable Census data for male income distribution in 2010 is unavailable.

randomly assigned one of three levels of incomes: 3-5, 8-10, 10-20 (1,000 CNY).⁸ These incomes are slightly higher than the median for this website to make our profiles more attractive to potential female visitors.

“Short” female profiles are 155 cm in height, one standard deviation below “medium”, which are 160 cm (Zhang & Wang, 2011), which are in turn one standard deviation below tall, which are 165 cm in height. These female profiles were block-randomly assigned incomes: 2-3, 3-5, 8-10 (1,000 CNY). 3-5 is the mean income level for women of this age group on this website. In summary, we had 20 profiles for each combination of income and height in our 3×3 design for a total of 180 profiles for each gender. Thus, with these treatments, we constructed 360 profile “slots.” We then randomly assigned according to gender 360 pictures, nicknames, and personal statements to these 360 slots.

Users can rank the profiles of other users by the registration time, login time, age, number of photos, the credibility of the profile, and income in the website’s search engine. The website also highlights randomly selected (so far as we can tell) new profiles. Neither should affect our results, because all of our profiles had statistically identical characteristics.

Users could view our profiles’ picture, nicknames, age, city, marital status, height, income, and the first few lines of a free-text statement in their default search results.⁹ They could then click a link and visit our full profile, which did not contain any other information. We could view our visitors’ full profiles by clicking their link in our profile’s visitor history, which records visits from any individual visitor to an individual profile only once, even if they made multiple visits. Visits across our profiles are not necessarily from unique visitors. However, given that we posted our profiles with lags so that many other profiles would be between our profiles in search engine results, and we randomly assigned characteristics to our profiles, the individual idiosyncratic factors of specific visitors should be ruled out as the main driver of our findings.¹⁰

⁸ We selected these income levels, which are similar to those chosen in Ong and Wang (Ong & Wang, 2015), to be high enough to receive a sufficient number of visits within a short period of time (24 hours) without being conspicuously high. In support of the reasonableness of our income assignment to low-income men, 3-5k/month is slightly lower than the 6k/month that female respondents said was satisfactory for a mate in a national survey three years later:

<http://www.scmp.com/news/china/society/article/1913694/great-expectations-chinese-womens-ideal-man-should-earn-6701-yuan>.

⁹ We were ready to eliminate any potential inconsistencies between the text of the personal statement and the assigned photo. However, we found no such inconsistencies.

¹⁰ Since we randomly assigned pictures, nicknames and the first two lines of the statements to profiles, we would find a uniform distribution of clicks across heights and incomes across cities, if visitor choices were based on anything other than the height and income of our profiles.

We created 36 profiles (of the same gender) the day before to allow the website time to register them. Each day included four profiles from each of the nine income and height combinations. We logged in these 36 profiles randomly, with approximately five minutes between each, to leave at least one page between each of our profiles, for five days during the period of September 11-17, 2013 for the male profile treatments and September 24-29, 2013 for the female profiles. We alternated between logging in the next day's profiles and the collection of the previous day's visit data. The total login/collection time was 1-3 hours per day, depending on computer speed and number of visits.

Based on previous findings that men are indifferent to women's incomes, but women prefer higher income men (Ong, 2016; Ong & Wang, 2015), we predict

Hypothesis 1. Men will be indifferent to female profile incomes whereas women will prefer higher income male profiles.

Based on the prior literature's finding that women prefer taller men and the theory of assortative matching, we predict that

Hypothesis 2. All women will prefer taller male profiles, with taller women preferring the taller male profiles the most among all women.

Based on previous work which showed a weak preference among men for taller women, as well as the association between health, and height we predict

Hypothesis 3. Men will prefer the taller female profiles (among those who are shorter than they are).

Data Results

We recorded 2310 men visitors, which is a random sample of a fifth of the total number of visitors to our 180 female profiles.¹¹ We received and recorded all 1516 women visitors to our 180 male profiles.¹² We test for heterogeneity in visitor's response to mate-height as a function of height at three levels: short, medium, and tall. 529 of the 1516 female visitors were at the three levels of interest. 310 of the 2310 male visitors that we counted were at these three corresponding levels for men. Thus, the total number of visits we used for our analysis is 839. We used the

¹¹ More men visited our female profiles than women visited our male profiles. The men who visited our female profiles are from a larger age range. Men can be more aggressive in their search because of the scarcity of women in China. Hitsch et al. (2010b) find that men visited female profiles at 2-3 times the rate of women to male profiles in the US where the sex ratio is close to 1.

¹² Although users can view anyone else's profile, including those of the same gender, they cannot report a same-sex preference on this website.

remaining data for robustness checks, which yielded similar results. These are available upon request.

Before we present our results, we first confirm the strong association between height and other desirable characteristics such as educational attainment and income for both men and women in China. Table 1 shows the strong correlation between visitor income and educational attainment on height for both men and women in our online dating data. On the website, a one cm increase in men's height is associated with a 1.8 percent increase in men's income and a 2.0 percent increase in female income. We control for the effect of educational attainment to better approximate the effect of height discrimination. When educational attainment is controlled for, the percentage increase for men is 0.9 percent and the percent increase for women is 1.4 percent. Table 2 shows the comparably strong correlation in CFPS data. A one cm increase in height, when we do not control for educational attainment, is associated with a 1.4 percent increase in men's income and a 1.7 percent increase in women's income. These effects are approximately comparable with prior findings for China (with more controls for location etc..) which find a one cm increase is associated with a 1 percent increase in wages for men and a 0.9 percent increase for women (Gao & Smyth, 2010). When educational attainment is controlled for, the increase for men is 0.7 percent, whereas that for women is 1.2 percent. The differences between the impact of height for men and women on the online dating website and in the CFPS can be attributed to differences in the importance of heights and its correlates for the four major cities (Beijing, Shanghai, Chengdu, and Shenzhen) of the online dating experiment and the more representative sample of cities, which are subject to significant regional variation in height, in the CFPS data.

The graphs of men's visits to female profiles are summarized in Figure 1. The horizontal axis indicates the height of our female profiles. The vertical axis indicates the average daily visits. The number in brackets in the legend is the total average number of visits per day for that height. For example, the average share of medium men who visited our 165 cm female profiles with reported incomes of 3-5 (in 1,000 CNY) was approximately six percent per day. The average daily visits from medium men was 36, the number in brackets in Figure 1. The actual total for all such men for the 15 days of the experiment was 181, the number in brackets in Figure 2.

[Insert Figure 1 here]

[Insert Figure 2 here]

We normalize the graphs by dividing each average daily visit by all of the visits at each of the height levels of the visitors so that we may determine the probability of visits from each height level of the visitors to each height and income levels of the visited profile. For example, Figure 1 shows an average of 6 visits by medium men to tall women with the median income. This result translates into the $6/36 \cong 17$ percent in Figure 2. We observe no discernable trend by income for these lines. However, except for short men, nearly all of these graphs increase with the height of the women. This pattern is confirmed in the regression results in Table 3. Only the short man's visits to female profile's income, but only marginally significantly.

Figure 2 shows that both 178 and 172 cm men visited female profiles who were 165 cm the most. These women were 13-7 cm shorter than the men. We discern no pattern for the few 166 cm men who visited our profiles. This skew in the distribution away from short men indicates that men on this website may tend to be taller than the rest of the population or they are misreporting their height if they are short. However, according to our calculations, the average reported height of men on this online dating website was 175 cm in Beijing and 174 cm Shanghai, which was identical to that found in a representative survey (Zhang & Wang, 2011). The average reported heights of women on this website were approximately 1.5 cm taller for women in Beijing and one cm taller in Shanghai. Thus, the heights of website users are quite comparable to those of the general population. In any case, we use data from a representative household survey of married couples in the CFPS dataset to corroborate our predictions based on single individuals in our online dating sample.

In stark contrast, Figure 3 illustrates how women's average daily visits increase for higher income men. This pattern is even more salient when we normalize by the height of the visitors in Figure 4.

[Insert Figure 3 here]

Figure 4 reveals further variation in the women's responses to our male profile's height. Medium women always visited taller men more at all income levels. Most interestingly, short women visited short men the least and medium men the most among the male profiles they visited. They also visited short men the least and medium men the most among all women. Tall women generally visited tall men more than both medium and short women, except for low-income tall men, which they visited the least among all women.

[Insert Figure 4 here]

Thus, Figure 4 already shows the rough outlines of our U-shaped WTP envelope finding, that short women have the highest WTP for mate-height at the short and medium men's height, whereas tall women have the highest WTP for mate-height at the tall men's height.

Regression analysis

We test econometrically for the effect of income and height on visits. First, we explain our data in words, then mathematically. Each of our 180 profiles for each gender is at one of three income and height levels resulting in $3 \times 3 = 9$ treatment levels with 20 profiles in each. Each of our visitors also comes from three height levels. Thus, the $N = 540$ at the bottom of our regression results in Table 3 and Table 5 are perhaps better interpreted as potential states which can be realized by our 529 visits from women and 310 visits from men. Thus, a data point among our 540 data points is quintuple (number of visits from each of three height levels; a profile at a height and income level). We normalized the number of visits to a female profile at each height level of the visitors by dividing by the total number of visits at a height level. We then assigned a dummy variable to each of the visitors' three height levels.

The percent of visits to profile $i = 1, 2, \dots, 20$

- at income level $w = 4$ (for 3-5), 9 (for 8-10), 15 (for 10-20) in 1,000 CNY and
- height level $h = 166$ (short), 172 (medium), and 178 cm (tall) for male profiles

and

- income level $w = 2.5$ (for 2-3), 4 (for 3-5), 9 (for 8-10) in 1,000 CNY and
- height $h = 155$ (short), 160 (medium), and 165 cm (tall) for female profiles

from visitors of height h' is

- *percent of visits* $_{i}^{h'}$ = $\frac{N_{i,h,w}^{h'}}{\sum_{w \in \{4,9,15\}} \sum_{h \in \{166,172,178\}} \sum_{i=1}^{20} N_{i,h,w}^{h'}}$ to male profiles
- *percent of visits* $_{i}^{h'}$ = $\frac{N_{i,h,w}^{h'}}{\sum_{w \in \{2.5,4,9\}} \sum_{h \in \{155,160,165\}} \sum_{i=1}^{20} N_{i,h,w}^{h'}}$ to female profiles

Thus, the equation that we estimate is:

$$\begin{aligned} \text{percent of visits } _i^{h'} &= \alpha_0 + \alpha_1 \cdot h_i + \alpha_2 \cdot (h' = \text{medium dummy}) + \alpha_3 \cdot (h' = \text{tall dummy}) + \\ &\beta_1 \cdot w_i + \beta_2 \cdot (h' = \text{medium dummy}) \cdot w_i + \beta_3 \cdot (h' = \text{tall dummy}) \cdot w_i + \beta_4 \cdot (h' \\ &= \text{medium dummy}) \cdot h_i + \beta_5 (h' = \text{tall dummy}) \cdot h_i + \varepsilon_{i,h}^{h'} \end{aligned} \quad \text{Eq.(1)}$$

To control for heteroskedasticity and within-city correlations, we use clustered standard errors at the city-level.

Table 3 shows the regression of the percent of men's visits to female profiles. The coefficients for men's height dummy (e.g., -6.494 in column 1) are artifacts of normalization and should be ignored. Men generally do not respond to our female profile's incomes, with the possible exception of short men, who seem to respond marginally in column (1). However, our sample size for short men was also small (37 visits in total or an average of seven visits per day). This result is quite consistent with that in Ong and Wang (Ong & Wang, 2015), which also reported that men generally do not respond to women's income. Medium (0.042) and tall men (0.073) respond to women's height whereas short men (0.020) do not.

To see how this regression result relates to Figure 2, note that in Figure 2, men's visits increase approximately five percent for each five cm increase in the reported height of our female profiles, which scales down to a one percent increase for every one cm increase in height. Since there are 20 profiles for each of our 3×3 height and income combinations, that one percent increase translates into a 0.06 percent increase per profile increase in height of one cm, which is the coefficient 0.062 for *profile height* in column (2) in Table 3.

[Insert Table 3 here]

The response of tall men to our female profile's increasing height is insignificantly different from that of the medium. We also introduced quadratic heights into these regressions in A-Table 2 and find no significant coefficient. We also do not find heterogeneity among the men in A-Table 3. Our findings when we use the entire random sample of 2310 male visitors for the quadratic and non-quadratic specifications are, respectively, nearly identical in significance when men's height types are defined for the full range of heights (short ≤ 166 cm, 167 cm \leq medium ≤ 177 cm, tall ≥ 178 cm) rather than at specific heights. These results are available upon request. Table 4 shows that the WTP between mate-height and mate-income represented by the ratio of the percentage change in men's visits for a one cm increase in female height over the percentage change in visits for a 1k CNY/month increase in female income using the specification in Table 3. None of the WTPs are significant. We find an identical lack of significance for the full range of heights using the entire random sample. These results are available on request.

[Insert Table 4 here]

Observation 1. Men are indifferent to the incomes of female profiles, but prefer taller female profiles.

The regression of the percent of women's visits to male profiles is in Table 5. Column (1) in Table 5 has short women visitors as the benchmark, whereas column (2) has medium women visitors as the benchmark. Column (1) shows that all women's visits increase highly significantly on the male profile's income. However, with regards to profile height, only the short women's visits are strongly increasing, while that of the medium and tall women's are not. The difference between the linear coefficient for the medium women (-4.318) and the tall women (-6.560) compared to that of the linear coefficient for the short women's visits on male profiles' height (4.684) is negative. These coefficients for men's height interacted with the women's height type decrease but are still significant when we use the entire sample of 1516 female visitors. This loss in significance likely because the differentiation in preferences among women at three specific heights (short=155cm, medium=160cm, tall=165cm) brought out within our subsample is lost when we aggregate over a wide range of heights (short ≤ 155 cm, 156 cm \leq medium ≤ 164 cm, tall ≥ 165 cm) women.¹³

[Insert Table 5 here]

However, due to the significant quadratic term, we must find the peak visit rates to conclude whether women of each height prefer taller men. The levels of the probability of visits from different heights are as we would have expected. The height that maximizes the percentage of visits from short women is $-406.577 + 0.054 \cdot \text{Male income} + 4.684 \cdot \text{Male height} - 0.013 \cdot \text{Male height}^2$. This has a peak at male profiles of $173.5 \text{ cm} = -4.684 / (-0.013 \cdot 2)$ height, which is $173.5 - 155 = 18.5$ cm taller than the women themselves. Income here is in 1,000 CNY units. The peak for medium women is 11cm.¹⁴ Tall women have no peak, but they have a trough at 13cm.¹⁵

Observation 2. Women's visits increase on male profile's height and income.

¹³ The significance of these coefficients is lost almost entirely when we, furthermore, omit the quadratic term.

¹⁴ The height that maximizes the percent of visits from medium women is $(-406.577 + 371.7) + (0.054 + 0.00593) \cdot \text{Male income} + (4.684 - 4.318) \cdot \text{Male height} + (-0.013 + 0.0125) \cdot \text{Male height}^2 = -35.1 + 0.06023 \cdot \text{Male income} + 0.366 \cdot \text{Male height} - 0.001 \cdot \text{Male height}^2$. This has a peak at male profiles of $183 \text{ cm} = (-0.366) / (-0.001 \cdot 2)$ height, which is $183 - 160 = 23$ cm taller than the women themselves.

¹⁵ Tall women have no male profile height which maximizes their percent of visits. The height that minimizes the percent of visits from tall women is $(-406.577 + 564.6) + (0.054 + 0.0284) \cdot \text{Male income} + (4.684 - 6.560) \cdot \text{Male height} + (-0.013 + 0.0190) \cdot \text{Male height}^2 = 97.14 + 0.0827 \cdot \text{Male income} - 1.876 \cdot \text{Male height} + 0.0055 \cdot \text{Male height}^2$. This has a trough at male profiles of $170.5 \text{ cm} = -(-1.876) / (0.0055 \cdot 2)$. Since they exhibited no maximum within the variation in our profile heights, we infer that they preferred men who were at least the difference between the maximal male height and their own height $178 - 165 = 13$ cm above themselves.

Again, the WTP between height and income depends on their coefficient at each male profile height due to the quadratic term. We evaluate the WTP at each of the short (166cm), medium (172cm), and medium and tall (178 cm) male heights in Table 6.

[Insert Table 6 here]

Column (1) shows the WTP of mate-height and mate-income for short women, represented by the ratio of the percentage change in visits of short women for a one cm increase in male height over the percentage change in visits for a 1k CNY/month increase in male income. The WTP of short women (0.457) is higher than that of medium women (0.107) and even tall women (-0.043) at the height of the short male profile height (166cm). Short women's (0.109) WTP than that of medium (0.084) and even tall women (0.053) at the medium male profile height (172cm). However, at the tall male profile height (178cm), tall women (.149) have the highest WTP, followed by medium (0.0615) and lastly by short (-.239). The χ^2 test shows that the WTP of short women is significantly higher than that of the medium at the short man's height, but not at the medium or the tall man's height. Short women and tall women are different at the short and tall men's heights. Medium and tall women's WTP are never different from each other. Thus, short women have the highest WTP of mate-height for mate-income at the short and medium man's height, followed by medium women, and then by tall women. However, the opposite ordering is evident at the tall man's height. The WTP of each height of woman depends on the man's height at which her WTP is evaluated. We find almost identical results when we use the full sample of 1516 female visitors, with the exception of the WTP of the medium woman at the tall men's height of 178cm, which becomes insignificant. The change in the WTP across women of different heights can be summarized by the following observation.

Observation 3. Women's WTPs for mate-height forms a U-shaped envelope on the women's height.

Chinese Family Panel Studies Data

We test whether these preferences revealed through visits before the first dates in the online dating environment predict patterns of spousal height in the China Family Panel Studies (CFPS) 2010 baseline dataset.¹⁶ The CFPS is a comprehensive survey of individual-, family-, and

¹⁶ Although the CFPS for 2012 data is available, it only collected household income without separating husband's and wife's incomes. Moreover, it did not collect the income of self-employed individuals, unlike the 2010 data set.

community-level data across China, covering various aspects of economic and non-economic issues. It includes 16,000 households in 25 provinces and is representative of the whole population of China. We restrict the sample to married couples with urban *hukous*, both between the ages of 20 and 45 years old, which comprises 2191 couples. We drop the observations whose height is beyond three standard deviations from the mean, which are either outliers or possibly recording mistakes during the survey. This leaves us a final sample of 2147 couples for analysis. Table 7 shows the summary statistics.

[Insert Table 7 here]

Table 8 presents the regressions of the wife's educational attainment and beauty on husband's characteristics. It shows that both the wife's educational attainment and beauty are positively related to the husband's *log* income and height. We report the ratios and the products of the coefficients of interest within and across columns in the table. The corresponding Wald test of the proportionality of these factors is not rejected (p-value = 0.241), indicating that the WTP is identified. The value of the WTP between husband's *log* income and height is between 0.062 and 0.084. This suggests that a one cm increase in height is equivalent to a 6.2-8.4 percent increase in income for the wife.

[Insert Table 8 here]

However, our online dating results suggest that women's taste for mate-height may be heterogeneous according to their height. Based on our online dating finding in Observation 3 and the above subsequent confirmations with marriage data, we predict,

Hypothesis 4. Short wives are most willing to pay for husband height.

Heterogeneity in women's willingness to tradeoff husband income for husband height

In order to test Hypothesis 4, we apply a methodology recently proposed by Chiappori et al. (Chiappori et al., 2021). Specifically, assume that men and women are heterogeneous not only in their observed characteristics, but also in their tastes regarding the characteristics of their potential spouses. Each woman is characterized by a vector $(x, \varepsilon) \in \mathbf{R}^2 \times \mathbf{R}^2$, where $x = (x_1, x_2)$ denotes her observable characteristics (here, education and beauty) whereas $\varepsilon = (\varepsilon_1, \varepsilon_2)$ denotes her idiosyncratic preferences for a male's observable traits. Similarly, each man is characterized by a vector $(y, \eta) \in \mathbf{R}^2 \times \mathbf{R}^2$, where $y = (y_1, y_2)$ denotes his income and height while $\eta = (\eta_1, \eta_2)$

summarizes his tastes regarding the education and beauty of a potential mate. The surplus generated by the matching of WTP. (x, ε) and Mr. (y, η) takes the form:

$$S(x, \varepsilon; y, \eta) = (x, y) + \sum_x x_i \eta_i + \sum_x y_i \varepsilon_i \quad \text{Eq. (2)}$$

where $S(x, y)$ is a systematic component reflecting the overall interaction between the spouses' observable characteristics, while the next two terms translate each spouse's idiosyncratic evaluation of the partner's traits.

In practice, we assume that the vectors of random variables ε and η are independent of each other and of observables, and normally distributed with mean 0 and variance 1. Similarly, x is normally distributed, with mean M_x and covariance matrix Σ_{xx} , while y is normally distributed, with mean M_y and covariance matrix Σ_{yy} . Finally, the surplus is assumed quadratic:

$$S(x, y) = x' \Delta y \quad \text{Eq. (3)}$$

Under these assumptions, Chiappori, McCann, and Pass (2021) show the following results. First, the joint distribution of (x, y) at the stable matching is normal. Second, the structure just described implies the following two relationships between x and y :

$$x = Ay + B + \Sigma_x \eta \quad \text{Eq. (4)}$$

and

$$y = Cx + D + \Sigma_y \varepsilon \quad \text{Eq. (5)}$$

A , B , Σ_x and Σ_y are 2×2 matrices; moreover, it is then the case that

$$\Delta = A' (\Sigma_x)^{-1} + (\Sigma_y)^{-1} C \quad \text{Eq. (6)}$$

where A' is the transpose of A .

It follows from these results that the matrix Δ can readily be estimated. Indeed, in equation (3) the random term $\Sigma_x \eta$ is independent (by assumption) from the regressor, and can, therefore, be estimated by OLS; in practice, one must simply regress the wife's characteristics over the husband's to identify the regressors A and the covariance matrix Σ_x . Similarly, regressing the husband's characteristics over the wife's gives matrices C and Σ_y .

Finally, a particular case obtains in the index case, studied by Chiappori et al. (Chiappori et al., 2012), when the vectors of observable characteristics x and y enter the surplus through one-dimensional indices $I(x)$ and $J(y)$ respectively. In the linear case under consideration, we then have:

$$I(x) = \alpha' x, \quad J(y) = \beta' y \quad \text{Eq. (7)}$$

where α and β are vectors in \mathbf{R}^2 . It follows, in particular, that both matrices A and C are of rank one, a property that can readily be tested.

We divide our data into three subsamples based on the wife's height: short (one standard deviation below the mean height), medium, and tall (one standard deviation above the mean height), and then run Eq. (4) separately on these three subsamples to obtain the corresponding WTP for each type of wife. By comparing the values of their WTPs between husband height and husband income, we can identify which type of wife values the height of their husband most.

However, differences in the measured WTPs of wives for husband height across groups may be due to their husband's preferences, not the wife's preferences. In this case, the assumption of Chiappori et al. (Chiappori et al., 2021) that the unobserved characteristics of husbands are not correlated with their observable characteristics may be violated when we divide wives into short, medium, and tall groups. To address this problem, we apply the estimator that Vella (Vella, 1993) developed to adjust for the possibility of unobserved selection with simultaneous equations. We use the wife's mother's age of giving birth and the wife's weight at birth as exclusion restrictions for the wife's height and to run the first-stage regression in Table 9.

[Insert Table 9 here]

We expect that mother's age of giving birth is positively correlated with children's height, because the resources available to the child, which increases with the mother's age, contributes to realized adult height. Older mothers are more knowledgeable than younger ones. Such knowledgeability has been shown to contribute to the height of children (Rubalcava & Teruel, 2004; Thomas, Strauss, Henriques, Strauss, & Henriques, 1991) through better utilization of community and household resources, and possibly by improving child nutrition (Bhargava & Fox-Kean, 2003). By contrast, the mother's age should not be correlated with the traits related to marital matching of the daughter, including her beauty.

Potential height and beauty (e.g., symmetry of facial features and body proportion) are influenced by genetic quality, prenatal hormonal levels, and exposure to diseases and parasites (Gangestad, 1993; Richard H. Steckel, 2009). Qualitatively, physical beauty is generally related to averageness, symmetry, and sexual dimorphism of features (Rhodes, 2006). In women, beauty is also a signal of fertility, e.g., levels of estrogen. For beauty, genes, mutation, a parasitic load plays the dominant role, rather than resources (Gangestad, 1993). Thus, the father's age can decrease his child's beauty because men produce new sperm throughout their lives. Sperm produced at later

ages is more likely afflicted by mutation (Huber, Fieder, Huber, & Fieder, 2014). In contrast, the quality of mother's eggs is fixed even before her birth, and is, therefore, not subject to mutation as the mother ages. Thus, the beauty of children is unaffected by the mother's age. We also use weight at birth in the first-stage regression. It does affect height (Sandra E. Black, Devereux, & Salvanes, 2007) but should not influence beauty.

We calculated the generalized residual from Table 9 and set it into the second stage of the SUR regression as a control variable and to bootstrap the standard errors. The results are presented in Table 10.

[Insert Table 10 here]

In Table 10, the equality constraints for short, medium, and tall wives are not rejected by the Wald test (p-value = 0.718, 0.171 and 0.575, respectively). The WTP of the short wife is between 0.143 and 0.179 and is the highest among short wives, suggesting that they value men's height the most. For short wives, a one cm increase in husband height is equivalent to 14.3-17.9 percent increase in his income, which is approximately twice the average value obtained for the whole sample of women in Table 8 and more than three times that of the medium wife. We use the Likelihood Ratio (LR) test to check whether the WTPs among short, medium, and tall wives are significantly different. For each pair of these types of wives, we force the WTP to be the same across the two types and run a "restricted" SUR regression. We compare the coefficient for the restricted SUR with those in the "unrestricted" in Table 10 and use the LR test with the null hypothesis that the WTPs are constant across height groups. The differences between short and medium and between medium and tall wives are both significant (p-value = 0.009 and 0.052, respectively). The WTP of the short wife is also lower than the tall wife. Though the difference is insignificant (LR test p-value = 0.176), it is consistent with our U-shaped WTP envelope finding with online dating data.¹⁷ We conclude,

Observation 4. Short wives are significantly more willing than medium wives to pay for husband height, though only weakly more than tall wives.

¹⁷ Our findings with online dating data show that women concentrate their visits assortatively with respect to their own and men's heights: tall women concentrate on tall men, medium women concentrate on medium men, and short women concentrate on short men. Our results for married women are consistent with these online dating results. However, our online dating data also allows us to identify the MRSs for matches that are not assortative on height. As mentioned in the text, these results suggest a U-shaped envelope in terms of the women's MRS for height as a function of the men's height. We currently do not have the sample size with CFPS data to test for the non-constancy of married women's MRS for men's height as a function of men's height.

We tested for the willingness of husbands to trade off between the wife's income and height. Consistent with our online dating results, we find in A-Table 4 that the coefficient for wife's income is insignificant. However, the lack of significance here could be due to the generally accepted endogeneity of the wife's labor market participation. Wiswall and Basit (Wiswall & Zafar, 2021) provide preliminary evidence that women are heterogeneous in their expectation of their own labor market participation, especially after marriage and childbirth, and that some men anticipate the possibility that their future spouse may decrease their labor market participation. Such anticipation would suggest a potential reason why men tend not to visit the online dating profiles of high-income women with higher intensity than low-income women. These men may discount their ability to predict women's labor market participation ex-ante to meeting. These men may also be heterogeneous in their preferences for their future spouse's labor market participation.

We do find that the coefficient for wife's income becomes significant if we exclude those wives with zero income. This contrast between the significant results for working wives with the insignificant results when we use all wives suggests that the men who might have anticipated their wife's continued labor market participation ex-post of meeting may trade off between wife's income and wife's height. (This regression result is available on request.) Since we do not observe the basis by which wives might leave the labor market nor how this departure might be anticipated by the men, we instead replace wife's income with wife's education, which we assume, similar to the rest of the literature, is less endogenous than wife's income and just as observable as her income to her husband at their meeting.

To test for men's WTP for wife's characteristics, we use men's income instead of men's educational attainment as the dependent variable (unlike as in the case of women), because men's labor market participation tends to be unaffected by marriage and the birth of their children. Likewise, unlike the case with women, we use men's height instead of beauty as the dependent variable, because we hypothesize that women care more about husband height than husband facial beauty. Table 11 shows how the husband tradeoff between the wife's education and height. For males, the necessary equality condition for a single well-defined WTP for men as a whole is violated (the within-column p-value = 0.000 and the across-column p-value = 0.000).

[Insert Table 11 here]

The average men's WTP may not be well-defined because of heterogeneity across men of different heights, which we now test for. We, again, employed the Vella (Vella, 1993) estimator

for men that we used for women in A-Table 5 and A-Table 6 to address the possible selection effects from splitting the sample into three. A-Table 5 shows that the mother's age of giving birth is marginally below the threshold of significance for husband height, but the husband's height does increase with his birth weight. This difference can be attributed to the preference for boys in China, which may guarantee sufficient nutrition for sons, regardless of the knowledgeability of the mother. As a possible consequence, the knowledgeability of mothers may make more of a difference to the nutrition of girls than for boys. However, the second stage in A-Table 6, which utilizes residuals of the first-stage, indicates that the wife's height does not have a significant effect on husband income. Moreover, the equality of WTPs for the medium ($Pr = 0.014$) and tall ($Pr = 0.009$) men is rejected in Wald-tests in A-Table 6. Hence, we do not have the well-defined WTPs from each subgroup of husbands by which to test for heterogeneity across husbands of different heights.

We have shown that short women value height more than medium women and weakly more than tall women with both online dating and marriage data. Prior work has shown that high-income women can be worse off when men are more plentiful, because their abundance increases the expected value of low-income women that enter the competition for these high-income men (Ong et al., 2020). In this paper, we find that short women are more willing to pay for mate-height than tall women. In other words, women have a reference-dependent preference for mate-height. Short women should be less willing to substitute toward short men even when the competition for tall men increases. Therefore, the seemingly paradoxical outcome found with reference-dependent preferences for mate-income can also arise with mate-height;

Hypothesis 5. Only short women's probability of marriage decreases with local sex ratios relative to medium, or even in absolute terms.

Table 12 presents the marriage probability of women as a function of their height, using the medium-height women as the benchmark. We narrow the age range from women age 20-45 to those aged 20-30 to cover the range when women transition from singlehood to married life. The median age of first marriage for women in 2005 was 23. 98.5 percent were married by the age of 30. The 2010 Census does not contain micro-level data. However, CFPS data for 2010 shows a similar pattern as the 2005 Census.

Again, we define tall (short) women as one standard deviation above (below) the mean in column (1) of Table 12 and very tall (very short) two standard deviations above (below) in column

(2). Column (1) indicates that tall women (-0.412) are significantly less likely to marry than medium women, whereas short women (-0.092) are insignificantly different in their probability. A 10 percent increase in the sex ratio decreases the marriage probability of short wives by 5.7 percentage points compared with medium wives and 1.8 percentage points in absolute terms. As expected, medium women are more likely to marry in cities with a high sex ratio (4.464). Tall (0.761) and very tall women (-1.289) are insignificantly different from medium women in this respect. However, short (-6.421) and very short women (-8.057) are significantly less likely to marry in higher sex ratio cities. A 10 percent increase in the sex ratio decreases the marriage probability of very short wives by 8.0 percentage points compared with medium wives and 4.3 percentage points in absolute terms.

[Insert Table 12 here]

This finding is summarized in the following observation.

Observation 5. Only short women's probability of marriage decreases with local sex ratios relative to medium, and even in absolute terms.

Mother's intergenerational altruism

One potential reason why short women may be more willing to pay for mate-height than tall women is out of concern for the height of their children. In that case, we would expect that short wives are more likely to have children earlier when the husband is taller, and that their fertility and probability of early marriage increases with local sex ratios. We test hypotheses related to fertility concerns with CFPS data of married couples.

Figure 5 shows the raw data with trend lines for the correlation between husband height and income based on the wife's height.

[Insert Figure 5 here]

The left panel shows the data for very short wives, the middle for medium-height wives, and the right panel for tall wives. In all three cases, the upper line is for early mothers (women who became mothers before the age of 24, the median age of all women giving birth) and the lower line is for late mothers (women who became mothers after the age of 24). The positive trend increases slightly for late mothers from short to medium wives and more noticeably from medium to tall wives. These results suggest that the willingness of late mothers to trade husband income for husband height increases with the mother's height. The slope of the trend line also increases for

early mothers, but is noticeably negative for short early mothers and less positive for tall early mothers as compared with tall late mothers. However, the slope of tall early mothers is approximately the same as that of medium early mothers. These impressions are confirmed by the coefficient for the interaction of husband height and the short wife dummy in Table 13, which approaches significance for short early mothers (-0.019) in column (1) and is significant for very short early mothers (-0.039) in column (5). We find similar results when the tall wife as the benchmark. They are available upon request.

[Insert Table 13 here]

The negative coefficient for the interaction between *husband height*short wife* is nearly identical (-0.038) when the husband's and the wife's educational attainment, age, and income are controlled for in column (6). Thus, short women who are early mothers are willing to give up 3.8 percentage points more income for every one cm increase in height than medium mothers. These findings imply that short early mothers are more willing to pay for mate-height than short late mothers, and medium and tall early and late mothers. The positive coefficients for husband height in columns (1)-(8) indicates that the husband's height positively affects his income. Husband height has no further effect on his income when the wife is tall compared with medium, regardless of the age of motherhood.

Observation 6. Short and very short wives who are early mothers are most willing to give up husband income for husband height.

We do not find similar results for men in A-Table 1.

We look next at the effect of the sex ratio on the willingness of wives to pay for mate-height. Columns (1), (2), (5), and (6) show that the benchmark medium-height early mothers are more willing to pay for mate-height when the sex ratio increases. In contrast, columns (3), (4), (7), and (8) show that medium-height late mothers are not willing to pay more as the sex ratio increases. The short and very short early mothers are insignificantly more willing than medium-height mothers to pay for mate-height as the sex ratio increases. However, the tall and the very tall mothers are, respectively, significantly (0.008) and weakly (0.016 with $p\text{-value}=0.16$) less willing to pay for mate-height in comparison to the benchmark medium-height early mother when the sex ratio increases. The difference between very short and very tall early mothers is significant ($p\text{-value}=0.033$ in the case of column (5) and $p\text{-value}=0.089$ in the case of column (6)). By contrast,

the difference between short and tall late mothers in columns (3), (4), (7), and (8) is always insignificant. Thus,

Observation 7. Whereas all early mothers' willingness to pay for husband height increases, short early mothers' increase most and tall early mothers' increase least on the availability of men.

We also use the earliness of marriage (in other words, marriages before the age of 23, the median age of marriage) instead of early motherhood as a robustness check. All results are very similar in magnitude and identical in their significance levels. These results are available upon request.

Discussion

Our study explores the gender difference in preference for mate-height in an online dating field experiment in which we randomly assigned height and income and in actual marriages. We assigned income and height independently to our online dating profiles. Doing so allows us to identify the preference for height separated from income and the preference for mate-income separated from height for both men and women. With our online dating data, we confirm a previous finding that men are indifferent to women's income. Here we also show that they prefer taller women (Observation 1). Women prefer higher income and taller men (Observation 2). Considering that we fixed educational attainment and randomized on income and beauty and health, as revealed through profile pictures, these results imply that the preferences for mate-height of each gender are independent of other correlated factors. Surprisingly, women's WTPs for mate-height forms a U-shaped envelope on the women's height (Observation 3). Short women have the highest WTP at the short and medium men's heights, followed by medium women, which are both higher than that of tall women. However, tall women have the highest WTP for mate-height at the tall men's height, followed by medium women, which are higher than that of short women. Although the WTP for mate-height among women of different heights form a U-shaped envelope on their height, short women's WTP is higher than that of tall women at the short and medium men's height than that of tall women at the tall men's height. Thus, our findings with online dating and marriage data reject a preference basis for assortative mating on height for women inferred in prior speed dating experimental and empirical studies of married couples. Instead, our finding suggests the intriguing

possibility that mate-height can be complementary for tall or medium men and women, but a substitute for short women.

We test for heterogeneity in the preferences for mate-height of men and women of different heights by applying the methodologies of Chiappori et al. (Chiappori et al., 2021) and Vella (1993). Short wives are significantly more willing than medium wives to pay for husband height, though only weakly more than tall wives (Observation 4). Given this reference-dependent preference for mate-height, and consistent with prior work on reference-dependent preferences, only the short women's probability of marriage decreases with local sex ratios, both relative to the medium women and in absolute terms (Observation 5).

We do not find heterogeneity in men's preferences in online dating data or in the CFPS data of married couples. In the case of online dating data, the WTP was not well-defined because men did not prefer higher income women. Consistent with this finding, neither men's income nor beauty increase with his wife's height with CFPS data. Although we cannot rule out endogeneity on the men's side, we know of no evidence in the large psychological and demographic literatures on height that suggests that men's preference for shorter women increases with their height (Stulp & Barrett, 2016), which is what would be required for men's preferences to be a confound for our findings for short women.

Based on prior work, we conjecture that the gender difference in the heterogeneity in preference for mate-height that we find can be attributed to gender differences in intergenerational altruism. In support of this, short wives who are early mothers are indeed more willing to pay for husband height than medium or tall wives (Observation 6). In contrast, husbands do not have a well-defined tradeoff between wife's income and wife's height, as would be expected given our and prior findings with online dating data that men are indifferent to women's income.

Our findings of a higher intensity preference for mate-height among short women complements Stulp, Buunk, and Pollet's (2013) and Stulp, Buunk, and Kurzban's (2013) findings of a more pronounced preference for mate-height among women than among men. However, they do not test for heterogeneity among women or assess the willingness to pay for mate-height.

Our finding of a willingness to pay for mate-height among women that is inversely related to their height suggests a possible reason for the finding of a greater rate of out-race marriages for Chinese women compared with Chinese men in Britain (Belot & Fidrmuc, 2010). Indeed, though White British men (175 cm) and women (162 cm) are approximately 2 cm taller than men and

women in our study. The average height of the Chinese women in their study is 158 cm, which is 2 cm shorter than the average height of the women in our study. The gender difference in out-ethnicity marriage among ethnically Chinese men and women may be due to the Chinese women (in particular, women who want children) in their sample being shorter than the average Chinese woman and the Chinese men not being much richer than the average White British man.

Mixed evidence of heterogeneous rates of fertility for women of different heights exists in prior studies. Medium women have more children and their children are more likely to survive in the Netherlands (Stulp, Barrett, Tropic, & Mills, 2015). Shorter women show greater fertility than other heights of women in the US (Stulp, Pollet, Verhulst, & Buunk, 2012; Stulp, Verhulst, Pollet, & Buunk). However, others find no effect of women's height on fertility in the UK (Krzyżanowska, Mascie-Taylor, & Thalabard, 2015). These studies do not control for state welfare subsidies to unwed mothers (e.g., low rent housing, food stamps...), which can vary with time and country. Our findings that short women are more fertile with taller mates and have a stronger preference for mate-height may help explain why tall men tended to have more children in Taiwan (Tao & Yin, 2015).

Heterogeneity in preference for mate-height among women could also be the reason why Weitzman and Conley (Weitzman & Conley, 2014) determined that men who are shorter than the average man do a smaller share of the housework and contribute a greater share of the household income. This result is consistent with our analysis, which suggests that wives married to short men may require a higher mate-income premium to compensate for the men's shorter stature.

One important limitation of our data is our tall women were shorter than our short men. Therefore, we cannot confirm Hitsch et al.'s (2010) finding that men are averse to women who were taller than themselves, nor that women dis-prefer men who are shorter than themselves. We avoided using extreme heights among our profiles to preserve the representativeness of preferences that may be revealed through our treatments, while maximizing the sample sizes for those treatments.

Our findings suggest the importance of the inclusion of height controls in matching studies that attempt to identify the effect of other match characteristics such as income or educational attainment. They also suggest that people may match assortatively on bundles of characteristics across generations. Short women's preference can increase economic inequality within a generation because they are more willing to give up mate-income for mate-height, despite having

lower earnings themselves. However, this counter assortative mating preference can decrease economic inequality across generations especially in the context of greater social mobility, when their children are taller, and on average taller people have higher earnings (Power, Manor, & Li, 2002).

References

- Alexander, Brian. (2012). *The chemistry between us: love, sex, and the science of attraction*. Penguin Group US.
- Alger, Ingela, & Cox, Donald. (2013). The Evolution of Altruistic Preferences: Mothers versus Fathers. *Review of Economics of the Household*, 11(3), 421–446.
- Anders, Sari M. Van SM van, Gray, Peter B. PB, van Anders, Sari M., Gray, Peter B. PB, & Anders, Sari M. Van SM van. (2007). Hormones and Human Partnering. *Annual Review of Sex Research*, 18(1), 60–93.
- Bapna, Ravi, Ramaprasad, Jui, Shmueli, Galit, & Umyarov, Akhmed. (2016). One-Way Mirrors in Online Dating: A Randomized Field Experiment. *Management Science*, 62(11), 3100.
- Becker, Gary S. (1973). A Theory of Marriage: Part I. *Journal of Political Economy*, 81(4), 813–46.
- Belot, Michèle, & Fidrmuc, Jan. (2010). Anthropometry of love: Height and gender asymmetries in interethnic marriages. *Economics & Human Biology*, 8(3), 361–72.
- Belot, Michèle, & Francesconi, Marco. (2013). *Dating Preferences and Meeting Opportunities in Mate Choice Decisions*. Source: *The Journal of Human Resources* (Vol. 48).
- Bertrand, Marianne, Kamenica, Emir, & Pan, Jessica. (2015). Gender identity and relative income within households. *Quarterly Journal of Economics*, 130(2), 571–614.
- Bhargava, Alok, & Fox-Kean, Melanie. (2003). The effects of maternal education versus cognitive test scores on child nutrition in Kenya. *Economics and Human Biology*, 1(3), 309–319.
- Black, Sandra E., Devereux, Paul J., & Salvanes, Kjell G. (2007). From the Cradle to the Labour Market? The Effect of Birth Weight On Adult Outcomes. *Quarterly Journal of Economics*, 122(1), 409–439.
- Black, SE, & Devereux, PJ. (2011). Recent Developments in Intergenerational Mobility. *Handbook of Labor Economics*.
- Brown, H., & Roberts, J. (2014). Gender role identity, breadwinner status and psychological well-being in the household. *Working Paper*, (2014004).
- Cardoso, Hugo F. V, & Caninas, Madalena. (2010). Secular trends in social class differences of

- height, weight and BMI of boys from two schools in Lisbon, Portugal (1910-2000). *Economics and Human Biology*, 8(1), 111–120.
- Case, Anne, & Paxson, Christina. (2008). Stature and status: Height, ability, and labor market outcomes. *Journal of Political Economy*, 116(3), 499–532.
- Case, Anne, Paxson, Christina, & Islam, Mahnaz. (2009). Making sense of the labor market height premium: Evidence from the British Household Panel Survey. *Economics Letters*, 102(3), 174–176.
- Cavelaars, A. E. J. M., Kunst, A. E., Geurts, J. J. M., Crialesi, R., Grötvedt, L., Helmert, U., ... Mackenbach, J. P. (2009). Persistent variations in average height between countries and between socio-economic groups: an overview of 10 European countries. *Annals of Human Biology*, 27(4), 407–421.
- Cheremukhin, Anton, Restrepo-Echavarria, Paulina, & Tutino, Antonella. (2020). Targeted search in matching markets. *Journal of Economic Theory*, 185, 104956.
- Chiappori, Pierre-André, McCann, Robert, & Pass, Brendan. (2021). Multidimensional matching: theory and empirics. *Working Paper*.
- Chiappori, Pierre-André, Oreffice, Sonia, & Quintana-Domeque, Climent. (2012). Fatter Attraction: Anthropometric and Socioeconomic Matching on the Marriage Market. *Journal of Political Economy*, 120(4), 659–695.
- Cole, T. J. (2003). The secular trend in human physical growth: A biological view. *Economics and Human Biology*, 1(2), 161–168.
- Currie, Janet, & Moretti, Enrico. (2007). Biology as Destiny? Short and Long Run Determinants of Intergenerational Transmission of Birth Weight. *Journal of Labor Economics*, 25(2), 231–264.
- Deaton, Angus, & Arora, Raksha. (2009). Life at the Top: The Benefit of Height. *Economics and Human Biology*, 2, 133–136.
- Eastwick, Paul W., Luchies, Laura B., Finkel, Eli J., & Hunt, Lucy L. (2014). The predictive validity of ideal partner preferences: a review and meta-analysis. *Psychological Bulletin*, 140(3), 623–65.

- Egebark, Johan, Ekström, Mathias, Plug, Erik, & van Praag, Mirjam. (2021). Brains or beauty? Causal evidence on the returns to education and attractiveness in the online dating market. *Journal of Public Economics*, 196, 104372.
- Fisman, Raymond, Iyengar, Sheena S., Kamenica, Emir, & Simonson, Itamar. (2006). Gender differences in mate selection: Evidence from a speed dating experiment. *Quarterly Journal of Economics*, 121(2), 673–697.
- Folke, Olle, & Rickne, Johanna. (2020). All the single ladies: Job promotions and the durability of marriage. *American Economic Journal: Applied Economics*, 12(1), 260–287.
- Foster, Gigi, & Stratton, Leslie S. (2021). Does female breadwinning make partnerships less healthy or less stable? *Journal of Population Economics*, 34(1), 63–96.
- Fraccaro, Paul J., Jones, Benedict C., Vukovic, Jovana, Smith, Finlay G., Watkins, Christopher D., Feinberg, David R., ... DeBruine, Lisa M. (2011). Experimental evidence that women speak in a higher voice pitch to men they find attractive. *Journal of Evolutionary Psychology*, 9(1), 57–67.
- Gangestad, Steven. (1993). Sexual selection and physical attractiveness. *Human Nature*, 4(3), 205–235.
- Gao, Wenshu, & Smyth, Russell. (2010). Health human capital, height and wages in China. *The Journal of Development Studies*, (613), 1–25.
- Goussé, Marion, Jacquemet, Nicolas, & Robin, Jean-marc. (2018). Marriage, labor supply, and home production. *Econometrica*, 85(6), 1873–1919.
- Gregory Clark. (2014). *The Son Also Rises: Surnames and the History of Social Mobility*. Princeton University Press.
- Grillot, Rachel L., Simmons, Zachary L., Lukaszewski, Aaron W., & Roney, James R. (2014). Hormonal and morphological predictors of women's body attractiveness. *Evolution and Human Behavior*, 35(3), 176–183.
- Hamermesh, Daniel, & Biddle, Jeff E. (1994). Beauty and the Labor Market. *American Economic Review*, 84(5), 1174–94.
- Harper, Barry. (2000). Beauty, stature and the labour market: a British cohort study. *Oxford*

- Bulletin of Economics and Statistics*, 62(5), 771–800.
- Hatton, Timothy J., & Bray, Bernice E. (2010). Long run trends in the heights of European men, 19th-20th centuries. *Economics and Human Biology*, 8(3), 405–413.
- Heineck, Guido. (2005). Up in the Skies? The Relationship between Body Height and Earnings in Germany. *Labour*, 19(3), 469–489.
- Herpin, Nicolas. (2005). Love, careers, and heights in France, 2001. *Economics and Human Biology*, 3(3), 420–49.
- Hitsch, Günter J., Hortaçsu, Ali, & Ariely, Dan. (2010a). What makes you click?—Mate preferences in online dating. *Quantitative Marketing and Economics*, 8(4), 393–427.
- Hitsch, Günter J., Hortaçsu, Ali, & Ariely, Dan. (2010b). What Makes You Click?—Mate Preferences in Online Dating. *Quantitative Marketing and Economics*, 8(4), 393–427.
- Hitsch, Günter J., Hortaçsu, Ali, Ariely, Dan, Hitsch, By Günter J., & Ariely, Dan. (2010). Matching and Sorting in Online Dating. *The American Economic Review*, 100(1), 130–163.
- Huber, Susanne, Fieder, Martin, Huber, Susanne, & Fieder, Martin. (2014). Advanced paternal age is associated with lower facial attractiveness. *Evolution and Human Behavior*, 35(4), 298–301.
- Jia, Ruixue, & Li, Hongbin. (2016). Access to Elite Education, Wage Premium, and Social Mobility. *Working Paper*.
- Kirkebøen, Lars J., Leuven, Edwin, & Mogstad, Magne. (2021). College as a Marriage Market. *SSRN Electronic Journal*.
- Krzyżanowska, Monika, Mascie-Taylor, C. G. Nicholas, & Thalabard, Jean-Christophe. (2015). Is human mating for height associated with fertility? Results from a british national cohort study. *American Journal of Human Biology: The Official Journal of the Human Biology Council*, 27(4), 553–63.
- Kuhn, Peter, & Shen, Kailing. (2013). Gender discrimination in job ads: Evidence from china. *Quarterly Journal of Economics*, 128(1), 287–336.
- Li, Miao-Xin, Liu, Peng-Yuan, Li, Yu-Mei, Qin, Yue-Juan, Liu, Yao-Zhong, & Deng, Hong-Wen. (2004). A major gene model of adult height is suggested in Chinese. *Journal of Human*

Genetics, 49(3), 148–53.

- López, Hassan H., Hay, Aleena C., & Conklin, Phoebe H. (2009). Attractive men induce testosterone and cortisol release in women. *Hormones and Behavior*, 56(1), 84–92.
- Lundberg, SJ, Pollak, RA, & Wales, TJ. (1997). Do husbands and wives pool their resources? Evidence from the United Kingdom child benefit. *Journal of Human Resources*.
- Lundborg, Petter, Nystedt, Paul, & Rooth, Dan-olof. (2009). The Height Premium in Earnings: The Role of Physical Capacity and Cognitive and Non-Cognitive Skills. *Working Paper*.
- McEvoy, Brian P., & Visscher, Peter M. (2009). Genetics of human height. *Economics and Human Biology*, 7(3), 294–306.
- Neyt, Brecht, Vandenbulcke, Sarah, & Baert, Stijn. (2019). Are men intimidated by highly educated women? Undercover on Tinder. *Economics of Education Review*, 73.
- Nielsen, Helena Skyt, & Svarer, Michael. (2009). Educational Homogamy: How Much is Opportunities? *Journal of Human Resources*, 44(4), 1066–1086.
- Ong, David. (2016). Education and Income Attraction: An Online Dating Field Experiment. *Applied Economics*, 48(19).
- Ong, David, & Wang, Jue. (2015). Income attraction: an online dating field experiment. *Journal of Economic Behavior and Organization*, 111, 13–22.
- Ong, David, Yang, Yu (Alan), & Zhang, Junsen. (2020). Hard to get: The scarcity of women and the competition for high-income men in urban China. *Journal of Development Economics*, 144(May), 1–20.
- Oreffice, Sonia, & Quintana-Domeque, Climent. (2010). Anthropometry and socioeconomics among couples: evidence in the United States. *Economics and Human Biology*, 8(3), 373–84.
- Peck, MN, & Lundberg, O. (1995). Short stature as an effect of economic and social conditions in childhood. *Social Science & Medicine*.
- Persico, Nicola, Postlewaite, Andrew, & Silverman, Dan. (2004). The Effect of Adolescent Experience on Labor Market Outcomes: The Case of Height. *Journal of Political Economy*, 112(5), 1019.
- Pierce, Charles a. (1996). Body Height and Romantic Attraction: a Meta-Analytic Test of the

- Male-Taller Norm. *Social Behavior and Personality: An International Journal*, 24, 143–149.
- Power, Chris, Manor, Orly, & Li, Leah. (2002). Are inequalities in height underestimated by adult social position? Effects of changing social structure and height selection in a cohort study. *BMJ*, 325(7356), 131–134.
- Rhodes, Gillian. (2006). The Evolutionary Psychology of Facial Beauty. *Annual Review of Psychology*, 57(1), 199–226.
- Rubalcava, LN, & Teruel, GM. (2004). The role of maternal cognitive ability on child health. *Economics & Human Biology*, 2(3), 439–455.
- Schwartz, Christine R. (2013). Trends and variation in assortative mating: Causes and consequences. *Annual Review of Sociology*, 39(May), 451–470.
- Schwartz, Christine R., & Mare, Robert D. (2005). Trends in Educational Assortative Marriage from 1940 to 2003. *Demography*, 42(4), 621–646.
- Singh-Manoux, Archana, Gurmelen, Julie, Ferrie, Jane, Silventoinen, Karri, Gu??guen, Alice, Stringhini, Silvia, ... Kivimaki, Mika. (2010). Trends in the association between height and socioeconomic indicators in France, 1970-2003. *Economics and Human Biology*, 8(3), 396–404.
- Singh, Prakarsh, & Mitra, Sandip. (2017). Incentives, information and malnutrition: Evidence from an experiment in India. *European Economic Review*, 93, 24–46.
- Steckel, RH. (1995). Stature and the Standard of Living. *Journal of Economic Literature*, 33(4), 1903–1940.
- Steckel, Richard H. (2009). Heights and human welfare: Recent developments and new directions. *Explorations in Economic History*, 46(1), 1–23.
- Stulp, Gert, & Barrett, Louise. (2016). Evolutionary perspectives on human height variation. *Biological Reviews of the Cambridge Philosophical Society*, 91(1), 206–34.
- Stulp, Gert, Barrett, Louise, Tropf, Felix C., & Mills, Melinda. (2015). Does natural selection favour taller stature among the tallest people on earth? *Proceedings. Biological Sciences / The Royal Society*, 282(1806), 20150211.
- Stulp, Gert, Buunk, Abraham P., Kurzban, Robert, & Verhulst, Simon. (2013). The height of

- choosiness: mutual mate choice for stature results in suboptimal pair formation for both sexes. *Animal Behaviour*, 86(1), 37–46.
- Stulp, Gert, Buunk, Abraham P., & Pollet, Thomas V. (2013). Women want taller men more than men want shorter women. *Personality and Individual Differences*, 54(8), 877–883.
- Stulp, Gert, Pollet, Thomas V, Verhulst, Simon, & Buunk, Abraham P. (2012). A curvilinear effect of height on reproductive success in human males. *Behavioral Ecology and Sociobiology*, 66(3), 375–384.
- Stulp, Gert, Verhulst, Simon, Pollet, Thomas V, & Buunk, Abraham P. The effect of female height on reproductive success is negative in Western populations, but more variable in non-western populations. *American Journal of Human Biology: The Official Journal of the Human Biology Council*, 24(4), 486–94.
- Tao, Hung-Lin. (2014). Height, weight, and entry earnings of female graduates in Taiwan. *Economics and Human Biology*, 13, 85–98.
- Tao, Hung-Lin, & Yin, Ching-Chen. (2015). Height, partners and offspring: Evidence from Taiwan. *Journal of Biosocial Science*, 48(05), 1–23.
- Thomas, Duncan, Strauss, John, Henriques, Maria-helena, Strauss, John, & Henriques, Maria-helena. (1991). How Does Mother's Education Affect Child Height? *Journal of Human Resources*, 26(2), 183–211.
- Tombs, S., & Silverman, I. (2004). Pupillometry: A sexual selection approach. *Evolution and Human Behavior*, 25(4), 221–228.
- Vella, F. (1993). A simple estimator for simultaneous models with censored endogenous regressors. *International Economic Review*, 441–457.
- Walker, M., Shaper, a G., & Wannamethee, G. (1988). Height and social class in middle-aged British men. *Journal of Epidemiology and Community Health*, 42(3), 299–303.
- Weitzman, Abigail, & Conley, Dalton. (2014). From Assortative to Ashortative Coupling: Men's Height, Height Heterogamy, and Relationship Dynamics in the United States. *Working Paper*.
- Wiswall, Matthew, & Zafar, Basit. (2021). Human capital investments and expectations about career and family. *Journal of Political Economy*, 129(5), 1361–1424.

Zhang, Ying-Xiu, & Wang, Shu-Rong. (2011). Geographic variation of stature in Chinese youth of age 18+. *Anthropologist*, 13(2), 103–106.

Tables and figures

Table 1: Correlation between income and profile height from online dating website

	Male visitors			Female visitors		
	Log income	Log income	Edu years	Log income	Log income	Edu years
	(1)	(2)	(3)	(4)	(5)	(6)
Height (cm)	0.018***	0.009***	0.045***	0.020**	0.014*	0.065***
	(0.003)	(0.001)	(0.006)	(0.005)	(0.004)	(0.008)
Education years		0.214***			0.096**	
		(0.036)			(0.019)	
Age dummies	Y	Y	Y	Y	Y	Y
City dummies	Y	Y	Y	Y	Y	Y
Constant	7.271***	8.471***	-5.616***	7.167***	7.916***	-7.791***
	(0.565)	(0.332)	(0.847)	(0.856)	(0.856)	(1.192)
Observations	2,047	2,047	2,047	1,432	1,432	1,432
R-squared	0.129	0.216	0.070	0.210	0.236	0.225

Notes: Data based on the visitors from the online dating experiment in Ong, Yang, Zhang (Ong et al., 2020). Robust standard errors clustered at the city level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

Table 2: Correlation between income and profile height from CFPS data

	Male			Female		
	Log income	Log income	Education years	Log income	Log income	Education years
	(1)	(2)	(3)	(4)	(5)	(6)
Height	0.014***	0.007*	0.110***	0.017**	0.012**	0.065***
	(0.004)	(0.004)	(0.014)	(0.006)	(0.006)	(0.014)
Education		0.071***			0.103***	
		(0.005)			(0.004)	
Married dummy	0.314***	0.388***	-1.243***	-0.279***	-0.006	-3.297***
	(0.073)	(0.057)	(0.264)	(0.064)	(0.055)	(0.268)
Age dummies	Y	Y	Y	Y	Y	Y
Province dummies	Y	Y	Y	Y	Y	Y
Constant	6.067***	6.557***	-5.300**	7.577***	6.990***	4.471*
	(0.815)	(0.771)	(2.549)	(1.252)	(1.188)	(2.352)
Observations	2,992	2,992	3,267	2,782	2,782	3,672
R-squared	0.221	0.308	0.181	0.178	0.295	0.261

Notes: Data based on the CFPS 2010. The sample is restricted to men and women between the ages of 20 and 45 years old with urban hukou. Extreme observations of income and height are dropped if they are more than three standard deviation away from the mean. Robust standard errors clustered at the province level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

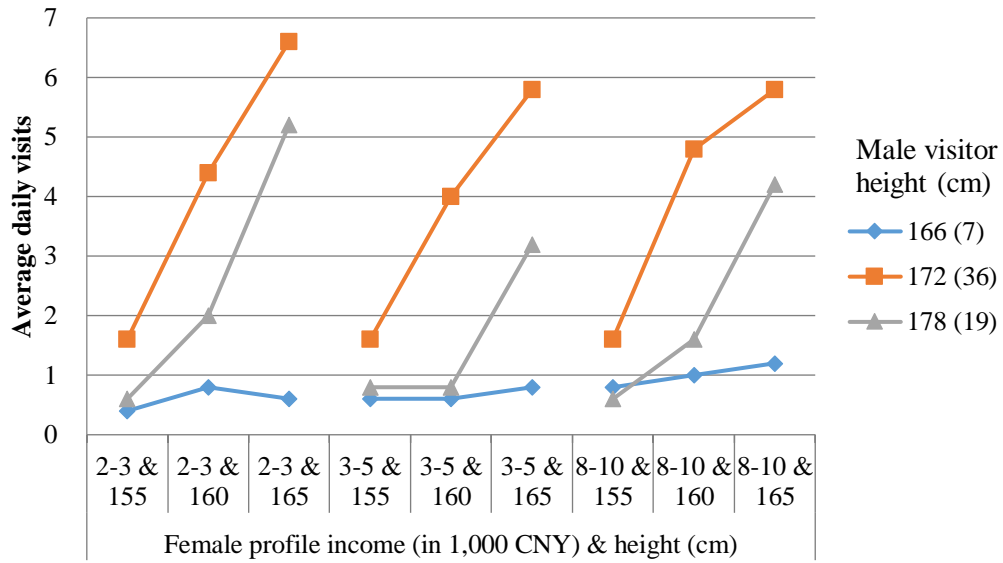


Figure 1: Male average daily visits to female profiles vs female profile income and height (online dating data)

Notes: The average heights for females and males on the website and in the four cities of experiment are 160 and 172 cm, respectively. Other heights are either one standard deviation above or below for their respective sexes. The numbers in brackets are total average daily visits. 3-5 (in 1,000 CNY) is the median income for women on the website.

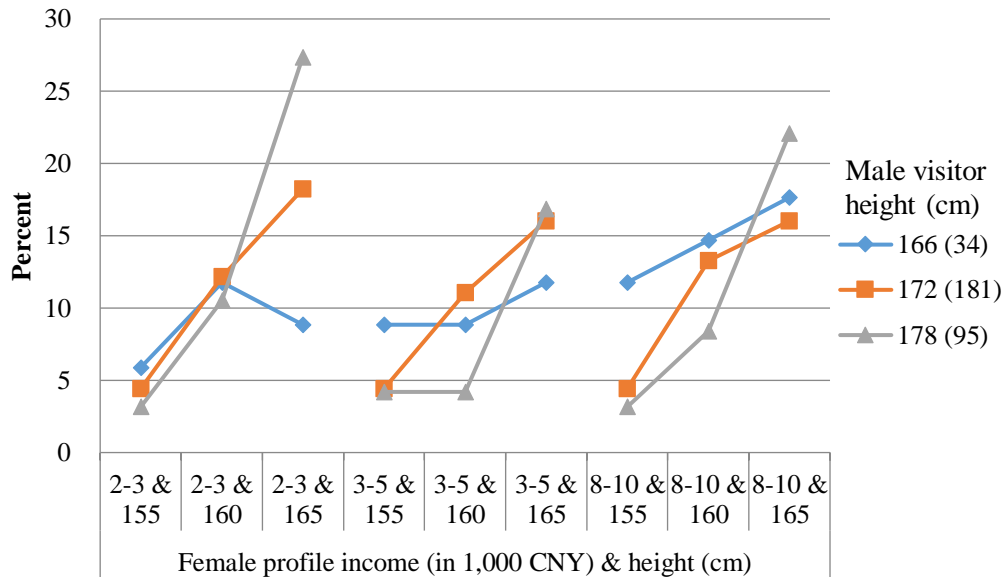


Figure 2: Percent of male visits to female profiles vs female profile income and height (online dating data)

Notes: The average heights for females and males on the website and in the four cities of experiment 160 and 172 cm, respectively. Other heights are either one standard deviation above or below for their respective sexes. The numbers in brackets are total daily visits. 3-5 (in 1,000 CNY) is the median income for women on the website.

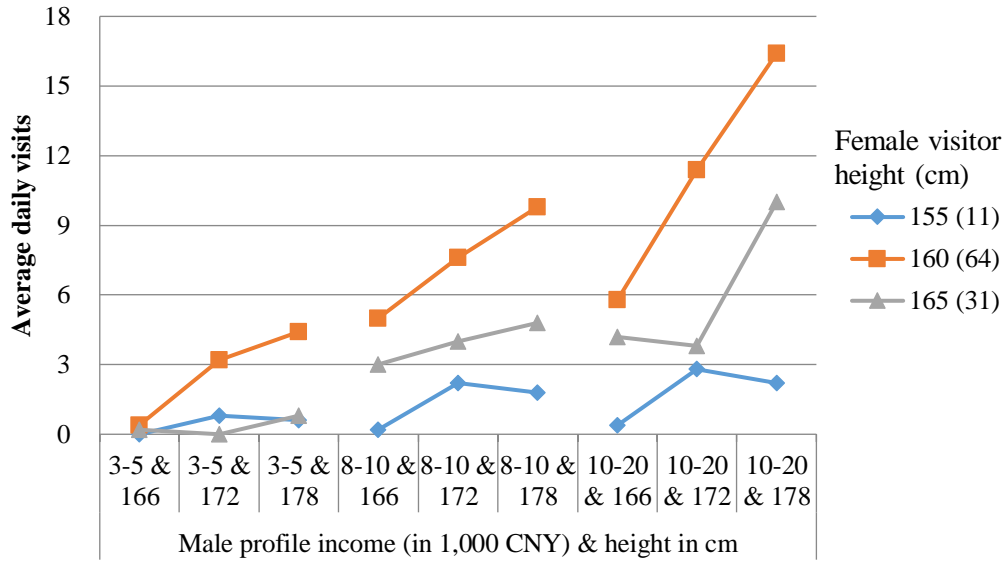


Figure 3: Female average daily visits to male profiles vs male profile income and height (online dating data)

Notes: The average heights for females and males on the website and in the four cities of experiment 160 and 172 cm, respectively. Other heights are either one standard deviation above or below for their respective sexes. The numbers in brackets are total average daily visits. 8-10 (in 1,000 CNY) is the median income for women on the website.

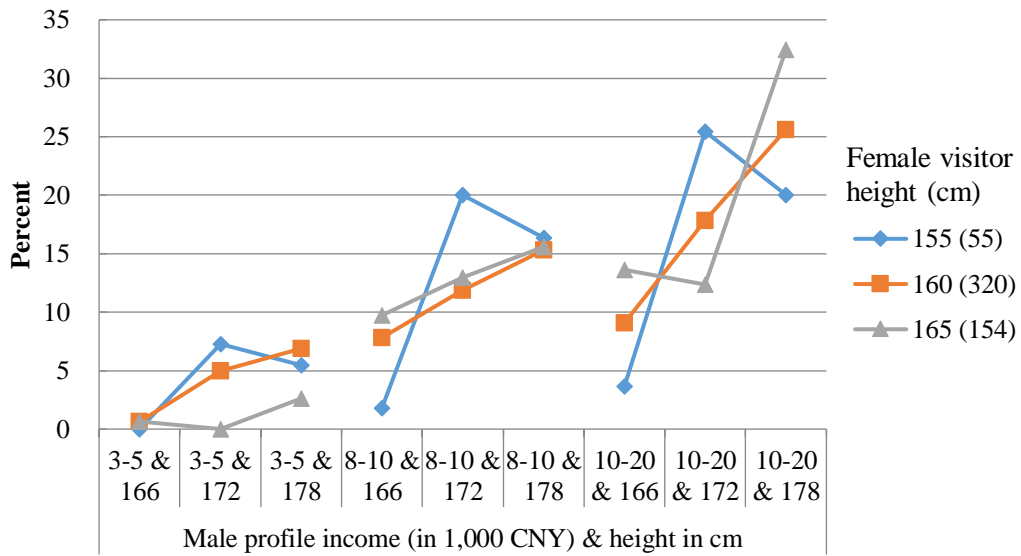


Figure 4: Percent of female visits to male profiles vs male profile income and height (online dating data)

Notes: The average heights for females and males on the website and in the four cities of experiment are 160 and 172 cm, respectively. Other heights are either one standard deviation above or below for their respective sexes. The numbers in brackets are total daily visits. 8-10 (in 1,000 CNY) is the median income for women on the website.

Table 3: Regression of percent of men's visits to female profiles (online dating data)

Female profile	Visit percent	
	(1)	(2)
Short man dummy		6.494* (3.896)
Medium man dummy	-6.494* (3.896)	
Tall man dummy	-11.465*** (3.896)	-4.971 (3.896)
Profile income	0.046* (0.025)	-0.000 (0.025)
Profile height	0.020 (0.017)	0.062*** (0.017)
Profile income*short man dummy		0.046 (0.036)
Profile height*short man dummy		-0.042* (0.024)
Profile income*medium man dummy	-0.046 (0.036)	
Profile height*medium man dummy	0.042* (0.024)	
Profile income*tall man dummy	-0.053 (0.036)	-0.007 (0.036)
Profile height*tall man dummy	0.073*** (0.024)	0.031 (0.024)
City dummies	Y	Y
Constant	-2.855 (2.756)	-9.349*** (2.756)
Observations	540	540
R-squared	0.086	0.086

Notes: Profile income is in 1k CNY/month, and profile height is in cm. The average height for males in the four cities of experiment is 172cm. Medium man dummy = 1 if height is 172cm, the average level. Short man dummy = 1 if height is 166 cm, one standard deviation below the average. Tall man dummy = 1 if height is 178 cm, one standard deviation above the average. Standard errors are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

Table 4: Men's tradeoff between women's height and income (online dating data)

WTP	(1)	(2)
Short man	0.083 (0.086)	
Medium man	-7.894 (134.013)	
Tall man	-1.401 (2.813)	
Chi2 test of differences of WTPs		
short = medium	chi2(1)=0.00	p=0.953
short = tall	chi2(1)=0.28	p=0.598
medium = tall	chi2(1)=0.00	p=0.961

Notes: The average height for males in the four cities of experiment is 172cm. Medium man dummy = 1 if height is 172cm, the average level. Short man dummy = 1 if height is 166 cm, one standard deviation below the average. Tall man dummy = 1 if height is 178 cm, one standard deviation above the average. Male visitor's WTP between female height and income is calculated as the ratio of coefficients of profile height over profile income for each height type of male visitors. It measures how much of an increase in female income (in percent) is equivalent to a one cm increase in female height in attracting the same number of visits from a certain type of man. Standard errors in parenthesis under the value of the WTP: * p<0.1, ** p<0.05; *** p<0.01.

Table 5: Regression of percent of women's visits to male profiles (online dating data)

Male profile	Visit percent	
	(1)	(2)
Short woman dummy		-371.707*** (133.906)
Medium woman dummy	371.707*** (133.906)	
Tall woman dummy	564.576*** (133.906)	192.869 (133.906)
Profile income	0.054*** (0.012)	0.060*** (0.012)
Profile height	4.684*** (1.102)	0.366 (1.102)
Profile height ²	-0.013*** (0.003)	-0.001 (0.003)
Profile income*short woman dummy		-0.006 (0.017)
Profile height*short woman dummy		4.318*** (1.558)
Profile height ² *short woman dummy		-0.013*** (0.005)
Profile income*medium woman dummy	0.006 (0.017)	
Profile height*medium woman dummy	-4.318*** (1.558)	
Profile height ² *medium woman dummy	0.013*** (0.005)	
Profile income*tall woman dummy	0.028* (0.017)	0.023 (0.017)
Profile height*tall woman dummy	-6.560*** (1.558)	-2.242 (1.558)
Profile height ² *tall woman dummy	0.019*** (0.005)	0.007 (0.005)
City dummies	Y	Y
Constant	-406.577*** (94.686)	-34.871 (94.686)
Observations	540	540
R-squared	0.276	0.276

Notes: The average height for females in the four cities of experiment is 160cm. Medium woman dummy = 1 if height is 160cm, the average level. Short woman dummy = 1 if height is 155 cm, one standard deviation below the average. Tall woman dummy = 1 if height is 165 cm, one standard deviation above the average. Profile income is in 1k CNY/month, and profile height is in cm. Standard errors are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

Table 6: Women's tradeoff between men's height and income (online dating data)

WTP at 166cm men	(1)	(2)
Short woman	0.457*** (0.130)	
Medium woman	0.107 (0.082)	
Tall woman	-0.043 (0.057)	
Chi2 test of differences of WTPs		
short = medium	chi2(1)= 5.17	p= 0.023**
short = tall	chi2(1)= 12.32	p= 0.000***
medium = tall	chi2(1)= 2.21	p= 0.137
WTP at 172cm men		
Short woman	0.109*** (0.033)	
Medium woman	0.084*** (0.028)	
Tall woman	0.053*** (0.018)	
Chi2 test of differences of WTPs		
short = medium	chi2(1)= 0.32	p= 0.570
short = tall	chi2(1)= 2.20	p= 0.138
medium = tall	chi2(1)= 0.90	p= 0.342
WTP at 178cm men		
Short woman	-0.239** (0.100)	
Medium woman	0.062 (0.081)	
Tall woman	0.149** (0.061)	
Chi2 test of differences of WTPs		
short = medium	chi2(1)=5.49	p=0.019**
short = tall	chi2(1)= 10.98	p= 0.000***
medium = tall	chi2(1)= 0.74	p= 0.389

Notes: The average height for females in the four cities of experiment is 160cm. Medium woman dummy = 1 if height is 160cm, the average level. Short woman dummy = 1 if height is 155 cm, one standard deviation below the average. Tall woman dummy = 1 if height is 165 cm, one standard deviation above the average. Female visitor's WTP between male height and income is calculated as the ratio of coefficients of profile height over profile income for each height type of female visitors. Due to the inclusion of quadratic term of profile height to account for observed nonlinearity in visiting patterns, female visitor's WTP is calculated at each profile's height level. The WTP measures how much of an increase in male income (in percent) is equivalent to a one cm increase in male height in attracting same number of visits from a certain type of woman. Standard errors in parenthesis under the value of the WTP: * p<0.1, ** p<0.05; *** p<0.01.

Table 7: Summary statistics of CFPS 2010 data

Variable	Obs.	Mean	Std. Dev.	Min	Max
<i>Husband</i>					
Age	2,174	36.1	5.90	20	45
Height (cm)	2,174	171.0	5.28	155	187
Education (year)	2,174	10.0	3.96	0	19
Annual income (CNY)	2,174	26440.9	33152.57	0	600000
<i>Wife</i>					
Age	2,174	34.4	6.2	20	45
Height (cm)	2,174	160.0	4.6	145	174
Education (year)	2,174	9.3	4.4	0	22
Annual income (CNY)	2,174	12958.2	19422.9	0	360000

Notes: The sample is restricted to married couples with urban *hukou*, both between the ages of 20 and 45 years old and in which the husband has positive income. Extreme observations of income and height are dropped if they are more than three standard deviation away from the mean.

Table 8: SUR regressions of wife's characteristics on husband's characteristics

	Whole sample	
	Wife's education	Wife's beauty
Husband's log income	1.388*** (0.129)	0.217*** (0.048)
Husband's height	0.117*** (0.012)	0.013*** (0.004)
Husband's and wife's age and province fixed effects	Y	Y
Observations	2,079	
Corr(residuals)	0.188***	
Breusch-Pagan test	chi2(1) = 74.141, Pr = 0.000	
Wald tests:		
Within columns (WTP):		
Husband's height /	0.084***	0.062***
Husband's log income	(0.011)	(0.023)
	chi2(1) = 1.38, Pr = 0.241	
Across columns:		
Husband's log income *	0.019***	0.025***
Husband's height	(0.006)	(0.005)
	chi2(1) = 1.05, Pr = 0.307	
Log likelihood	-8653.272	

Notes: Data based on the CFPS 2010. The sample is restricted to married couples with urban *hukou*, both between the ages of 20 and 45 years old and in which the husband has positive income. Robust standard errors clustered at province level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

Table 9: First stage regression: Wife's height group vs. mother's age of giving birth

Ordered Probit:	Wife's height group (short, medium, tall)
	(1)
Mother's age of giving birth	0.009*
	(0.005)
Weight at birth	0.145***
(=0 if don't remember)	(0.045)
Dummy for missing weight at birth	0.788***
	(0.275)
Age	-0.019***
	(0.005)
Province FE	Y
Observations	1,789
Pseudo R2	0.062

Notes: Data based on the CFPS 2010. The sample is restricted to married couples with urban *hukou*, both between the ages of 20 and 45 years old and in which the husband has positive income. Robust standard errors clustered at province level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

Table 10: Second stage SUR regressions for wife's WTP for husband height

	Short wife (<1 s.d.)		Med wife		Tall wife (>1 s.d.)	
	Wife's education	Wife's beauty	Wife's education	Wife's beauty	Wife's education	Wife's beauty
	(1)	(2)	(3)	(4)	(5)	(6)
Husband's log income	0.932*** (0.341)	0.209** (0.082)	1.571*** (0.159)	0.218*** (0.043)	1.048*** (0.295)	0.213*** (0.076)
Husband's height	0.167*** (0.048)	0.030** (0.012)	0.091*** (0.026)	0.003 (0.006)	0.108** (0.046)	0.012 (0.013)
Generalized residual	-2.115 (2.966)	-2.304*** (0.696)	-4.866*** (1.441)	0.617 (0.396)	-0.613 (2.125)	0.886 (0.616)
Husband's and wife's age and province fixed effects		Y		Y		Y
Observations		319		1,071		326
Corr(residuals)		0.170***		0.217***		0.099*
Breusch-Pagan test		chi2(1) = 9.220, Pr = 0.002		chi2(1) = 50.398, Pr = 0.000		chi2(1) = 3.174, Pr = 0.075
Wald tests:						
Within columns:						
Husband's height /	0.179**	0.143*	0.058***	0.015	0.103*	0.056
Husband's log income	(0.086)	(0.076)	(0.019)	(0.030)	(0.057)	(0.068)
	chi2(1) = 0.13, Pr = 0.718		chi2(1) = 1.88, Pr = 0.171		chi2(1) = 0.31, Pr = 0.575	
Across columns:						
Husband's log income *	0.028*	0.035*	0.005	0.020***	0.012	0.023*
Husband's height	(0.015)	(0.017)	(0.010)	(0.007)	(0.014)	(0.013)
	chi2(1) = 0.13, Pr = 0.718		chi2(1) = 1.64, Pr = 0.201		chi2(1) = 0.29, Pr = 0.592	
Log likelihood	-1325.072		-4414.521		-1325.093	
LR test:						
<i>H0</i> : WTP constant across	short = med		med = tall		short = tall	
wife groups	chi2(2) = 9.504*** , Pr = 0.009		chi2(2) = 5.906* , Pr = 0.052		chi2(2) = 3.470, Pr = 0.176	

Notes: Data based on the CFPS 2010. The sample is restricted to married couples with urban *hukou*, both between the ages of 20 and 45 years old and in which the husband has positive income. Bootstrapped standard errors in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

Table 11: SUR regressions of husband's characteristics on wife's characteristics

	Whole sample	
	Husband's log income	Husband's height
Wife's education year	0.052*** (0.004)	0.180*** (0.020)
Wife's height	0.007** (0.003)	0.186*** (0.029)
Husband's and wife's age and province fixed effects	Y	
Observations	2,080	
Corr(residuals)	0.062***	
Breusch-Pagan test	chi2(1) = 8.015, Pr = 0.005	
Wald tests:		
Within columns:		
Wife's height /	0.127*	1.031***
Wife's edu year	(0.070)	(0.223)
	chi2(1) = 20.69***, Pr = 0.000	
Across columns:		
Wife's edu year*	0.010***	0.001*
Wife's height	(0.001)	(0.001)
	chi2(1) = 47.87***, Pr = 0.000	
Log likelihood	-8436.739	

Notes: Data based on the CFPS 2010. The sample is restricted to married couples with urban *hukou*, both between the ages of 20 and 45 years old and in which the husband has positive income. Robust standard errors clustered at province level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

Table 12: Logit regressions of woman's marriage probability

(Medium woman as benchmark)	married=1; single=0	
	1 s.d.	2 s.d.
	(1)	(2)
Short woman	-0.092 (0.311)	-0.727 (0.574)
Tall woman	-0.412*** (0.153)	-1.191 (0.944)
Sex ratio	4.464** (1.763)	4.257** (1.729)
Sex ratio*short woman	-6.421** (2.851)	-8.057* (4.868)
Sex ratio*tall woman	0.761 (1.467)	-1.289 (8.104)
Log income	-0.083*** (0.020)	-0.084*** (0.022)
Age, edu, and province dummies	Y	
Constant	1.598 (1.027)	1.563 (1.046)
Observations	1,677	
Pseudo R2	0.388	

Notes: Data are from CFPS 2010. The sample is restricted to women with urban *hukous*, between the ages of 22 and 35 years old, and in which the husband has a positive income. Short/medium/tall woman is a dummy variable which equals to 1 if the height is one standard deviations below/within/above the mean in Column (1), and two standard deviations in Column (2). The medium women are the omitted benchmark. The sex ratio is in *log* form, calculated according to woman's age, with a spousal age gap of two years and a five-year age window, based on 2010 Census at province level. Robust standard errors clustered at province level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

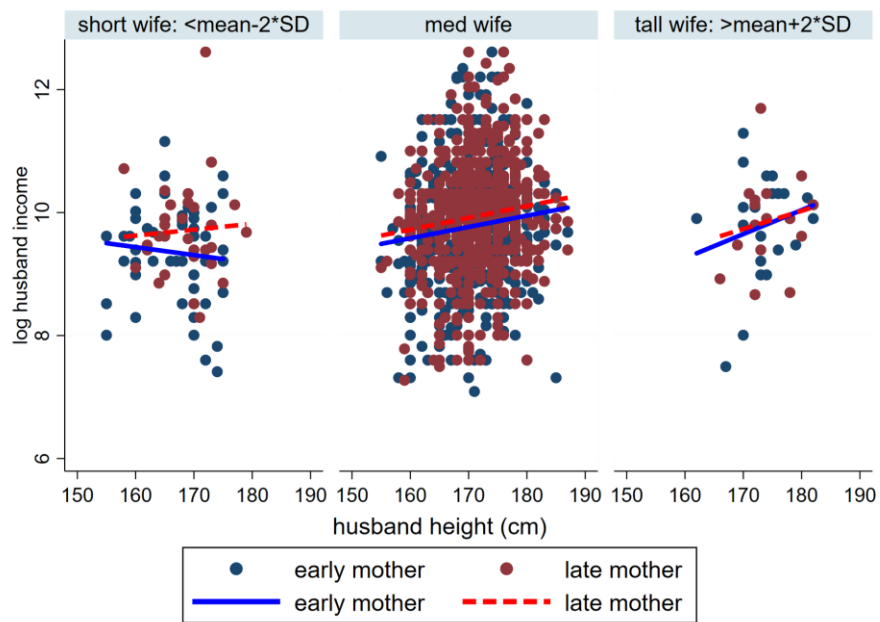


Figure 5: Husband's income and height by wife's height

Notes: Data are from CFPS 2010. The sample is restricted to married couples with urban *hukous*, both between the ages of 20 and 45 years old, and in which the husband has a positive income. Early mother is defined as those who give birth to their children at or earlier than 24 years old, the mean age of birth. Late mother is defined as those who give birth to their children later than 24 years old. Short/medium/tall wife is a dummy variable which equals to 1 if the height is two standard deviations below/within/above the mean.

Table 13: Regression of husband's income on height by wife's height, age of having children, and sex ratio

	Husband income(log)							
	1 s.d.				2 s.d.			
	Early mother (<=24 yrs old)		Late mother (>24 yrs old)		Early mother (<=24 yrs old)		Late mother (>24 yrs old)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Husband height	0.017** (0.007)	0.015** (0.006)	0.019*** (0.007)	0.020*** (0.007)	0.013** (0.006)	0.013** (0.006)	0.016*** (0.005)	0.017*** (0.004)
Short wife	3.122 (1.946)	3.061 (1.834)	0.878 (1.876)	0.750 (1.734)	6.240** (2.638)	6.185** (2.379)	0.360 (3.464)	0.702 (3.905)
Tall wife	0.149 (2.209)	-0.460 (2.254)	1.302 (2.090)	1.138 (2.173)	-6.658 (5.334)	-6.879 (5.357)	-3.520 (3.442)	-3.906 (2.837)
Husband height*short wife	-0.019 (0.012)	-0.018 (0.011)	-0.005 (0.011)	-0.005 (0.010)	-0.039** (0.016)	-0.038** (0.014)	-0.003 (0.020)	-0.005 (0.023)
Husband height*tall wife	-0.001 (0.013)	0.002 (0.013)	-0.008 (0.012)	-0.007 (0.012)	0.038 (0.030)	0.039 (0.031)	0.020 (0.019)	0.023 (0.016)
Sex ratio	20.176** (7.562)	17.342* (8.413)	9.066 (7.587)	10.455 (8.276)	20.712*** (6.599)	17.980** (7.444)	7.819 (8.414)	8.452 (8.945)
Husband height*sex ratio	-0.118** (0.045)	-0.103** (0.049)	-0.054 (0.044)	-0.064 (0.047)	-0.119*** (0.039)	-0.105** (0.043)	-0.046 (0.049)	-0.051 (0.052)
Husband height*sex ratio*short wife	0.003 (0.004)	0.002 (0.004)	-0.002 (0.007)	-0.003 (0.007)	-0.007 (0.006)	-0.008 (0.005)	-0.005 (0.009)	-0.006 (0.010)
Husband height*sex ratio*tall wife	0.008** (0.003)	0.007** (0.003)	0.003 (0.004)	0.004 (0.005)	0.016 (0.010)	0.014 (0.013)	-0.009 (0.010)	-0.010 (0.010)
Husband age, edu dummies	Y	Y	Y	Y	Y	Y	Y	Y
Wife age, edu dummies	N	Y	N	Y	N	Y	N	Y
Wife income (log)	N	Y	N	Y	N	Y	N	Y
Province dummies	Y	Y	Y	Y	Y	Y	Y	Y
Constant	6.218*** (1.271)	5.922*** (1.140)	5.470*** (1.136)	5.547*** (1.062)	6.861*** (1.123)	6.518*** (1.065)	6.098*** (0.882)	6.145*** (0.766)
Observations	976	976	1,061	1,061	976	976	1,061	1,061
R-squared	0.307	0.334	0.377	0.396	0.314	0.340	0.378	0.397

Notes: Data are from CFPS 2010. The sample is restricted to married couples with urban *hukous*, both between the ages of 20 and 45 years old, and in which the husband has a positive income. Early mother is defined as those who give birth to their children at or earlier than 24 years old, the mean age of birth. Late mother is defined as those who give birth to their children later than 24 years old. Short/medium/tall wife is a dummy variable which equals to 1 if the height is one standard deviation (column (1)-(4)) or two standard deviations (column (5)-(8)) below/within/above the mean. The sex ratio is in *log* form calculated according to wife's age with a spousal age gap of two years and a five-year age window, based on 2010 Census at province level. Robust standard errors clustered at province level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

Appendix

A-Table 1: Regression of men's and women's visits on profile income

	Men visiting female profile	Women visiting male profile
	(1)	(2)
visitors' incomes \leq 5k dummy	0.004 (0.112)	0.350 (0.274)
visitors' incomes \geq 10k dummy	-0.067 (0.112)	-0.594** (0.274)
profile income	-0.003 (0.014)	0.087*** (0.018)
profile income * visitors' incomes \leq 5k dummy	-0.001 (0.019)	-0.036 (0.026)
profile income * visitors' incomes \geq 10k dummy	0.013 (0.019)	0.061** (0.026)
City fixed effect	Y	Y
Constant	0.570*** (0.088)	0.255 (0.207)
Observations	540	492
R-squared	0.006	0.228

Notes: Profile income is in 1k CNY/month. Standard errors clustered at city-level are in parenthesis: * $p < 0.1$, ** $p < 0.05$; *** $p < 0.01$.

A-Table 1: Regression of wife income on height by husband's height and age of having children

	Wife income(log)							
	1 s.d.				2 s.d.			
	Early father (<=26 yrs old)		Late father (>26 yrs old)		Early father (<=26 yrs old)		Late father (>26 yrs old)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Wife height	0.034*** (0.010)	0.031*** (0.011)	-0.007 (0.016)	-0.006 (0.014)	0.028*** (0.009)	0.026*** (0.009)	-0.019 (0.018)	-0.020 (0.016)
Short husband	4.199 (3.853)	0.678 (3.036)	7.840 (7.099)	8.963 (7.545)	11.878 (9.155)	8.650 (7.511)	2.182 (9.756)	2.914 (8.735)
Tall husband	2.503 (3.574)	4.990 (3.301)	-2.749 (4.020)	-2.530 (3.979)	-4.764 (10.240)	-5.820 (8.766)	-20.691** (8.693)	-22.530** (8.531)
Wife height*short husband	-0.028 (0.024)	-0.005 (0.019)	-0.051 (0.045)	-0.058 (0.048)	-0.078 (0.058)	-0.057 (0.048)	-0.017 (0.063)	-0.022 (0.056)
Wife height*tall husband	-0.017 (0.022)	-0.032 (0.021)	0.017 (0.025)	0.016 (0.025)	0.029 (0.063)	0.036 (0.053)	0.129** (0.053)	0.140** (0.052)
Wife age, edu dummies	Y	Y	Y	Y	Y	Y	Y	Y
Husband age, edu dummies	N	Y	N	Y	N	Y	N	Y
Husband income	N	Y	N	Y	N	Y	N	Y
Province dummies	Y	Y	Y	Y	Y	Y	Y	Y
Constant	0.628 (2.147)	-3.321 (2.418)	8.896*** (2.796)	6.552*** (2.242)	1.535 (2.036)	-2.405 (2.285)	10.817*** (3.183)	8.950*** (2.881)
Observations	881	881	725	725	881	881	725	725
R-squared	0.310	0.370	0.271	0.325	0.309	0.369	0.277	0.330

Notes: Data are from CFPS 2010. The sample is restricted to married couples with urban *hukous*, both between the ages of 20 and 45 years old, and in which the husband has a positive income. Early father is defined as those who have children at or earlier than 26 years old, the mean age of birth. Late father is defined as those who have children later than 26 years old. Short/medium/tall wife is a dummy variable which equals to 1 if the height is one standard deviation (column (1)-(4)) or two standard deviations (column (5)-(8)) below/within/above the mean. The medium husband is the omitted benchmark. Robust standard errors clustered at province level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

A-Table 2: Regression of percent of men's visits to female profiles (online dating data)

Female profile	visit percent	
	(1)	(2)
Short man dummy		8.471 (11.446)
Medium man dummy	-7.630 (4.652)	
Tall man dummy	-12.539 (6.166)	-6.045 (4.070)
Profile income	0.046 (0.021)	-0.000 (0.007)
Profile height	-0.527 (1.061)	-0.479 (1.033)
Profile height ²	0.002 (0.003)	0.002 (0.003)
Profile income*short man dummy		-0.145 (1.061)
Profile height*short man dummy		-0.054 (0.072)
Profile height ² *short man dummy		0.000 (0.000)
Profile income*medium man dummy	0.064 (0.338)	
Profile height*medium man dummy	0.049 (0.030)	
Profile height ² * medium man dummy	-0.000 (0.000)	
Profile income*tall man dummy	-0.053 (0.030)	-0.007 (0.022)
Profile height*tall man dummy	0.073** (0.018)	0.031 (0.019)
Profile height ² * tall man dummy	-0.000 (0.000)	-0.000 (0.000)
City dummies	Y	Y
Constant	40.868 (84.537)	33.855 (81.285)
Observations	540	540
R-squared	0.086	0.086

Notes: The average height for males in the four cities of experiment is 172cm. Medium man dummy = 1 if height is 172cm, the average level. Short man dummy = 1 if height is 166 cm, one standard deviation below the average. Tall man dummy = 1 if height is 178 cm, one standard deviation above the average. Robust standard errors clustered at the city-level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

A-Table 3: Men's tradeoff between women's height and income (online dating data)

WTP at 155cm women		
	(1)	(2)
Short men's	0.054 (0.708)	
Medium men's	0.459 (1.302)	
Tall men's	0.839 (3.623)	
Chi2 test of differences of WTPs		
short = medium	Chi2(1)=0.09	p=0.7617
short = tall	Chi2(1)=0.07	p=0.7880
medium = tall	Chi2(1)=0.01	p=0.9123
WTP at 160cm women		
Short men's	0.424 (0.519)	
Medium men's	0.614 (1.820)	
Tall men's	1.015 (4.096)	
Chi2 test of differences of WTPs		
short = medium	Chi2(1)=0.01	p=0.9076
short = tall	Chi2(1)=0.02	p=0.8842
medium = tall	Chi2(1)=0.01	p=0.9240
WTP at 165cm women		
Short men's	0.794 (1.235)	
Medium men's	0.769 (2.377)	
Tall men's	1.191 (4.579)	
Chi2 test of differences of WTPs		
short = medium	Chi2(1)=0.00	p=0.9906
short = tall	Chi2(1)=0.01	p=0.9393
medium = tall	Chi2(1)=0.01	p=0.9322

Notes: The average height for males in the four cities of experiment is 172cm. Medium man dummy = 1 if height is 172cm, the average level. Short man dummy = 1 if height is 166 cm, one standard deviation below the average. Tall man dummy = 1 if height is 178 cm, one standard deviation above the average. The WTP of mate-height and mate-income for specific height type of man is the ratio of the percentage change in visits of that height type for a one percent change in female height over the percentage change in visits for a one percent change in female income for that height type. Robust standard errors clustered at province level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

A-Table 4: SUR regressions of husband's characteristics on wife's characteristics

Whole sample		
	Husband's log income	Husband's height
Wife's log (income+1)	0.008 (0.006)	0.121*** (0.022)
Wife's height	0.012*** (0.003)	0.197*** (0.029)
Observations	2,080	
Corr(residuals)	0.097***	
Breusch-Pagan test	chi2(1) = 19.601, Pr = 0.000	
Wald tests:		
Within columns:		
Wife's height /	1.527	1.631***
Wife's log income	(1.404)	(0.444)
	chi2(1) = 0.01, Pr = 0.934	
Across columns:		
Wife's log income *	0.001	0.001***
Wife's height	(0.001)	(0.000)
	chi2(1) = 0.01, Pr = 0.938	
Log likelihood	-8523.586	

Notes: Data based on the CFPS 2010. The sample is restricted to married couples with urban *hukou*, both between the ages of 20 and 45 years old, and in which the husband has positive income. Robust standard errors clustered at province level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

A-Table 5: First stage regression: Husband's height group vs. mother's age of giving birth

Ordered Probit:	Husband's height group (short, med, tall)
	(1)
Mother's age of giving birth	-0.007 (0.005)
Weight at birth (=0 if don't remember)	0.177*** (0.042)
Dummy for missing weight at birth	1.041*** (0.274)
Age	-0.028*** (0.005)
Province FE	Y
Observations	1,903
Pseudo R2	0.086

Notes: Data are from CFPS 2010. The sample is restricted to married couples with urban *hukous*, both between the ages of 20 and 45 years old, and in which the husband has a positive income. Robust standard errors clustered at province level are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.

A-Table 6: Second stage SUR regressions for husband WTP on wife's education and height

	Short husband (<1 s.d.)		Med husband		Tall husband (>1 s.d.)	
	husband's log income	husband's height	husband's log income	husband's height	husband's log income	husband's height
	(1)	(2)	(3)	(4)	(5)	(6)
Wife's education	0.030*** (0.011)	0.108*** (0.033)	0.054*** (0.005)	0.048*** (0.018)	0.050*** (0.011)	-0.030 (0.035)
Wife's height	-0.000 (0.010)	0.069** (0.031)	0.009* (0.005)	0.049*** (0.016)	0.010 (0.009)	0.089*** (0.029)
Generalized residual	-0.674 (0.465)	0.286 (1.395)	-0.344 (0.217)	-1.793** (0.893)	0.202 (0.278)	-2.165 (1.408)
Husband's and wife's age and province fixed effects		Y		Y		Y
Observations		303		1335		265
Corr (residuals)		0.168***		0.202***		0.119**
Breusch-Pagan test		chi2(1) = 9.664, Pr = 0.002		chi2(1) = 49.133, Pr = 0.000		chi2(1) = 5.110, Pr = 0.024
Wald tests:						
Within columns:						
Wife's education /	-0.016 (0.345)	0.642* (0.369)	0.157* (0.088)	1.012** (0.501)	0.205 (0.202)	-2.936 (3.412)
Wife's height						
		chi2(1) = 1.89, Pr = 0.169		chi2(1) = 2.88*, Pr = 0.090		chi2(1) = 0.85, Pr = 0.357
Across columns:						
Wife's education *	0.002* (0.001)	-0.000 (0.001)	0.003*** (0.001)	0.000 (0.000)	0.004** (0.002)	-0.000 (0.000)
Wife's height						
		chi2(1) = 1.64, Pr = 0.201		chi2(1) = 6.06** , Pr = 0.014		chi2(1) = 6.93*** , Pr = 0.009
Log likelihood		-1007.462		-4538.025		-810.066

Notes: Data are from CFPS 2010. The sample is restricted to married couples with urban hukous, both between the ages of 20 and 45 years old, and in which the husband has a positive income. Bootstrapped errors clustered are in parenthesis: * p<0.1, ** p<0.05; *** p<0.01.