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The height of choosiness: mutual mate choice for stature results in suboptimal pair formation for both sexes

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Mutual mate choice is prevalent in humans, where both males and females have a say in their choice of partner. How the choices made by one sex constrain the choice of the other remains poorly understood, however, because human studies have mostly limited themselves to measuring preferences. We used a sample of 5782 speed-daters making 128 104 choices to link preferences for partner height to actual choice and the formation of a match (the mutual expression of interest to meet again). We show that sexual conflict at the level of preferences is translated into choice: women were most likely to choose a speed-dater 25 cm taller than themselves, whereas men were most likely to choose women only 7 cm shorter than themselves. As a consequence, matches were most likely at an intermediate height difference (19 cm) that differed significantly from the preferred height difference of both sexes. Thus, our study reveals how mutual mate choice can result in suboptimal pair formation for both sexes, highlighting the importance of assessing the mate choice process in its entirety.
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Finding a suitable mate to form a reproductive unit is complex, owing to the many factors that prevent an individual from obtaining his or her preferred partner. First, mates with the desired properties might not be available and, even if they are, individuals might have insufficient time to assess all available possible mates (Reynolds & Gross 1990; Widemo & Sæther 1999; Fawcett & Johstone 2003; Cotton et al. 2006). Second, some desired characteristics might trade off against each other; for instance, attractiveness might trade off against willingness or ability to provide parental investment (Magrath & Komdeur 2003); obtaining a mate with the desired level of both characteristics might, as a consequence, be impossible.

Relatedly, other individuals' pursuit of their own interests can impair mating with preferred individuals. In many species, including humans, mating is a two-sided affair: individuals who prefer a given partner must themselves be chosen as a mate by that individual (Johnstone et al. 1996; Baldauf et al. 2009). In addition, third parties, especially same-sex rivals, can interfere with obtaining one's desired mates (Wong & Candolin 2005). Furthermore, even successful pair formation (i.e. pair bonding) always entails the risk that, at some point in the future, the partner may move to a more attractive alternative (Rusbult & Buunk 1993). For these and other reasons, any given individual's mate preferences are unlikely to be completely satisfied.

In part because of the difficulty of tracking choice and pairing, the study of mate choice has focused to a large extent on measuring preferences (Courtiol et al. 2010b). How preferences translate to actual choices and subsequent pairing remains unclear. One window onto the relationships between preferences, choice and pairing is so-called speed-dating events. During a speed-dating event, participants meet approximately 10–30 individuals in a series of 3–7 min 'dates' after which they discretely indicate whether they are interested in further contact ('Yes'/'No'). When a 'Yes' is reciprocated, they make a 'Match', and contact details are subsequently provided to enable participants to arrange a more traditional date if desired (Kurzban & Weeden 2005, 2007; Finkel & Eastwick 2008; Lenton & Francesconi 2011). Although such 'matches' do not inevitably lead to the formation of an actual relationship, people who were matched with at least one person during speed dating had a

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10.9% chance of engaging in sexual intercourse with a 'match' within 6 weeks of the event, while the chance of a more serious relationship after 1 year was 7.2% (Asendorpf et al. 2011). Thus, speed dating is an ecologically relevant setting to study pair formation.

Data from speed-dating events have some advantages over self-report questionnaire- or vignette-based studies, having greater ecological validity and allowing a look at the effects of mutual mate choice. More importantly for the present purpose, speed dating allows researchers to determine how mate preferences, self-reported indications of what individuals want in a mate, translate into the choices that individuals actually make, and how these choices translate into subsequent potential pairing. We thus treated the speed-dating venue as a 'model system' that enabled us to interrogate human mate choice processes in a manner directly comparable to those of other species (Lenton et al. 2009). To this end, we operationalized definitions related to preference, choice and pairing as used in the mate choice literature (Fowler-Finn & Rodríguez 2012a, b) for use within a speed-dating context, focusing on partner height as a preference variable (see Table 1).

Previous studies that have addressed the interplay between preferences, choice and pairing in speed dating have shown that stated preferences are generally poor predictors of choice, in that many 'nonpreferred' individuals are also chosen (Kurzban & Weeden 2007; Todd et al. 2007; Eastwick & Finkel 2008; Eastwick et al. 2011). Preferences also fail to predict which potential mates are pursued after a speed-dating event (Eastwick & Finkel 2008). Furthermore, choices made during speed-dating events were only weakly reciprocated between partners (Luo & Zhang 2009; Back et al. 2011).

The present analysis has several advantages over previous work. First, we examined preferences, choice and pairing simultaneously. Second, we focused on one trait, height, which is a particularly useful trait to study because: (1) it is an easily verified objective measure (in contrast to, e.g. kindness or reported income); (2) both sexes show height preferences (Courtiol et al. 2010a; Stulp et al. 2013b); (3) partner heights correlate positively (Spuhler 1982; Stulp et al. 2011) and men are taller than their partner more often than expected by chance alone (Gillis & Avis 1980; Stulp et al. 2013a), indicating that pairing with respect to height is nonrandom; and (4) both male and female heights are related to the number of children produced (Stulp et al. 2012a, b, c), indicating that pair formation with respect to height can affect reproductive success and thereby has evolutionary relevance. Another advantage of our study is that a clearly defined partner preference was available (i.e. preferred partner height), allowing a direct comparison with the response to heights. This compares favourably to previous studies, where preferences have most commonly been measured using a subjective scale (e.g. rate on a scale how important physical attractiveness is in an ideal romantic partner; see Kurzban & Weeden 2005 for a notable exception). Finally, because we could combine the specific preferences and choices of both sexes simultaneously, we were able to assess potential conflicts over partner height, and so examine how mutual mate choice affects final pairing.

Previous work indicates that preference functions for height in both sexes do not align, creating a sexual conflict over partner height (Baldauf et al. 2009; Courtiol et al. 2010a; see Table 1). The present work first reproduced this finding, and, subsequently, we tested (1) whether stated preferences for partner height translated into actual choice during speed dating and (2) whether height was related to responsiveness (while others might use terms such as 'selectivity' or 'choosiness,' we use this term to connect with the animal literature) and desirability. Based on the preferences and choices of speed-daters, we determined both the strength of preference and tolerance with respect to height (Table 1), and examined how these depended on a person's sex and own height. Finally, we tested whether (3) the conflict between the sexes over stated height preferences affected choice and pair formation.

METHODS

Speed Dating

We used data collected by HurryDate, a firm organizing speed-date events across North America. The procedure and data have been described elsewhere (Kurzban & Weeden 2005, 2007). In short, men and women are invited in groups of usually up to 50 and with an approximately equal sex ratio. Events are stratified by age (25–35 and 35–45 are typical). During an event, all men interact with all women for 3 min per date after which both parties discretely register their interest in the other person by indicating either 'Yes' or 'No' on a designated scorecard. These are then stored by HurryDate and checked for 'matches': cases in which both male and female indicated 'Yes' to one another. Subsequently, participants are informed who their matches are, can view these individuals' online profiles, and send emails to their matches. Our sample consisted of single men and women paying a fee to attend the event, indicating that these individuals were genuinely searching for a mate (and contrasts with many other studies in which speed-daters received a reward for participating in the form of, for instance, money or course credits e.g. Eastwick & Finkel 2008; Luo & Zhang 2009; Eastwick et al. 2011). HurryDate collects survey data from their participants including their own height and a preferred height range (i.e. a minimal and maximal preferred height).

During a HurryDate event, women usually remain seated while the men change positions. Given this pattern, women's height may

Table 1
Definitions of preference measures, choice and pairing drawn from the literature and the operational definitions used in a speed-dating context

Variable	General (short) definition	Operational definition
Preference ranking	The ranking of mates based on the trait value with respect to likelihood of mating	The stated minimal and maximal preferred height
Strength*	The degree to which deviations from the ideally preferred trait value are disfavoured	The decrease in the probability of responding 'Yes' to a speed-dater whose height deviates from the chooser's acceptable height range preference
Responsiveness*,†	The probability that an individual will respond positively to any mate, independently of trait value	The probability of responding 'Yes' to any speed-dater encountered during an event, independently of their height
Tolerance*	The range of trait values considered acceptable by a choosing individual	The standard deviation of the mean of those heights to which a 'Yes' response was given
Choice	Positive response to sampled mates	Whether a given speed-dater gave a 'Yes' response
Pair formation	The formation of a pair to reproduce	Whether a 'Yes' response was reciprocated, and a 'Match' formed

* Based on Fowler-Finn & Rodríguez (2012a, b).
† In the speed-dating literature often referred to as 'selectivity' or 'choosiness'.

be more difficult for men to assess than vice versa. However, before the speed-dating event starts, the speed-daters spend several minutes interacting while standing, allowing assessments of height. Moreover, height is also readily assessed from cues while sitting, as standing height correlates strongly with both sitting height ($r = 0.94$) and arm length ($r = 0.94$; Torres et al. 2003). In addition, the face can also be used as a cue to height (Re & Perrett 2012). Thus we consider it safe to assume that men had sufficient opportunity to assess the height of their female dates.

Although human populations can differ substantially in terms of height, previous studies using a wide range of methodologies and various populations (Pawlowski 2003; Fink et al. 2007; Courtiol et al. 2010a; Re & Perrett 2012; Stulp et al. 2013b) have all yielded the same consistent mate preferences with respect to height. Yet, studies from non-Western samples suggest that these height preferences are not universal (Sear & Marlowe 2009; Sorokowski & Butovskaya 2012). U.S. citizens are particularly diverse in their ethnic background, even among those considered Caucasian. The preferences for height observed in this study should therefore not be considered as 'universal' preferences for stature.

When using such an ethnically diverse sample one has to bear in mind that assortment for ethnic background may lead to assortment for height, as ethnic background and height are correlated. Yet, because of this correlation, it is very hard to determine the causal arrow of this relationship. Indeed, a preference for certain heights will also lead to assortment for ethnic background. An interesting example of the entanglement between height and ethnicity comes from patterns of interethnic marriage: marriages between black men and white women and between Asian women and white men are more frequent than marriages between black women and white men and between Asian men and white women, and these asymmetries are best understood in terms of height (Belot & Fidrmuc 2010). Nevertheless, in an attempt partially to account for homogamy with respect to ethnicity, we added a variable to all our logistic mixed models (see below) that coded whether or not speed-daters were of similar ethnic background. Including this variable in our analyses did not change our results qualitatively (i.e. a significant term for height (or height difference) never became nonsignificant; these results are not reported here).

Ethical approval was obtained from the Institutional Review Board at the University of Pennsylvania. Informed consent was not deemed necessary by this Board, as the participants engaged in 'public behaviour'. The data obtained could not be traced back to the individual.

Sample

We included all events in which full information was available for all choices made by all participants in that event (i.e. full information on who said 'Yes' to whom). We excluded all events in which (1) one of the individuals said 'Yes' to an unknown individual; (2) when a 'Match' was reported even though both individuals had not said 'Yes' to one another; (3) when 'Yes' was said to an individual of the same sex (HurryDate sessions are specifically designed for heterosexuals); and (d) when the total number of participants in the event was lower than 15. This gave us a total of 174 speed-dating events with full information on who said 'Yes' to whom in which 5782 individuals ($N = 3024$ females) made 128 104 choices, resulting in 9072 matches.

Analyses

All analyses were performed separately for the two sexes. We examined the individual preferences for partner height and how these related to an individual's height using Pearson correlations, and t tests were calculated to examine sex differences (using Cohen's d as our measure of effect size). We examined whether height (or differences in height) affected the chance of either giving or receiving a 'Yes' response using mixed models with binomial error distribution, in which individuals of both sexes and 'event' were included as random effects (i.e. three random effects in total). The Wald Z test was used for determining P values for the parameter estimates in the mixed models. When examining quadratic terms of height (or height difference), we always included the linear term in the statistical model. When the quadratic term was nonsignificant, we present the statistical details from the model with only the linear term of height. Height and preferences for height were reported in inches, so we used this unit of measurement in all analyses, but for the graphs we converted these data to centimetres. All analyses were performed using the lme4 package in R, version 2.13.1 (R Development Core Team 2008). All percentages mentioned in the Results are predictions from mixed models based on the fixed effects, which were calculated based on the formula in Diggle et al. (2002). Confidence intervals of optima were based on 1000 reanalyses of the data using the functions simulate and refit in R.

RESULTS

Overall Sample

An average of 36.97 (SD = 10.82) individuals participated per event in the 174 speed-dating events, in which an average of 18.17 ± 5.18 were women and 18.80 ± 6.06 were men. Average height for men was 179.06 (SD = 6.87) cm (154 men did not report height), and 165.20 (SD = 6.72) cm for women (172 women did not report height). See Appendix Tables A1 and A2 for more descriptive statistics.

Stated Preferences for Partner Height

Preference ranking with respect to height was studied using the minimum and maximum preferred height. Men were more likely (761 of 2601; 29.26%) than women (167 of 2847; 5.87%) to report a very low minimally preferred height (4 feet ≈ 122 cm; $\chi^2_1 = 526.28$, $P < 0.0001$). In contrast, women were more likely (844 of 2847; 29.65%) than men (623 out of 2601; 23.95%) to report a very high maximally preferred height (7 feet ≈ 213 cm; $\chi^2_1 = 22.39$, $P < 0.0001$). We considered the very low minimally (4 feet) and very high maximally (7 feet) preferred heights to indicate that there was no limit to the height of an acceptable partner, and therefore excluded these individuals from the following analysis. The preferred height range (maximally preferred minus minimally preferred height) was larger in men than in women (men: mean ± SD: 24.43 ± 8.43 cm; $N = 1770$; women: 18.72 ± 7.08 cm; $N = 1996$; $t_{3470.13} = 22.33$, $P < 0.0001$, $d = 0.74$). Height correlated positively with minimally and maximally preferred height in both sexes (Fig. 1; men: minimum: $r_{1820} = 0.35$, $P < 0.0001$; maximum: $r_{1955} = 0.52$, $P < 0.0001$; women: minimum: $r_{2651} = 0.40$, $P < 0.0001$; maximum: $r_{1981} = 0.42$, $P < 0.0001$).

Women preferred larger within-pair height differences than men. Men's minimally preferred height difference was 0.021 (SD = 6.65) cm (indicating that on average men prefer to be a minimum of 0.021 cm taller than a woman), whereas women indicated a significantly larger minimum height difference of 8.30 (SD = 6.95) cm ($t_{4314.21} = 40.96$, $P < 0.0001$, $d = 1.21$). A one-sample t test against zero revealed that women ($t_{2652} = 61.45$, $P < 0.0001$, $d = 1.19$), but not men ($t_{1956} = 0.14$, $P = 0.890$, $d = 0.003$) had on average a minimal preferred height such that the male was taller

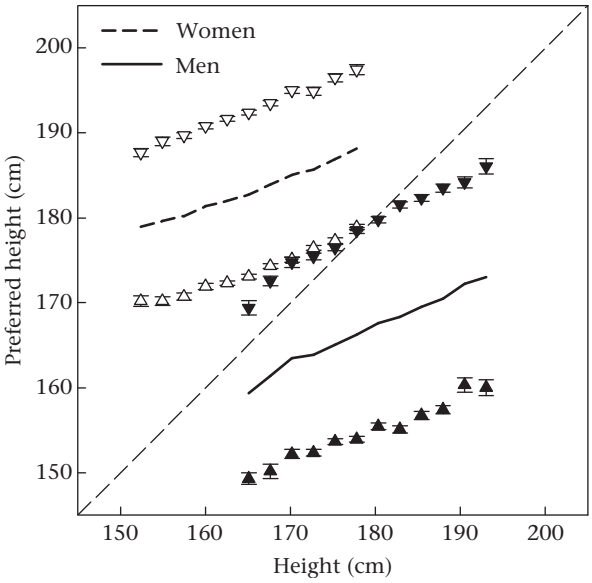


Figure 1. Minimum and maximum preferred height (means ± SE) in relation to subject height for men (filled triangles) and women (open triangles). The lines reflect the midpoint between the minimally and maximally preferred height. For men, bins below 65 inches and above 75 inches, and for women bins below 60 inches and above 70 inches, were collapsed.

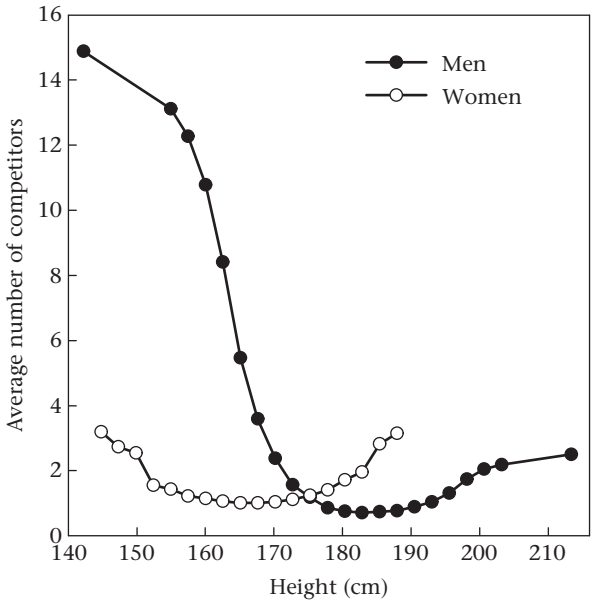


Figure 2. The number of competitors in the speed-date population for men and women in relation to their height. High values indicate that the number of individuals of a given height is high relative to the number of opposite-sex individuals for whom that height falls within the acceptable height range. See text and Tables A3 and A4 for further information.

than the female in the couple. With respect to the maximum preferred height difference, we again found a significant contrast between the sexes: on average, men preferred a slightly smaller maximum within-pair height difference than women (men: mean ± SD: 24.67 ± 7.44 cm; women: 27.94 ± 6.54 cm; $t_{3637.69} = 14.28$, $P < 0.0001$, $d = 0.47$).

Knowing the distribution of both individual preference rankings and actual heights enabled us to identify the potential direction and intensity of intersexual selection acting on height (Fawcett & Johnstone 2003). To this end, we first calculated how many opposite-sex individuals would accept a partner of a given height in the sense that his/her height was between the reported minimum and maximum preferred height of opposite-sex participants. We then calculated the total number of individuals that were of acceptable height for these opposite-sex individuals. In these calculations, we also included individuals with very low minimal or high maximal preferred heights. The ratio of these values gives the number of same-sex people that an individual of a given height would face as competition per opposite-sex person. For instance, a man of 177.8 cm (70 inches) would fall within the preferred height range of 2458 women. These 2458 women on average would accept 2101 other men. Thus, a man of 177.8 cm would compete with, on average, 2101/2458 = 0.85 men (see Appendix Tables A3 and A4 for these calculations for all heights). Short men faced the greatest number of competitors (Fig. 2), whereas men of average height had the fewest competitors. Very tall men had more competitors than men of average height, but fewer than short men. Relatively short and relatively tall women faced more competition than women of average height, but variation in competition across women was much lower than across men (Fig. 2). This reflects our finding that the male-preferred height range was, on average, larger than the female-preferred height range.

Strength of Preference in Relation to Height

To establish the strength of the preferences with respect to height we analysed the relationship between preferred height range and choice. Strength was assessed on two levels. First, we examined the likelihood that an individual said 'Yes' to a speed-dater who fell within the reported preferred height range of that individual. For men, the estimated likelihood of saying 'Yes' to a preferred individual with respect to height was 47.9%, whereas for a nonpreferred individual this was reduced to 42.8% (logistic regression: $Z = 7.62$, $P < 0.0001$). For women, these same values were 32.2% for a preferred individual versus 25.4% for a nonpreferred individual ($Z = 13.64$, $P < 0.0001$): a significantly greater decrease than seen in men (interaction term: $Z = 3.10$, $P = 0.002$). Second, for those speed-daters who fell outside the preferred height range of a choosing individual, we assessed the extent to which the magnitude of the deviation from the preferred height range influenced the chance of saying 'Yes'. For men, we found that the likelihood of saying 'Yes' to an individual who fell 1 inch (2.54 cm) outside the preferred height range was predicted to be 40.0%, whereas this likelihood decreased by 5.7% when the individual fell 5 inches (12.7 cm) outside the preferred range ($Z = 3.01$, $P = 0.003$; Fig. 3). For women, we found that the likelihood of saying 'Yes' to an individual who fell 1 inch (2.54 cm) outside the preferred height range was predicted to be 24.8%, while 5 inches decreased it by 8.0% ($Z = 7.87$, $P < 0.0001$). A significant interaction was found between sex and the deviation from the preferred height range ($Z = 2.41$, $P = 0.016$), indicating that preference strength was stronger in women than men. Thus, both analyses showed that women had a stronger preference than men, and that the link between preference and choice was stronger in women than in men.

Examining the strength of preference separately towards heights above and below the preferred height range, we found that women disfavoured heights that were shorter than preferred more than those taller than preferred (interaction term: $Z = 3.02$, $P = 0.003$; Fig. 3). The reverse was true for men: men tended to disfavour women who were taller than preferred more than women shorter than preferred (interaction term: $Z = 1.66$, $P = 0.097$). This pattern was significantly different between the sexes (interaction term: $Z = 3.33$, $P = 0.001$).

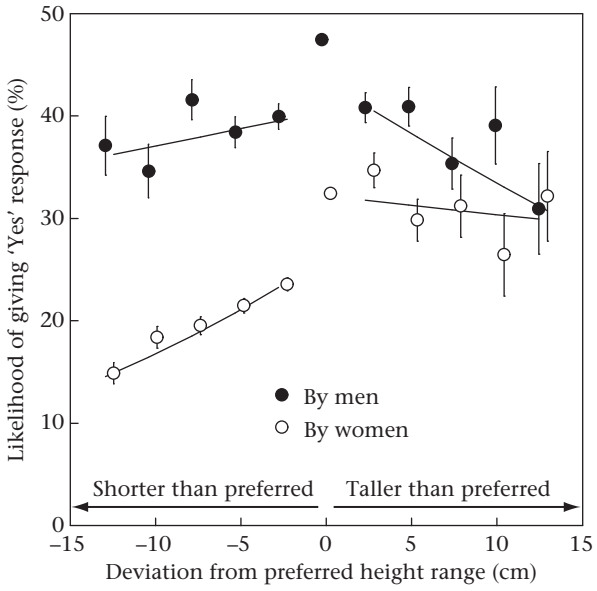


Figure 3. The strength of the height preference: the likelihood of giving a 'Yes' response with increased deviation from the preferred height range for men and women (mean ± SE). Bins below −7 inches and above 7 inches were collapsed. The likelihood of giving a 'Yes' response when the height fell within the height range is plotted for comparison.

Tolerance in Relation to Height

The standard deviation of heights to which a 'Yes' response was given (including only those individuals that responded with 'Yes' more than once) was on average 2.45 (± 0.73) for men and 2.35 (± 1.00) for women, a small but significant difference ($t_{5203} = 5.24$, $P < 0.0001$, $d = 0.15$). This difference in tolerance was not a consequence of different standard deviations of height for men and women (Levene's test for equality of variances: $F = 0.087$, $P = 0.768$). This reinforces the results given above on strength of preferences, with women displaying a significant tendency to choose a narrower range of mates during speed dating than men. This measure of tolerance also correlated weakly but significantly with the reported preferred height range in men (Spearman correlation: $r_S = 0.070$, $N = 1691$, $P = 0.004$) and women (Spearman correlation: $r_S = 0.064$, $N = 1690$, $P = 0.009$), indicating that individuals who reported a narrower preferred height range also showed less variability with respect to which heights were given a 'Yes' response.

Responsiveness, Desirability and Pair Formation in Relation to Height

Overall, we found that, for both men and women, those who reported a wider preferred height range were also more responsive in general (men: $Z = 4.73$, $P < 0.0001$; women: $Z = 8.63$, $P < 0.0001$). Furthermore, men were more responsive than women: on average, they said 'Yes' to 47.4% of women, whereas for women this value was substantially lower at 30.2% ($Z = 20.85$, $P < 0.0001$).

Taller men were less responsive, but more likely to receive a 'Yes' response from women (which we refer to as 'desirability'). Both relationships were curvilinear, with maximum responsiveness at 7.2 cm above average height (95% confidence interval, CI = 3.4–18.9), and maximum desirability at 21.3 cm (95% CI = 12.9–64.0) above average height (Table 2, Fig. 4a, b). The desirability effect was stronger than the responsiveness effect and hence taller men were more likely to form a pair, that is, were more likely to end up with a match (Table 2, Fig. 4c).

Female height was not significantly related to either responsiveness or pair formation (Table 2, Fig. 4a, c). However, very short and very tall women were slightly less desirable, as indicated by a significant quadratic effect of female height on the chance of receiving a 'Yes' response (Table 2, Fig. 4b). The most frequently chosen female height was predicted to lie 0.38 cm (95% CI = −5.1–6.4) above average height although, from the graph, it is clear that particularly very short and very tall women were least frequently chosen, whereas women in the intermediate height range had similar likelihoods of receiving a 'Yes' response. Thus, very short and very tall women were chosen less often than those of more intermediate heights.

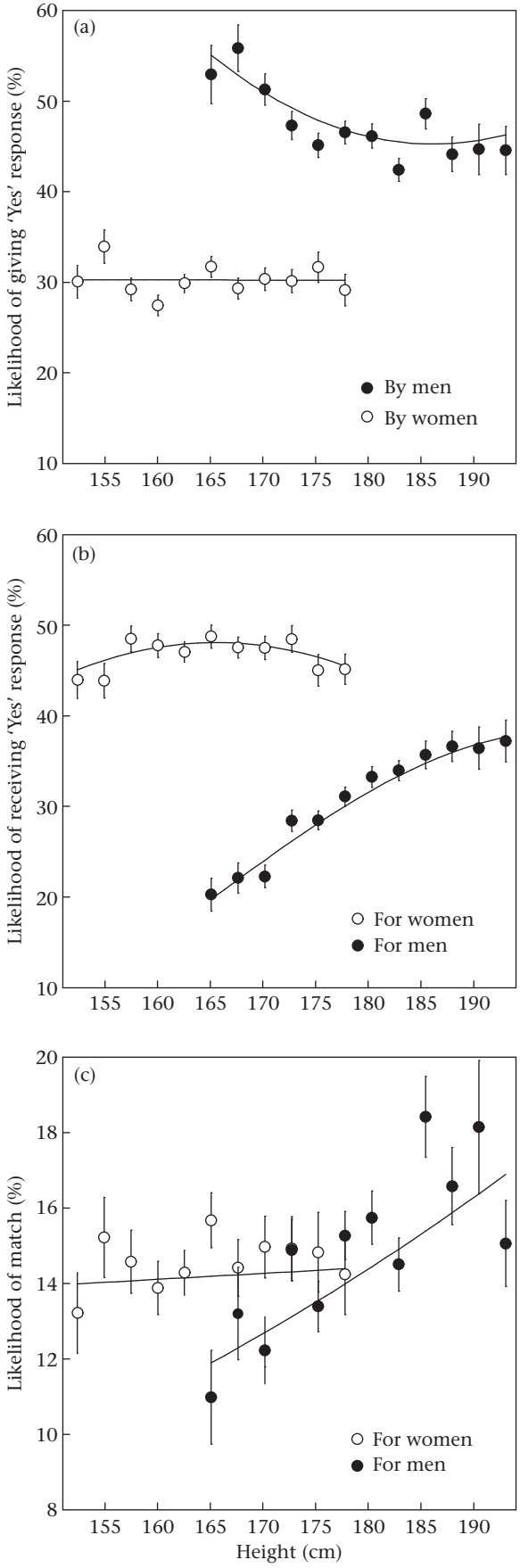
Mutual Mate Choice and Pair Formation

As partner preferences are dependent on one's own height (Fig. 1), relative height difference may be more informative with respect to the chance of giving a 'Yes' response than assessment of potential partner height alone because it integrates the height of both participants. We found curvilinear effects for both men and women on the chance of giving a 'Yes' response with respect to partner height differences (male minus female height; Table 3, Fig. 5). For men, a 'Yes' response was most likely when the woman was 7.1 cm (95% CI = 1.0–12.2) shorter than themselves, significantly lower than the average height difference of 13.9 cm between men and women in our sample. Women, in contrast, were most

Table 2
The effect of male and female height (in inches; mean-centered) on the likelihood of giving a 'Yes' response, receiving a 'Yes' response, and having a match during speed dating

	Likelihood of giving a 'Yes' response		Likelihood of receiving a 'Yes' response		Likelihood of match	
	Male	Female	Male	Female	Male	Female
Intercept	−0.22±0.052 (<0.0001)	−1.23±0.043 (<0.0001)	−1.18±0.046 (<0.0001)	−0.12±0.053 (0.026)	−2.27±0.034 (<0.0001)	−2.27±0.034 (<0.0001)
Height	−0.050±0.012 (<0.0001)	−0.00049±0.010 (0.962)	0.12±0.010 (<0.0001)	0.0021±0.010 (0.834)	0.047±0.0084 (<0.0001)	0.0041±0.0083 (0.619)
Height^2	0.0088±0.0027 (0.001)	*	−0.0071±0.0024 (0.003)	−0.0070±0.0030 (0.020)	*	*
Random effects†						
Choosing individual ID	2.23±1.49	1.66±1.29	1.76±1.33	2.31±1.52	0.79±0.89	0.81±0.90
Chosen individual ID	1.63±1.28	1.58±1.26	1.48±1.21	1.61±1.27	0.85±0.92	0.83±0.91
Event ID	0.13±0.36	0.086±0.29	0.081±0.28	0.13±0.36	0.056±0.24	0.054±0.23

Table entries show binomial logistic mixed-model parameter estimates ± SE and the associated *P* value (in parentheses).
* The squared term of height was nonsignificant ($P > 0.159$). We present the estimates from the model without this term.
† Parameter estimate for variance components ± SD.



likely to give a 'Yes' response when the man was 25.1 cm taller (95% CI = 22.1–28.8). This height difference was significantly larger than the average height difference between men and women and also substantially larger than the male optimum.

We then calculated the height difference with the highest likelihood of a match (i.e. mutual score of 'Yes'). We found a maximum likelihood of a match at 19.2 cm (95% CI = 16.2–22.8) which falls in between the most chosen value for both men (7.1 cm) and women (25.1 cm), and which was also significantly greater than the average height difference (Table 3, Fig. 5). When we multiply the curve of the men giving a 'Yes' response (with respect to the height differences) with that of the female curve, we obtain a curve indicating the chance of a match when the chance of a 'Yes' being reciprocated is independent (i.e. the likelihood of having a 'Yes' response reciprocated is equal to that nonreciprocated). This estimated curve was very similar to the observed height distribution of the matches (Fig. 5), suggesting that men and women were not more likely to give a 'Yes' response to an individual who gave them a 'Yes' response in turn; thus there is no evidence to suggest that a given couple feels a 'click' with one another.

Resulting Mating Patterns with Respect to Height

We correlated the height of an individual with the average height of all matches of that individual (Fig. 6). Both male ($r_{2204} = 0.128$, $P < 0.0001$) and female ($r_{2379} = 0.105$, $P < 0.0001$) height correlated positively with this average height, providing some indication of assortative mating: taller individuals tended to be matched with taller individuals in both sexes, but men of average height were more likely to be matched with shorter females (Fig. 6). Thus, assortative mating for height was tempered by female choice for men much taller themselves, with the result that men of average height, rather than shorter men, were more likely to be matched with shorter women.

DISCUSSION

Studies of mate choice are generally restricted to the assessment of preferences, thereby neglecting the subsequent processes that lead to pair formation. Here, departing from previous work, we addressed simultaneously how preferences for partner height translated into actual choice, and how choice then translated into pairing. We found that nonpreferred potential partners with respect to height still had a high (albeit reduced) chance of being chosen (42.8% and 25.4% for men and women, respectively). This is consistent with previous studies, which show that reported partner preferences are not strong predictors of choice during speed dating (Kurzban & Weeden 2007; Todd et al. 2007; Eastwick & Finkel 2008; Eastwick et al. 2011).

In addition to the reasons put forward in the Introduction to account for why preferences are not always expected to predict choice, humans may not be able express their own preferences accurately, or they may feel compelled to give socially desirable answers (Todd et al. 2007; Eastwick et al. 2011). Additionally, and perhaps most crucially, the setting in which preferences are established may not conform to the situation in which preferences are actually expressed. It is worth bearing in mind, therefore, that other psychological processes besides those relating strictly to mating decisions may explain some of the deviation of choice from preference.

Figure 4. The effect of male and female height on (a) the likelihood of giving a 'Yes' response, (b) the likelihood of receiving a 'Yes' response, and (c) the likelihood of a match (all mean ± SE). For men, bins below 65 inches and above 75 inches, and for women bins below 60 inches and above 70 inches, were collapsed.

Table 3
The effect of the difference in height (male minus female height; in inches) on the likelihood of giving a 'Yes' response by men and women, and the likelihood of a match

	Likelihood of giving a 'Yes' response		Likelihood of match
	Men	Women	
Intercept	−0.11±0.065 (0.081)	−1.67±0.061 (<0.0001)	−2.47±0.051 (<0.0001)
Height difference	0.021±0.011 (0.052)	0.14±0.011 (<0.0001)	0.085±0.011 (<0.0001)
Height difference^2	−0.0038±0.0007 (<0.0001)	−0.0072±0.0008 (<0.0001)	−0.0057±0.0008 (<0.0001)
Random effects*			
Choosing individual ID	2.29±1.51	1.71±1.31	0.83±0.91
Chosen individual ID	1.63±1.27	1.50±1.22	0.81±0.90
Event ID	0.13±0.35	0.089±0.30	0.060±0.25

Table entries show binomial logistic mixed model parameter estimates (±SE) and the associated *P* value (in parentheses).
* Parameter estimate for variance components (±SD).

Despite the imperfect mapping of preferences onto choice, we found that women's preferences were more strongly related to subsequent choice than those of men. Women reported a narrower preferred height range than men, and they were also less likely to choose men that fell outside this range (i.e. women had a higher strength of preference). Similarly, there was less variation in the heights chosen by women compared to men (i.e. women also had a lower tolerance). Finally, women were less responsive overall than men, mirroring findings from previous research (e.g. Kurzban & Weeden 2005; Todd et al. 2007; Eastwick & Finkel 2008; Lenton & Francesconi 2011), but there was no influence of a woman's own height on her responsiveness (in line with Kurzban & Weeden 2005). Female height did, however, influence their desirability: women of average height were most desired during speed dating. Furthermore, based on the preferences for height expressed by men and the actual height distribution of women, it was clear that women of average height also had the fewest rivals to compete with compared to shorter and taller women. These effects were generally small, however, and did not translate into actual success, as female height was unrelated to the chance of a match.

A contrasting pattern of results was obtained for men, where an individual's own height had a significant influence on his responsiveness: specifically, taller men were less responsive than shorter men. The lower responsiveness displayed by taller men can be partly explained by their increased desirability, as taller men were most often given a 'Yes' response by women and had to compete with fewer rivals than shorter men. Thus, the increased popularity of, and reduced competition for, taller men compared to shorter men may explain their decreased responsiveness during speed dating. Despite being less responsive, taller man were most likely to end up with a match. Taken together, these results demonstrate that height is considered more important by women as a mate choice characteristic, and that men's 'mating success' is therefore more dependent on height than the mating success of women. Thus female mate choice is a likely contributor to the evolution of human sexual size dimorphism.

Stated preferences for height differences also revealed a conflict between the sexes. In general, women preferred their partner to be much taller, whereas men preferred their partner to be only slightly shorter. These stated preferences were also reflected in choice: men were most likely to choose only small partner height differences, including those height differences in which the woman was taller than the choosing men. Women, in contrast, were most likely to choose much larger partner height differences, and least likely to choose small partner height differences, particularly those that would result in the man being shorter. Further evidence that women disfavour men shorter than themselves is also shown by the differences in their strength of preference: women strongly disfavoured men who were shorter, but not those who were taller, than their preferred height range (Fig. 3). These converging lines of

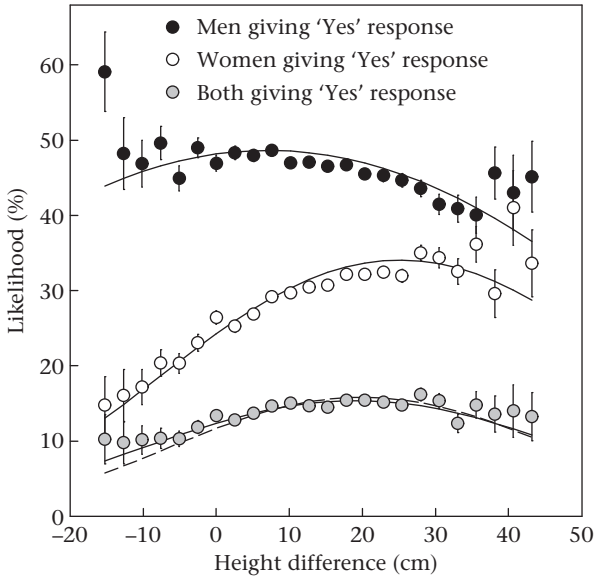


Figure 5. Height differences (male minus female height), the likelihood of giving a 'Yes' response by men and women and the likelihood of a match (all mean ± SE). Bins below −6 inches and above 17 inches were collapsed. The broken line represents the multiplication of the curves representing the likelihood of giving a 'Yes' response for both men and women.

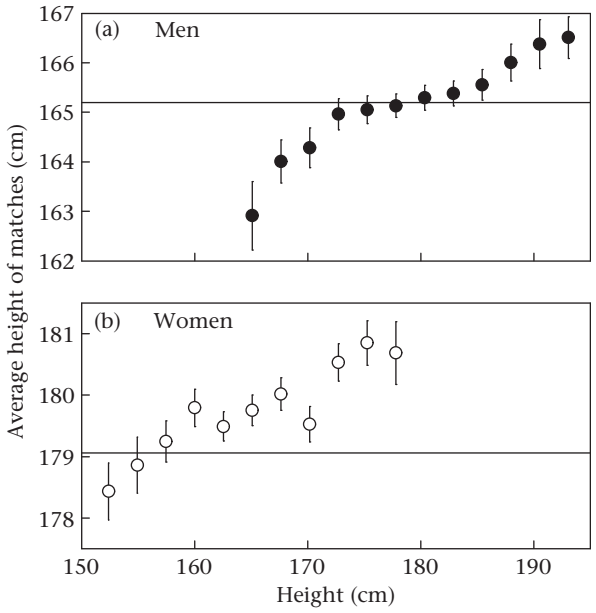


Figure 6. The average height ± SE of the individuals with whom an individual of a given height is paired for (a) men and (b) women. For every individual we calculated the average height of all individuals with which they had a match (see text). The horizontal line represents the average height of the opposite sex.

evidence strongly suggest that the male-taller norm observed in actual couples (i.e. males are more often taller than their partner when compared to random mating; Gillis & Avis 1980) is driven by women rather than by men.

The process of mate choice and pair formation during speed dating resulted in assortative mating for height, but the magnitude of assortment in the resulting matches is lower than that observed among actual couples (Spuhler 1982; Stulp et al. 2011, 2013a). A possible explanation for a lower level of assortment is that, because women's choices were so strongly directed towards men much taller than themselves, it was men of average height, rather than shorter men, who were most likely to be paired with shorter women (Fig. 6). Although shorter men were much less likely to find a match during speed-dating events (Fig. 4c), they may nevertheless succeed in finding a partner outside of this more restricted context because the availability of average height and taller men in a population is, obviously, finite. Once more preferred men are removed from the mating pool, some women may be forced to compromise with respect to partner height, and pair up with shorter men. Thus, because shorter men are potentially still successful at finding a partner, and because such men are more likely to be paired with shorter women than with tall women (because of preferences in both sexes), the observed magnitude of assortment in actual couples will be higher than that seen in a speed-dating context.

Our most notable finding, however, concerns the manner in which the conflict over partner height difference extended to actual pair formation. While men preferentially chose partners with a height difference that fell significantly below the average height difference between men and women, women chose partners with height differences that were significantly above this average difference (Fig. 5). This conflict in choice inevitably resulted in pairs in which the height difference between partners was suboptimal for both sexes, even though all parties were expressing a free choice and rivals did not prevent this choice. Thus, our study shows how mutual mate choice for preferred partners can lead to suboptimal pair formation, highlighting the value of following the mate choice process beyond the establishment of preferences through to pair formation. Our study also illustrates the value of speed dating as a model system, as it shows how human mate choice processes can be studied in a manner directly comparable to those of other species.

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References

Asendorpf, J., Penke, L. & Back, M. 2011. From dating to mating and relating: predictors of initial and long-term outcomes of speed-dating in a community sample. *European Journal of Personality*, **30**, 16–30.

Back, M. D., Penke, L., Schmukle, S. C., Sachse, K., Borkenau, P. & Asendorpf, J. B. 2011. Why mate choices are not as reciprocal as we assume: the role of personality, flirting and physical attractiveness. *European Journal of Personality*, **25**, 120–132.

Baldauf, S. A., Kullmann, H., Schroth, S. H., Thunken, T. & Bakker, T. C. 2009. You can't always get what you want: size assortative mating by mutual mate choice as a resolution of sexual conflict. *BMC Evolutionary Biology*, **9**, 129.

Belot, M. & Fidrmuc, J. 2010. Anthropometry of love: height and gender asymmetries in interethnic marriages. *Economics & Human Biology*, **8**, 361–372.

Cotton, S., Small, J. & Pomiankowski, A. 2006. Sexual selection and condition-dependent mate preferences. *Current Biology*, **16**, R755–R765.

Courtiol, A., Raymond, M., Godelle, B. & Ferdy, J.-B. 2010a. Mate choice and human stature: homogamy as a unified framework for understanding mating preferences. *Evolution*, **64**, 2189–2203.

Courtiol, A., Picq, S., Godelle, B., Raymond, M. & Ferdy, J.-B. 2010b. From preferred to actual mate characteristics: the case of human body shape. *PLoS One*, **5**, e13010.

Diggle, P., Heagarty, P., Liang, K.-Y. & Zeger, S. 2002. *Analysis of Longitudinal Data*. 2nd edn. Oxford: Oxford University Press.

Eastwick, P. W. & Finkel, E. J. 2008. Sex differences in mate preferences revisited: do people know what they initially desire in a romantic partner? *Journal of Personality and Social Psychology*, **94**, 245–264.

Eastwick, P. W., Eagly, A. H., Finkel, E. J. & Johnson, S. E. 2011. Implicit and explicit preferences for physical attractiveness in a romantic partner: a double dissociation in predictive validity. *Journal of Personality and Social Psychology*, **101**, 993–1011.

Fawcett, T. W. & Johstone, R. A. 2003. Mate choice in the face of costly competition. *Behavioral Ecology*, **14**, 771–779.

Fink, B., Neave, N., Brewer, G. & Pawlowski, B. 2007. Variable preferences for sexual dimorphism in stature (SDS): further evidence for an adjustment in relation to own height. *Personality and Individual Differences*, **43**, 2249–2257.

Finkel, E. J. & Eastwick, P. W. 2008. Speed-dating. *Current Directions in Psychological Science*, **17**, 193–197.

Fowler-Finn, K. D. & Rodríguez, R. L. 2012a. Experience-mediated plasticity in mate preferences: mating assurance in a variable environment. *Evolution*, **66**, 459–468.

Fowler-Finn, K. D. & Rodríguez, R. L. 2012b. The evolution of experience-mediated plasticity in mate preferences. *Journal of Evolutionary Biology*, **25**, 1855–1863.

Gillis, J. S. & Avis, W. E. 1980. The male-taller norm in mate selection. *Personality and Social Psychology Bulletin*, **6**, 396–401.

Johnstone, R. A., Reynolds, J. D. & Deutsch, J. C. 1996. Mutual mate choice and sex differences in choosiness. *Evolution*, **50**, 1382–1391.

Kurzban, R. & Weeden, J. 2005. HurryDate: mate preferences in action. *Evolution and Human Behavior*, **26**, 227–244.

Kurzban, R. & Weeden, J. 2007. Do advertised preferences predict the behavior of speed daters? *Personal Relationships*, **14**, 623–632.

Lenton, A. P. & Francesconi, M. 2011. Too much of a good thing? Variety is confusing in mate choice. *Biology Letters*, **7**, 528–531.

Lenton, A. P., Fasolo, B. & Todd, P. M. 2009. The relationship between number of potential mates and mating skew in humans. *Animal Behaviour*, **77**, 55–60.

Luo, S. & Zhang, G. 2009. What leads to romantic attraction: similarity, reciprocity, security, or beauty? Evidence from a speed-dating study. *Journal of Personality*, **77**, 933–964.

Magrath, M. J. L. & Komdeur, J. 2003. Is male care compromised by additional mating opportunity? *Trends in Ecology & Evolution*, **18**, 424–430.

Pawlowski, B. 2003. Variable preferences for sexual dimorphism in height as a strategy for increasing the pool of potential partners in humans. *Proceedings of the Royal Society B*, **270**, 709–712.

R Development Core Team. 2008. *R: A Language and Environment for Statistical Computing*. Vienna: R Foundation for Statistical Computing. http://www.r-project.org.

Re, D. E. & Perrett, D. I. 2012. Concordant preferences for actual height and facial cues to height. *Personality and Individual Differences*, **53**, 901–906.

Reynolds, J. D. & Gross, M. R. 1990. Costs and benefits of female mate choice: is there a lek paradox? *The American Naturalist*, **136**, 230–243.

Rusbult, C. E. & Buunk, B. P. 1993. Commitment processes in close relationships: an interdependence analysis. *Journal of Social and Personal Relationships*, **10**, 175–204.

Sear, R. & Marlowe, F. W. 2009. How universal are human mate choices? Size does not matter when Hadza foragers are choosing a mate. *Biology Letters*, **5**, 606–609.

Sorokowski, P. & Butovskaya, M. L. 2012. Height preferences in humans may not be universal: evidence from the Datoga people of Tanzania. *Body Image*, **9**, 510–516.

Spuhler, J. N. 1982. Assortative mating with respect to physical characteristics. *Social Biology*, **29**, 53–66.

Stulp, G., Verhulst, S., Pollet, T. V., Nettle, D. & Buunk, A. P. 2011. Parental height differences predict the need for an emergency Caesarean section. *PLoS One*, **6**, e20497.

Stulp, G., Pollet, T. V., Verhulst, S. & Buunk, A. P. 2012a. A curvilinear effect of height on reproductive success in human males. *Behavioral Ecology and Sociobiology*, **66**, 375–384.

Stulp, G., Verhulst, S., Pollet, T. V. & Buunk, A. P. 2012b. 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*, **24**, 486–494.

Stulp, G., Kuijper, B., Buunk, A. P., Pollet, T. V. & Verhulst, S. 2012c. Intralocus sexual conflict over human height. *Biology Letters*, **8**, 976–978.

Stulp, G., Buunk, A. P., Pollet, T. V., Nettle, D. & Verhulst, S. 2013a. Are human mating preferences with respect to height reflected in actual pairings? *PLoS One*, **8**, e54186.

Stulp, G., Buunk, A. P. & Pollet, T. V. 2013b. Women want taller men more than men want shorter women. *Personality and Individual Differences*, **54**, 877–883.

Todd, P. M., Penke, L., Fasolo, B. & Lenton, A. P. 2007. Different cognitive processes underlie human mate choices and mate preferences. *Proceedings of the National Academy of Sciences, U.S.A.*, **104**, 15011–15016.

Torres, L. A. G. M. M., Martinez, F. E. & Manço, J. C. 2003. Correlation between standing height, sitting height, and arm span as an index of pulmonary function in 6–10-year-old children. *Pediatric Pulmonology*, **36**, 202–208.

Widemo, F. & Sæther, S. A. 1999. Beauty is in the eye of the beholder: causes and consequences of variation in mating preferences. *Trends in Ecology & Evolution*, **14**, 26–31.

Wong, B. B. M. & Candolin, U. 2005. How is female mate choice affected by male competition? *Biological Reviews*, **80**, 559–571.

Appendix

Table A1
Descriptive statistics of the events ($N = 174$)

	Mean±SD	Minimum	Maximum
No. of persons in event	36.79±10.82	15	65
No. of men in event	18.80±6.06	6	35
No. of women in event	18.17±5.18	7	30
Sex ratio*	0.51±0.050	0.35	0.63

The correlation between the number of men and women participating in the event was $r = 0.852$, $P < 0.0001$.

* No. of men in event divided by no. of persons in event.

Table A2
Descriptive statistics of the speed-daters

	N	Mean±SD	Minimum	Maximum
Female	3024			
Age	3019	31.83±5.16	20	53
Height*	2852	165.20±6.72	144.78	187.96
Ethnicity	3024			
Caucasian	2305			
Asian	135			
African	107			
Hispanic	125			
Other	83			
Unknown	269			
Male	2758			
Age	2755	34.41±6.06	21	68
Height	2604	179.06±6.87	142.24	213.36
Ethnicity	2758			
Caucasian	2109			
Asian	138			
African	86			
Hispanic	98			
Other	102			
Unknown	225			

* Height was originally reported in inches.

Table A3
Calculating the average number of competitors per male height (see Fig. 2)

Male height*	Frequency	No. of women would accept height†	Average no. of men accepted by these women‡	Considered too short by no. of women	Considered too tall by no. of women	Average no. of competitors§
142.24	1 (0.04)	171 (6.01)	2547 (97.81)	2676 (93.99)	0 (0)	14.89
154.94	1 (0.04)	194 (6.81)	2547 (97.81)	2653 (93.19)	0 (0)	13.12
157.48	4 (0.15)	207 (7.27)	2542 (97.61)	2640 (92.73)	0 (0)	12.27
160.02	6 (0.23)	235 (8.25)	2533 (97.29)	2612 (91.75)	0 (0)	10.78
162.56	11 (0.42)	298 (10.47)	2508 (96.30)	2549 (89.53)	0 (0)	8.41
165.1	42 (1.61)	455 (15.98)	2490 (95.62)	2392 (84.02)	0 (0)	5.47
167.64	107 (4.11)	685 (24.06)	2463 (94.57)	2162 (75.94)	0 (0)	3.59
170.18	175 (6.72)	1014 (35.62)	2412 (92.64)	1833 (64.38)	0 (0)	2.38
172.72	258 (9.91)	1486 (52.2)	2334 (89.61)	1360 (47.77)	1 (0.04)	1.57
175.26	312 (11.98)	1891 (66.42)	2244 (86.18)	954 (33.51)	2 (0.07)	1.19
177.8	397 (15.25)	2458 (86.34)	2102 (80.72)	385 (13.52)	4 (0.14)	0.85
180.34	351 (13.48)	2689 (94.45)	2029 (77.92)	150 (5.27)	8 (0.28)	0.75
182.88	389 (14.94)	2803 (98.45)	1980 (76.02)	18 (0.63)	26 (0.91)	0.71
185.42	209 (8.03)	2676 (93.99)	1982 (76.11)	4 (0.14)	167 (5.87)	0.74
187.96	174 (6.68)	2590 (90.97)	1983 (76.16)	0 (0)	257 (9.03)	0.77
190.5	80 (3.07)	2243 (78.78)	1994 (76.57)	0 (0)	604 (21.22)	0.89
193.04	53 (2.04)	1929 (67.76)	2001 (76.85)	0 (0)	918 (32.24)	1.04
195.58	17 (0.65)	1536 (53.95)	2025 (77.76)	0 (0)	1311 (46.05)	1.32
198.12	10 (0.38)	1185 (41.62)	2063 (79.21)	0 (0)	1662 (58.38)	1.74
200.66	4 (0.15)	1016 (35.69)	2085 (80.06)	0 (0)	1831 (64.31)	2.05
203.2	1 (0.04)	959 (33.68)	2096 (80.50)	0 (0)	1888 (66.32)	2.18
213.36	2 (0.08)	844 (29.65)	2110 (81.03)	0 (0)	2003 (70.35)	2.50

Numbers in parentheses are percentages.

* Height in cm (originally reported in inches).

† The number of women who included that particular male height in their preferred height range.

‡ The average number of men liked by all the women who included that particular male height in their preferred height range.

§ The average number of competitors was a function of how many women would accept a man of a given height and the average number of men that were accepted by these women: that is, the average number of other men accepted by the women (average number preferred minus 1) divided by the number of women who would accept them.

Table A4
Calculating the average number of competitors per female height (see Fig. 2)

Female height*	Frequency	No. of men would accept†	Average no. of women accepted by these men‡	Considered too short by no. of men	Considered too tall by no. of men	Average no. of competitors§
144.78	1 (0.04)	863 (33.18)	2760 (96.77)	1738 (66.82)	0 (0)	3.20
147.32	9 (0.32)	1000 (38.45)	2736 (95.92)	1601 (61.55)	0 (0)	2.73
149.86	17 (0.6)	1070 (41.14)	2725 (95.53)	1531 (58.86)	0 (0)	2.55
152.4	85 (2.98)	1740 (66.9)	2706 (94.89)	861 (33.1)	0 (0)	1.55
154.94	124 (4.35)	1887 (72.55)	2695 (94.49)	714 (27.45)	0 (0)	1.43
157.48	277 (9.71)	2181 (83.85)	2666 (93.47)	420 (16.15)	0 (0)	1.22
160.02	304 (10.66)	2303 (88.54)	2644 (92.72)	297 (11.42)	1 (0.04)	1.15
162.56	455 (15.95)	2446 (94.04)	2606 (91.37)	151 (5.81)	4 (0.15)	1.06
165.1	363 (12.73)	2532 (97.35)	2570 (90.1)	58 (2.23)	11 (0.42)	1.01
167.64	380 (13.32)	2532 (97.35)	2564 (89.9)	21 (0.81)	48 (1.85)	1.01
170.18	305 (10.69)	2468 (94.89)	2574 (90.26)	8 (0.31)	125 (4.81)	1.04
172.72	219 (7.68)	2329 (89.54)	2592 (90.88)	3 (0.12)	269 (10.34)	1.11
175.26	169 (5.93)	2099 (80.7)	2614 (91.64)	1 (0.04)	501 (19.26)	1.24
177.8	100 (3.51)	1862 (71.59)	2628 (92.13)	0 (0)	739 (28.41)	1.41
180.34	32 (1.12)	1537 (59.09)	2641 (92.61)	0 (0)	1064 (40.91)	1.72
182.88	10 (0.35)	1356 (52.13)	2660 (93.27)	0 (0)	1245 (47.87)	1.96
185.42	1 (0.04)	949 (36.49)	2682 (94.03)	0 (0)	1652 (63.51)	2.82
187.96	1 (0.04)	859 (33.03)	2704 (94.82)	0 (0)	1742 (66.97)	3.15

Numbers in parentheses are percentages.

* Height in cm (originally reported in inches).

† The number of men who included that particular female height in their preferred height range.

‡ The average number of women liked by all the men who included that particular female height in their preferred height range.

§ The average number of competitors was a function of how many men would accept a woman of a given height and the average number of women that were accepted by these men, that is, the average number of other women accepted by the men (average number preferred minus 1) divided by the number of men who would accept them.