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Dating Preferences and Meeting Opportunities in Mate Choice Decisions

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Abstract

Much empirical evidence shows that female and male partners look alike along a variety of attributes. It is however unclear how this positive sorting comes about, because marriage is an equilibrium outcome arising from a process that entails searching, meeting and choosing one another. This study takes advantage of a unique data set to shed light on the forces driving choices at the earliest stage of a relationship. Both women and men value physical attributes, such as age and weight, and reveal that their dating choices are assortative along several traits. Importantly, meeting opportunities are found to have a substantial role in determining dating proposals.

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JEL Classification: D1, J1

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1. Introduction

A well established tradition of social science research has documented the strong resemblance of traits and socioeconomic status between husbands and wives. Both men and women tend to choose mates of similar age, race, education, and physical appearance (see, e.g., Weiss [1997], Kalmijn [1998], Schwartz and Mare [2005], Kurzban and Weeden [2005], Fernandez, Guner, and Knowles [2005], and Choo and Siow [2006] for recent analyses and reviews). But isolating the forces that lie behind this pattern of positive marital sorting is challenging, because marriage is an equilibrium outcome arising from a process that entails searching, meeting, and choosing one another.

In a frictionless world, positive sorting may arise simply as a result of individual preferences or technological complementarities in the marital production function (Gale and Shapley, 1962; Becker, 1981). For instance, positive sorting can be consistent with aligned or "agreed-upon" preferences (whereby everyone values the same attributes) as well as with assortative or "likes-attract" preferences (whereby people prefer partners who are similar to themselves).

Search frictions, on the other hand, may lead to positive sorting through alternative mechanisms. In particular, matches could be determined by who meets whom, who proposes to whom, and who searches where. The first force, who meets whom, implies that meeting opportunities play a key role in the matching process. There is evidence that people tend to meet individuals who are like themselves (Kalmijn and Flap, 2001; Nielsen and Svarer, 2009), and this alone could lead to positive sorting. But even in an environment where everyone can potentially meet everyone else, search frictions, combined with aligned preferences on the partner's type, give rise to positive sorting. As shown in Burdett and Coles (1997), a class structure will emerge in equilibrium, whereby the optimal strategy is to propose to and accept proposals from potential partners only in a fixed type interval. Finally, if individuals can choose not only who to propose to and whom to accept proposals from, but also where they search (and therefore who they are likely to meet), then segmentation will emerge in equilibrium, that is, the marriage market will be segmented in a number of sub-markets organized around classes of types (Jacquet and Tan, 2007).

Disentangling all such different channels empirically is challenging, as it is to identify whether mating preferences are aligned or assortative. A major problem, in fact, is that analysts only observe "final matches" (i.e., marriages and cohabitations), but seldom observe the whole pool of potential partners, nor do they have information on the process of proposals and rejections that prelude the formation of a relationship. As a result, we are typically unable to unravel the separate influence of the forces that underlie this union formation.[1] A few recent studies, however, shed light on the importance of such mechanisms by examining dating choices (e.g., Kurzban and Weeden, 2005; Fisman et al. 2006 and 2008; Finkel, Eastwick, and Matthews, 2007; Todd et al., 2007).

[1] At the cost of model-specific functional form identifying restrictions, this has been achieved with the estimation of structural parameters of marriage (final match) models as in Wong (2003), Bisin, Topa, and Verdier (2004), and Choo and Siow (2006).

This paper contributes to that new growing literature by using unique data from a large commercial speed dating agency in Britain, and makes two substantive contributions. First, we provide direct evidence on the nature of the choices underlying mate selection. Second, we assess the importance of meeting opportunities relative to that of other forces driving dating choices (such as preferences for partners with certain attributes) in explaining the observed patterns in dating behavior. Both contributions rely on the fact that we use a large sample of speed daters who have a more diverse set of attributes than those analyzed in earlier studies. This in itself allows us to focus on an extensive set of dyadic interactions and analyze individual patterns of mate choices over several personal characteristics and over many events with a wide variation in the composition of the pool of participants across events.

As in earlier speed dating studies, dating preferences can be recovered under the assumption that speed daters engage in *straightforward* behavior (Fisman et al., 2006), that is, if whenever a participant proposes to one individual but does not to another, then the flow utility value that the participant receives from the former is greater than the corresponding value obtained from the latter.

Given straightforward dating behavior, the speed dating protocol offers considerable advantages in comparison to other non-experimental settings. First, it shares some of the key useful features of an experimental setup. Subjects meet a large number of potential partners in a sequence of short dates that are always organized in the same way: participants meet in pairs (a man and a woman), sit at a table, and chat for three minutes.[2] This is a compelling example of a naturally occurring market as in other field studies (e.g., Harrison and List, 2004 and 2008): that is, speed daters are not a convenience sample but a population observed in a natural environment, without experimental frame. Subjects' choices in these speed dating sessions constitute real behavior with actual consequences. The *speed* aspect of each dyadic meeting — lasting 3 minutes only — is a powerful feature here, in line with the huge bulk of psychological evidence demonstrating that individuals can make remarkably sophisticated social judgements (from mate choice to consumer choice) based on "thin slices" of social observations or interactions lasting just a few minutes (e.g., Ambady and Rosenthal, 1992; Miller and Todd, 1998; Jones et al., 2007; Finkel, Eastwick, and Matthews, 2007; Finkel and Eastwick, 2008; Iyengar, 2009).

Second, matches are formed via a fully anonymized central process, whereby participants report who they wish to meet again to the dating agency and have no limit to the number of proposals they can make. The agency, in turn, exchanges contact details only between participants who have proposed to each other. This setting therefore offers us detailed information on the dyadic choices made by each party as well as whether they form a match or not, enabling us to analyze the determinants of mate choices and to underpin the process through which matches are formed. Third, mate choices in this context are made at the earliest stage of a union, that is, after a first meeting. Since social mixing can only be achieved if people choose to engage further with each other after a first encounter, these early choices are crucial for our understanding of the formation of long-term partnerships.

[2] Throughout the paper, we will refer to "subjects" as the participants making the proposals and to "partners" as the participants receiving proposals.

Finally, subjects have no prior information about whom they will meet and they can propose only after the event. This differs from studies of other forms of mediated dating, such as small ads (Lynn and Shurgot, 1984) or on-line dating (Hitsch, Hortaçsu, and Ariely, 2010), where people choose whom to meet first and, only after, they possibly meet. This process of selection is likely to be driven by unverifiable information, which may tend to exaggerate the role of attributes believed to be essential in the dating/mating market. Since our goal is to study dating choices in an environment where there is no pre-selection on attributes, it is important that market participants have no (or little) prior information about each other before they meet.

Our setting, therefore, provides us with a unique source of exogenous variation in opportunities (participants choose the venue but do not choose who they meet) and gives us the possibility to isolate the role of meeting in mate selection. This is bolstered by the fact that we have information on a large number of events (84 in total), and in each of these events, we observe several participants (approximately 22 men and 22 women in each event) who face exactly the same pool of potential partners (i.e., the same choice set), and we observe their choices within this choice set. In addition, the real-life nature of our data is important for us to identify the role played by socioeconomic attributes: not only is the sample of participants large, but crucially it is also much more diverse than that used in other speed dating studies (e.g., Fisman et al., 2006 and 2008).

Despite such methodological advantages, there may be questions about the external validity of our results.[3] An argument could be raised on the self-selection of speed daters ("who goes speed dating?"). Although this cannot be summarily dismissed, we should stress the growing popularity of speed dating events in Britain and elsewhere which gather individuals from all walks of life with ample variation in age, socioeconomic position, and physical attributes. In Section 3, we will provide detailed information on our estimation sample and discuss further the issue of its statistical representativeness.

Another source of concern is whether the choices made in the speed dating context are informative at all about household formation. Speed daters could be driven by strategic considerations, such as fear of rejection, by considerations that are not shared by individuals who seek to form durable unions. This idea, however, is not strongly supported by the data. Indeed, even though there is no limit on the number of proposals that can be made, a significant share of participants (38 percent of men and 46 percent of women) do not propose to anyone, and only 7 percent propose to more than half of potential partners, while only 1 percent propose to everyone. These figures support the notion of straightforward behavior and are hard to reconcile with the idea that speed daters are primarily interested in short-term casual relationships.

A final related concern has to do with the possibility of multiple equilibria. If some speed daters do behave strategically (e.g., they care about the utility from a subsequent relationship that may result from the date, or they fear their proposals will be rejected), then multiple equilibria can arise. We apply a formal test recently developed by de Paula and Tang

[3] Interestingly, Finkel and Eastwick (2008) argue that the speed dating setup exhibit *stronger* external validity than do most of the other highly controlled procedures for analyzing mate selection and romantic attraction.

(2011) and find no evidence of multiple equilibria in the data-generating process. Once again, this result strongly suggests that our data are likely to reveal speed daters' preferences.

Our analysis yields three main findings. First, both women and men value easily observable physical attributes: women prefer men who are young and tall, while men are more attracted to women who are young and thin. We also find that partner's education and occupation have an impact on desirability, irrespective of gender. Second, there is evidence of mild positive assortative preferences (rather than agreed-upon preferences) along a number of characteristics, with both women and men preferring partners of similar age, height, and education. Third, the impact of dating preferences is limited with meeting opportunities playing a more dominant role. This result emphasizes the notion that mating requires meeting: the pool of potential partners shapes the type of people whom subjects propose to and, ultimately, with whom they form durable relationships.[4]

The rest of the paper is organized as follows. Section 2 discusses the related literature. Section 3 introduces the speed dating protocol and describes our data. To gain more insights, we also compare our data to other representative data on British singles and document the variety of speed daters' attributes in the sample. In Section 4, we discuss our main findings on attribute demands. The aim is to identify the determinants of mate choice and to establish whether, even at this early stage, a pattern of positive sorting emerges. We also give evidence in support of straightforward behavior and show nonparametric results from the de Paula-Tang test for the existence of multiple equilibria. Section 5 presents a picture of the patterns of dating proposals observed in the aggregate in each speed dating session, providing us with evidence on the importance of meeting opportunities. In particular, we analyze how the relative abundance of specific attributes in a given market, as opposed to market homogeneity, affects mate selection. Section 6 looks at dating matches, that is, cases in which individuals propose to each other. Section 7 discusses our main findings emphasizing caveats and interpretations, and Section 8 concludes.

2. Related Literature

Early studies on human mating date back to Westermarck (1903) and Hamilton (1912). The economics literature, which has grown out of Becker's (1973; 1974; 1981) seminal work, has produced search and matching models that can generate wide arrays of sorting (e.g., Lam, 1988; Bergstrom and Bagnoli, 1993; Burdett and Coles, 1997; Shimer and Smith, 2000; Teulings and Gautier, 2004; Choo and Siow, 2006; Eeckhout, 2006; Smith, 2006; Chiappori, Iyigun, and Weiss, 2009; Gautier, Svarer, and Teulings, 2010; Coles and Francesconi, 2011).[5] The focus of most of these studies however is different from ours, in that they try to characterize the conditions under which positive assortative matching may arise and explain *why* matching is assortative. They pursue this goal in a variety of ways by, for example, imposing payoff supermodularity and transferable utilities between partners, or

[4] Of course, preferences for attributes which we cannot observe (e.g., ethnicity, ambition, and intelligence) may still play a substantial role.

[5] Kalmijn (1998), Cooper and Sheldon (2002), Blossfeld and Timm (2003) and Buss (2003) provide broad surveys of studies by sociologists and psychologists.

allowing for frictions in the matching process with nontransferable utilities, or modeling a household production function with spousal trait complementarities.

A slightly different issue concerns the *nature* of mating preferences. This has not yet become a central issue in economics, although it is of great salience. Evolutionary psychologists and anthropologists argue that individuals prefer those who are similar to themselves on relevant dimensions (Berscheid et al., 1971; Thiessen, Young and Delgado, 1997). For example, similarity of values and tastes gives partners a better chance to participate in joint activities, leads to mutual confirmation of each other's behavior and lifestyle, and creates a common basis for conversation and affection (DiMaggio and Mohr, 1985; Kalmijn 1994). A natural implication of this "likes-attract" mechanism is positive marital sorting. Other scientists claim that mate preferences are shared across all individuals and primarily reflect traits that are evolutionarily advantageous (Trivers, 1972; Waynforth and Dunbar, 1995; Buss, 2003; Buston and Emlen, 2003). People compete with others to search for mates with valuable resources. The result of this competition is that the most attractive candidates select amongst themselves while the least attractive ones must rely on one another. Competition for key resources on the marriage market, therefore, leads again to an aggregate pattern of positive assortative mating.

A small but burgeoning number of recent studies have analyzed mate selection taking advantage of the experimental setting of speed dating. Kurzban and Weeden (2005) use data from HurryDate, a large dating company operating in major metropolitan areas in the United States, to investigate the choices that approximately 2600 subjects make in dating partners. Their main estimates show that female and male subjects have strong agreed-upon preferences rather than assortative preferences: they are equally attracted by physically observable attributes like weight, height, and age, and much less so by other attributes such as education and religion. They also report evidence of small positive assortative patterns along race and height.[6]

Within the economics literature, Fisman et al. (2006) base their experimental design on the HurryDate format to analyze a sample of about 400 students at Columbia University, with the objective of identifying gender differences in dating preferences. Their results slightly differ from those found by Kurzban and Weeden (2005). Only men exhibit a preference for physical attractiveness while women respond more to intelligence and race. They find some evidence of positive sorting, with male subjects valuing women's intelligence or ambition only if it does not exceed their own. They also document the importance of group size, whereby women (but not men) become more selective in larger meetings. In a subsequent study using the same data, Fisman et al. (2008) investigate racial preferences in dating. Their finding that women have stronger racial preferences than men is not consistent with the results reported in Kurzban and Weeden (2005).

Hitsch, Hortaçsu, and Ariely (2010) follow a different approach. They use data from a large sample of users of a major on-line dating service in Boston and San Diego to analyze how individual characteristics affect the likelihoods of having a personal profile browsed, being contacted, and exchanging contact information via e-mail. Although on-line daters do

[6] Other noteworthy contributions in the speed dating literature include Todd et al. (2007), Eastwick and Finkel (2008), and Lenton, Fasolo, and Todd (2009).

not physically meet, this study confirms some of the previous evidence based on speed dating and final match data. For example, in line with the results discussed in Fisman et al. (2006), Hitsch and colleagues find that women put more weight on a partner's income than men do; and, consistent with Fisman et al. (2008), women have a more pronounced preference to form a match with men of their own ethnicity. Finally, Lee (2009) also uses data from an on-line dating service in Korea. Her analysis compares sorting as observed in the general population to the simulated sorting that arises among daters. She finds more sorting along age and less sorting along socioeconomic attributes among daters than among individuals in the general population, and argues that on-line dating services may alleviate constraints on people's choice sets.

As mentioned earlier, the advantage of speed dating data in comparison to on-line dating is that, in on-line dating, part of the selection process occurs *before* the first actual (physical) meeting. People typically browse through profiles and their choices can only possibly be based on the information available in these profiles. In a speed dating setting, instead, the choices are made *after* a meeting, and people do not choose whom they will meet (they only choose to attend the event). This gives us direct observation on the choice set, and enables us to evaluate the role of opportunities directly.

Finally, the paper by Nielsen and Svarer (2009) is, to our knowledge, the only study that explicitly examines the extent to which opportunities in the marriage market influence the tendency of individuals to marry someone who went to the same educational institution or to an institution near them. Using Danish administrative data on final matches, they find that about half of the systematic sorting on education can be explained by that tendency. They attribute this finding to low search frictions or selection of people with similar preferences into the same institutions, that is, proximity to partners, which is arguably an important component of matching opportunities.[7]

3. Data and Selection Issues

A. The Speed Dating Protocol

Speed dating offers single individuals the opportunity to meet a large number of potential mates over a short pre-determined period of time. It has become very popular among dating agencies, with several commercial companies organizing events in countries like the United States, Canada, Australia, Germany, France, and the United Kingdom.[8]

We use data from one of the biggest UK private agencies that operates in small and large cities across the country. Participants register for an event that takes place in a specific location during the evening in a bar or club. Participants pay a fixed fee, which varies with location and occasional discounts. There is no specified maximum number of women and

[7] A recent study by Bruze (2011) finds a strong tendency to sort positively on education in marriage among movie stars, who typically do not attend the same schools, are not sorted by education in the workplace, and whose earnings are not correlated with years of education. Although this result, as Bruze suggests, could be exclusively ascribed to preferences, it might be primarily driven by meeting opportunities and the pool of available partners movie stars usually interact with.

[8] An updated list of agencies is available at <http://dmoz.org/Society/Relationships/Dating/Speed-Dating>.

men who can participate in each session, although there are rarely more than 30 women and 30 men. Events are stratified by age (23-35 and 35-50 are typical age ranges) so that individuals of roughly the same ages participate in the same session.[9] Bookings are made on the Internet or, less frequently, by phone. Individuals can book for an event as long as there are enough places available. The agency does not screen participants, nor does it intervene in the allocation of participants across events. Hence, each event gathers individuals who potentially have heterogeneous attributes and are unaware of the people they are about to meet. In the next subsection we will return to this last point.[10]

In general, participants arrive for the event and, at registration, are given a starting table number, a label tag with a film star alias, and a pen and a card to indicate the alias of the people they wish to meet again (we shall refer to this choice as a *proposal*). Half an hour after registration, the host explains how the evening works, and then the session begins. People sit at the assigned table, with women usually staying seated at the same table and men moving around. Each date lasts for three minutes. After a date, men have about 30 seconds to move to the next table, and a new date begins. After eight individual dates the session stops and participants can move around and get a quick drink before another round of eight three-minute dates starts. A typical evening consists of three such rounds, after which participants leave.

Speed daters communicate their proposals to the agency right after the event. There is no limit to the number of proposals subjects can make from the pool of participants. In fact, each individual can be matched more than once. The agency collects all these proposals and exchanges contact details only between participants who have a *match*, i.e., those who propose to each other.

Participants are recommended to create a personal profile on the agency's website reporting information on age, education, occupation, basic physical characteristics (weight, height, eye color, and hair color), interests (hobbies and activities outside work), smoking habits, and family situation (presence of children). This information is self-reported and is not verified by the agency in any formal way. Profiles are accessible by all participants *after* the event only, and can be consulted before communicating the proposals. Some characteristics in the profile are presumably easier to verify than others. Because participants have already personally met, they are likely to have a good idea of each other's physical appearance. Thus, differently from other forms of mediated dating — such as small ads or on-line dating — the scope for private information about characteristics that are easily verifiable and might require little or no verbal exchange for verification (e.g., age, height, and weight) is arguably limited and, quite importantly for our identification purposes, the scope for mis-reporting such salient personal characteristics in the on-line profiles is limited too.

Our estimating sample uses most of the available data drawn from these on-line, self-reported profiles. Each profile contains information on variables generally believed to be

[9] The suggested age range is only a guideline and it is not binding; anyone is free to participate, even outside her/his age range. Events with asymmetric age ranges (e.g., women 27-40, men 28-42) are also run occasionally. They represent, however, a small proportion of the sessions contained in our data set.

[10] The size of a market may be not fully random because the agency tries to organize events with 20-25 individuals on each side (profitability and participants' interest being the main reasons for this target size). This information, however, is not known to speed daters. Furthermore, to the best of our knowledge, no meeting had to be canceled because of excess or scarcity of participants.

salient determinants of mate selection (Buss, 2003). These include cues that can be apprehended visually and may not require a verbal exchange for verification, such as age, weight, height,[11] as well as other traits that could not be easily perceived visually and might necessitate a verbal exchange to discern, e.g., educational attainment, occupation, and smoking status (Lenton and Francesconi, 2010).

B. Descriptive Statistics

We have data on approximately 1800 women and 1800 men who participated in 84 speed dating events organized between January 2004 and October 2005. Table 1 presents the summary statistics of these meetings. The average size of an event is approximately 22 men and 22 women. Most events do not have exactly equal numbers of women and men, but the difference in numbers rarely goes beyond three. The participation fee across all markets is just below £20 per session (the median is £20), and ranges from £10 to £25. About 38 percent of men and 46 percent of women do not propose anyone, and three-quarters of the non-proposing men and almost half of the non-proposing women in the sample go back another time. Proposers too go back another time, albeit at a smaller rate on average (about 10 and 20 percent for women and men, respectively).

Striking gender differentials in proposal behavior are observed in the data. In line with sexual selection theory (Trivers, 1972; Buss, 2003), women are much choosier than men. On average, women select 2.6 men and see 45 percent of their proposals matched, while men propose to 5 women and their proposals are matched in only 20 percent of the cases. About 1 in 3 men and 1 in 10 women do not get any proposal. Overall, we observe 22 matches per event, an average of roughly one per participant. To ascertain if participants who do not make any proposal are different from those who do, we checked whether the two groups are balanced in their distributions of observed characteristics for each gender separately. Regardless of subject's gender, we cannot reject the null hypothesis that the two groups are the same along each of the variables used in our empirical analysis. We repeated this exercise for partners, to assess if partners who receive no proposal are different from those who are chosen at least once. Again, balance tests on covariates can never be rejected at standard levels of statistical significance, irrespective of partner's gender.

As already mentioned, our data do not contain information on race or ethnicity. However, given that none of the events was aimed at a specific ethnic/religious group and with anecdotal corroborative evidence from the agency's management, the fraction of nonwhite participants is small (and most certainly below 5 percent).

To have a better understanding of speed daters' characteristics, we compare them to a representative sample of singles taken from the British Household Panel Survey (BHPS).[12] For this comparison, we use information from the fourteenth wave (2004) of the BHPS, and restrict the BHPS sample to individuals aged between 20 and 50.

[11] The profiles, however, do not contain information on race or ethnic origin.

[12] Since 1991, the BHPS has annually interviewed a representative sample of about 5500 households covering more than 10000 individuals. More information on the BHPS can be found at <http://www.iser.essex.ac.uk/ulsc/bhps/doc/>.

Summary statistics by sample are reported in Table 2.[13] The differences across samples are notable. Speed dating participants are more educated on average (about two thirds of men and women have at least a university degree, against 20 percent of singles in the BHPS), and are more concentrated in relatively high-skilled occupations (83 percent of men and 76 percent of women are in 'skilled non-manual' and 'professional and managerial' jobs, as opposed to 40 percent in the BHPS). Our sample therefore fits the popular view about speed dating markets, according to which they seem to attract a disproportionate fraction of career people (Kurzban and Weeden, 2005).

Speed daters are also older than their BHPS counterparts (especially men, who are 5 years older on average). But if we restrict the BHPS sample to individuals with at least a university degree, the age differentials are reversed: male and female speed daters are 1 to 4 years *younger*, respectively. The average height is similar in both samples, slightly below 180 centimeters for men and around 165 centimeters for women. The average weight is comparable among men in the two samples, but it is much lower for female speed daters, and this difference does not disappear even if the BHPS sample is restricted to highly educated women. Dividing weight (measured in kilograms) by height squared (measured in meters), we obtain the Body Mass Index (BMI), which we include in our empirical analysis. General health guidelines associate 'normal' weight with a BMI between 18.5 and 25, and define 'underweight' when BMI is below 18.5 and 'overweight' when BMI is above 25. The shares of overweight men and, in particular, women are substantially larger in the BHPS sample than in the speed dating sample. The two sets of figures do not get closer even when the BHPS sample is restricted to more educated respondents.

It is worthwhile noting that in the speed dating sample there are substantially fewer women reporting weight information than men. Our demand analysis in Section 4 will try to minimize the resulting loss in sample size by assigning participants with missing weight information to the (base) normal weight category and identifying them with a missing weight dummy variable.[14] We shall proceed in a similar fashion for all the variables with missing information (except age, because we restrict the sample to individuals with valid age data). Alternative assignment rules (e.g., substituting missing values with market mean or modal values computed on valid cases) have delivered exactly identical results to those discussed below and are, therefore, not reported. However, we will discuss the estimates for the dummy variables that record missing information.

Finally, smoking is more prevalent among BHPS respondents, with 36 percent of men and 38 percent of women smoking against 9 and 13 percent respectively in the speed dating sample. Limiting the BHPS sample to highly educated individuals does not eliminate the differences but reduces them by more than half. Speed daters are therefore healthier than their

[13] The categorizations of the variables in Table 2 and used in the analysis below are standard. Some, such as education and occupation, have been motivated by data availability. Redefining, for example, education (occupation) so that lower educational qualifications (other occupational groups) are explicitly considered would only lead to small cell size problems without adding new insights to our goal of understanding mate choice decisions.

[14] There might be a concern that those not reporting their weight information are overweight or obese. Thus, we also reclassified participants with missing information into the overweight (rather than the normal weight) category. This alternative classification did not alter any of the results shown in the next sections.

BHPS counterparts. Alternatively, they may believe that smoking reduces their overall desirability and, consequently, are more likely to misreport smoking information.

In sum, the descriptive statistics in Table 2 indicate that, relative to the overall British population, speed daters are different along a number of salient characteristics, such as education, occupation, and weight. We cannot rule out the possibility that the decision to participate in speed dating events might signal a desire to meet people with such attributes and individuals might self-select on the basis of these attributes. In Section 4 we will come back to this issue and examine it more formally assessing how it might affect our interpretation of the role of preferences in mate selection.

Despite the sample selection issue, our analysis does not suffer from the "articulation effect" mentioned in Fisman et al. (2006). This emerges when subjects are asked to rank their partners on particular attributes at the same time as they propose to them. In such cases, it is possible that the proposal decision is affected by the reasoning on which the rating itself is determined. Because in our data set subjects do not have to articulate reasons for their proposals and are never asked to rate partners (other than choosing them), the results below should not be driven by reason-based choice.

We have already mentioned that an attractive feature of the speed dating protocol is that no one has prior information about who will be attending an event. Events are filled up on a first-come/first-served basis, that is, the agency does not screen participants ex ante. But we cannot rule out the possibility that the choice set faced by speed daters may not be entirely exogenous to their preferences. If this were the case, we should observe a systematic (non-zero) correlation in female and male characteristics across sessions with the odds of meeting partners with similar attributes being greater than the odds of meeting partners with non-similar attributes. Admittedly, the coefficients of variation reported in Table 2 (in italics) provide evidence of a lower degree of dispersion in the speed dating sample than in the general population of singles along most of the observed characteristics, especially education and higher-level occupations. But we do not find significant differences in terms of other attributes, including age, height and weight.

To provide additional evidence, Figure 1 plots the distribution of female and male characteristics (means for age and height, and shares for the other attributes) across sessions. It shows a fairly widespread distribution of participants along all traits, except for age, which is not surprising. This is broadly confirmed by the correlation estimates reported in the first column of Table 3. Apart from age and smoking, the correlation between female and male attributes is close to zero and not significant. The second column of Table 3 reports odds ratios for all the female-male pairs in our sample. Contrary to the correlation results, the odds of meeting a similar partner are slightly (but significantly) greater than those of meeting a non-similar partner for almost all attributes, with the exception of occupation and weight. Despite this result, such odd ratios are very close to one and much lower than those generally found for women and men in final matches (e.g., Mare, 1991; Kalmijn, 1994; Pencavel, 1998). We, therefore, take these results as evidence of only mild sorting ex ante. We shall return to the potential of non-random selection in the next sections.

4. Individual Dating Proposals

We now estimate attribute demands looking at the whole set of proposals a subject can make in a given market and examining which of the potential partner's observed attributes trigger a proposal. At this stage, we remain agnostic on the mechanisms that might drive such proposals, in particular whether they reveal specific mating preferences or strategic considerations. Later in the section, we will come back to this issue.

A. Baseline Estimates

We begin by investigating the association of partner's attributes with the probability of making a proposal. Our basic regression specification is of the form

$$(1) \qquad d_{ijm} = \mathbf{X}'_{jm}\beta + \mu_i + \varepsilon_{ijm},$$

where d_{ijm} is the proposal decision that subject i takes with respect to partner j in market m. This is equal to one if i proposes to j, and zero otherwise. The vector $\mathbf{X}_{jm}$ contains socio-demographic characteristics of potential partners in market m, μ_i is a subject-specific permanent fixed effect, and ε_{ijm} is an idiosyncratic shock. For ease of interpretation, we estimate (1) using linear probability models with subject fixed effects. Qualitatively similar results were obtained using least squares regression and random effects models, which are therefore not reported.

The estimates by subject's gender are shown in the first two columns of Table 4.[15] The last column reports the results of the test of equality of coefficients by gender. All attributes, with the exception of height and missing smoking status, appear to affect desirability differently for men and women. A notable result is that partner's attributes explain relatively little (between 3 and 7 percent) of the overall variation in proposals. This does not mean that preferences can have only a minor effect on mate selection: it is well established, in fact, that even mild preferences for certain attributes may lead to high levels of segregation (Schelling, 1971). This is an important point to which we will return in Section 5.

More educated women are more desirable than less educated women: on average, they are 2 percentage points more likely to receive a proposal. There is no evidence, however, of a similar pattern on the other side of the market (i.e., in the case of women's demand). Occupational status affects partner's demand considerably more than education, and influences desirability in opposite directions for men and women. Women in skilled and managerial or professional occupations are less likely to receive a proposal than others, while the opposite pattern emerges for men.

Physically observable attributes also have an effect on desirability. Both men and women are more likely to receive proposals if they are young and tall. Weight on the other

[15] In the analysis below, we enter age (in years), height and weight linearly. Height and weight are normalised by subtracting the corresponding sample mean and dividing by the corresponding standard deviation. In addition, Table 4 distinguishes individuals with degree or higher qualifications, includes three occupational dummies and a dummy for smoking status. We experimented with several other specifications (e.g., polynomials in age, height, and weight, and different dummy variables for education and occupation) and also included measures of BMI. All our main results remained unchanged.

hand affects desirability differently for men and women. While it is a disadvantage for women, it is an advantage for men. This is consistent with earlier findings in the psychology and evolutionary biology literatures (e.g., Tovée et al., 1998; Thornhill and Grammar, 1999; Buss, 2003). If a woman smokes, her likelihood of receiving a proposal is reduced by 4 percentage points, and, if a man does, his likelihood goes down by about 1.5 percentage points.

The analysis also includes indicator variables for missing information on partner's characteristics. Since participants create and post their own online profiles, those who do not report such information might seek not to disclose less desirable attributes. As discussed earlier, the incentive to misreport (or not report at all) information is likely to be limited, because speed daters can consult profiles only after they have physically met. The estimates in Table 4 show no clear evidence that participants who do not report information are less desirable. The largest estimates are found for missing occupation information which reduces women's desirability by about 12 percentage points and increases men's by almost 5 percentage points.

It is worth stressing that socioeconomic status and physical attributes are correlated in our sample. For male subjects, education and occupation are strongly positively correlated with both own age and height. For female subjects, instead, we find that height and weight are correlated with neither own education nor occupation, but age is negatively related to higher educational attainment. Regardless of gender, smoking is negatively associated with both education and occupation. When formulating their proposals, therefore, individuals (and, in our data, women especially) may be using partners' desirable physical attributes, such as height and age, as strong predictors of socioeconomic position, as suggested by the matching theory based on costly signals developed by Hoppe, Moldovanu, and Sela (2009).

B. Are Dating Choices Assortative?

To gain a further insight into the way individuals formulate their mate choices, we extend our previous analysis by taking subjects' own traits into account, and examine if subjects propose to partners who are similar to themselves rather than to partners with different attributes. Specifically, we estimate the influence of subjects' characteristics on their own demand for partners. This concordance analysis is theoretically motivated by many of the studies that show striking similarities between mates along several dimensions, such as age, education and physical appearance (e.g., Schwartz and Mare, 2005; Kurzban and Weeden, 2005; Choo and Siow, 2006; Nielsen and Svarer, 2009; Bruze, 2011). The demand framework analysis used in the previous subsection still yields an appropriate interpretation of the relationships of interest, provided the assumption of straightforward behavior continues to hold.

We augment model (1) with partner's fixed effects and with concordance variables,[16] that is, we identify the effects of concordance variables controlling for subject and partner's

[16] For this analysis, we use differences in age and height between men and women. In particular, we distinguish pairs in which the man is 7 centimeters taller from other pairs. Although this cutoff is arbitrary, 7 centimeters correspond to one standard deviation in the height distribution of married men and women aged 20-50 in the 2004 BHPS. Seven centimeters are also about half of the gender height difference among married couples. Similar considerations apply to the case of age, for which we distinguish men who are 5 or more years older

individual attributes. The results by subject's gender are reported in Table 5. The first two columns present a specification with concordance variables indicating whether subject and potential partner share similar or identical cues. The last two columns show the results from a more flexible specification, which allows for differences in the way heterogamy may affect mate choice (e.g., whether the subject is more or less educated than the partner) and breaks down different types of concordance (e.g., both subject and partner smoke or both do not smoke). Compared to the results shown in Table 4, we obtain a considerably greater R^2 in all specifications, suggesting that the inclusion of partner-specific fixed effects enhances the model's ability to capture the overall variation in proposals.

We find evidence of positive sorting along age. Both men and women prefer dates where he is up to 5 years older rather than dates where he is more than 5 years older or where the man is younger than the woman. Mate desirability is also influenced by educational homogamy (Nielsen and Svarer, 2009): partners with similar educational levels are 2 percentage points more likely to receive a proposal than partners whose qualifications are different. Women reveal positive assortative preferences on smoking and men on height, with both men and women disliking dates in which the woman is taller. There is instead no evidence of concordance on occupation or BMI. In fact, a man is substantially less likely to propose to a woman if both of them are students or self-employed.

An important determinant of mate choice decisions, which we have ignored so far, is the variation in the choice set faced by subjects *within* each session. This will be the focus of the next section. A related determinant is the choice set variation *across* sections, as given by event size. Including event size (number of partners) as an additional regressor in (1) does not change any of our results, with the event size estimates being always small and statistically insignificant.

In Section 3, we pointed out that speed daters differ from singles from the general population along a number of salient characteristics. We also mentioned the possibility that the decision to participate in speed dating events might signal a desire to meet people with such attributes and individuals might self-select on the basis of these attributes.

This implies that preference for positive sorting might play a greater role than what we have claimed so far. In the same section, however, we also argued that speed daters' unawareness about other participants (and their characteristics) cannot trigger the desire to meet people with similar traits, unless they return to future events expecting to meet partners with exactly the same attributes.[17] Consider the case of education, for which speed daters in our sample are substantially more educated than individuals from the general population. If speed daters know they are likely to meet highly educated participants and have a penchant for education, then it is possible that preferences play a role that we have not accounted for. Interestingly, our results show evidence of only mild preferences for higher educated partners on either side of the market. This observation could be extended to all other attributes

than women. Therefore, although the construction of such concordance measures is primarily based on the empirical distributions of male-female attribute differences within our sample, their interpretation is meaningful and justifiable within both the mate selection literature more generally (Trivers, 1972; Miller and Todd, 1998; Buss, 2003; Buston and Emlen, 2003; Lenton et al., 2009) and the assortative mating literature more specifically (Hout, 1982; Mare, 1991; Kalmijn, 1998; Kurzban and Weeden, 2005; Nielsen and Svarer, 2009). Several robustness checks of such measures have yielded comparable results to those reported here.

[17] In Section 5.A we shall examine the role played by returning speed daters on our results.

considered in the analysis. It seems unlikely, therefore, that our estimates systematically bias the role played by preferences.

C. Preferences or Strategic Concerns?

An important question arising from the previous analysis regards the interpretation of the mechanisms driving dating proposals. In fact, although agreed-upon preferences are unlikely to play a dominant role, proposals might be driven not just by (assortative) *preferences* but also by *strategic considerations* (i.e., anticipation of rejection). Specifically, choices could be assortative either because speed daters have preferences for partners with similar attributes or because they have strategic concerns. For example, a low-education woman may be more likely to propose to a low-education man not because she prefers a partner with similar education to hers, but because she anticipates that she will not be chosen by a man with greater levels of education.[18]

As already emphasized, the room for strategic incentives in the way in which speed daters express their preferences is likely to be limited in our setting. First, proposals are made online and require only a tick of an anonymous (alias) name. Second, there is no limit to the number of proposals that can be made. Third, if a proposal is not reciprocated (i.e., it is not matched), the rejection goes through a third party (the speed dating agency) rather than on a face-to-face basis, and participants are unlikely to meet again. Thus, both the cost of proposing and the fear of rejection are arguably negligible at this early stage of the process and in our speed dating setup, and these in turn should reduce the scope for strategic considerations.

If variation in the quality of subjects in a given market *m* leads them to make different choices, then this may be indicative of strategic choice behavior. For example, participants with relative attractiveness concerns may anticipate to be rejected in markets where they are relatively less attractive than their competitors. To test for this possibility, we augmented (1) with the vector $\left(\mathbf{X}_i - \overline{\mathbf{X}}_i^{(s)}\right)$, where each $\overline{X}_i^{(s)}$ denotes the mean of attribute *X* computed over all subjects in a given market *m*. If there is no strategic behavior of this kind, we expect the new estimated coefficients on all differences to be zero. All such estimates (not shown for convenience) are not statistically different from zero, with the lowest *p*-values on age being equal to 0.174 for female subjects and 0.143 for male subjects, and with *p*-values of the *F*-test of joint significance being 0.448 and 0.403 for women and men, respectively. These results suggest no role of strategic choice behavior among subjects, in the sense that proposal decisions do not seem to be driven by subjects' relative attractiveness concerns.

A further way of gauging the salience of strategic incentives is by looking at unmatched proposals.[19] By definition, a proposal is successful only if it is matched. If speed daters are strategic and their proposal behavior is driven by the anticipation of who will reject them, we should find that the correlation between proposals is positive and that the proportion of proposals being matched is substantial. In events with a large fraction of 'reject-averse'

[18] Notice however that, from a policy perspective this distinction is unimportant when the role of preferences (or strategic considerations) is evaluated against the role of meeting opportunities. See Section 5.

[19] It is worth reminding that, on the basis of the homogeneity tests discussed in the earlier section, speed daters who do not make (receive) any proposal are *not* statistically different from those who do, along each of the attributes included in our analysis.

individuals, therefore, participants may be reluctant to propose to partners who are believed to be less likely to reciprocate their proposal, simply because they do not wish to be turned down and not because such partners are not desirable. As documented in Section 3, men propose to an average of five women per session and women propose to an average of two men; the small number of male proposals is matched in only 20 percent of the cases, while the even smaller number of female proposals is matched in 38 percent of the cases. As a result, the overall correlation between proposals is positive but small (less than 0.15). This evidence supports the notion of straightforward behavior formalized by Fisman et al. (2006), on which the identification of preferences in a speed dating setup rests.

Finally, realizing that individuals might not engage in straightforward behavior if, for example, they care about the utility from a subsequent relationship that may result from the date (what Fisman et al. [2006] call *match utility*) or if they do not propose because of the fear their proposal will not be reciprocated, we perform a test for the existence of multiple equilibria in the data-generating process. In particular, we use the nonparametric test formulated by de Paula and Tang (2011). Table 6 presents the covariance of the male and female proposals (i.e., the only test statistic in a two-player game), its bootstrap standard error, the test results obtained from Wald statistics, and the number of games. Both unconditionally and conditional on event size, we can never reject the null hypothesis of a unique equilibrium. These estimates provide strong evidence in support of the idea that the behavior of speed daters in our sample is unlikely to be driven by strategic considerations, match utility, or fear of rejection. They strongly suggest instead that speed daters' behavior is straightforward and hence choices, even at this early stage of the meeting process, are likely to reveal participants' dating preferences.

5. The Role of the Market

The estimates of the previous section offer evidence in favor of positive sorting along a number of individual attributes. These same attributes, however, can explain only a small fraction of the overall variation in dating proposals. The goal of this section is to describe the aggregate patterns of proposals arising at the event (or "market") level. As mentioned already, an important advantage of our data is that they have information on several events and, for each event, on *both* sides of the market in which individuals propose to each other.

In what follows we analyze two salient dimensions along which markets may vary: the first is the abundance (or scarcity) of desirable attributes, and the second is the degree of homogeneity among potential partners. For example, in some markets there may be an abundance of university graduates on both sides, while in others university graduates might be short in numbers. Alternatively, some sessions could be highly heterogeneous, with substantially more university graduates on one side than the other. Although both dimensions could have a significant impact on dating proposal behavior, we know little about this influence.

A. Relative Abundance of Attributes and Aggregate Proposals

We start by presenting a simple conceptual framework which guides our empirical analysis and the interpretation of the results. We have information on 84 events, each of them involving two pools of potential partners, one on each side of the market. Consider a specific speed dating event, *m* (*m*=1,...,84). Although, the full choice set is the product of distributions of all the observable attributes of all potential partners in *m*, we focus for simplicity on one attribute at the time, denoted by *X*, and represent the distribution of *X* over partners by its mean, $\overline{X}_m^{(p)}$. For each *m*, we also observe the mean attribute of all partners who have been proposed to, which we refer to as the *proposal set* $\overline{X}_m^{(c)}$.[20]

Suppose dating proposals are exclusively formulated on the basis of meeting opportunities, that is, subjects have no intrinsic preferences for any specific attribute. In this environment, the mean attribute of partners who have been proposed to in market *m* will have to be equal to the mean attribute of all potential partners in *m*, that is, $\overline{X}_m^{(c)} = \overline{X}_m^{(p)}$. For instance, the share of highly educated women who have been proposed to by every man in a given event should be equal to the share of highly educated women in that same event. Put differently, in a scatter plot of $\overline{X}_m^{(c)}$ against $\overline{X}_m^{(p)}$, we would expect the data points to be scattered along the 45-degree line. This is what we refer to as the "opportunity-only" (O-O) model, whose empirical counterpart corresponds to the following constrained regression:

$$(2) \qquad \overline{X}_m^{(c)} = \overline{X}_m^{(p)} + u_m,$$

where u_m is an idiosyncratic shock to market *m*. If there is a commonly-shared preference for X, then we will observe $\overline{X}_m^{(c)} > \overline{X}_m^{(p)}$ (i.e., in the scatter plot, $\overline{X}_m^{(c)}$ will lie above the 45-degree line), and if there is a commonly-shared distaste, $\overline{X}_m^{(c)} < \overline{X}_m^{(p)}$ (i.e., $\overline{X}_m^{(c)}$ will lie below the 45-degree line). Such possibilities imply that (2) becomes:

$$(3) \qquad \overline{X}_m^{(c)} = \alpha_0 + \alpha_1 \overline{X}_m^{(p)} + u_m,$$

with the O-O model corresponding to the constrained version of (3) in which

$$(4) \qquad \alpha_0 = 0 \text{ and } \alpha_1 = 1.$$

The equalities in (4) provide the necessary and sufficient statistical conditions under which meeting opportunities determine sorting. An identification caveat, as it is always the case in matching markets (e.g., Eeckhout and Kircher, 2010), is that this test effectively amounts to testing a mixture of preferences and opportunities, since the estimates of both

[20] By definition, and regardless of whether *X* is binary or continuous, $\overline{X}_m = \left(\sum_{j=1}^{J_m} X_{jm}\right)/J_m$ and $\overline{X}_m^{(c)} = \left(\sum_{j=1}^{J_m^{(c)}} X_{jm}^{(c)}\right)/J_m^{(c)}$, where *j* indexes partners, J_m is the total number of potential (other-sex) partners in market *m*, and $J_m^{(c)}$ is the number of partners who receive a proposal in market *m*.

α_0 and α_1 might pick up behavior and event heterogeneity (such as within-market idiosyncratic preference polarization and event size variation) and noise (such as measurement error) correlated to u_m. As in other studies (e.g., Gautier, Svarer, and Teulings, 2010; Eeckhout, Pinheiro, and Schmidheiny, 2010), we address this caveat by performing a number of robustness checks and resting on our large samples within each market. Nonetheless, the possibility that our estimates identify a mixture of opportunities and preferences and not just opportunities remains, and caution should be used in the interpretation of the results.

For each of the attributes used so far, panel A of Table 7 reports the results from regressions (3) by subject's gender. To ease interpretation, the estimates are complemented by Figures 2 and 3, which plot $\overline{X}_m^{(c)}$ against $\overline{X}_m^{(p)}$. The aggregate picture reveals some striking patterns that guide the interpretation of our estimates. The O-O model cannot be rejected in eight out of the 12 attribute-proposal patterns analyzed here, while it can be rejected in the case of age (for both male and female proposals), smoking (female proposals) and education (male proposals). All estimates are robust to the inclusion of event size in (3).

Consider the four cases in which the O-O model is rejected. In line with our earlier analysis, younger partners (regardless of gender), more educated women, and men who do not smoke tend to receive more proposals on average. Interestingly, in each of these cases, there is a switch in the aggregate proposal pattern depending on whether the attribute is abundant or not at the market level. The tendency to propose to participants who are younger than the average in a given session is weaker in events in which there is an abundance of older-than-average partners, despite the fact that speed daters generally prefer younger partners. Similarly, the propensity to propose to men who are not smoking decreases when there are more male smokers present in the market. The scarcity of a desirable attribute (young age and nonsmoking) reduces its desirability, rather than heightening its demand. This cannot be easily interpreted on the basis of preferences only without resorting to opportunities. The opposite pattern is observed in the case of female education. Although women who are highly educated tend to be less popular than the average woman in sessions where there are only few of them, they become more desirable in markets where there are more of them.

The education estimates allow us to reconsider the issue of sample selection which was previously discussed in Sections 3 and 4. Speed daters are more educated than individuals from the population at large. If they know this and they wish to date highly educated people, the matching process we estimate at the event level should be driven by preferences to a large extent. If this is the mechanism underlying the proposal behavior under study, then the slope parameter for education should be greater than unity. In Table 7, this emerges only for female subjects, although α_1 is not statistically significantly different from one. In the case of male subjects, instead, we find exactly the opposite. Like in the analysis of individual demands, this evidence is thus hard to reconcile with the notion of a greater role for preferences in matching.

Dating proposals, therefore, cannot be assumed to be just a function of potential partners' characteristics. The environment in which potential partners meet matters and shapes proposal behavior considerably, albeit the O-O model is statistically rejected in such

cases. It is worth stressing this point because market information is generally unavailable, even when on-line dating data are used, and, by leaving the market out of the analysis, we are likely to obtain an incomplete picture of mate choice decisions.

Along the other attribute-proposal combinations, the O-O model cannot be rejected: that is, observed proposals appear to be driven primarily by meeting opportunities. Such combinations refer to occupation, height, and weight for both women and men, education in the case of female proposals, and smoking in the case of male proposals. In these instances, the intercept α_0 is always equal to zero, and the slope parameter α_1 is never statistically different from 1. These results, even accounting for the identification caveat raised earlier, suggest that meeting opportunities are likely to play an essential role in shaping the observed pattern of mate choice in our sample.

In the previous section, we mentioned the potential issues raised by individuals who participate to more than one event. To assess the influence of 'returning' speed daters on our results more formally, we re-computed the statistics needed to test the O-O model after excluding individuals who were observed in more than one event. The estimates from this new exercise were very close to those shown in Table 7.

Our analysis so far has assumed that proposals are determined only by partners' characteristics and attribute distributions. Of course, they may be influenced also by subjects' characteristics and distributions. For example, highly educated women may receive a larger share of proposals in sessions with a greater concentration of highly educated male subjects; and, conversely, they may receive a smaller share of proposals when the pool of subjects is relatively less educated.

To explore this possibility and provide a further robustness check of our results, we analyze a relationship similar to equation (3) in which, on the right-hand side, $\overline{X}_m^{(p)}$ is replaced with the observed mean of *X* computed over all *subjects* in *m*, $\overline{X}_m^{(s)}$, that is:

$$(5) \qquad \overline{X}_m^{(c)} = \beta_0 + \beta_1 \overline{X}_m^{(p)} + \nu_m.$$

The idea here is that if, given *m* and *X*, subjects' proposal behavior, summarized by $\overline{X}_m^{(c)}$, is independent of subjects' own attribute distribution, captured by $\overline{X}_m^{(s)}$, (or, in other words, $\beta_1 = 0$), then dating proposals are expected to be shaped mainly by market conditions.[21]

The results are in panel B of Table 7. Except for the cases of age and smoking, the distribution of subjects' attributes turns out to be uncorrelated to subjects' demands. This means that, in our speed dating context, subjects' characteristics do not influence subjects' proposals (who they propose to).

Proposals, therefore, continue to be largely determined by the opportunities of meeting specific partners with specific attributes.

[21] In Section 4.C, we examined subjects' relative attractiveness concerns in standard attribute demands by including the difference between a subject's attribute and the market level mean of the same attribute computed over all subjects. The exercise here is different, not only because it focuses on market level (rather than individual level) behavior, but also because it considers the effect of subjects' average traits on subjects' choice set rather than the effect of deviations from subjects' mean characteristics on the individual likelihood of making a proposal.

B. Market Homogeneity and Sorting

Other than with respect to the relative abundance of attributes, markets may also vary in their degree of homogeneity, whereby sessions could comprise more or fewer individuals with similar attributes. To gauge how market homogeneity influences the distribution of proposals, our analysis here follows that performed in the previous section, although now it focuses on changes in the degree of partner homogeneity across markets, which is defined as the fraction of pairs of potential partners in a given session who share a specific attribute.[22] If dating proposals are exclusively formulated on the basis of meeting opportunities, that is, subjects have no intrinsic preferences for partners with a similar attribute, the share of partners who have been proposed to in market *m* will have to be equal to the share of potential partners in the same market *m*. We keep the same notation as before, but now $\tilde{X}$ refers to the fraction of partners sharing an identical attribute. In such an environment, the O-O model corresponds to the following constrained regression:

$$(6) \qquad \tilde{X}_m^{(c)} = \tilde{X}_m^{(p)} + \xi_m,$$

where ξ_m is an idiosyncratic shock to market *m*. Again, if there is a commonly-shared preference for similarity along *X* or if there is a commonly-shared distaste, we will observe $\tilde{X}_m^{(c)}$ to be either greater or smaller than $\tilde{X}_m$, respectively. To allow for this possibility, we then estimate

$$(7) \qquad \tilde{X}_m^{(c)} = \gamma_0 + \gamma_1 \tilde{X}_m^{(p)} + \xi_m,$$

with the O-O model corresponding to the constrained version of (7) in which $\gamma_0 = 0$ and $\gamma_1 = 1$. The same caveat about this test as the one raised earlier, i.e., that it amounts to testing a mixture of preferences and opportunities rather than the O-O model per se, applies again.

For each attribute, Table 8 reports the results from regressions (7) by subject's gender. These estimates are supported by Figures 4 and 5, which plot $\tilde{X}_m^{(c)}$ against $\tilde{X}_m^{(p)}$ for male and female subjects, respectively. The O-O model is rejected in 6 out of the 12 cases at standard levels of statistical significance. These are age and height regardless of the subject's gender, BMI for male subjects, and smoking for female subjects.

The fact that (6) can never be rejected in the case of education and occupation indicates that sorting in proposal behavior along such characteristics is likely to be mild. Evidence of negative sorting instead emerges along height (especially among women) and BMI (especially among men), while positive sorting is found in the case of age and smoking. This evidence, combined with the identification caveat discussed above, is indicative of the importance of sorting preferences in mate choice decisions. A visual inspection of Figure 4, however, suggests that, with the exception of age and height, the aggregate patterns of proposals closely replicate the distributions of market characteristics, confirming what we found earlier when analyzing the aggregate relative abundance of attributes.

[22] For most events in our sample, we observe between 400 and 900 of such pairs.

6. From Proposals to Matches

Because our data contain information on proposals made from both sides of the market, we can gain further insights on the nature of the matches arising after a first encounter. A natural question, in fact, is to ask whether greater positive sorting is found when we observe a match, that is, when two people propose to each other.

Repeating the analysis reported in Section 3, we compute attribute odds ratios for the female-male pairs for which there is a match. To ease our exposition, these estimates are presented in Table 3, close to the corresponding odds ratios computed on all female-male meetings. The odds of getting matched to a partner of similar age are 11 times greater than those of getting matched to a partner of different age, which represents an almost five-fold statistically significant increase with respect to the corresponding odds ratio computed on all speed daters. The odds ratios for matched pairs on the other attributes increase too, and, as indicated by the last column of the table, this increase is significant in the cases of education and occupation. But the magnitude of such odds ratios is always modest, especially if compared to the estimates found with final match data (Mare, 1991; Kalmjin, 1994 and 1998; Pencavel, 1998; Schwartz and Mare, 2005). Thus, preferences (in particular, on age and education) influence match formation in this environment, but much less than what we observe amongst partners in cohabiting or marital unions in standard survey or census data. Again, meeting opportunities seem to have an important role among speed daters and, perhaps more generally, at the early stages of all relationships.

In Section 4, we mentioned some results of assortative preferences along a measure of agreed-upon popularity, a proxy of potential partners' consensual value (see footnote 16). To provide further evidence of how such preferences operate in mate choice and partnership formation, we estimated odds ratios on the whole sample of female-male pairs and on the subsample of pairs for which there is a match using such a measure. The odds ratio increases from about 1 (t-value=0.8) in the former sample to 4.7 (t-value=10.4) in the latter, suggesting that a highly popular individual is almost 5 times more likely to get a date with another highly popular mate than with a less popular individual. Not only are popular individuals more likely to receive proposals and propose to each other, but they are also more likely to get a date with one another. Assortative preferences therefore may trigger this positive sorting on market value, but the measure itself reveals again the importance of the market within which it is determined.

7. Discussion

The previous section has documented one important new result: proposals and *dating* matches alike are determined to a large extent by meeting opportunities in the (dating) market. Although mate selection and final matches are undoubtedly affected by individual preferences over partners' attributes, their overall import at this early stage is relatively

modest giving way to the role of market opportunities. This indicates that dating and mating require meeting: the pool of available interaction partners is shaped by various institutionally organized arrangements (e.g., schools, work places, neighborhoods, family networks, voluntary associations, bars and clubs) and these constrain the type of people with whom we form personal relationships and eventually durable unions.

The importance of the environment in which individuals choose their partners and friends has been already stressed in earlier studies in different contexts (e.g., Bisin, Topa, and Verdier, 2004; Marmaros and Sacerdote, 2006; Nielsen and Svarer, 2009).[23] Our results add to such contributions and have ramifications for our understanding of social structure and socioeconomic mobility. They also provide us with fresh underpinnings to interpret the existing evidence on mate choice highlighted in the speed dating context (Kurzban and Weeden, 2005; Fisman et al., 2006 and 2008; Todd et al. 2007) or in other mediated and unmediated environments (Plomin, DeFries, and Roberts, 1977; Lynn and Shurgot, 1984; DiMaggio and Mohr, 1985; Wong, 2003; Choo and Siow, 2006; Lenton, Fasolo, and Todd, 2008; Hitsch, Hortaçsu, and Ariely, 2010). Even in settings in which the amount of positive assortative matching is considerable (such as in final matches), the pool of available partners is likely to be salient. This suggests a continued emphasis not on assortment, but rather on identifying institutional and social milieux where people meet and mate as well as formulating a more precise definition of marriage markets (Pawłowski and Dunbar, 1999). Put differently, our result calls us to pay attention to the "how" — and not just the 'who' — of mate selection, as some evolutionary anthropologists and psychologists have also begun to stress (Miller and Todd, 1998).

We have long known that the chances to marry endogamously are higher the more often one meets people within the "group" (however this is defined) and the more often one interacts with group members on a day-to-day basis (see, among others, Kalmijn [1998]). Stone (1977) offers a fascinating account of the development of a series of county marriage markets, centered on the facilities of county towns (such as balls, card parties, annual fairs, and horse-racing events), and a national marriage market, centered on London and Bath, for the British aristocracy during the first half of the eighteenth century. Despite this, our knowledge of marriage markets is rather patchy and anecdotal. In fact, the operationalization of the very notion of marriage markets is challenging.

Economists have typically studied specific aspects of the number of women and men in a reference population, such as sex ratios among immigrants or ethnic groups or after events (such as wars) that lead to exogenous sex ratio changes (e.g., Chiappori, Fortin, and Lacroix, 2002; Angrist, 2002; Acemoglu, Autor, and Lyle, 2004; Abramitzky, Delavande, and Vasconcelos, 2011). But this can offer only a coarse view of the institutional mechanisms by which the courting process comes about. A well established strand of sociological research has focused on the geographic distribution of ethnic groups, such as Asian-Americans in California or Jewish-Americans in New York City (Lieberson and Waters, 1988; Bills, 2005). Others have examined local marriage markets such as schools or workplaces (Bozon and

[23] As mentioned in Section 2, Nielsen and Svarer (2009) find that around half of the observed educational homogamy is attributable to matching opportunities. Besides the econometric reasons discussed earlier, one possible explanation for the greater role of opportunities found in our study than in theirs is that we look at the dating game rather than at final matches.

Héran, 1989; Kalmijn and Flap, 2001; Nielsen and Svarer, 2009). But the demographic (including gender) composition of a specific population cannot be seen separately from the regional distribution of groups. If people base their decision to live in a given area on factors that are not independent of in-group preferences, then mating preferences cannot be distinguished from partners' availability in standard observational data. Here is where the speed dating setup of our study turns out to be very important. Despite this, a more precise definition and a better measurement of the concept of marriage market are needed.

The result that many traits (including education and occupation) can explain little of the variation in people's desirability in speed dating events is also noteworthy, especially because these attributes have been reported as important determinants of mate preferences in other circumstances (Hout, 1982; Mare, 1991; Kalmijn, 1994; Pencavel, 1998). It is of course possible that these traits do not show up strongly in speed dating events, not because they are intrinsically unimportant, but because they are traits for which it is difficult to gain reliable information in a short interaction (Hoppe, Moldovanu, and Sela, 2009). It is however unclear why speed daters are substantially less able to assess each others' schooling or wealth than individuals in the context of personal ads or online dating, where researchers have found consistent preferences for status and education (Lynn and Shurgot, 1984; Pawłowski and Koziel, 2002; Hitsch, Hortaçsu, and Ariely, 2010) and where the reliability of the information posted cannot be easily checked. More broadly, these findings underline the need to build a more cohesive picture of the attributes of individuals that make them more desirable in the mating market and how the set of such attributes may change in different dating environments.

8. Conclusion

This paper analyzes dating behavior using new data from a large UK speed dating agency. It pursues two primary goals. The first is to shed light on the nature of people's preferences when selecting mates. We find that speed daters' proposals are primarily driven by assortative preferences and less by generally agreed-upon mate values, with both women and men preferring partners of similar age and education. We also find that women and men equally value observable physical attributes: women prefer men who are young and tall, while men are more attracted to women who are young and thin. And partner's education and occupation too have an impact on desirability, irrespective of gender.

The second goal of the paper is to provide empirical evidence on the importance of meeting opportunities in explaining patterns of dating proposals and matches. Our results indicate that the role of preferences is generally counterbalanced, and sometimes even overshadowed, by that of meeting opportunities. This finding stresses the need to gain deeper insights and a better measurement on the wide variety of formal and informal institutions that give rise to what we call marriage markets and that shape mate selection, dating behavior, courtship, and matchmaking.

This work contributes to the growing economics literature that emphasizes the importance of studying mate choice and estimates individual preferences in dating partners

(Bisin, Topa, and Verdier 2004; Choo and Siow, 2006; Fisman et al. 2006 and 2008; Nielsen and Svarer, 2009; Hitsch, Hortaçsu, and Ariely, 2010) as well as to the broader scientific literature that increasingly uses speed dating procedures to study the evolution of mate choices and relationship dynamics (e.g., Kurzban and Weeden, 2005; Finkel, Eastwick, Matthews, 2007; Todd et al. 2007).

A number of extensions would be desirable, even within our speed dating context. First, incorporating how speed daters learn about their potential partners' characteristics (either during the meeting or browsing their profiles) would give us a deeper understanding of dating preferences, which may also have ramifications for theory. Second, a methodology similar to that applied here could be used to analyze different substantive issues (such as the extent to which dating preferences differ by ethnicity), different rules of the game (e.g., allowing participants to interact for more/less than three minutes or letting them know they have received a proposal even if they do not reciprocate), different agencies that target specific populations (in terms of age, occupation, race, or religion), and speed daters in different countries. Finally, an ambitious extension is to follow speed daters over time and observe how their matches evolve. This will allow us to have a better view on how they screen potential partners and eventually form durable long-term relationships.

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Table 1

Sample Characteristics of Speed Dating Events

	Mean	Std. dev.	Min	Max
Number of female subjects (N_m = 84)	22.3	3.9	15	31
Number of male subjects (N_m = 84)	22.3	3.9	15	30
Number of proposals made per meeting by:				
Female subjects (N_i = 1868)	2.6	3.1	0	30
Male subjects (N_i = 1870)	5.0	5.8	0	30
Number of proposals received per meeting by:				
Male partners (N_j = 1870)	2.6	3.1	0	18
Female partners (N_j = 1868)	5.0	4.4	0	22
Number of matches per meeting	22	20	2	117
Share of proposals matched (as a fraction of all proposals) for:				
Female subjects (Obs = 4119)	0.45			
Male subjects (Obs = 9467)	0.20			

Note: N_m is the number of events (or markets), N_i is the number of subjects, N_j is the number of partners, and 'Obs' refers to the number of subject-partner pairs in which the subject has made a proposal.

Table 2
Summary Statistics of Subjects' Attributes

	Women		Men	
	Speed dating	BHPS	Speed dating	BHPS
Age (years)	34.5 (7.5)	32.7 (9.4)	35.8 (6.9)	30.5 (9.1)
	0.217	*0.287*	*0.193*	*0.298*
	[1,776]	[1,351]	[1,828]	[1,200]
University degree or greater qualification	0.66	0.20	0.65	0.20
	0.322	*0.797*	*0.339*	*0.803*
	[974]	[1248]	[1071]	[1053]
Occupation				
Professional and managerial	0.36	0.33	0.43	0.24
	0.611	*0.672*	*0.521*	*0.755*
Skilled non manual	0.50	0.19	0.40	0.16
	0.486	*0.802*	*0.583*	*0.827*
Other occupations[a]	0.14	0.48	0.17	0.60
	0.877	*0.520*	*0.827*	*0.403*
	[1008]	[862]	[1110]	[905]
Height (cm)	165.4 (6.7)	163.8 (6.4)	179.1 (6.9)	178.4 (7.4)
	0.041	*0.039*	*0.039*	*0.041*
	[1008]	[1270]	[1139]	[1095]
Weight (kg)	57.8 (5.9)	66.4 (14.0)	77.6 (10.0)	79.9 (15.5)
	0.102	*0.211*	*0.129*	*0.194*
	[334]	[1192]	[774]	[1067]
Share underweight[b]	0.05	0.04	0.00	0.02
Share overweight[c]	0.05	0.38	0.29	0.45
Smoking	0.13	0.38	0.09	0.36
	0.824	*0.619*	*0.886*	*0.636*
	[844]	[1278]	[1045]	[1101]

Note: In each cell, we report the mean, the standard deviation in parentheses, the coefficient of variation (which, in the case of the speed dating sample is a weighted average by market, with weights given by the number of participants over the total population of speed daters) in italics, and the number of subjects in square brackets. Standard deviations are not reported for dummy variables.

[a] Includes workers in manual occupations, self-employed, full-time students, and individuals in other jobs.

[b] If BMI<18.5.

[c] If BMI>25.

Table 3
Correlation Coefficients and Odds Ratios in Female and Male Attributes

	Female-male correlation (all speed daters)	Odds ratios		
		All speed daters	Matched pairs	Test of equality (*p*-value)
Age[a]	0.904** (0.002)	2.39** (0.003)	11.01** (0.97)	0.000
University degree or greater qualification	0.091 (0.413)	1.10** (0.002)	1.54** (0.13)	0.004
Professional and managerial occupations	0.052 (0.652)	1.01 (0.02)	1.25* (0.12)	0.013
Height[a]	0.103 (0.389)	1.04* (0.05)	1.08 (0.09)	0.933
Overweight	0.031 (0.780)	1.00 (0.16)	0.69 (0.76)	0.421
Smoking	0.232** (0.030)	1.18** (0.01)	1.81* (0.41)	0.059

Note: The figures in the first column are correlation coefficients between male and female attributes. Their standard errors (in parentheses) are bootstrapped from 100 replications. The figures in the second and third columns are odds ratios obtained from logistic regressions. Standard errors are in parentheses. In the column labelled 'Test of equality' we report the *p*-value of the test that the odds ratio in the second column equals the corresponding odds ratio in the third column.

[a] Odds ratios for this attribute are computed using two distinct groups, that is, individuals who are above the average age or height, and individuals who are at the average or below.

The '**' in the first column indicates that a correlation is significantly different from zero at the 1 percent level. The '*' and '**' in the second and third columns indicate that an odds ratio is significantly different from one at the 5 and 1 percent level, respectively.

Table 4
Demand for Partner's Attributes

	Subject's gender		
	Female	Male	Test equality of coefficients (p-value)
Age (years)	-0.005	-0.011	0.000
	(0.000)***	(0.000)***	
University degree or greater qualification	-0.001	0.018	0.002
	(0.004)	(0.005)***	
Professional and managerial	0.063	-0.070	0.000
	(0.024)**	(0.025)***	
Skilled non-manual	0.068	-0.074	0.000
	(0.024)***	(0.025)***	
Other occupations	0.052	-0.096	0.000
	(0.025)**	(0.025)***	
Smoking	-0.016	-0.040	0.014
	(0.006)**	(0.008)***	
Height (normalised)	0.004	0.008	0.084
	(0.001)***	(0.002)***	
Weight (normalised)	0.009	-0.009	0.000
	(0.001)***	(0.002)***	
Missing education	-0.016	0.022	0.001
	(0.007)**	(0.009)**	
Missing occupation	0.047	-0.122	0.000
	(0.025)*	(0.026)***	
Missing smoking status	0.014	0.003	0.228
	(0.006)**	(0.006)	
Missing height	-0.033	0.000	0.000
	(0.009)***	(0.000)	
Missing weight	0.010	-0.041	0.000
	(0.004)***	(0.005)***	
Constant	0.235	0.724	0.000
	(0.026)***	(0.027)***	
Observations	41767	40544	
R-squared	0.03	0.07	

Note: Estimates are obtained from linear probability models including subject fixed effects. The variables "height" and "weight" have been normalised by subtracting the corresponding sample mean and dividing by the sample standard deviation. Observations are at the subject-partner meeting level.
* significant at 5 percent; ** significant at 1 percent.

Table 5
Assortative preferences

	Subject's gender			
	Female	Male	Female	Male
Age				
Man is between 0 and 5 years older	0.039	0.061		
	(0.003)***	(0.004)***		
Man is 5 years older or more	.		-0.054	-0.040
			(0.005)***	(0.006)***
Woman is older			-0.022	-0.081
			(0.005)***	(0.006)***
Education				
Similar education level	0.017	0.022		
	(0.003)***	(0.004)***		
Man is more educated			-0.022	-0.088
			(0.086)	(0.083)
Woman is more educated			-0.000	0.051
			(0.086)	(0.083)
Occupation				
Similar occupation	0.007	0.006		
	(0.005)	(0.006)		
Both students			-0.010	-0.241
			(0.100)	(0.125)*
Both self-employed			0.106	-0.309
			(0.131)	(0.163)*
Both manual			-0.012	0.001
			(0.023)	(0.028)
Both skilled/non manual			0.001	0.002
			(0.007)	(0.008)
Both prof/man			0.010	0.012
			(0.007)	(0.009)
Smoking				
Similar smoking status	0.025	0.014		
	(0.012)**	(.014)		
Both smoke			0.045	0.068
			(0.089)	(0.088)
Both do not smoke			0.003	-0.040
			(0.086)	(0.084)
Height				
Man is between 0 and 7 cm taller	0.006	0.028		
	(0.005)	(0.006)***		
Man is more than 7 cm taller			0.021	-0.009
			(0.007)***	(0.008)
Woman is taller			-0.032	-0.046
			(0.006)***	(0.008)***

Weight				
Similar BMI	0.000	0.012		
	(0.007)	(0.009)		
Woman overweight and man not overweight			0.109	0.047
			(0.121)	(0.087)
Man overweight and woman not overweight			-0.119	0.014
			(0.125)	(0.071)
N. obs	46065	46065	46065	46035
R-squared	0.32	0.34	0.32	0.18

Note: Estimates are obtained from linear probability models including subject and partner fixed effects. The similarity variables are defined as follows: Education: both no degree or both with university degree, Occupation: both students, both self-employed, both skilled non manual, both manual, both professional/managerial; Smoking status: Both smoking, both not smoking; BMI: Both underweight, both normal weight, both overweight. Observations are at the subject-partner meeting level.
* significant at 5 percent; ** significant at 1 percent.

Table 6
Multiplicity Tests

	Covariance between female/male proposals	Bootstrap standard error	Wald test	*N*
All markets	0.173	0.157	0.018	41835
Small markets	0.173	0.158	0.017	21051
Large markets	0.173	0.157	0.019	20784

Note: All tests have been performed using the de Paula-Tang's (2011) algorithm. The number of bootstrap repetitions for the calculation of the standard errors is 1000. *N* is the number of games. A market is *small* if it presents subjects with 23 or fewer partners and *large* if it presents subjects with 24 or more partners.

Table 7
Opportunities and Preferences in the Speed Dating Market – Relative Abundance of Attributes

	(1) Age (mean)	(2) University degree or greater qualification	(3) Professional and managerial occupations	(4) Height (mean)	(5) Overweight	(6) Smoking
A. Partner's attributes						
Female subject						
α_0	-8.75**	-0.06	-0.02	-8.75	-0.05	-0.02*
	(1.87)	(0.06)	(0.06)	(17.63)	(0.04)	(0.01)
α_1	1.18**	1.11**	1.03**	1.05**	1.19**	1.30**
	(0.05)	(0.09)	(0.13)	(0.10)	(0.13)	(0.10)
F test $(\alpha_1 = 1)$	0.001†	0.268	0.806	0.636	0.122	0.005†
F test $(\alpha_0 = 0, \alpha_1 = 1)$	0.000	0.399	0.896	0.130	0.297	0.018
R^2	0.864	0.633	0.433	0.585	0.538	0.657
Observations	84	81	81	82	81	84
Male subject						
α_0	-7.34**	0.10*	0.03	7.18	0.00	-0.01
	(1.56)	(0.04)	(0.02)	(10.47)	(0.02)	(0.01)
α_1	1.13**	0.90**	0.94**	0.96**	0.86**	1.09**
	(0.04)	(0.06)	(0.07)	(0.06)	(0.04)	(0.07)
F test $(\alpha_1 = 1)$	0.005†	0.085	0.388	0.509	0.140	0.202
F test $(\alpha_0 = 0, \alpha_1 = 1)$	0.000†	0.000	0.465	0.229	0.194	0.263
R^2	0.886	0.762	0.717	0.737	0.787	0.729
Observations	84	84	78	84	80	84
B. Subject's attributes						
Female subject						
β_1	0.88**	0.10	-0.09	0.11	0.09	0.10*
	(0.07)	(0.14)	(0.10)	(0.12)	(0.05)	(0.05)
R^2	0.647	0.012	0.009	0.010	0.042	0.042
Observations	84	83	82	82	79	82
Male subject						
β_1	1.13**	0.001	0.02	0.10	-0.002	0.04
	(0.08)	(0.12)	(0.11)	(0.15)	(0.008)	(0.08)
R^2	0.704	0.001	0.003	0.005	0.001	0.003
Observations	84	83	82	82	79	82

Note: Ordinary least squares estimates; standard errors in parentheses. Figures in panel A are obtained from the estimation of equation (3); those in panel B are from equation (5) which includes a constant (see text). Observations are at the meeting level. In the rows labelled 'F test', we report the *p*-value of the test that α_1=1 or of the test that α_0=0 and α_1=1.
* significant at 5 percent; ** significant at 1 percent.
† indicates that equality is rejected (at 5 percent).

Table 8
Opportunities and Preferences in the Speed Dating Market – Market Homogeneity

	Age	Education	Occupation	Height	BMI	Smoking
Female subject						
γ_0	0.15**	0.03	0.03	-0.16**	-0.25	0.69**
	(0.03)	(0.05)	(0.05)	(0.04)	(0.13)	(0.12)
γ_1	0.75	0.96**	0.87**	0.88**	1.35**	0.28**
	(0.12)	(0.10)	(0.11)	(0.09)	(0.18)	(0.10)
$H_0 : \gamma_0 = 0, \gamma_1 = 1$ (*p*-value)	0.00†	0.76	0.19	0.00†	0.16	0.01†
Observations	84	84	84	84	84	84
Male subject						
γ_0	0.09**	0.02	-0.06	-0.07	-0.23**	-0.07
	(0.02)	(0.04)	(0.03)	(0.04)	(0.07)	(0.07)
γ_1	0.92**	0.98	1.16**	0.76**	1.27**	1.11**
	(0.07)	(0.09)	(0.08)	(0.07)	(0.09)	(0.08)
$H_0 : \gamma_0 = 0, \gamma_1 = 1$ (*p*-value)	0.00†	0.71	0.12	0.00†	0.00†	0.06
Observations	84	84	84	84	84	84

Note: Ordinary least squares estimates; standard errors in parentheses. Figures are obtained from the estimation of equation (7). Observations are at the meeting level. Homogeneity in attributes is defined as follows: Age: Man is at most 5 years older than the woman; Education: Both with less than A-level qualifications, or both with A-level (or equivalent) qualifications, or both with university degree; Occupation: Both in professional-managerial occupations, or both in skilled non-manual occupations, or both in manual occupations or both students; Height: Man at most 7 centimetres taller than the woman; BMI: Both overweight, or both normal, or both underweight; Smoking: Both smoking, or both not smoking.
** significant at 1 percent.
† indicates that equality is rejected (at 5 percent).

Figure 1. Joint (Female and Male) Average Distribution of Attributes

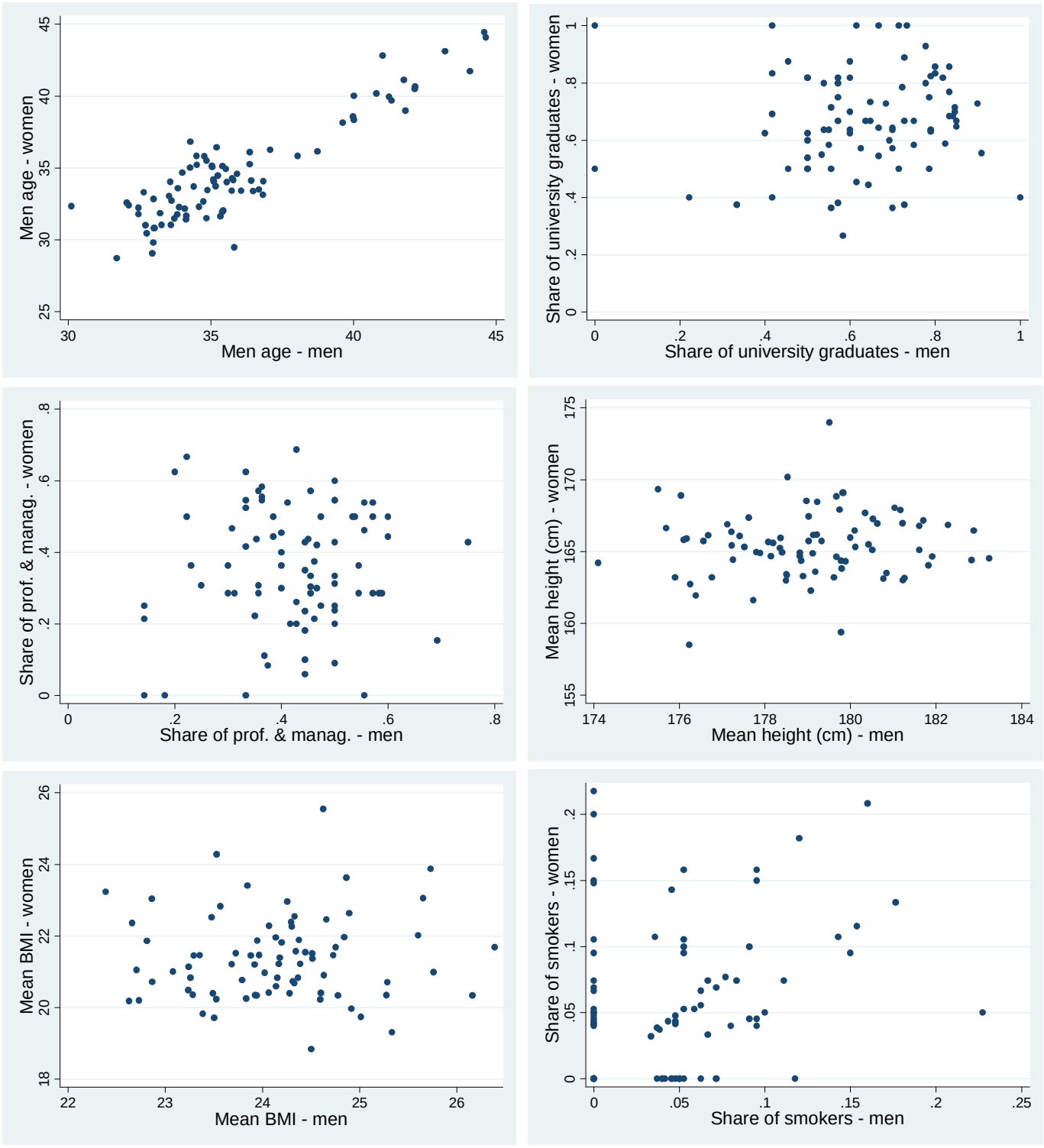
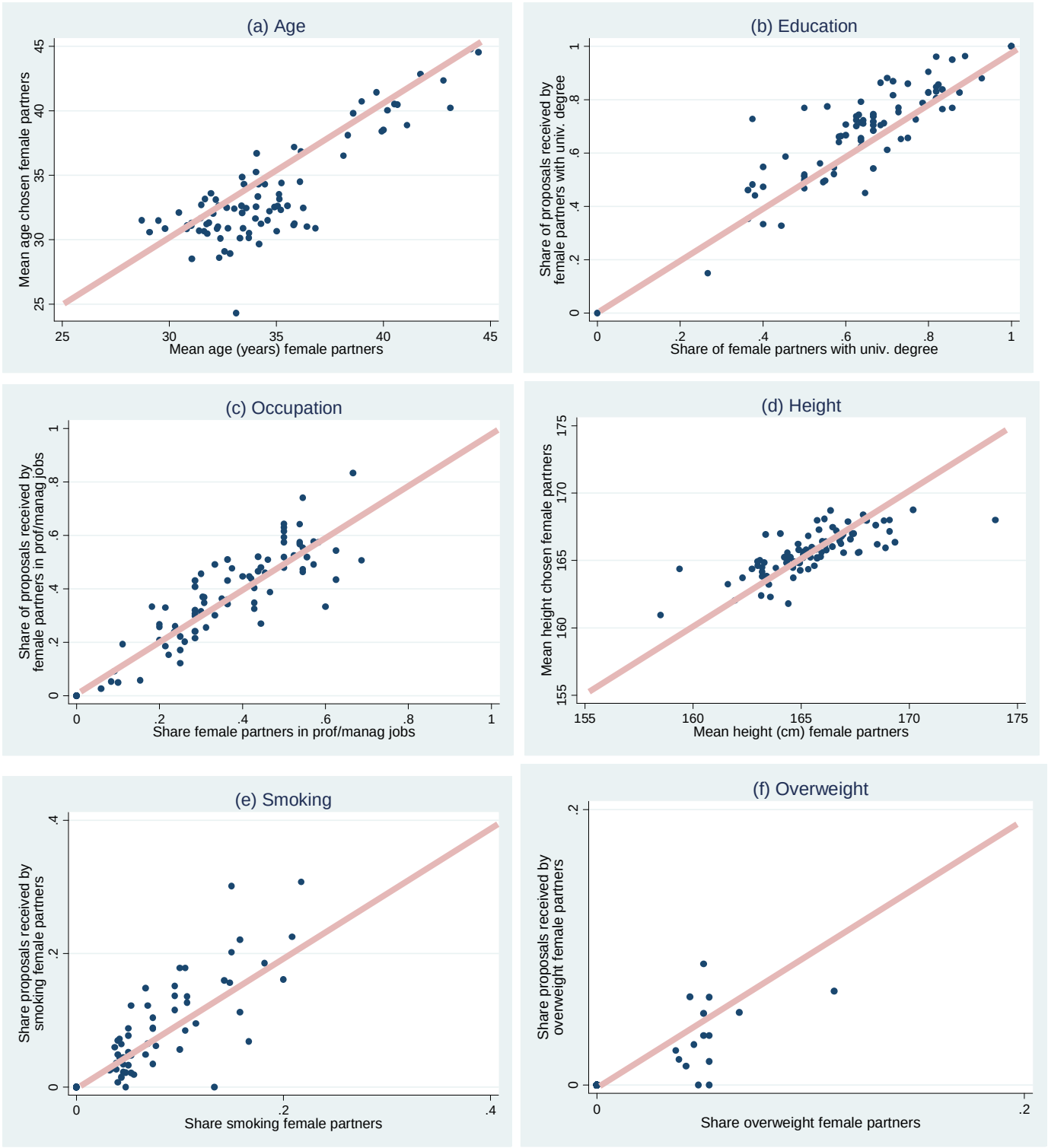
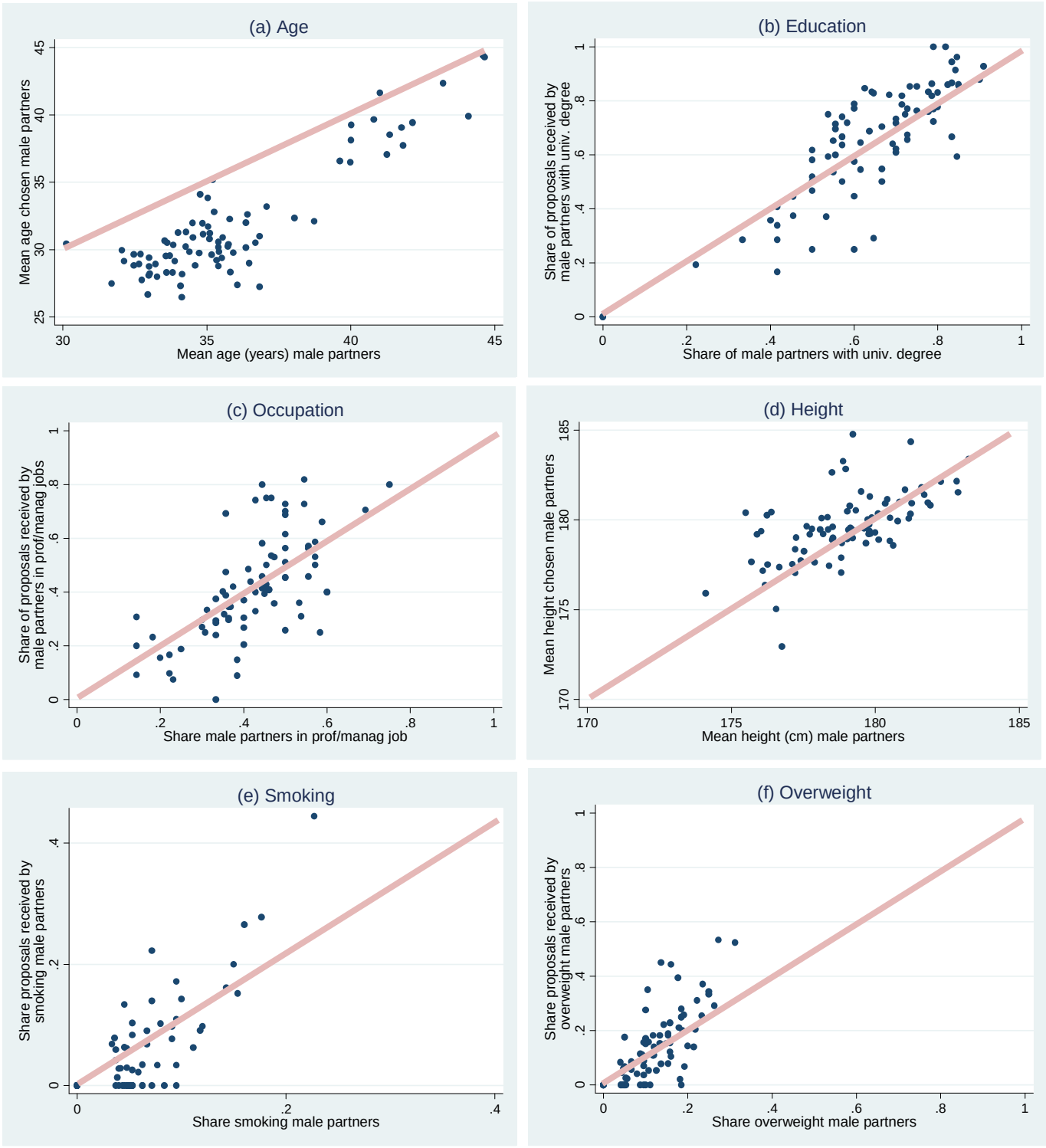


Figure 2. Selection and Partners' Supply – Male Subjects



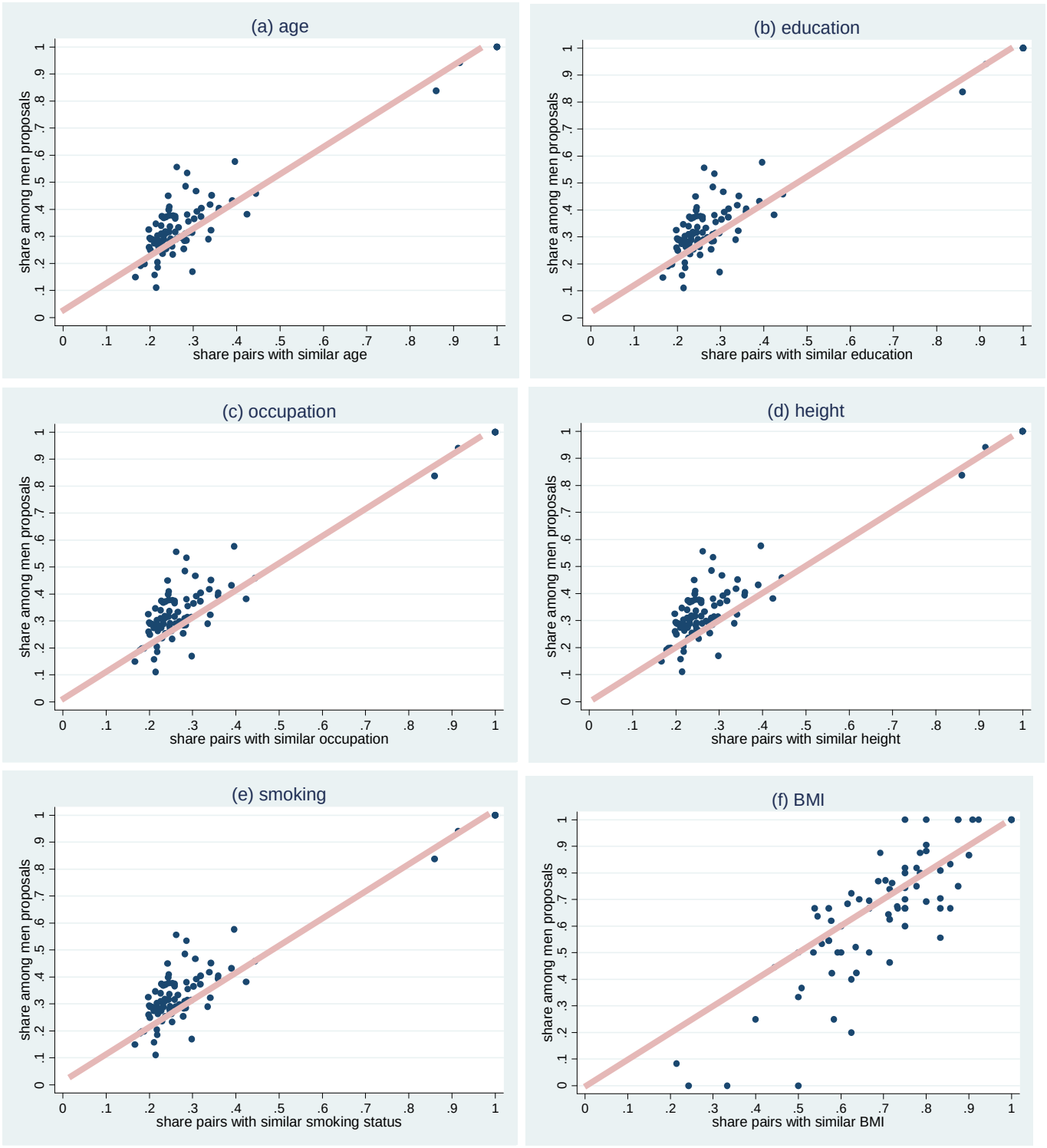
Each dot represents means or shares of characteristics of partners in a specific meeting. The straight line is the 45 degree line.

Figure 3. Selection and Partners' Supply – Female Subjects



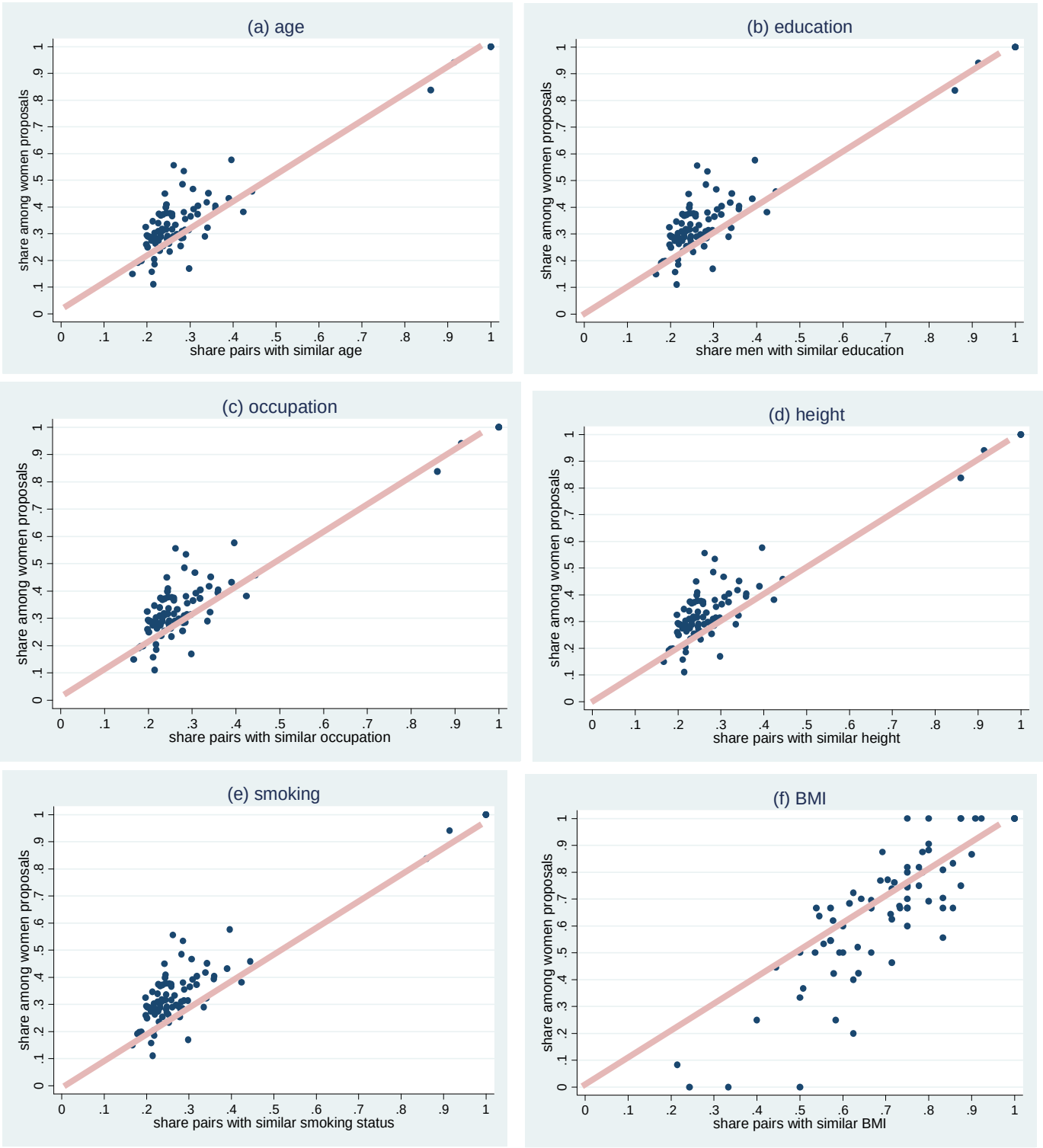
Each dot represents means or shares of characteristics of partners in a specific meeting. The straight line is the 45 degree line.

Figure 4. Selection and Market Homogeneity – Male Subjects



Each dot represents means or shares of characteristics of partners in a specific meeting. The straight line is the 45 degree line. Similar attributes are defined as follows: Age: Man is at most 5 years older than the woman; education: Education (less than a-levels, a-levels and university degree); Occupation: Both professional-managerial, both skilled non-manual, both manual or both students, Height: Man at most 7 centimetres taller than the woman; BMI: Both overweight, both normal, both underweight; Smoking: Both smoking, both not smoking.

Figure 5. Selection and Market Homogeneity – Female Subjects



Each dot represents means or shares of characteristics of partners in a specific meeting. The straight line is the 45 degree line. Similar attributes are defined as follows: Age: Man is at most 5 years older than the woman; education: Education (less than a-levels, a-levels and university degree); Occupation: Both professional-managerial, both skilled non-manual, both manual or both students, Height: Man at most 7 centimetres taller than the woman; BMI: Both overweight, both normal, both underweight; Smoking: Both smoking, both not smoking.