

Educational and age assortative mating in China: The importance of marriage order

Yang Hu
Department of Sociology
Lancaster University
Email: yang.hu@lancaster.ac.uk

Yue Qian
Department of Sociology
University of British Columbia
Email: yue.qian@ubc.ca

Author Note

Both authors contributed equally to this work and their names are listed alphabetically. Address correspondence to: Yue Qian, Department of Sociology, University of British Columbia (Vancouver), 6303 NW Marine Drive, Vancouver, BC, Canada, V6T 1Z1, yue.qian@ubc.ca.

This paper was presented at the 2018 Annual Conference of the International Chinese Sociological Association and Princeton Research Network on Contemporary China.

Educational and age assortative mating in China: The importance of marriage order

Abstract

Background: Family change in China is characterized by increasing divorce rates and a growing number of remarriages, like in many Western countries. Assortative mating is a crucial part of the institution of (re)marriage and it plays a key role in the (re)production of socioeconomic inequality. However, no research has examined assortative mating in remarriages in China, despite the recent emergence of studies on this topic in Western contexts.

Method: Our analysis drew on pooled, nationally-representative data from seven waves of the Chinese General Social Survey and China Family Panel Studies between 2010 and 2015 ($N = 49,642$ individuals). We used logistic regression models to examine educational and age assortative mating patterns of people in first and higher-order marriages.

Results: For both men and women, educational homogamy was more likely to occur in first marriages than in remarriages. Holding age at marriage constant, compared with those married to a similarly-aged spouse, men and women married to a spouse who was older than themselves were more likely to be in a remarriage as opposed to a first marriage.

Conclusion: Our findings suggest that the rules that enforce status homogamy in first marriages are less salient in configuring assortative mating patterns in remarriages, and thus remarriage may be incompletely institutionalized in China.

Contribution: This is the first study that has compared assortative mating patterns between first-married and remarried people in China. This study highlights the importance of marriage order – as a resource for the never married and a disadvantage for the previously married – in shaping patterns of marital mobility in China.

Keywords: Age, Assortative Mating, Education, Gender, Marriage Order, Remarriage.

1. Introduction

Assortative mating, the question of “who marries whom” has important implications for the production and reproduction of social inequality (Schwartz, 2013). Despite the decline of first marriage and the rise of remarriage in many countries (Cherlin, 2004; Raymo et al., 2015; Sweeney, 2010; Wang & Zhou, 2010), scholarly efforts remain limited in examining how the pattern of assortative mating may differ between first marriages and remarriages, apart from a few recent exceptions that focused on Western societies (Choi & Tienda, 2017; Gelissen, 2004; Qian & Lichter, 2018; Shafer, 2013a, 2013b). It is widely believed that patterns of assortative mating are conditional on the extent to which (re)marriage is institutionalized and stigmatized (Cherlin, 2004; Kalmijn, 1998; Qian & Lichter, 2018; Qian & Qian, 2017; Schwartz, 2013). Compared to Western societies, the increase in remarriage is more recent and remarriage tends to be more strongly stigmatized in China (Hu & To, 2018; Ma, Turunen, & Rizzi, 2018). Thus, we cannot readily assume that assortative mating in remarriage may operate in similar ways in China and in Western contexts.

[Insert Figure 1 Here]

It is pertinent to compare assortative mating in first and higher-order marriages against the backdrop of unfolding demographic transitions in China (Wang & Zhou, 2010). Annual rates of marriage and divorce (i.e., the number of marriages/divorces per 1,000 population) from 1985 to 2016 are shown in Figure 1. The marriage rate had fluctuated in post-reform China and has been in steady decline since 2013. The divorce rate has undergone a nearly eight-fold increase from 0.4 to 3.0 over the same period. Notably, the divorce rate in today’s China is comparable to that in Western countries such as the United States, where the divorce rate was 3.2 in 2016 (National Center for Health Statistics, 2017). In addition, only 3.0% of newly married people in 1985 had previously married, and this figure has increased dramatically to 16.3% in 2016 (China Statistics Yearbook, 2017). Clearly, the decline in first

marriage rates and the increase in divorce and remarriage rates have become the defining features of family change in contemporary China. Comparing assortative mating patterns between first marriages and remarriages thus promises important and new insights into the implications of family change for social stratification.

In this study, we also aim to demonstrate the value of extending the focus of research on assortative mating to consider non-pecuniary dimensions such as age, in addition to a focus on socioeconomic traits. Existing research has predominantly examined marital sorting on social and economic traits such as education, race/ethnicity, and immigrant status, but much less is known about how age may affect assortative mating patterns (for reviews, see Blossfeld, 2009; Kalmijn, 1998; Schwartz, 2013). The institution of marriage is imbued with symbolic meanings beyond mere socioeconomic considerations (Cherlin, 2004). Since the availability of potential spouses and individuals' marital behaviors and strategies change over the life course (Hu & To, 2018; Oppenheimer, 1988; Rosenfeld & Thomas, 2012; Qian & Preston, 1993), it is pivotal to also consider the role played by age in shaping assortative mating and how the patterns of age pairing differ between first and higher-order marriages.

Analyzing pooled data from multiple waves of the Chinese General Social Survey and China Family Panel Studies between 2010 and 2015, we compared educational and age assortative mating patterns between first and higher-order marriages. Results showed that educational homogamy was less likely in remarriages than in first marriages; and age hypergamy (i.e., marrying an older spouse than oneself) was more likely to occur among remarried individuals than among their first-married counterparts, for men and women alike. The results suggest that the weaker strength of educational homogamy in remarriage than in first marriage may help mitigate economic inequality arising from marital sorting on education (Hu & Qian, 2015). Furthermore, the status of being previously married appears to be a disadvantage in the marriage market, which in turn determines the outcome of

assortative mating. The results highlight the importance of marriage order for the study of assortative mating.

2. Background and Theoretical Considerations

2.1 Remarriage in China

We first provide a brief historical overview of remarriage in China before we theorize and hypothesize the patterns of assortative mating in remarriages vis-à-vis first marriages. In the feudal and imperial eras, remarriage was mainly formed following the event of widowhood rather than divorce, as women were afforded limited rights to file for divorce (Waltner, 1981). Although the then-dominant ideal of female chastity obliged widows to remain faithful to their deceased husbands (Waltner, 1981), widows, particularly those from less well-off families, often had to remarry, due to their exclusion from the labor force and a lack of inherited assets (Huang, 2012).

Following the founding of socialist China in 1949 and the country's economic reforms since 1979, the formation of remarriages has been influenced by broader legal and social contexts. First, the 1950 Marriage Law granted Chinese men and women equal rights to marriage and divorce according to personal will (Chen & Li, 2014). Since then, in addition to widowhood, divorce has become another pathway leading to remarriage. Secondly, as the socialist state promulgated gender egalitarianism, women's labor force participation rate increased to more than 90% in the socialist era (World Bank, 2018), which enhanced women's economic independence. As a result, women's remarriage may be driven to a lesser extent by their economic needs than it was in pre-socialist China (Holmgren, 1985). However, it is also worth noting that with the state's retreat from promoting gender equality in the post-reform era (Ji et al., 2017), female labor force participation rate declined to 73% in 1990 and further down to 61% in 2018 (World Bank, 2018). Given the persistent

employment and wage disadvantages facing women (Zhang & Hannum, 2015), less well-off women may still be more likely to remarry, particularly when they have young children (Hu & To, 2018). By contrast, men's socioeconomic resources may bolster their desirability in the remarriage market (Huang, 2012). Lastly, the mass expansion of (higher) education since the 1990s has contributed to detraditionalizing social attitudes towards divorce and remarriage (Hu, 2016; Huang, 2012). Thus, in post-reform China, educated people, particularly educated women, are more likely to divorce and remarry (Ma, 2018; Wang & Zhou, 2010).

Despite the changing context of remarriage described above, certain negative stigmas attached to remarriage remain to date. For example, Chinese parents still express serious concerns regarding negative implications of stepfamilies for child well-being (Hu & To, 2018). In rural areas, the persisting ideal of female chastity still prevents women from remarrying (Huang, 2012). Due to the persistence of patrilineal traditions, many Chinese families still strive to ensure that bequest is passed down the family bloodline and kin network (Zhang, 2012). This also renders the boundary of and entitlement to inheritance a highly contested area in people's remarriage considerations. In light of these socio-cultural barriers and stigmas attached to remarriage, marriage order may play an important role in shaping individuals' positions and prospects in the Chinese marriage market.

2.2 Theorizing Assortative Mating

The pattern of assortative mating is shaped by both individual preferences as well as structural opportunities and constraints in the marriage market. Individuals seek to maximize their utility as they search for a spouse (Becker, 1981). Although individuals may develop personalized preferences for a "suitable" spouse, it is worth noting that such preferences are informed by the social, economic, and cultural institutions in which the marital institution is embedded (Cherlin, 2004; Oppenheimer, 1988; Qian & Qian, 2014). In the meantime,

individuals' ability to realize their preferences is constrained by structural opportunities that define the pool of potential spouses (Schwartz, 2013). Moreover, individual traits, such as marriage order, socioeconomic status, and age, may also represent potential resources or barriers in determining the extent to which people can realize their preferences and maximize their utility in the marriage market (Qian & Lichter, 2018).

Chinese people have long upheld the tradition of “marriages of matching doors” (*men dang hu dui*): parents prefer that their adult children marry someone of a similar socioeconomic status (Hu, 2016; Lui, 2016); and such preferences in turn shape adult children's spouse selection, through socialization and parental intervention (Ji, 2015; Qian & Qian, 2014; Riley, 1994). In the past few decades, the increasing prevalence of educational homogamy has contributed to growing inter-household earnings inequality in urban China (Hu & Qian, 2015). In addition to the strong emphasis on status homogamy, there is also a long-standing tradition of female hypergamy in China, where women marry men of a higher status than themselves (Lui, 2016). Prior studies on assortative mating in China have almost exclusively focused on first marriages. The empirical patterns of educational and age assortative mating are found to align with those traditions that enforce status homogamy in general and female hypergamy in particular (e.g., Han, 2010; Mu & Xie, 2014; Qian & Qian, 2014). Overall, people tend to marry a similarly-aged and similarly-educated spouse in first marriages (Han, 2010; Qian & Qian, 2014). When two spouses differ in educational levels, husbands are usually more educated than their wives (Qian & Qian, 2014). As for age assortative mating, men tend to marry a wife who is slightly younger than themselves, and on average, husbands are about two years older than their wives (Mu & Xie, 2014; Qian & Qian, 2014).

The patterns of educational and age assortative mating in remarriages may, however, differ from those in first marriages, due to differential marital preferences and opportunities

between never-married and previously-married individuals. As argued by Cherlin (1978), remarriage is an “incomplete institution” in Western societies: while the formation and organization of first marriage are closely regulated by existing social conventions that enforce status homogamy, the formation of remarriage may be bound to a lesser extent by established rules. A similar observation may hold true in China where the increase in the number and visibility of remarriage, particularly after divorce, is a recent phenomenon (Holmgren, 1985; Wang & Zhou, 2010). Because the marital institution provides no “standard solutions” for how family roles and relations should be organized in remarriages (Cherlin, 2004; Sweeney, 2010), endorsement of marriages of matching doors – the tradition that emphasizes status homogamy – may be weaker among remarried than first-married people in China.

2.2.1 Educational Assortative Mating

In contemporary China, education has played an increasingly important role in shaping individual preferences and structural opportunities in mate selection (Han, 2010; Qian & Qian, 2014). With the reinstatement and expansion of formal schooling and tertiary education following China’s 1978 economic reform, education has become a crucial indicator of individuals’ social status and human capital (Yeung, 2013). In the meantime, gender gaps in all levels of education have narrowed over the past few decades (Treiman, 2013). Because educational institutions are potential sites for dating and mating, educational homogamy tends to increase with prolonged schooling (Mare, 1991). Moreover, education also helps homogenize ideological orientations and cultural tastes, which may reinforce preferences for status homogamy (Bruze, 2011). Prior research has indeed documented the presence and rise of educational homogamy in first marriages in contemporary China (Han, 2010; Qian & Qian, 2014, 2017).

We hypothesize that educational homogamy is less likely among first-married than remarried people (Hypothesis 1). Individuals tend to prefer marrying someone of similar educational level (Higgins et al., 2002). However, divorced and widowed people, usually concentrating in a later rather than an earlier stage of the life course, face a thin market for potential spouses, because most people of similar ages are already partnered (Rosenfeld & Thomas, 2012, p. 538). As a result, divorcé(e)s and widow(er)s may have more limited opportunities to fulfil their preferences and often have to cast a wider net when searching for spouses by relaxing their preferences for educational homogamy (Shafer, 2013b). Yet further, education may be less relevant as a structural condition for union formation and a symbolic signifier for socioeconomic status in higher-order than first marriages altogether. Although educational institutions serve as a key match-making site for the never married, the previously married are less likely to meet their remarriage partners in schools, given the concentration of remarriages in later rather than earlier life stages (Hu & To, 2018; Shafer, 2013a). Whereas education is often a proxy for long-term economic potential in the first-marriage market, the socioeconomic status of previously-married people is more clearly signaled by their occupation, income and wealth, which renders education a tangential socioeconomic indicator in the remarriage market (Oppenheimer, 1988; Qian, 2017).

2.2.1 Age Assortative Mating

The patterns of age pairing in first and higher-order marriages have received scant scholarly attention (for exceptions, see Gelissen, 2004; Qian & Lichter, 2018; Shafer, 2013a). Unlike socioeconomic resources that confer sought-after status, age is a double-edged sword that represents both an asset and a liability in the marriage market. Age is indicative of symbolic status and power, especially for men, in the Chinese family, in which patriarchal norms regulate the distribution of power by individuals' age-cum-sex attributes (Hu, 2016). Since

patriarchal traditions oblige men to be the breadwinners and age correlates with the accumulation of economic resources, women tend to marry men who are older than themselves in pursuit of economic stability (Poppel et al., 2001), especially given the recent resurgence of gender inequality in China's labor market (Mu & Xie, 2014). Furthermore, a woman's youth is considered a valuable resource, as the sexualized construction of femininity associates "youthful looks" with physical attractiveness and fecundity in China and elsewhere (England & McClintock, 2009; Ji, 2015).

We expect age homogamy to be less likely in remarriages than in first marriages (Hypothesis 2). First, the opportunity structure enforces age homogamy more closely in the first-marriage than remarriage market. The cohort-based organization of education fosters marriages between individuals of similar ages (Smits, 2003). Compared with first marriages, the routes through which remarriage partners meet are more diverse (Shafer, 2013b), which may contribute to age heterogamy in remarriages. Second, due to the backlash of previous life events, remarriage opportunities are constrained by the social stigma attached to divorce and widowhood (Hu & To, 2018). More specifically, because raising someone else's heir is frowned upon in China, children from previous marriages are often viewed as a "heavy burden" and make remarriage more difficult for both genders (Huang, 2012). Given their weaker bargaining position in the marriage market, divorcé(e)s and widow(er)s may be less likely to fulfil their age preferences for mates, compared to the never married. Moreover, divorcé(e)s and widow(er)s may need to draw on additional resources to compensate for their disadvantage in the marriage market. Indeed, marrying a spouse who is older than oneself was found to be a key compensatory strategy, particularly for women (Poppel et al., 2001).

3. Methods

3.1 Data and Sample

Individual-level data on remarriage are very limited in China. To ensure a sufficient number of remarriages for analysis, we pooled multiple waves of data from two national surveys. Our first data source is the Chinese General Social Survey (CGSS, <http://cgss.ruc.edu.cn>), a repeated cross-sectional survey conducted by the National Survey Research Center at Renmin University of China. Using a multistage stratified random sampling strategy, the CGSS surveyed one random member aged 18 and above from each household, with response rates of around 72% for the years we used. We used data from the 2010, 2011, 2012, 2013 and 2015 CGSS ($N = 11,783, 5,620, 11,765, 11,438$ and $10,968$ for each year), because they collected information on respondents' marriage order and used the same sampling design.¹ Our second data source is the adult panel from the 2010 and 2012 waves of the China Family Panel Studies (CFPS, <http://www.issp.pku.edu.cn/cfps/en>),² a longitudinal household panel survey newly launched by Peking University (Xie & Hu, 2014). Multistage probability-proportional-to-size sampling was used; and the household-level response rate was 81.25% for the 2010 baseline. Although the CFPS is a longitudinal survey, few respondents changed marital status between the two waves. Thus, we used the cross-sectional samples of the 2010 respondents ($N = 33,600$) and the new respondents in 2012 ($N = 9,326$).

To construct our analytical sample, we kept currently married respondents³ ($N = 73,052$)—the only group who provided spousal information. We further restricted our sample

¹ We did not use the CGSS data collected before 2010, due to differences in sampling design and sampling frames before and after the 2010 wave of the survey. For further information, please see <http://cgss.ruc.edu.cn/index.php?r=index/sample>.

² The 2014 and 2016 CFPS data were available when this research was conducted. However, we did not include the two waves in our analysis because they did not contain spousal information such as education and age.

³ Our analysis did not include individuals in unmarried cohabiting relationships because they did not provide information on their partners in the CFPS. According to the analysis conducted by Yu and Xie (2015, p. 616) using the 2010 and 2012 CFPS data, 8.1% of adult men and 6.2% of adult women were in an unmarried cohabiting relationship at the time of survey. It is also worth noting that unmarried cohabitation is still largely practiced as a prelude to, rather than a substitute for, marriage in China (Yu & Xie, 2015).

based on four criteria: (1) respondents were born after the founding of the People's Republic of China (i.e., 1950 or later), which means the upper age limit of our sample was 65 years, thereby minimizing mortality selection bias; (2) respondents were born before 1991, because no respondent born after 1990 was in a remarriage at the time of the survey; (3) respondents entered their current marriage after 1978 (i.e., post-reform marriage cohort), because of the small number of remarriages contracted before 1979; and (4) both spouses were aged 16 years and older when they entered the current marriage. After excluding 89 respondents with missing information on the variables used in the analysis, we obtained a final analytical sample of 49,642 respondents ($N = 28,347$ for CGSS and 21,295 for CFPS).

[Insert Table 1 Here]

3.2 Dependent Variable

Our dependent variable is marriage order—a binary variable distinguishing first (reference category) and higher-order marriages. Unfortunately, our data did not contain information on whether the respondents' spouses were in their first or higher-order marriages. Thus, our classification of “first marriage” and “remarriage” was based on the respondents' marriage order, irrespective of their spouses' marriage order. Since mixed-order marriage contains only one remarried spouse, remarriage was under-represented in our sample.

Not being able to capture mixed-order marriages is a major limitation of our analysis; and our results should be cautiously interpreted in relation to this limitation. Not knowing both spouses' marriage order means that our analysis can only be conducted and interpreted at an individual rather than couple level, an approach we take in the current study.

Admittedly, if the status of being never married is deemed as a valuable resource whereas the status of being previously married is considered undesirable in the marriage market, marital exchange between the marriage order of one spouse (e.g., being never-married) and the valued resources (e.g., better education) of the other spouse may occur in mixed-order

marriages (Qian & Lichter, 2018). Unfortunately, we were unable to examine such marital exchange because it takes place at a couple level. It should be a key agenda for future surveys to collect information on both spouses' marital histories. Regardless, given the scarcity of data on remarriage in China, analyzing the data we have still provides valuable new evidence on assortative mating patterns in remarriages in China.

3.3 Key Predictors

Educational assortative mating. In the surveys, married respondents were asked about their own and their spouses' educational attainment at the time of survey—a good proxy for education at the time of marriage, because only rarely do Chinese people pursue further formal education after getting married (Treiman, 2013). The responses were recoded into four categories: (1) primary school or below, (2) junior high school, (3) senior high school, and (4) college or above (including vocational college [*da zhuan*], four-year university, and advanced degrees). We did not further distinguish university graduates from vocational college graduates due to small sample sizes.

Based on one's own and spouse's educational levels, we devised two sets of variables to measure educational assortative mating. First, a series of dummy variables were created to measure educational homogamy (two spouses having the same level of education), hypergamy (wives having a lower level of education than their husbands), and hypogamy (wives having a higher level of education than their husbands), respectively. Secondly, we calculated an educational distance measure as the *absolute* value of difference in educational levels between the respondents and their spouses. Following Schwartz and Han (2014, Note 8 on p. 626), the educational distance measure ranged from 1 to 3 if two spouses differed in

their educational levels, whereas for homogamous couples, the distance measure was coded as 1 (instead of 0).⁴

Age assortative mating. To measure age assortative mating, we calculated husband-wife age gap based on respondents' and their spouses' year of birth and respondents' gender. Following Verbakel and Kalmijn (2014), we grouped the husband-wife age gap, which ranged between -34 and 34, into five categories to capture age hypogamy, homogamy and hypergamy: (1) husband younger than wife by 3 or more years ([-34, -3]), (2) husband-wife age difference within 2 years ([-2, 2], reference), (3) husband older than wife by 3 to 5 years ([3, 5]), (4) husband older than wife by 6 to 10 years ([6, 10]), and (5) husband older than wife by 11 or more years ([11, 34]). Among the respondents in the category of -34 to -3 (husband younger than wife by 3 or more years; age hypogamy), 55% had a husband-wife age gap of -3 years, and another 23% and 9%, respectively, had an age gap of -4 and -5 years, whereas the husband-wife gap of -34 represented only one extreme case in our sample. Due to the small number of cases in which the husband was younger than the wife by 3 to 34 years, we did not make any further distinction within this group to ensure an adequate cell size for statistical modeling. To confirm the robustness of our results, we conducted sensitivity analysis by using alternative classifications of husband-wife age gaps (i.e., [-34, -2], [-1, 1], [2, 4], [5, 34], following Lamidi, Brown, & Manning, 2015) and obtained substantively the same results as those reported in this article.

Although in some prior research, scholars classified spouses' ages into 5-year intervals and modeled the cross-tabulation of spouses' age categories to examine age assortative mating (e.g., Gelissen, 2004; Qian & Qian, 2014; Schwartz & Graf, 2009), we

⁴ Because educational homogamy was already captured by a separate dummy variable, coding educational homogamy using a unique value (i.e., 0) in the educational distance measure and including it together with the homogamy dummy in a model would lead to multicollinearity. Therefore, following Schwartz and Han (2014), we coded educational homogamy as 1 in the educational distance measure before including the distance measure alongside the educational homogamy dummy in our models.

chose to directly measure the absolute level of spousal age gap. We did so because 75% of the respondents had a husband-wife age gap between -3 and 3 years, which means that using age intervals would substantially increase the misclassification rate of age pairing.

3.4 Control Variables

We included several control variables in our models.⁵ In addition to the educational assortative mating measures, we controlled for respondents' and their spouses' educational levels (Hou & Myles, 2013). As individuals' marital preferences and opportunities may change over the life course (England & McClintock, 2009; Qian & Preston, 1993), we controlled for respondents' age at current marriage which was calculated based on respondents' year of current marriage and year of birth. To account for social changes since China's 1978 economic reform, we measured the time period of respondents' current marriage, using four categories: 1979–1989 (reference), 1990–1999, 2000–2009, and 2010–2015. We also included a dummy variable distinguishing urban (1) and rural (0) residence, which was based on whether a given respondent resided in an area that fell under the jurisdiction of an urban neighborhood committee or a rural village committee at the time of survey. Lastly, we controlled for the combination of data source and survey year (referred to as data source hereafter for brevity) using seven dummy variables: 2010 CGSS (reference), 2011 CGSS, 2012 CGSS, 2013 CGSS, 2015 CGSS, 2010 CFPS, and 2012 CFPS.

⁵ Although the presence of children is found to shape men's and women's remarriage prospects and status mobility in the remarriage market (Hu & To, 2018; Qian & Lichter, 2018), children are seldom present to influence the formation of first marriages due to a very low level of nonmarital childbearing in China (Raymo et al., 2015). For example, Hu and To (2018) found that after divorce, Chinese women with school-age and adult children were less likely to remarry, whereas Chinese men with pre-school children were more likely to remarry. However, the CGSS does not contain information on whether one's children were born with one's current or previous spouse. The data limitation prevented us from controlling for the presence of children in our analysis.

3.5 Analytical Strategy

Table 1 presents the statistical techniques that have been used to model assortative mating patterns, namely log-linear models and binary or multinomial logistic regression models. In the latter, depending on their research questions, researchers have distinctly used assortative mating as the dependent or independent variable. As detailed in Table 1, while researchers often used log-linear models to examine patterns of educational and age assortative mating (e.g., Han, 2010; Qian & Qian, 2014, 2017), control variables cannot be easily incorporated and interpreted in log-linear models (Hou & Myles, 2013; Rosenfeld, 2005; Schwartz & Graf, 2009). The need to incorporate control variables, particularly continuous ones, in our analysis encouraged us to choose logistic regression models over log-linear models. This choice was also informed by the fact that log-linear models assume couple-dyads as the unit of analysis; yet, as discussed earlier, not being able to measure mixed-order marriage means our analysis should necessarily take place at the individual level. Furthermore, as we aimed to simultaneously model educational and age assortative mating, we included educational and age assortative mating as independent variables rather than the dependent variable in our logistic regression models, following the precedents of Hou and Myles (2013) and Schwartz and Graf (2009). Thus, in our models, marriage order was included as the dependent variable.

[Insert Table 1 Here]

Our models estimated differences in assortative mating patterns by marriage order. The models predicted the relative likelihood of an individual being in a remarriage as opposed to a first marriage (the reference category) conditional on the key predictors and control variables. The models were built in four steps. In Model 1, we included all the control variables and the single indicator for educational homogamy. To provide a more nuanced distinction within educational heterogamy, we distinguished educational homogamy, hypogamy and hypergamy in Model 2. Because the odds of marriage may differ as spouses

marry across distinct levels of difference in education (Qian, 1997), we also included the educational distance measure in Model 2. Expanding on Models 1 and 2, respectively, Models 3 and 4 further included the dummy variables indicating the husband-wife age gap.⁶ As it was possible for multiple CFPS respondents to cluster in the same household, we estimated cluster-robust standard errors to account for within-household correlation (Cameron & Miller, 2015). Furthermore, we conducted the variance-inflation-factor (VIF) test to ensure that our key variables were not affected by the issue of multicollinearity.

Separate models were fitted for men (Models A) and women (Models B). Gender differences in assortative mating patterns are well documented in research on first marriage (Gelissen, 2004; Qian, 2017; Qian & Qian, 2014) and also begin to be noted in recent studies on remarriage (Qian & Lichter, 2018; Shafer, 2013a). While the “incompleteness” of institutionalized rules (Cherlin, 2014), presence of social stigmas (Hu & To, 2018; Qian & Lichter, 2018) and structural constraints (Shafer, 2013a, 2013b) have often been cited to explain why homogamous unions are less likely in higher-order than first marriages, it remains unclear whether and how these factors may affect women and men in different ways. Due to a lack of theoretical and empirical research comparing the role of marriage order in shaping women’s assortative mating vis-à-vis that of men, we were unable to systematically develop a hypothesis; rather, we treat gender difference as an open empirical question by modeling men and women separately.

⁶ Early in our data analysis, we also explored the possible exchange between educational and age assortative mating by including the interaction terms between the two in our models. Because including the interaction terms did not improve the overall model fit or affect the results of other covariates, we excluded them from the final analysis reported in this article.

4. RESULTS

4.1 Descriptive Statistics

Table 2 presents the descriptive statistics by the respondents' gender and marriage order. The percentages of men and women who had the same level of education as their spouses were higher in first marriages than in remarriages (men: 54.26% vs. 48.40%; women: 55.61% vs. 54.11%). In line with previous research (Qian & Qian, 2014), educational hypergamy was more prevalent than educational hypogamy in China. Additionally, both men and women in remarriages were less educated than their counterparts in first marriages. This is not surprising as remarried people tend to be older than first-married people and China's mass expansion of education was relatively recent (Treiman, 2013). Although the descriptive results are in line with Hypothesis 1 in that educational homogamy was less common in remarriages than in first marriages, it is important to examine educational assortative mating net of the distributions of spouses' education and other control variables (Hou & Myles, 2013; Kalmijn, 2010).

[Insert Table 2 Here]

On average, remarried men were 4.79 years older than their wives, and the corresponding age gap was 1.83 years for first-married men ($t = 23.31, p < .001$). Similarly, on average, remarried and first-married women were younger than their husbands by 3.26 years and 1.88 years, respectively ($t = 11.39, p < .001$). After recoding the husband-wife age gap measure into five categories, we found that consistent with Hypothesis 2, the percentage of age homogamy (i.e., $[-2, 2]$) was much higher in first marriages than in remarriages, for both men (62.54% vs. 33.22%) and women (62.61% vs. 35.64%). In contrast, large spousal age gaps were more prevalent in higher-order marriages than in first marriages. For example, the proportion of remarried men who were older than their wives by 11 to 34 years (16.69%) was 14.3 times larger than that of first-married men (1.17%), and the proportion of remarried

women who were younger than their husbands by 11 to 34 years (10.68%) was 7.4 times larger than that of first-married women (1.45%).

Our results also confirm that first marriages and remarriages tended to take place at different life-course stages. For men, the average age at first marriage was around 24.8 years, whereas the mean age at remarriage was 37.4 years. Women's mean ages at first marriage and remarriage were 22.9 years and 35.6 years, respectively. As spousal age gap may vary by marital timing (England & McClintock, 2009), it is crucial to control for age at marriage in order to estimate the net association between marriage order and spousal age gap.

4.2 Results of Logistic Regression Models

Table 3 presents the results of logistic regression models estimating the relationships between marriage order and assortative mating on education and age. For model fit statistics, a less negative value of log-likelihood (LL) indicates a better model fit. The Akaike information criterion (AIC) penalizes the inclusion of “free parameters” that make little or no contribution to the overall model fit (Raftery, 1986). A smaller value of AIC indicates a better and more parsimonious model fit.

[Insert Table 3 Here]

Models 1A, 2A, 1B, and 2B examined educational assortative mating for men and women. We found that adding a single educational homogamy indicator (M1B) to the model that only included control variables improved the model fit for women ($\Delta\text{AIC} = -3.9$; $\Delta\text{LL} = 2.9$, $p < .05$), whereas adding the educational homogamy, hypogamy and distance parameters (M2A) improved the model fit for men ($\Delta\text{AIC} = -9.6$; $\Delta\text{LL} = 7.8$, $p < .01$). The results indicated that educational assortative mating patterns differed by marriage order for both men and women.

While model selection was not our main focus, our two specifications of educational assortative mating – one using a single homogamy indicator and the other using the homogamy and hypogamy dummies and a distance measure – supported Hypothesis 1 in indicating that the degree to which individuals married outside their own educational groups was higher in higher-order marriages than in first marriages. In Model 1A, the results showed that compared with men in an educationally heterogamous marriage, men in an educationally homogamous union were 15.7% ($1 - \exp(-0.17)$) less likely to be in a remarriage than in a first marriage, although the coefficient was not statistically significant at the 5% level. The results of Model 2A support Hypothesis 1: compared with men who married a less-educated wife than themselves (i.e., educational hypergamy), men who married a similarly-educated wife were 44.6% ($1 - \exp(-0.59)$) less likely to be in a remarriage than in a first marriage. This is consistent with the results for the educational distance parameter: the larger the distance between the husband's and wife's educational levels, the more likely that the men were in a remarriage as opposed to a first marriage ($b = 0.49, p < .01$). Additionally, in Model 2A, the result for the education hypogamy parameter indicates that remarried men were less likely than their first-married counterparts to marry up in education: compared with men who married a less-educated wife than themselves, men who married a more-educated wife were 67.0% ($1 - \exp(-1.11)$) less likely to be in a remarriage than in a first marriage.

The results of Model 1B showed that compared with women in an educationally heterogamous marriage, women in an educationally homogamous union were 25.2% ($1 - \exp(-0.29)$) less likely to be in a remarriage than in a first marriage ($p < .05$). In Model 2B, the results based on the detailed educational homogamy, hypergamy, hypogamy and distance parameters indicated that compared with women who married a more-educated husband than themselves (i.e., hypergamy), women who married a similarly-educated husband (i.e., homogamy) or a less-educated husband (i.e., hypogamy) were both less likely to be in a

remarriage than in a first marriage, although the coefficients were not statistically significant at the 5% level. Consistent with the results for men, the coefficient for women's educational distance variable, though not statistically significant, showed that the distance between two spouses' education was positively associated with women's odds of being in a remarriage.

In Models 3 and 4, adding age assortative mating measures further improved the model fit for men (Models 3A vs. 1A: $\Delta\text{AIC} = -11.3$; $\Delta\text{LL} = 9.7$, $p < .01$) and particularly women (Models 3B vs. 1B: $\Delta\text{AIC} = -123.0$; $\Delta\text{LL} = 65.6$, $p < .001$). Notably, the results suggest that women's marital sorting on age seems to be more sensitive to marriage order than that of men. The results of age assortative mating parameters consistently lent support to Hypothesis 2 that age homogamy was less prevalent in remarriages than in first marriages. The results showed that compared with men married to a similarly-aged spouse (i.e., the husband-wife age gap between -2 and 2), men married to a wife who was older than themselves by 3–34 years were 2.5 times more likely to be in a remarriage than in a first marriage (Model 3A: $\exp(0.91)$, $p < .001$; Model 4A: 2.4 times = $\exp(0.88)$, $p < .001$).

In Models 3B and 4B, compared with women married to a similarly-aged husband, women married to a husband who was older than themselves were more likely to be in a remarriage as opposed to a first marriage. Specifically, compared with women married to a husband within 2-year age difference, women married to a husband who was older than themselves by 3–5 years, 6–10 years, and 11 years or more were 2.2 times ($\exp(0.77)$), 4.0 times ($\exp(1.39)$), and 8.8 times ($\exp(2.18)$) more likely, respectively, to be in a remarriage as opposed to a first marriage (for all three, $p < .001$).

[Insert Table 4 Here]

Recall that according to Table 2, compared with first-married individuals, both the percentage marrying an older spouse than oneself and the percentage marrying a younger spouse than oneself were higher among remarried individuals. The results from our logistic

regression models in Table 3, however, showed that the stronger presence of age heterogamy in higher-order than first marriages was driven by the tendency for remarried individuals (regardless of gender) to marry someone older than themselves. The discrepant findings were largely due to the inclusion of age at current marriage in our regression models. This is because individuals, particularly men, tend to marry further down in age (i.e., marry a much younger spouse than themselves) when they marry at later ages (England & McClintock, 2009) and remarriages tend to take place much later in life than first marriages (as shown in Table 2). Indeed, our additional regression analysis presented in Table 4, which excluded the age at marriage variable, yielded similar findings to the descriptive results in Table 2. Therefore, our analysis indicates that when we compare first-married and remarried individuals who entered their current marriage at the same age, the latter, irrespective of gender, are consistently more likely to marry someone older than themselves. This underlines the importance of examining age assortative mating net of age at marriage.

Although it is not the focus of this study, the coefficients for marriage cohorts revealed an increase in the odds of remarriage vis-à-vis first marriage across the marriage cohorts from 1979–1989 to 2010–2015. This result is consistent with national statistics on remarriage rates in China (cf. Figure 1).

5. DISCUSSION

The rapid and sizable increase in the number of remarriages has become a key feature of family and demographic changes in contemporary China (Raymo et al., 2015; Wang & Zhou, 2010). However, little is known about assortative mating patterns in remarriage or how the patterns may differ from those observed in first marriage, apart from a few recent studies that focused on Western contexts (Choi & Tienda, 2017; Gelissen, 2004; Qian & Lichter, 2018; Shafer, 2013a, 2013b). As a result, a number of important questions are left unanswered. In

China, is remarriage an “incomplete” institution (Cherlin, 1978, 2004), which is regulated to a lesser extent by the rules such as “marriages of matching doors” that enforce homogamous pairings (Hu, 2016; Ji, 2015; Lui, 2016)? If a lack of marital mobility reinforces socioeconomic inequality (Schwartz, 2013), does assortative mating in remarriage help mitigate social inequality by reducing social boundaries or exacerbate inequality by reinforcing socioeconomic segregation? Analyzing up-to-date data from nationally representative surveys in China, we attempted to shed light on these questions by comparing patterns of educational and age assortative mating between first and higher-order marriages.

We found that in China, educational homogamy and age homogamy were less prevalent in remarriages than in first marriages, which was consistent with prior research situated in Western countries (Qian & Lichter, 2018; Shafer, 2013a, 2013b; Shehan et al., 1991). Although Cherlin’s argument (1978, 2004) that remarriage is an “incomplete” institution applied mainly to differential behaviors and family interactions within first marriages and remarriages, our findings complement his argument by showing that remarriage is also incompletely institutionalized because the rules and conventions that enforce status homogamy in first marriage are less salient in configuring assortative mating patterns in remarriage. Additionally, we demonstrate that the differential assortative mating patterns by marriage order also differed between the education and age dimensions. While the pattern of educational pairing was more *heterogeneous* in remarriages than in first marriages, people were *consistently* more likely to marry a spouse older than themselves in remarriages than in first marriages. Thus, the results underscore the importance of considering assortative mating as plural processes in which the process of matching operates along multiple dimensions.

Specifically, for educational assortative mating, our results suggest that education and individual life course (i.e., marital timing and marital history) jointly shape assortative mating

patterns in first and higher-order marriages. As many previously-married people tend to be older than their never-married counterparts, it is less likely that the former met their remarriage partners in schools (Mare, 1991). Whilst education signifies long-term economic potential in the first-marriage market (Oppenheimer, 1988), individuals' socioeconomic status may be more evident from their occupation, income and wealth rather than education in the remarriage market (Qian, 2017; Shafer, 2013b). Furthermore, divorced and widowed people face a thin market for potential spouses, because most people of similar ages are already partnered (Rosenfeld & Thomas, 2012, p. 538). Hence, compared with never-married individuals, previously-married people may be more likely to "cast a wider net" to secure a spouse by marrying outside their own educational groups (Qian & Lichter, 2018). With the rise of remarriages in China (Wang & Zhou, 2010), more people may remarry across educational boundaries, which may help reduce the social distance between educational groups and mitigate economic inequality arising from educational assortative mating (Choi & Tienda, 2017; Hu & Qian, 2015).

For age assortative mating, we found age homogamy to be prevalent in first marriages, which is consistent with previous research (Qian & Qian, 2014). However, our results also suggest that marital sorting on age may have different operative mechanisms in first and higher-order marriages. Prior research showed that men tended to marry further down in age later in the life course, largely due to their preference for youth and the gendered double standard of aging (England & McClintock, 2009; Gelissen, 2004). We contribute to the scholarship by uncovering that controlling for age at marriage, compared with their never-married counterparts, previously-married men were more likely to marry a wife who was older than themselves, but they were not more likely to marry a wife who was younger than themselves. Thus, our results suggest that marital history plays a crucial role in determining the degree to which men can fulfill their preference for a young wife. As the

negative stigmas attached to marital dissolution inhibits previously-married men from finding a younger wife to marry, they may have to marry someone older in order to secure a spouse.

Similarly, controlling for age at marriage, previously-married women are disadvantaged relative to their never-married counterparts, due to the social stigmas attached to divorce and widowhood (Hu & To, 2018; Huang, 2012). Women's younger age relative to their potential husbands' age is a valuable resource in the marriage market (England & McClintock, 2009). Not surprisingly, we found that previously-married women were particularly likely to enter a remarriage with a man who was older than themselves, perhaps to compensate for their unfavorable marital history. Taken together, our results suggest that marriage order seems to be a resource for the never married and a disadvantage for the previously married, for men and women alike.

Furthermore, our findings highlight the importance of controlling for age at marriage in the analysis of age assortative mating. Without accounting for age at marriage in Tables 2 and 4, remarried individuals were more likely than the first-married to be in a marriage with someone younger than themselves. This result, however, seems to be an artifact of remarriages occurring at older ages than first marriages. Individuals, especially men, who marry later in life are more likely than those marrying earlier to marry someone younger than themselves (England & McClintock, 2009; Gelissen, 2004). In fact, when we compared first-married and remarried people who entered their current marriage at the same age (i.e., by controlling for age at marriage) in Table 3, the latter were more likely to marry a spouse who was older than themselves. Unfortunately, age at marriage was often unaccounted for in prior research on age assortative mating (Shafer, 2013a; Verbakel & Kalmijn, 2014). We urge scholars to control for age at marriage when analyzing marital sorting on age, as both individual preferences and marriage market conditions may change over the life course (England & McClintock, 2009; Rosenfeld & Thomas, 2012; Qian & Preston, 1993).

This study is subject to several limitations. First, due to the lack of data on spouses' marriage order, our definition of first marriage and remarriage was based on the marriage order of individual respondents rather than couple dyads. This means that we were unable to distinguish mixed-order marriages and thus underestimated the number of remarriages at the couple level. This data limitation also prevented us from testing whether never-married people may exchange their marriage order (i.e., the status of being never-married) for favorable socioeconomic resources (e.g., education) when marrying a previously-married spouse, as Qian and Lichter (2018) reported in their study of American couples. Secondly, divorce and widowhood entail different life-course dynamics and relational configurations with family members (Cherlin, 1978; Hu & To, 2018). Due to data limitations, we were not able to differentiate between the two distinct pathways leading into remarriage, but this should be an important agenda for future research. Thirdly, due to a lack of detailed information on spouses' traits such as income, occupation, wealth, and the presence of children at the time of marriage, our analysis necessarily focused on less time-sensitive traits such as education and spousal age gap. Lastly, our analysis compared assortative mating patterns between first-married and remarried people, but not between the first and higher-order marriages experienced by the same individuals.

Despite its limitations, this is the first study that has compared assortative mating patterns between first-married and remarried people in China. Given that the rise in the number of remarriages has become a major feature of family and demographic changes in both the East and the West (Cherlin, 2004; Raymo et al., 2015; Sweeney, 2010), we highlight the need for systematic theoretical developments and further empirical studies to better understand the distinctive nature of remarriage. Due to the scarcity of fine-grained data on remarried people in China, our empirical investigation had to rely on the efforts of pooling seven waves of data from two large-scale national surveys. It is pivotal to collect rich

longitudinal data from large samples of remarried couples in China. Such data will allow us to follow people through distinct life course and marital trajectories and also to examine patterns and consequences of assortative mating on a broader range of attributes such as income, *hukou* status, and occupation.

REFERENCES

- Becker, G. S. (1981). *A treatise on the family*. Cambridge, MA: Harvard University Press.
- Blossfeld, H. P. (2009). Educational assortative marriage in comparative perspective. *Annual Review of Sociology*, 35, 513–530.
- Bruze, G. (2011). Marriage choices of movie stars: Does spouse's education matter? *Journal of Human Capital*, 5(1), 1–28.
- Buss, D. M., Shackelford, T. K., Kirkpatrick, L. A., & Larsen, R. J. (2001). A half century of mate preferences: The cultural evolution of values. *Journal of Marriage and Family*, 63(2), 491–503.
- Cameron, A. C., & Miller, D. L. (2015). A practitioner's guide to cluster-robust inference. *Journal of Human Resources*, 50(2), 317–372.
- Cherlin, A. (1978). Remarriage as an incomplete institution. *American Journal of Sociology*, 84(3), 634–650.
- Cherlin, A. J. (2004). The deinstitutionalization of American marriage. *Journal of Marriage and Family*, 66(4), 848–861.
- China Statistics Yearbook. (2017). *Table 22–25: Marriage services statistics*. Accessed online on July 21, 2018: <http://www.stats.gov.cn/tjsj/ndsj/2017/indexch.htm>
- Choi, K. H., & Tienda, M. (2017). Boundary crossing in first marriage and remarriage. *Social Science Research*, 62, 305–316.
- England, P., & McClintock, E. A. (2009). The gendered double standard of aging in US marriage markets. *Population and Development Review*, 35(4), 797–816.
- Gelissen, J. (2004). Assortative mating after divorce: A test of two competing hypotheses using marginal models. *Social Science Research*, 33(3), 361–384.
- Han, H. (2010). Trends in educational assortative marriage in China from 1970 to 2000. *Demographic Research*, 22, 733–770.

- Higgins, L. T., Zheng, M., Liu, Y., & Sun, C. H. (2002). Attitudes to marriage and sexual behaviors: A survey of gender and culture differences in China and United Kingdom. *Sex Roles, 46*(3–4), 75–89.
- Holmgren, J. (1985). The economic foundations of virtue: Widow-remarriage in early and modern China. *Australian Journal of Chinese Affairs, 13*, 1–27.
- Hou, F., & Myles, J. (2013). Interracial marriage and status-caste exchange in Canada and the United States. *Ethnic and racial studies, 36*(1), 75–96.
- Hu, A., & Qian, Z. (2015). Educational homogamy and earnings inequality of married couples: Urban China, 1988–2007. *Research in Social Stratification and Mobility, 40*, 1–15.
- Hu, Y., & To, S. (2018). Family relations and remarriage post-divorce and post-widowhood in China. *Journal of Family Issues, 39*(8), 2286–2310.
- Hu, Y. (2016). Impact of rural-to-urban migration on family and gender values in China. *Asian Population Studies, 12*(3), 251–272.
- Hu, Y. (2016). Marriage of matching doors: Marital sorting on parental background in China. *Demographic Research, 35*, 557–580.
- Huang, Y. (2012). Remarriage, gender, and life course in contemporary inland rural China. *Journal of Comparative Family Studies, 43*(2), 313–330.
- Jepsen L.K., & Jepsen, C.A. (2002). An empirical analysis of the matching patterns of same-sex and opposite-sex couples. *Demography, 39*(3), 435–453.
- Ji, Y. (2015). Between tradition and modernity: “Leftover” women in Shanghai. *Journal of Marriage and Family, 77*(5), 1057–1073.
- Ji, Y., Wu, X., Sun, S., & He, G. (2017). Unequal care, unequal work: Toward a more comprehensive understanding of gender inequality in post-reform urban China. *Sex Roles, 77*(11–12), 765–778.

- Kalmijn, M. (1998). Intermarriage and homogamy: Causes, patterns, trends. *Annual Review of Sociology*, 24, 395–421.
- Kalmijn, M. (2010). Educational inequality, homogamy, and status exchange in black-white intermarriage: A comment on Rosenfeld. *American Journal of Sociology*, 115(4), 1252–1263.
- Lamidi, E., Brown, S. L., & Manning, W. D. (2015). FP-15-14 Assortative mating: Age heterogamy in U.S. marriages, 1964-2014. National Center for Family and Marriage Research Family Profiles.79. https://scholarworks.bgsu.edu/ncfmr_family_profiles/79
- Lui, L. (2016). Gender, rural-urban inequality, and intermarriage in China. *Social Forces*, 95(2), 639–662.
- Ma, L., Turunen, J., & Rizzi, E. (2018). Divorce Chinese style. *Journal of Marriage and Family*. Online first: <https://doi.org/10.1111/jomf.12484>
- Mare, R. D. (1991). Five decades of educational assortative mating. *American Sociological Review*, 56(1), 15–32.
- Mu, Z., & Xie, Y. (2014). Marital age homogamy in China: A reversal of trend in the reform era? *Social Science Research*, 44, 141–157.
- National Center for Health Statistics. (2017). *Provisional number of divorces and annulments and rate: United States, 2000–2016*. Accessed online on July 20, 2018: https://www.cdc.gov/nchs/data/dvs/national_marriage_divorce_rates_00-16.pdf
- Oppenheimer, V. K. (1988). A theory of marriage timing. *American Journal of Sociology*, 94(3), 563–591.
- Poppel, F. V., Liefbroer, A. C., Vermunt, J. K., & Smeenk, W. (2001). Love, necessity and opportunity: changing patterns of marital age homogamy in the Netherlands, 1850–1993. *Population Studies*, 55(1), 1–13.

- Qian, Z., & Lichter, D. T. (2018). Marriage markets and intermarriage: Exchange in first marriages and remarriages. *Demography*, *55*(3), 849–875
- Qian, Z., & Preston, S. H. (1993). Changes in American marriage, 1972 to 1987: Availability and forces of attraction by age and education. *American Sociological Review*, *58*(4), 482–495.
- Qian, Z. (1997). Breaking the racial barriers: Variations in interracial marriage between 1980 and 1990. *Demography*, *34*(2), 263–276.
- Qian, Y., & Qian, Z. (2014). The gender divide in urban China: Singlehood and assortative mating by age and education. *Demographic Research*, *31*, 1337–1364.
- Qian, Y., & Qian, Z. (2017). Assortative mating by education and Hukou in Shanghai. *Chinese Sociological Review*, *49*(3), 239–262.
- Qian, Y. (2017). Gender asymmetry in educational and income assortative marriage. *Journal of Marriage and Family*, *79*(2), 318–336.
- Raftery, A. E. (1986). Choosing models for cross-classifications. *American Sociological Review*, *51*(1), 145–146.
- Raymo, J. M., & Iwasawa, M. (2008). Bridal pregnancy and spouse pairing patterns in Japan. *Journal of Marriage and Family*, *70*(4), 847–860.
- Raymo, J. M., Park, H., Xie, Y., & Yeung, W. J. J. (2015). Marriage and family in East Asia: Continuity and change. *Annual Review of Sociology*, *41*, 471–492.
- Riley, N. E. (1994). Interwoven lives: Parents, marriage, and guanxi in China. *Journal of Marriage and the Family*, *56*(4), 791–803.
- Rosenfeld, M. J. (2005). A critique of exchange theory in mate selection. *American Journal of Sociology*, *110*(5), 1284–1325.
- Rosenfeld, M. J., & Thomas, R. J. (2012). Searching for a mate: The rise of the Internet as a social intermediary. *American Sociological Review*, *77*(4), 523–547.

- Schwartz, C. R. (2013). Trends and variation in assortative mating: Causes and consequences. *Annual Review of Sociology*, 39, 451–470.
- Schwartz, C. R., & Graf, N. L. (2009). Assortative matching among same-sex and different-sex couples in the United States, 1990–2000. *Demographic research*, 21, 843–878.
- Schwartz, C. R., & Han, H. (2014). The reversal of the gender gap in education and trends in marital dissolution. *American Sociological Review*, 79(4), 605–629.
- Schwartz, C. R., & Mare, R. D. (2005). Trends in educational assortative marriage from 1940 to 2003. *Demography*, 42(4), 621–646.
- Shafer, K. (2013a). Disentangling the relationship between age and marital history in age-assortative mating. *Marriage & Family Review*, 49(1), 83–114.
- Shafer, K. (2013b). Unique matching patterns in remarriage: Educational assortative mating among divorced men and women. *Journal of Family Issues*, 34(11), 1500–1535.
- Smits, J. (2003). Social closure among the higher educated: Trends in educational homogamy in 55 countries. *Social Science Research*, 32(2), 251–277.
- Shehan, C. L., Berardo, F. M., Vera, H., & Carley, S. M. (1991). Women in age-discrepant marriages. *Journal of Family Issues*, 12(3), 291–305.
- Sweeney, M. M. (2010). Remarriage and stepfamilies: Strategic sites for family scholarship in the 21st century. *Journal of Marriage and Family*, 72(3), 667–684.
- Treiman, D. J. (2013). Trends in educational attainment in China. *Chinese Sociological Review*, 45(3), 3–25.
- Verbakel, E., & Kalmijn, M. (2014). Assortative mating among Dutch married and cohabiting same-sex and different-sex couples. *Journal of Marriage and Family*, 76(1), 1–12.
- Wang, Q., & Zhou, Q. (2010). China's divorce and remarriage rates: Trends and regional disparities. *Journal of Divorce & Remarriage*, 51(4), 257–267.

World Bank. (2018). *Labor force participate rate, female (% of female population ages 15+)*.

Accessed online on March 26, 2019:

<https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?locations=CN>

Xie, Y., & Hu, J. (2014). An introduction to the China family panel studies (CFPS). *Chinese Sociological Review*, 47(1), 3–29.

Yeung, W. J. J. (2013). Higher education expansion and social stratification in China. *Chinese Sociological Review*, 45(4), 54–80.

Yu, J., & Xie, Y. (2015). Cohabitation in China: Trends and determinants. *Population and development review*, 41(4), 607–628.

Zhang, Y., & Hannum, E. (2015). Diverging fortunes: The evolution of gender wage gaps for singles, couples, and parents in China, 1989–2009. *Chinese Journal of Sociology*, 1(1), 15–55.

Table 1: A summary of statistical techniques for the analysis of assortative mating

Models	Strengths	Limitations	Examples
Log-linear model	<ul style="list-style-type: none"> Widely-used to examine assortative mating patterns; Controlling for marginal distributions of spouses' attributes. 	<ul style="list-style-type: none"> "Inscrutable complexity" (Rosenfeld, 2005, p. 1287); The inclusion of different orders of interaction terms renders parameter interpretation difficult (Hou & Myles, 2013); Classification of continuous variables into categories may be arbitrary (Rosenfeld, 2005). 	<ul style="list-style-type: none"> Schwartz & Mare (2005): examining trends in educational assortative mating in the United States; Han (2010): examining trends in educational assortative mating in China; Qian (2017): examining trends in educational and income assortative mating in the United States.
Binary / Multinomial logit model, using types of marriage as the dependent variable(s)	<ul style="list-style-type: none"> Ease of interpreting parameter (Hou & Myles, 2013); Ease of incorporating control variables (Hou & Myles, 2013). 	<ul style="list-style-type: none"> Only applicable to examining differences in assortative mating <i>across</i> couple types. 	<ul style="list-style-type: none"> Hou & Myles (2013); Schwartz & Graf (2009): predicting couple type as a function of partners' attributes and assortative mating. Jepsen & Jepsen (2002): Predicting same-sex vs. different-sex couple type as a function of partners' assortative mating.
Binary / Multinomial logit model, using assortative mating as the dependent variable(s)	<ul style="list-style-type: none"> Ease of interpreting parameter (Hou & Myles, 2013); Ease of incorporating control variables (Hou & Myles, 2013). 	<ul style="list-style-type: none"> Usually only applicable to examining assortative mating on one characteristic (e.g., age <i>or</i> education). 	<ul style="list-style-type: none"> Raymo & Iwasawa (2008): using pregnancy status at marriage to predict educational assortative mating (i.e., hypogamy, homogamy, and hypergamy).

Table 2: Descriptive statistics for variables used in the analysis, by marriage order and gender

Parameter	Men		Women	
	First marriage	Remarriage	First marriage	Remarriage
Spouse's relative education ^a				
Educational hypergamy (%)	32.14	32.88	29.71	28.14
Educational homogamy (%)	54.26	48.40	55.61	54.11
Educational hypogamy (%)	13.60	18.72	14.68	17.75
Educational distance between spouses ^b	1.19	1.24	1.18	1.19
	(0.42)	(0.48)	(0.41)	(0.44)
Husband-wife age gap categories (%) ^c				
[-34, -3]	3.54	5.90	3.38	12.70
[-2, 2]	62.54	33.22	62.61	35.64
[3, 5]	24.33	19.06	24.09	21.50
[6, 10]	8.41	25.13	8.47	19.48
[11, 34]	1.17	16.69	1.45	10.68
Husband's education (%)				
< junior high school	25.16	29.51	25.87	40.12
Junior high school	38.94	35.75	39.61	36.94
High school	21.27	23.78	20.38	14.86
College or above	14.63	10.96	14.14	8.08
Wife's education (%)				
< junior high school	37.74	37.44	37.34	47.91
Junior high school	33.75	33.90	33.62	31.89
High school	17.12	19.22	16.99	14.57
College or above	11.40	9.44	12.05	5.63
Age at marriage	24.77	37.40	22.91	35.59
	(3.73)	(8.62)	(3.13)	(7.79)
Year of marriage (%)				
1979–1989	39.83	9.11	38.60	9.09
1990–1999	30.30	23.27	30.80	27.27
2000–2009	24.53	52.11	25.40	49.35
2010–2015	5.33	15.51	5.20	14.29
Urban residence (%)	54.78	64.92	55.00	54.40
<i>N</i> (individuals)	23,377	593	24,979	693

Note: ^a Educational hypergamy is marriage in which the husband is more educated than the wife. Educational homogamy is marriage in which two spouses share the same educational level. Educational hypogamy is marriage in which the wife is more educated than the husband. ^b This variable, ranging from 1 to 3, indicates the absolute value of the difference between spouses' education categories for those with different levels of education (see Schwartz & Han, 2014: Note 8 on p.626 for the same coding strategy). ^c Age gap was calculated by subtracting wife's age from husband's age.

Standard deviations are in parentheses. *N* = 49,642 [*N* (2010 CGSS) = 6,680; *N* (2011 CGSS) = 3,153; *N* (2012 CGSS) = 6,553; *N* (2013 CGSS) = 6,352; *N* (2015 CGSS) = 5,609; *N* (2010 CFPS) = 17,628; *N* (2012 CFPS) = 3,667].

Table 3: Logistic regression models predicting the log-odds of being remarried, by gender

Select parameter	Men (<i>N</i> = 23,970)				Women (<i>N</i> = 25,672)			
	M1A	M2A	M3A	M4A	M1B	M2B	M3B	M4B
Education homogamy	-0.17 (0.11)		-0.18 (0.11)		-0.29* (0.12)		-0.28* (0.12)	
Spouse's relative education ^a (ref.: Educational hypergamy)								
Educational homogamy		-0.59* (0.23)		-0.57* (0.23)		-0.33 (0.26)		-0.34 (0.29)
Educational hypogamy		-1.11* (0.44)		-1.03* (0.44)		-0.15 (0.49)		-0.12 (0.55)
Educational distance between spouses		0.49** (0.17)		0.48** (0.17)		0.14 (0.19)		0.01 (0.22)
Husband-wife age gap categories (ref.: [-2, 2])								
[-34, -3]			0.91*** (0.26)	0.88*** (0.27)			-0.13 (0.22)	-0.13 (0.22)
[3, 5]			-0.23 (0.14)	-0.22 (0.14)			0.77*** (0.15)	0.77*** (0.15)
[6, 10]			0.06 (0.15)	0.05 (0.15)			1.39*** (0.17)	1.39*** (0.17)
[11, 34]			-0.16 (0.23)	-0.16 (0.23)			2.18*** (0.30)	2.18*** (0.30)
Husband's education (ref.: < junior high school)								
Junior high school	-0.04 (0.16)	-0.44* (0.22)	-0.00 (0.16)	-0.37 (0.22)	-0.23 (0.14)	-0.29 (0.25)	-0.13 (0.15)	-0.19 (0.28)
High school	-0.20 (0.18)	-1.01** (0.35)	-0.15 (0.18)	-0.90* (0.35)	-0.69*** (0.20)	-0.82* (0.41)	-0.74*** (0.21)	-0.84 (0.48)
College or above	-0.64** (0.24)	-1.86*** (0.50)	-0.59* (0.24)	-1.72*** (0.51)	-0.71** (0.24)	-0.91 (0.58)	-0.73** (0.26)	-0.86 (0.67)
Wife's education (ref.: < junior high school)								
Junior high school	0.05 (0.15)	0.52* (0.22)	0.08 (0.15)	0.52* (0.22)	-0.11 (0.14)	-0.04 (0.25)	-0.03 (0.14)	0.02 (0.28)
High school	-0.00 (0.17)	0.85* (0.35)	0.02 (0.17)	0.82* (0.35)	-0.68*** (0.20)	-0.55 (0.41)	-0.62** (0.21)	-0.52 (0.48)
College or above	-0.49 (0.26)	0.67 (0.51)	-0.47 (0.26)	0.61 (0.51)	-1.12*** (0.27)	-0.95 (0.59)	-1.07*** (0.29)	-0.93 (0.69)
Age at marriage	0.29*** (0.01)	0.29*** (0.01)	0.29*** (0.01)	0.29*** (0.01)	0.43*** (0.01)	0.43*** (0.01)	0.43*** (0.02)	0.43*** (0.02)

Year of marriage (ref.: 1979–1989)									
1990–1999	0.70***	0.70***	0.69***	0.69***	0.93***	0.94***	0.88***	0.88***	
	(0.17)	(0.17)	(0.17)	(0.18)	(0.17)	(0.17)	(0.17)	(0.17)	
2000–2009	1.09***	1.08***	1.07***	1.07***	1.08***	1.08***	0.95***	0.95***	
	(0.17)	(0.17)	(0.17)	(0.17)	(0.16)	(0.16)	(0.17)	(0.17)	
2010–2015	1.17***	1.18***	1.12***	1.14***	0.99***	0.99***	0.90**	0.89**	
	(0.24)	(0.24)	(0.24)	(0.25)	(0.27)	(0.27)	(0.27)	(0.28)	
Urban residence (ref.: rural)	0.24	0.24	0.24	0.23	−0.37**	−0.37**	−0.50***	−0.50***	
	(0.13)	(0.13)	(0.13)	(0.13)	(0.14)	(0.14)	(0.14)	(0.14)	
Constant	−12.78***	−12.91***	−12.84***	−12.97***	−14.82***	−14.92***	−15.34***	−15.29***	
	(0.42)	(0.50)	(0.43)	(0.51)	(0.50)	(0.58)	(0.52)	(0.60)	
AIC (3,216.4/2,837.6)	3,215.9	3,206.8	3,204.6	3,196.9	2,833.7	2,837.2	2,710.7	2,714.6	
LL (−1,590.2/−1,400.8)	−1,589.0	−1,582.4	−1,579.3	−1,573.4	−1,397.9	−1,397.6	−1,332.3	−1,332.3	

Note: ^a Educational hypergamy is marriage in which the husband is more educated than the wife. Educational homogamy is marriage in which two spouses share the same educational level. Educational hypogamy is marriage in which the wife is more educated than the husband.

ref. = reference group. AIC = Akaike-information-criterion. LL = Log-likelihood. AIC and LL in brackets indicate the indices for models with only control variables for men and women, respectively. Robust standard errors are in parentheses. All models controlled for data source; we do not present their coefficients here, but full models are available upon request.

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

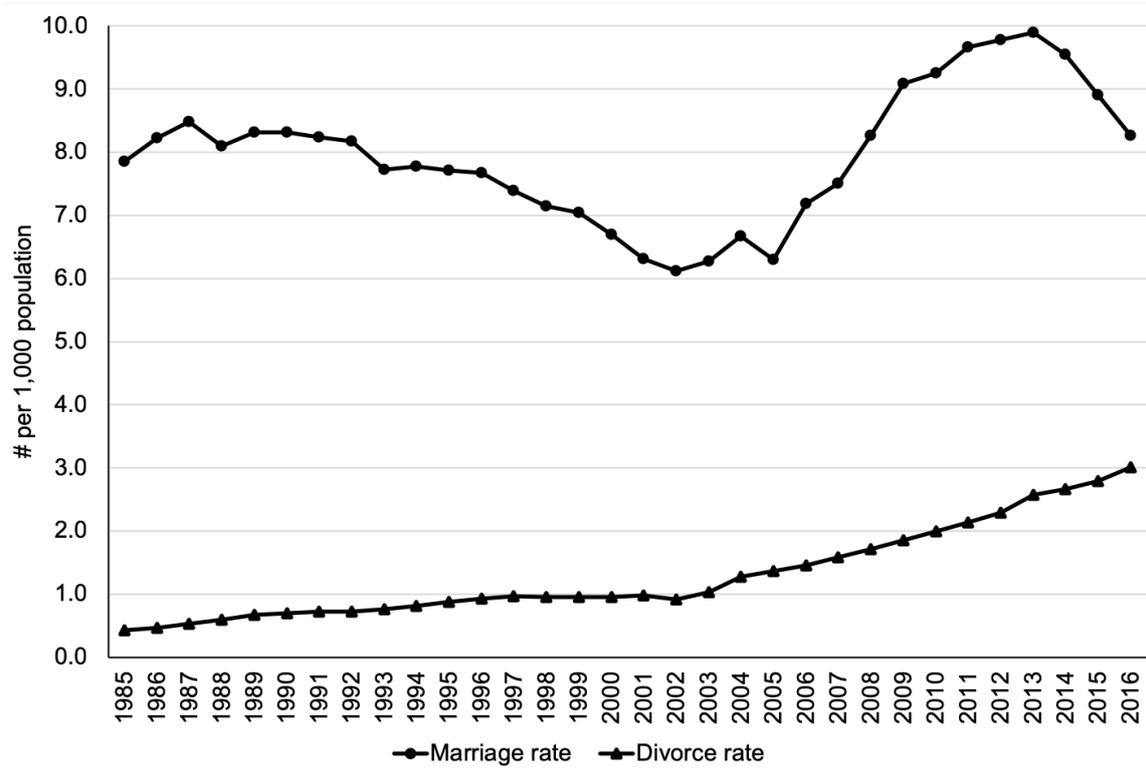
Table 4: Select parameters from logistic regression models predicting the log-odds of being remarried, without controlling for age at current marriage, by gender

Select parameter	Men (<i>N</i> = 23,970)		Women (<i>N</i> = 25,672)	
	M3C	M4C	M3D	M4D
Educational homogamy	-0.29** (0.09)		-0.23** (0.08)	
Spouse's relative education (ref.: hypergamy)				
Educational homogamy		-0.52** (0.19)		-0.18 (0.21)
Educational hypogamy		-0.67 (0.36)		0.05 (0.41)
Educational distance between spouses		0.44** (0.14)		0.17 (0.16)
Husband-wife age gap categories (ref.: [-2, 2])				
[-34, -3]	1.15*** (0.19)	1.12*** (0.19)	1.67*** (0.13)	1.66*** (0.13)
[3, 5]	0.29* (0.12)	0.28* (0.12)	0.37*** (0.11)	0.37*** (0.11)
[6, 10]	1.52*** (0.12)	1.51*** (0.12)	1.22*** (0.11)	1.21*** (0.11)
[11, 34]	2.93*** (0.16)	2.93*** (0.16)	2.27*** (0.16)	2.26*** (0.16)

Note: ref. = reference group. Models controlled for all the control variables listed in Tables 1 and 2 as well as data source, except for age at current marriage. Robust standard errors are in parentheses.

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

Figure 1: Rates of marriage and divorce in China, 1985–2016.



Source: Authors' calculations using data on annual marriage registrations, divorce registrations, and population size from the 2002, 2011, and 2017 China Statistics Yearbooks (accessed from the National Bureau of Statistics of China website on July 14, 2018, <http://www.stats.gov.cn/tjsj/ndsj/>).