Who is older?

Gender and age differences in heterosexual couples

Giuliana Giuliani

Thesis submitted for assessment with a view to
obtaining the degree of Doctor of Political and Social Sciences
of the European University Institute

Florence, 14 October 2020

European University Institute

Department of Political and Social Sciences

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I Giuliana Giuliani certify that I am the author of the work Who is older? Gender and age differences in heterosexual couples I have presented for examination for the Ph.D. at the European University Institute. I also certify that this is solely my own original work, other than where I have clearly indicated, in this declaration and in the thesis, that it is the work of others.

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23th September 2020

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ABSTRACT

Why are women the younger partner in the majority of couples? This thesis investigates the social and gendered patterns of age-difference between heterosexual partners in Europe and beyond, and the causes behind such patterns. Chapter 2 begins by constructing a theoretical framework to identify the mechanisms of mating selection that apply to age-differences, whether these may vary by gender, and why. In the following two chapters, the thesis investigates how age differences among married couples varies across space and time. In chapter 3, it analyses age differences between spouses in 96 countries, and how they vary according to the level of socio-economic development, women's empowerment and the demographic characteristics of the country. In chapter 4, it focuses on one case study, showing how age differences between spouses have changed in Italy over the past 145 years. Thereafter, the thesis moves on to cohabiting and married unions and tests two specific hypotheses affecting women's and men's preferences for age hypergamy. In chapter 5, it tests the "empowerment" hypothesis, according to which women with more opportunities are less likely to choose older men because such women can "afford" the risk of less financially stable men and less traditional gender roles. In chapter 6, the "evolutionary" hypothesis is tested, that is that men seek younger women as a reproductive strategy.

The thesis shows the persistence of hypergamy and its prevalence among marriages worldwide, but cross-country differences linked to different levels of women's empowerment. Importantly, the patterns of age differences among European cohabiting and married couples reflect gender differences in opportunities in the society and, only to a lesser extent, biological differences in reproduction capacity.

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Enid believed in matching and was happiest at a wedding where the bridesmaids suppressed their selfish individual desires and wore dresses that matched the corsages and cocktails napkins, the icing on the cake, and the ribbons on the party favour. She liked a ceremony at Chiltsville Methodist to be followed by a modest reception at Chiltsville Sheraton. She liked a more elegant wedding at Paradise Valley Presbiterian to culminate in the clubhouse at Deepmire, where even the complimentary matches (...) matched the color scheme. Most important of all was that the bride and the groom themselves match: have similar backgrounds and ages ad educations. Sometimes, at a wedding hosted by less good friends o Enid's, the bride would be heavier or significantly older than the groom, or the groom's family would hail from a farm town upstate and be obviously overawed by Deepmire's elegance. Enid felt sorry for the principals at a reception like that. She just knew the marriage was going to be a struggle from day one."

Jonathan Franzen

The corrections

You must be stronger than me. You've been here seven years longer than me. Don't you know you're supposed to be the man? Not pale in comparison to who you think I am

Amy Winehouse

Stronger than me

You said you'd marry me if I was twenty-three
But I'm one that you can't see if I'm only eighteen
Tell me who makes these rules
Obviously not you
Who are you answering to?

Paolo Nutini

Jenny don't be hasty

Times are changing. There are those who are on the train of change, women are there with you, like you, you've almost all understood, gentlemen. Not everyone, some are still on the platform and I'm sure they will soon get on the train.

Brigitte Macron

1. Introduction

Between 2016 and 2017, Donald Trump and Emmanuel Macron were elected Presidents of the United Stated and France, respectively. However, the race for gossip related to the candidates' private lives began much earlier, during their separate electoral campaigns. Of course, their respective partners, Melania Trump and Brigitte Macron, were part of the chase. Both First Ladies received significant media attention but for quite different reasons. Mrs Trump is about twenty-five years younger than her husband. In contrast, Mrs Macron is about twenty-five years older than her husband. Still today, when typing the names of either into a search engine, one of the first words to be suggested is "age".[1] Moreover, "how old" is the first "how" question asked on search engines worldwide about Mrs Macron, and only the fourth "how" question asked about Mrs Trump.[2] Sadly, the age of Mrs Macron was used by Brazilian President Bolsonaro to insult President Macron during his activity as President.

These episodes demonstrate that couples with large age gaps raise curiosity in general, but couples where the woman is the older partner (age hypogamous) may stir even greater interest (if not hostility). It is so partly because such relationships are themselves rare. In the vast majority of heterosexual couples, men are the older partner (age hypergamous) or partners are of a similar age (to a lesser extent). Only in a minority of couples women are the older partner. In this thesis, I ask: why do the patterns of age differences look this way? And, are we jumping on the train of change, as Brigitte Macron has suggested?

[1] Ranked as third suggestion by the website "ubersuggest", data refer to the current month's average..

[2] Data are measured by the website "answer the public" on 1st February 2020 and refers to a given moment. The questions searched for are presented by the preposition used together with the topic, for instance *how, what, where* etc. In addition, the *what* most asked questions about Brigitte Macron listed on the website are "what is Brigitte macron net worth", "what height is Brigitte macron" and "what age is Brigitte". "what age is Melania Trump" is not among the *what* most asked questions about Melania Trump, which are the following: "what Melania Trump wore/wore today/wore this week", "what Melania Trump do", what's Melania Trump's net worth".

The topic is important because age differences between partners are one of the dimensions of gender inequality in the couple and in the family. We know that resources and opportunities are unequally distributed in society by gender. For instance, in most sectors of the labour market, men are paid more than women, even when they are of a similar age and possess comparable qualifications. This means that in couples with partners of the same age women own less resources than their partners and this weakens their bargaining power. As income and status increase with age, the uneven gender distribution of resources is exacerbated in those couples where men represent the older partner. Moreover, age difference may affect also the distribution of psychological resources in the couple (Presser, 1975).

We live in a time when the gender revolution is "unfinished" (Gerson, 2011). The progress towards gender egalitarian roles in education and the labour market are yet to be accompanied by equal progress in gender egalitarian roles in the family (England, 2010; England, 2011; Gerson, 2011; Goldscheider et al., 2015). While women are increasingly part of the labour force and are expected to work, they are still the ones taking the "double shift" of work (Hochschild, 1989); the first shift being at the workplace and the second at home, with home and childcare duties. This is because of gender-unequal roles that demand women take the lion share of unpaid work at home. Many scholars have also linked the incomplete gender revolution to precise family dynamics. In particular, unequal gender roles in the family have been discussed as some of the causes of the decline in marriage rates, rise in divorce, and even declining fertility. Accordingly, some scholars suggested that more gender equal roles in the family would "solve" the "family crisis" (Esping-Andersen & Billari, 2015; Goldscheider et al., 2015; Anderson & Kohler, 2015). While the argument is debated (Myrskyla et al., 2011; Matysiak et al., 2016), there are no doubts that gender equality, in the society as in the family, is and has to be one of the targets of a fair society. This is why it is of utmost importance to understand the mechanisms reproducing gender inequality. One might be the unequal distribution of resources in couples with partners of different age.

In this thesis, I interpret age differences as the result of a more general mating selection process. This fact allows us to focus on one specific time, in the family life-course, when the scene for gender inequality is set. That is, right at the onset of the relationship. Studying age differences as the result of a mating selection process is also extremely useful to understand the entrenched way in which mating choice and gender are linked. I have said that age differences are one of the causes of gender inequality in the couple. However, they are also a consequence of gender inequality in the wider society. In this thesis, I focus on the latter aspect, investigating how

gender differences in social opportunities, as well as biological differences, affect mating selection and, consequently, lead to specific patterns of age differences. Sociological studies identify individual preferences and the structure of opportunities as the main forces determining the outcome of mating selection. This study highlights how the process of mating selection is deeply embedded in the gender system and therefore influenced by it.

There is a strong tradition of research on mating selection in the fields of sociology, demography and economics. While the majority of the studies in this field focus on partners' traits such as education, social status, and ethnicity, studies on age assortation are relatively scarce (Alarie & Carmichael, 2015; Berardo et al., 1993; Esteve et al., 2009a; Kolk, 2015; Vera et al., 1985), especially in Europe, with some noticeable exceptions (Bergström, 2018; Bozon, 1991; Mignot, 2010). However, recent evidence on age differences stems from two different strands of research. First, studies on the trends of age differences among partners in developed countries show that such patterns have being changing (Atkinson & Glass, 1985; Bhrolcháin, 2005; Martin Dribe & Nystedt, 2017; Esteve et al., 2009a; Kolk, 2015a; Mu, 2014; Van de Putte et al., 2009; Van Poppel et al., 2001). These studies confirm a positive trend in homogamous relationships or, similarly, towards smaller age gaps between the partners at least during the 20th century. The recent, smaller but positive trend of hypogamy is still to be confirmed. A second strand of research has focused on age preferences of online dating users (Bergström, 2018; Bergstrom & Bagnoli, 1993; Dunn et al., 2010; Hitsch et al., 2010; Skopek et al., 2011; Smith & Duggan, 2013; Whyte & Torgler, 2017). These studies demonstrate that age preferences differ by gender with a larger variation among women's' preferences when compared with men's' preferences. While men do seek younger women, women tend to seek older men or men of the same age (M. Bergström, 2018; Bergstrom & Bagnoli, 1993; Dunn et al., 2010; Hitsch et al., 2010; Skopek et al., 2011; Smith & Duggan, 2013; Whyte & Torgler, 2017).

However, we still do not know why the trends of age differences are changing, nor why individual age preferences differ by gender. This thesis builds on previous research by taking a broader and multidisciplinary approach to the topic. It focuses on heterosexual couples, married and cohabiting, mainly in Europe. At a macro level, it investigates the patterns of age differences between spouses in different countries, in relation to the level of socio-economic development and women's empowerment, as well as demographic factors. At the micro level, it highlights some potential factors influencing the age preferences of women and men, namely

women's education attainment and the intention of men to have children. Throughout the thesis, the relevance of age at marriage is also considered.

I have said above that this study contributes to understanding one of the processes leading to gender inequality in the couple, that is mating selection. Before describing in greater detail the empirical content of the thesis, I would like to highlight why the study of age differences is also important and contributes to the literature on mating selection mechanisms in general. Firstly, the patterns of age differences are clearly gendered, that is, there is a tendency to have younger partner, but only for men and not for women. Conversely, previous research shows a general tendency towards homogamy/endogamy relative to education, social status, and ethnicity. This means that partners tend to match with partners with similar characteristics or belonging to the same social group. When it comes to age, however, this is not the case. As I mentioned, there is a strong tendency towards age hypergamy (couples in which the man is the older partner) and, to a lesser extent, towards age homogamy (couples in which men and women are of a similar age). Age hypogamy (couples in which the woman is the older partner) appears to be avoided altogether. Consequently, age mating selection represents an empirical puzzle for mating selection theory with the element of gender being a central component.

A second reason why studying age differences is important in understanding mating selection mechanisms is that it allows us to focus better on the gender differences in preferences on the marriage market. The choice of partners depends on what characteristics individuals seek in their prospective partners and what is "available" on the market. In other words, individuals' preferences and the opportunity structure. A large body of research on mating selection has highlighted the importance of the opportunity structure for outcomes on the marriage market. For instance, in the case of education, the fact that women, in most developed countries, became more educated affected the ratio of highly educated women and men and, consequently, the patterns of educational homogamy (Esteve et al., 2016; Van Bavel, 2012). However, the ratio of same-age women and men is approximately one, at least in developed societies and for the most "marriageable age". That is, there are enough same-age women and men to allow homogamy to prevail on the market. The specific age opportunity structure allows us to prioritise a focus on preferences when studying the causes of age differences. In fact, if all individuals preferred same-age partners, this would be, in principle, possible. This makes the job of testing age preference towards homogamy easier.

The third reason why the study of age differences contributes to the literature on mating selection, is that it challenges the assumption that women and men on the marriage market have fixed age preferences. Most research on assortative mating model the marriage market on the assumption that men seek younger women and, vice-versa, that women seek younger men (typically using a 3 years age gap). According to recent findings, this is not entirely correct (Bergström, 2018; Bergstrom & Bagnoli, 1993; Dunn et al., 2010; Hitsch et al., 2010; Skopek et al., 2011; Smith & Duggan, 2013; Whyte & Torgler, 2017). Age preferences, as well as age differences, vary more often than is assumed. Therefore, we can no longer take age preferences for granted and we should turn our attention to the investigation of age differences and age preferences.

To sum up, this thesis researches the topic of age differences between partners and their causes, paying particular attention to the role of gender. Accordingly, it contributes to the understanding of one of the process leading to gender inequality in the family, and to the development of the theory on mating selection mechanisms. The thesis is organised as follows. In the next chapter, I set out the theoretical framework to interpret what mating selection mechanisms determine age differences (chapter 2). In particular, I discuss the main theories regarding individual preferences and how they are constrained by the age opportunity structure. The rest of the thesis consists of four empirical chapters, each of them investigating the role of specific factors in determining age differences between partners. The chapters are based on different sets of data and employ a variety of research methods. In chapters 3 and 4, I investigate the patterns of age differences among spouses across space and time, by using aggregated data to analyse the macro-factors affecting such patterns. In chapter 3, I investigate marriages in 96 countries. I show how the patterns of age differences vary by country, and how they correlate with the levels of socio-economic development and women's empowerment in the country. Methodologically, I use OLS and a variant of the extreme bound test (Leamer, 1985; Sala-I-Martin, 1997) as a robustness check. The study gives us a better picture of age differences worldwide. It suggests that, nowadays, countries in the Western Europe do not have particularly low shares of hypergamous marriages, or high shares of hypogamous ones, compared to other countries in the world. With regard to the factors associated with age differences at country level, the results show that socio-economic development and women's empowerment (in terms of education, employment and political representation) are negatively associated with the share of hypergamous marriages, and positively associated with the share of hypogamous ones in the

country. Further interesting findings concern the key roles of structural factors such as the legal age to marry, the actual age of brides and the gender ratio in life expectancy.

In chapter 4, I investigate the historical trends of age differences among spouses in Italy between 1875 and 2015. To my knowledge, this is the longest period covered in the literature on the topic. Trends are presented for both the first and second order marriages, and the trends among first marriages are discussed in light of the trends of age at marriage. The results confirm some of the patterns highlighted by previous literature and add new insights to the topic. As found in other countries, in Italy there was a large increase in the share of homogamous marriages in the 20th century and a smaller, more recent increase in the share of hypogamous ones. However, the long-time series of data show that hypogamy did not increase in the long-term. With regard to hypergamous marriages, only the shares of hypergamous marriages with larger age gaps decreased, but not those with smaller age gaps. Among second order unions, trends in age differences varied unexpectedly and, remarkably, hypogamy did not increase among second order marriages. Furthermore, disaggregating age differences by the age-groups of the spouses we see that, among first marriages, homogamy increased among spouses of any age, while hypogamy did not increase in any specific age-group of spouses. Its increase seems to be the result of the changing age-composition of the spouses, in particular, the increasing shares of brides marrying at an older age.

In the remaining two chapters, I focus on a set of developed countries and extend the analyses to cohabitations (including marriages). I test hypotheses concerning the origins of women's and men's age preferences for partners in a selected number of countries, using survey data at individual level obtained from the Generation and Gender Survey program. In chapter 5, I test the hypothesis that women seek older men because the latter can signal to be "good providers". To do so, I use cross sectional analyses and multinomial logit models to test the association between women's socio-economic characteristics and their outcomes on the marriage market (i.e. being single or in a cohabitation with older, younger or similar age partners) in four European countries (Bulgaria, France, Austria and Lithuania). The results partly confirm the thesis of the "good provider". College-educated women are consistently less likely to cohabit with older partners, and women with children from previous relationships and foreign-born women are more likely to cohabit with older partners. This suggests that women with more opportunities (in education) and less constrains (on the marriage market) are "freer" in their partner selection criteria.

In chapter 6, I test the hypothesis that men seek younger women to increase their chances of reproduction. Firstly, I analyse the association between the intentions to have children of single men and their future relationship status (that is, being single or in a cohabitation with older, younger, or similar age partners) and age-gap in the couple they form (for those who find a partner) in 8 countries. Secondly, using a larger sample of countries (13), I test the relationships between couples' gaps in age and their number of children. The results partially support the thesis that hypergamy may be a reproductive strategy for men. While men's fertility intentions are positively associated with larger age gaps in the couple (hypergamy), this varies with the age of men at the start of the relationship. The older men are when they start a relationship, the stronger the (positive) association between their intentions to have children and the age-gap is. However, the number of children couples have does not increase with their age-gaps. Thus, even if hypergamy might be, reasonably, a strategy for older men to have children, it is not an effective strategy.

The empirical findings of the research are summarised and discussed in the concluding chapter of the thesis (chapter 7). Overall, the thesis gives a broad overview of age differences between partners and the factors at macro and micro levels associated with such patterns. The factors explored together with ideas for further research on the topic are discussed in the conclusions of the thesis.

2. Age differences: A theoretical overview

2.1 Mating selection mechanisms

In this chapter I review the key theoretical concepts regarding mating selection mechanisms, and apply them to the topic of age differences between partners. Throughout the thesis, I refer to heterosexual mating, although many concepts equally may apply to different marriage markets.

Implicitly or explicitly, most theories on mating selection assume that mating selection happens on the marriage market[3], a metaphorical place where single individuals search for partners (Becker, 1973; P. England & Farkas, 1986; Becker, 1981; Goode, 1959, 1963; Kalmijn, 1998; Oppenheimer, 1988, 2003). The *outcome* is the couple that will be formed and will depend on the interplay of individual preferences and the market structure of opportunity. It is assumed that individuals are rational actors with orderable preferences and aim to maximise the gains from a potential partnership. For this reason, individuals will sort (evaluate) potential partners against their preferences, such as material resources or personal characteristics. Potential partners, on the other side of the market do the same, sorting their potential partners on the basis of their own preferences. The role individual preferences play on the final outcome on the marriage market is however restricted by the structure of the marriage market itself, which determines the supply of partners.

All outcomes of the marriage market are influenced by the above mating selection mechanisms, including the individuals who find a partner and those who remain single. For instance, individuals may remain single because the supply is not able to satisfy the demand (structural effects) or because they do not possess qualities sought (preferred) by the other side of the market. However, marriage markets are embedded in the wider societal context that affects its outcomes. In what follows, I will discuss preferences, opportunity structure and some contextual factors and apply the concepts to interpret age differences.

Individual preferences

The theory on mating selection distinguishes preferences for *matching* and preferences for *marrying up*. In the case of matching, individuals prefer partners with resources similar to their own. In the case of marrying up, individuals prefer to marry as high as possible. This means

[3] While I use the term "marriage market" for consistency with the previous literature, the mechanisms can also apply to the general "mating market" (De Hauw, Piazza, and Van Bavel 2014) where cohabitations, besides marriages, are included.

that they prefer partners with more resources than they themselves have, if possible[4]. Kalmjin (1998) suggests that individuals may prefer to match on cultural resources and to marry up on socio-economic resources. According to the *exchange theory* (Merton, 1948), individuals trade resources. On this view, women and men exchange the resources they have for the resources they lack. In practice, they marry *up* on some resources but *down* on others. By exchanging different resources, partners compensate one another for their respect shortages. Examples are the exchange of income and ethnicity (partner 1: rich and foreign-born; partner 2: poor but native), or beauty and income (partner 1: beautiful but poor; partner 2: ugly but rich). While in principle gender-neutral, theoretical and empirical applications of the theory assumed a clear gendered nature of the exchange, recognizing a sexual double standard in the appreciation of resources and preferences. For example, income is considered as one of the most prominent preference criteria for women to select men, while beauty as a criterion for men to select women (Goody, 1963; Taylor and Glenn, 1976; Waller, 1937; Elder, 1969). Becker (1973) explicitly links the resources to be exchanged to the gender specialisation of tasks (division of labour). Following the work specialisation of men on the labour market and women in domestic work[5], Becker predicts that men and women trade labour skills for domestic skills (men with exceptionally high labour skills would marry women with strong domestic skills).

Moving away from sociology and economics, gendered preferences can be explained by referring to biological and psychological theory related to mating selection. According to the classic evolutionary perspectives (Buss, 2005; Buss & Schmitt, 1993), mating selection is achieved through physical attraction, which is, in turn, rooted in primal instincts of reproduction (Barber 1995; Fink and Penton-Voak 2002; Grammer et al. 2003). Such reproductive instincts would direct men towards young women because of the latter's reproductive capacity, and women towards older men, more capable of providing material goods for the family.[6]

[4] For example, with regard to education, marrying up may mean marrying someone with higher educational attainment compared with their own, for many. However, highly educated individuals will not be able to marry someone with higher education, because they are already achieved the highest education level possible. For them, marrying up will simply mean marrying horizontally, marrying someone with their same level of education.

[5] In other terms, "paid" and "unpaid" work, as the economist Folbre (1994) described it.

[6] Recent research, however, argues that mating selection strategy evolves and that women nowadays may seek the men who can be better carer, in terms of providing stability and sharing childcare responsibilities (Campbell 2013; Dunbar and Barrett 2007).

Opportunity structure

The opportunity structure determines the supply of partners, that is, who is "available" for marriage. For instance, let's assume that a woman, called Maria, wishes to find a partner called Mario. In this hypothetical, Maria *prefers* a partner *matching* her name. Hence, *homonymous*. The structure of opportunity is important because it reflects how many Marios there are around. Obviously, the more Marios around, the greater the possibility that Maria finds one of them. On an aggregated level, the relative size of women and men called Maria or Mario (the number of women called Maria vs. number of men called Mario) affects the rate of homonymous couples of Mario and Maria.[7] This reasoning applies to every other characteristic, not only to names. For instance, a large body of research on mating selection has focused on the importance of the opportunity structure for educational homogamy. In particular, recent research has investigated the effects of the reversal of gender inequality in education on the process of assortative mating, fertility, and union dissolution (Esteve et al., 2012, 2016a; Grow & Van Bavel, 2015; Van Bavel, 2012). This research starts from the observation that, for the first time in European history, there is a reversal in the gender gap in education, with more highly educated women than men on the marriage market. The (reversed) gender imbalance in education inevitably affects the patterns of educational assortation, leading to less hypergamous and more hypogamous couples (with respect to education).

Societal context

Individual preferences and the opportunity structure are embedded in, and affected by, the wider societal context. This includes social norms related to marriage and family. Social norms constitute the "grammar of the society" (Bicchieri, 2006), describing what type of unions are allowed and between who. For instance, social norms may concern whether it is appropriate for individuals with different ethnic background, social class, religion etc. to marry, as well as the appropriate age to marry and appropriateness of remarriage. This would affect, in turn, preferences and opportunity structure. Social norms may affect preferences in two ways. They can be interiorised and therefore reflected in the individuals' preferences, or they can be enforced by "others", when they are able to "punish", in various ways, behaviour that does not conform to the norms. As an example, in his account of Italian marriages during the past century, Barbagli (1984) describes the use of "*scampanellate*" in villages in central Italy. These

[7] If there are 20 Marias and 15 Marios, there are not enough Marios for Marias. While all Marios can hope for homonymy, not all Marias will be so lucky.

were nuisance practices aiming to publicly shame spouses with large age differences and to disrupt their marriages[8]. Social norms affect the opportunity structure when they concern the when individuals may job the marriage market altogether. For instance, at what is the appropriate age to marry and have children (Liefbroer and Billari 2010; Billari et al. 2011), or how long after a divorce divorcees are able to re-marry.

Social norms may be strongly gendered, that is, what is appropriate for women may differ from what is appropriate for men. Social norms in favour of age hypergamy, or of young age at marriage for women, but not for men, are examples of strongly gendered norms (Liefbroer and Billari 2010; Billari et al. 2011). They are strictly linked to the whole gender system , which encompasses gender norms, gender roles and the gendered structure of opportunities. Consequently, mating selection mechanisms (age preferences and age opportunity structure) will vary in different gender systems.

In the next section of this chapter, I will zoom in and apply the above discussed mating selection mechanisms to the topic of age differences, discussing age preferences, the age opportunity structure and how they are influenced by the gender systems.

2.2 Age preferences, age at marriage and the gender system

Age preferences

Following the general theory on mating selection, age differences between partners result from the interplay of women and men's age preferences and their age opportunity structure. First, let's try to understand age preference. To simplify, let's assume a marriage market where the number of women and men is the same at each given age.[9]

If the matching mechanism applied, women and men would prefer partners of their same age. The outcome, with this specific population structure, would be age homogamy (no constrains in terms of opportunity structure). However, the fact that the patterns of age differences show a strong prevalence of hypergamy, suggests the preference of individuals is not to match. If the preference is to marry up, however, then "marrying up" must adopt different meanings for

[8] There are also other ways "others", also called "third parts"(Kalmijn, 1998) can affect the outcomes on the marriage market. An obvious example is that of arranged marriages, where third parts, usually parents, select the spouses (according to their preferences) or heavily influence their children' options by restricting their opportunity structure. A more subtle influence may be that exerted by third parts such as friends or acquaintances, by way of giving pieces of advice or supporting specific relationships.

[9] This population corresponds to the actual demographic structure of most populations in developed countries. However, we do not know whether the population within a marriage market reflects the gender and age structure of the entire population, so we can only assume that it is so.

women and men, in order for the outcome to be hypergamy. It appears that women marry up by marrying older men and men marry up by marrying younger women. Similarly, if individuals exchange resources, the regularity of hypergamy suggests that women and men trade young for old age. Older age seems to be a resource for men, but not for women. To explain this, we should look into characteristics correlated with age. In particular, I focus here on the Socio-Economic Status (SES) and reproductive capacity. This is because the former is positively associated with age and the latter is negatively associated with age. In fact, most socio-economic characteristics increase with age, for example income and social status.[10] For biological reasons, reproductive capacity decreases with age.[11] Importantly, SES increases with age more for men than for women. The reproductive capacity decreases with age more for women than for men. Many authors have explained women's preferences for older men by reference to their preferences for men with greater socio-economic resources (Oppenheimer, 2003; Presser, 1975) and men's preferences for younger women by reference to their instinct to reproduce (D.M. Buss & Schmitt, 1993).[12]

Opportunity structure and age at marriage

As mentioned, the gender ratio of population, in developed countries, is balanced[13], especially at "marriageable age". This means that if men and women aim at age homogamy, there are, in principle, no structural constraints in terms of age. For this reason, we should expect the opportunity structure to be actually less influential in the case of age, compared to other characteristics, for the outcomes on the marriage market.

While the gender structure of the population does not vary greatly by age, which therefore has a limited influence on age differences, the age structure of opportunity does vary according to the age of individuals ("age at marriage"). Age affects an individual's chance of meeting older and younger partners. For instance, at the age 16 it is virtually impossible to find a younger partner because the legal age of consent is 16. On the other hand, at the same age there will be plenty of opportunities to find older partners. Conversely, at the age of 60 the chances of finding

[10] Eventually, the association between age and SES may decrease, for instance after retirement. However, the association will be positive for most individuals on the marriage market, which are relatively young

[11] More specifically, it follows a U-turned shape, since it increases and then decreases. However, it decreases from the "marriageable age", which is also age >MIN.

[12] These explanations will be the bases of the hypotheses that I will test in chapters 5 and 6.

[13] In most populations, the sex ratio at birth (number of men divided by number of women) is slightly over 1, that is, slightly more males are born relative to females. However, the sex ratio at birth is usually compensated over the life course by higher male death rates at a younger age relative to females. In a situation of age homogamy, by the time males and female reach the marriageable age, the sex ratio is balanced (around one) and thus there should be a male for every female, and vice-versa.

older partners will be poor, although this will be compensated by a greater opportunity to meeting younger ones. In other words, structurally speaking and in absence of specific preferences, female age should be positively associated with age hypogamy and negatively with hypergamy; male age should be positively associated with age hypergamy and negatively with hypogamy.

One could argue that the age structure of opportunities is important when there are important changes in the age and gender composition of the population, which might influence the age differences between partners. For example, the "marriage squeeze" argument claims that changes in the age and gender of the population will influence the chances of individuals of finding partners. From a theoretical point of view, the concept is beyond of the scope of this thesis for two reasons. Firstly, the marriage squeeze theory is more directly related to the share of individuals who remain unmarried. In this study, I consider age differences between partners (those who do have partners). Accordingly, I find the concept of the marriage squeeze less relevant. Secondly, and more importantly, the marriage squeeze argument assumes that women and men have fixed preferences for age hypergamy. In this study, I am interested in the social factors influencing age preferences. I therefore start from the opposing assumption that age preferences are not fixed and can be influenced by other factors. From an empirical point of view, the effects of the marriage squeeze on assortative mating were often inconsistent[14] . For these reasons, this thesis will not consider the effects of the marriage squeeze on age differences. It will, however, attribute greater importance to the effects of an individual's age at marriage.

Gender systems

To summarise thus far, age differences are influenced by the individuals' age preferences and the age opportunity structure. These are, in turn, embedded in wider societal context and gender system. The latter encompasses the gender structure of opportunities, the gender culture and gender relations in general. We can expect that changes in the gender system of society will lead to changing patterns of age differences in many ways. In the following, I will briefly discuss how the gender system may influence age preferences and age at marriage by way of changing the gender roles and the gender relations.

According to economic and sociological views, the origins of gendered preferences are to be sought in the social and gender structure of the society (England and Farkas, 1986). Such

[14] For a review of measures of the marriage squeeze, see De Hauw et al., 2014.

structure determines the opportunities and roles of individuals also by their gender. The high value supposedly placed by women on SES in their partner search has been explained by the gender specialization of roles in the family and in society. As explained above, women value men for their earnings and social status (Becker, 1973, 1973); while men's specialisation is in paid work on the labour market, women will specialise in house and childbearing work. Presser (1975) contextualized women's preferences for older men in a gender system where even the women's social status is derived from that of men (Blake, 1974). In such a system, women do not have the opportunity to increase their socio-economic status by their own means. Consequently, seeking men is a way for women to obtain status for themselves. Since, as previously stated, age is positively correlated with SES (at least for men), women's age preferences for older men seem to reflect the social status (or lack thereof) of women in society. However, increasing education and labour opportunities for women redefines gender roles, which has become less specialized and more flexible (Gerson, 2011). As a result, we can expect that age preferences will change accordingly. This is because the weight placed on SES characteristics may decrease for women (Presser, 1975) and, perhaps, increase for men, as Oppenheimer argues (1988, 2003). Consequently, we can expect that preferences for hypergamy will decrease as gender roles become more equal and flexible.

Another important factor of change is linked to the changing gender relationships in the family and, more generally, in romantic relationships. The prevalence of hypergamy seems to reflect unequal gender relations reflecting a patriarchal system, and the male dominance in the relationship and in the family (Berardo et al., 1993b; Bozon, 1991a; Presser, 1975; Vera et al., 1985). However, in parallel to changing gender roles in the society, gender relations in the family are also changing (England, 2010, 2011; Gerson, 2011). In the past centuries, there have been important changes in the couples' relationships, towards more egalitarian roles and the ideal of marriage as a form of companionship (Barbagli, 1984; M. Dribe & Stanfors, 2017; William J. Goode, 1959; Laslett, 1977; Van de Putte et al., 2009; Van Poppel et al., 2001). Many historians have linked the idea of more gender egalitarian relationships in the family to smaller age differences between partners. Similarly, we can expect that more egalitarian gender relationships in couple will be accompanied by stronger preferences for partners of similar age, for both genders.

2.3 Sum up of the theoretical model

In summary, age differences are the outcome of women's and men's age preferences and their age at marriage. Moreover, the marriage market and its mechanisms are embedded in a specific gender system. The aim of this thesis is to investigate whether the patterns of age differences change and why. In the following chapters, I investigate the factors linked to such patterns from a macro and micro perspective. At the macro level, I analyse how the patterns of age differences change across space and time, thus in different contexts, giving major importance to the dimensions of socio-economic development and women's empowerment.

At the micro level, I test specific mechanisms determining age differences, synthesised in figure 2.1. Firstly, women' education can affect age differences, directly by influencing women's age preferences and indirectly by affecting women's age at marriage (chapter 5). Higher educated women are considered to have higher SES and opportunities, compared with women with lower education. For this reason, higher educated women should be less likely to prefer older men because they are less "in need" of men with higher SES (i.e. older men). Secondly, the intention of men to have children can affect age differences by affecting men's age preferences (chapter 6). I chose the intention of men to have children in order to have a measurable variable to test, in place of a generic "reproduction instinct". In Figure 2.1 below, I synthesize the theoretical model that will be investigated in chapters 5 and 6, using a Directed Acyclical Graph (DAG).[15] The outcome of interest is represented by age differences (y). The arrows represent the directions of association between explicatory variables and the outcome. All mechanisms at the micro level are embedded in the wider context and gender system.

[15] The DAG are used, strictly speaking, to show causal models, but they suit the schematisation of any theoretical model. For further references on DAG, see Elwert, 2013; Morgan & Winship, 2014

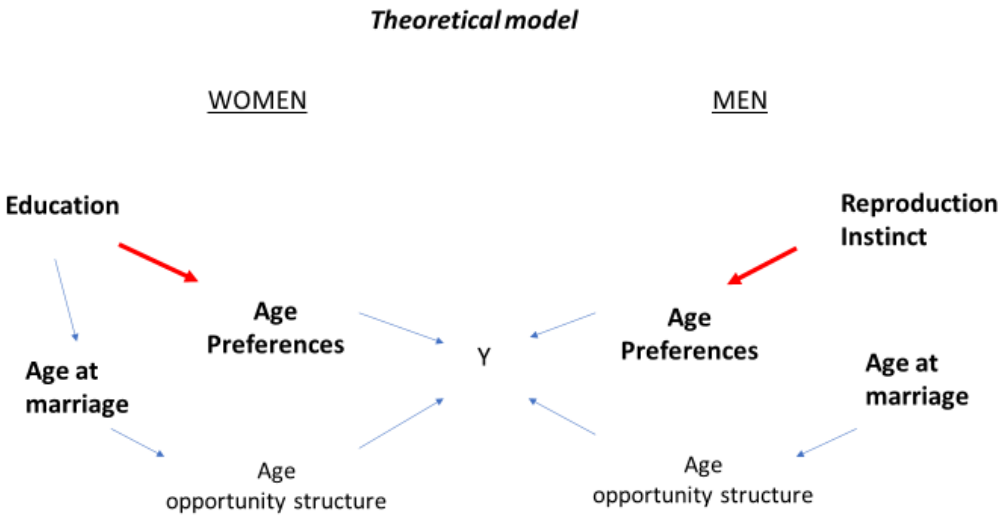

Figure 2-1. The theoretical model. Explanatory variables of y (y=age differences between partners)3. Age differences among spouses across the world

3. Age differences among spouses across the world

3.1 Introduction

According to Laslett, preindustrial-societies Western[16] families differed from families elsewhere in four respects. Crucially, one of them related to the age of spouses (Laslett, 1977).[17] The author claimed that Western spouses were, on average, only a few years apart; there was a relatively large share of marriages where the woman was the older of the partners; and, there was a tendency towards "companionate" marriage. His findings echoed the work on European and Western marriages by Hajnal (1965) and Goode (1963). Thus, the idea that age differences between spouses vary in different settings is not new. In this chapter, I investigate how age differences between spouses vary in today-societies and why.

Scholars have associated age differences with socio-economic development, in the form of modernization, industrialization and changing gender relations. However, most of this literature focused on historical changes in the patterns of age differences within a country (Atkinson & Glass, 1985; Bhrolcháin, 2005; Esteve, Cortina, & Cabré, 2009; Gonalons-Pons & Schwartz, 2017; Mu, 2014; Presser, 1975; Van de Putte et al., 2009; Van Poppel et al., 2001). Apart from a few exceptions (Casterline et al., 1986a; Mignot, 2010), there is a lack of research on cross-country differences in the age of spouses in contemporary societies.

In this chapter, I contribute to the existing literature, by filling this gap. I explore the patterns of age difference between spouses across countries and what macro-factors are associated with such patterns. In particular, I test how the share of hypergamous (homogamous, hypogamous) marriages in a country are associated with its levels of socio-economic development, various dimensions of women's empowerment and the demographic characteristics of the country. The main dimensions of women empowerment used are the gender ratio in education, female employment rates, and shares of parliamentary seats occupied by women.

Using data assembled from various sources provided by the United Nations, I compute and compare the statistics on age differences among spouses in 96 countries worldwide, and then link them to the country-level variables. The definitions of hypergamy, homogamy and hypogamy reflect the quality of data available. The age of the spouses is available in 5-year age categories; thus, marriages are defined as hypergamous (hypogamous) if the groom (bride) is

[16] More specifically, in Laslett (1977), the example referred to European families in particular.
[17] The other traits under which Western families differed from families elsewhere were the "nuclear family", the presence of servants and relative old age of the mother during childbearing.

at least one age category older than the bride (groom), and they are defined as homogamous if the groom and the bride are in the same age category. I use Ordinary Least Squares regressions to estimate the association between the share of hypergamous (hypogamous) marriages in a country and its socio-economic development and women' empowerment. I test the results referring to the "extreme bounds criteria", a technique used in empirical research on economic growth (Barro, 1991; Leamer, 1985; Levine & Renelt, 1992; Sala-I-Martin, 1997). These methods allow me to test the robustness of the results and to control for a number of variables at the country-level, notwithstanding the relatively small number of countries analysed. In the following two sections, I provide a short summary of the theoretical arguments for the study and a summary of the previous empirical findings on the topic. The results of the study and the conclusions follow.

3.2 Theoretical background

As discussed in the previous chapter, age differences between spouses stem from the interplay of individual age preferences and the age opportunity structure. In part, age preferences reflect the values and the gender system prevalent in a specific society. The age opportunity structure reflects the demographic characteristics of the population and, in particular, the gender ratio of the population and the age at marriage. Previous scholars have identified changes in the ideological and material social structure as some of the propellers of changing patterns of age differences over time. The same factors may be relevant for cross-country differences. For instance, if age differences change along the process of socio-economic development, the patterns of age differences in a country should reflect its level of socio-economic development, relative to other countries. Below, I discuss briefly how the level of socio-economic development and women's empowerment are related to age differences. Demographic factors, also relevant for country-variations in age differences, are described with the other variables in the empirical part of the chapter (variables section).

Socio-economic development

Socio-economic development may influence patterns of age differences because of its structural and cultural implications. Many authors have argued that age homogamy between spouses spread as a consequence of the process of modernization running in parallel with other processes such as industrialization (Atkinson & Glass, 1985; M. Dribe & Stanfors, 2017), urbanization (Martin Dribe & Nystedt, 2017) and the expansion of education. Socio-economic development reflects each of these processes. We can therefore expect age homogamy to be

more common between spouses in countries with a higher level of socio-economic development.

Moreover, we can expect that socio-economic development will be linked to age differences because of the cultural change associated with it. For instance, Van de Putte and his colleagues (2009) argued for a cultural shift characterized by a new, less instrumental and more egalitarian view of marriage. More recently, Kolk (2015) has associated the changing patterns of age differences (larger age gaps between partners and increasing hypogamy) with post-industrial values such as freedom, self-determination and self-expression, that is, the values linked to the concept of the Second Demographic Transition (Lesthaeghe & Van de Kaa, 1986; Lesthaeghe, 2010). On this view, the weaker norms related to the family and the intimate relationships result in the "individualisation" of partners' searching criteria. This leads to non-normative patterns of age differences. Since the mentioned post-industrial values go hand in hand with the socio-economic development, we can expect that the patterns of age differences will vary across more and less developed countries, and that age hypergamy (the "normative behaviour") is less common in the countries with higher levels of socio-economic development.

Women' empowerment

As explained in chapter 2, age differences are also expected to vary when the gender system changes. This is a consequence of shifting gender roles, gender relations and the age of women at marriage. Age hypergamy has been associated with patriarchy (Cain, 1993), unequal gender roles and unequal bargaining power of women and men in the family (Atkinson & Glass, 1985; Cain, 1993; Sieder & Mitterauer, 1983; Wheeler & Gunter, 1987). Bozon (1991) has labelled age hypergamy as women's "accepted domination". The gender roles and opportunities in society go hand in hand with the gender division of labour in the society. As discussed in the previous chapter, the classic economic explanation of hypergamy rests on the "traditional" gender division of labour (Becker, 1981), where men specialize in paid labour and women in unpaid labour (housework and childcare). However, as opportunities in fields such as education, employment and political representation increase, the gender roles become more equal and flexible. Consequently, women may seek partners based on different criteria. Therefore, as gender roles become more equal, we should expect less hypergamy.

3.3 Previous findings

To my knowledge, only a few authors have analysed the variation in age differences among spouses across countries and the factors behind such variation. One explanation for the absence of such analysis is the lack of comparable data. Exceptions are the findings by Mignot (2010) and Casterline and colleagues (1986). Both show that age differences between partners may vary considerably across countries.

In his research, Mignot (2010) used Census data, collected by the United Nations, which related to first marriages in various countries during the years 1980-2000 (UN, 2000). He computed the age difference between spouses subtracting the female SMAM (Singulate Mean Age at Marriage[18]) from the male SMAM for the latest available years. Of course, this is an approximated measure because the difference of two means does not necessarily corresponds to the average mean differences between the age of the partners in all couples.[19] However, it is an acceptable approximation for measuring age gaps among first marriage. This is because the age of individuals at their first marriage will vary less, both between and within gender, compared with age at marriage in second order marriages.[20] The study reports that, during the years 1990 and 2000[21], the average age difference computed was positive (that is, grooms were older than their brides) in 201 out of the 202 countries for which data was collected. The age difference was on average 3.5 years and its most common value was 1.6 years (male SMAM – female SMAM). These number are remarkably similar to those of other studies averaging age differences over the past century, such as the study of Bhrolcháin for marriages in England and Wales (2005). However, the age difference ranged from 1.3 in Ireland, for example, to 9 in Guinea. Interestingly, there was only one country were the female and male SMAM were almost identical, San Marino. Here, in 1995 the female SMAM was just 0.1 year bigger than

[18] Simply put, the SMAM is the average age at first marriage.

[19] For instance, let's compare the difference in the computation of age differences as: (a) average difference between age of spouses, and (b) differences between male and female SMAM; in an imaginary set of four couples assorted as following: (W=50 & M=25; W=25 & M=50; W=20 & M=20; W=18 & M=32). In this example, the average gap (a) is (-25+25+0+4)/4=1 year. The difference between male and female SMAM (b) is 32-28=4 years, so (a)<(b).

[20] For instance, let's compare the difference between (a) and (b) computations for an imaginary set of four couples at their first marriage. Plausibly, they can be assorted as following: (W=25 & M=27; W=30 & M=40; W=35 & M=30; W=28 & M=28). In this example, the average gap (a) is (2+10-5+0)/4=1.75 years. The difference between male and female SMAM (b) is 31.25 -29.5=1.75 years so (a)=(b).

[21] One issue with this data is that marriage cohorts (year) differ in the various countries, sometimes being even 10 years apart. This may be a problem because age differences may change over time within a country, as investigated by the next chapter.

the male SMAM (22.2 and 22.3 respectively). This research is interesting because it suggests that hypergamy is nearly universal among first marriages.

In a previous study, Casterline and his colleagues (Casterline at al.,1986) instead focused on the exact age difference between partners among women's first cohabitations in 28 developing countries.[22] They used micro-data obtained from the World Fertility Survey. The authors computed the age difference as male-female age and, comparing the mean at country and regional level, showed variation at both levels. The countries were grouped in six macro-areas: (1) Sub-Saharan Africa; (2) North Africa and West Asia; (3) South Asia; (4) South-East and East Asia; (5) Continental Latin America; and, (6) Caribbean. By arranging areas in such a way, the highest mean age differences were found in the first three areas (7.4; 7.1; and 6.1 in Sub-Saharan Africa, North Africa and West Asia, respectively), together with a relatively large variation between the countries in those areas. The lowest mean age differences were found in the latter three areas (3.9: 3.8; and 4.1 in South-East and East Asia; Continental Latin America, and the Caribbean respectively), where the variation between countries was smaller. Most interestingly, the authors showed variations in the share of hypogamous cohabitation and in specific categories representing age differences (<0; 0-4; 5-9; 10-14; 15+ years). Sensibly, there is less hypogamy in countries where the average age difference is bigger (a positive age difference means that grooms are older). Hypogamous cohabitations were less than 4%, on average in the first three macro-areas, and more than 9% in the latter three. The highest shares of hypogamous cohabitations were observed in Costa Rica (18%), Philippines (16%) and Thailand (12%). By bringing cohabitations into the picture, the research demonstrates strong variation in terms of age differences between partners.

Both studies also explored the factors associated with variations in the patterns of age differences. Mignot (2010) shows the coefficients of bivariate correlations between the difference in the male and female SMAM and 16 demographic and social indicators at country level. Pearson's correlation coefficients were positive and higher than 0.5 (1 indicates perfect correlation) for the share of population younger than 15 and the total fertility rate in the country. They were negative and higher than 0.5 for the mean female age at first marriage, expected male and female school attendance, and use of contraceptive methods. Interestingly, nearly all the factors listed above are also indicators of economic and social development and of the stage of the demographic transition of the country. In fact, factors indicating that a country has not

[22] In the survey, they argue that cohabitation is assimilated to marriage.

completed the demographic transition, such as young age at marriage, large shares of young population, low use of effective contraception, high fertility rates, all appear to be associated to larger age differences between spouses. Consequently, the age gaps are smaller among the countries that have completed the demographic transition. To sum up, this data suggests that smaller age differences may be another trait of the demographic transition or, equally, of social development.

Casterline and his colleagues (1986), focused on the role of the age structure and women's status in developing countries. The former, considered as constituting the structure of opportunity dominating the marriage market, was approximated as the ratio of male population 20-24 over the female population 15-19. The role of women's status in the society was approximated as the girls' primary school enrolment in the 1960s (as most individuals in the sample belong to such cohorts). The authors also discuss in length the role of women's status in the private sphere. Despite convincing arguments about how such status relates to the position of women in the family and kinship's structures (in particular married women), the analysis of the authors was only able to use regional areas' fixed effects to capture the cultural norms related to such status. Turning to the dependent variable, they measured three dimensions of age differences: median age difference in cohabitations; percentage of cohabitations with age difference exceeding 10 years; and, percentage with negative age difference (hypogamous). Using linear regressions, the authors found that the gender ratio of the population[23] was positively associated with the first two dependent variables, and negatively with the latter. Girls' enrolment in education was, on the contrary, negatively associated with the two first outcomes and positively associated with the latter. With the data at hand, the authors could not undertake a deeper analysis. And yet, using three outcome variables allowed for a more nuanced interpretation of the results of the analysis, which revealed new insights. Firstly, the results suggest that both the age opportunity structure and women's status may play a role in age homogamy. Secondly, the results suggest that girls' school enrolment is associated not only with age hypergamy and homogamy, but also with hypogamy.

3.4 The present study

The above studies show that age differences between partners do vary across countries and such variation may be associated with socio-economic development, demographic factors and women's status in the society. However, their findings relate to first marriage cohorts and first

[23] Male population 20-24 over the female population 15-19.

cohabitations respectively. With this study, I contribute to the literature in three ways. Firstly, I include all marriages in the analysis, using a new set of data referring to 96 countries worldwide. Secondly, I am able to add new variables at country level to test specifically the role of socio-economic development and women's empowerment, considering the demographic characteristics of the country. Thirdly, I use a more robust methodology to test the theory.

Using data from the demographic yearbook of the United Nations, I analyse age differences among spouses in 96 countries worldwide. I use data on all marriages registered between 2012 and 2017 (most data refer to 2016 and 2017). I focus on the share of hypergamous marriages over the total of marriages as the outcome variable and explore how it is correlated with the socio-economic development and dimensions of women empowerment in the country, controlling for the gender, age and density structure of the population, as well as the legal age to marry. The specific data and measures used to operationalize these factors are described in the next section. In line with the provided theoretical background and previous findings, I expect the share of hypergamous marriages to be smaller among the countries that are more socio-economically developed and where women are more empowered, specifically, in terms of education, employment and political representation.

Data, variables, methods, limitations

Data

For this study, I assembled data from various sources, which, for the most part, was collected from the United Nations statistics division's website, to build a rich dataset. Data on marriages (year, number of marriages, age-group of brides and grooms) was collected the UN demographic yearbook 2017 (*United Nations Demographic Yearbook 2016*, 2017). Such data refers to marriages in 96 countries distributed across all continents relative to the latest year available between 2012 and 2017. Age differences are presented as a cross-tabulation of the age of the bride and the groom by 5-year age groups, and lower and upper classes (<15; 15-19; (…);60+). Detailed data on the marriages by country are provided in appendix A (table A-1). Data referring to the human development index, various dimensions of women's empowerment and gender relations, as well as the legal age at marriage and the population structure in the country were collected from various Human Development Reports, also available on the United Nation Development Programme's website.

Variables

The dependent variable is the share of hypergamous marriages in the country in a given year (the most recent available). This is computed from the cross-tabulation of the 5-year age-groups of brides and grooms. Therefore, the share of hypergamous marriages refers to marriages where the groom is at least one age-category older than the bride; the share of hypergamous marriages refers to marriages where the bride is at least one age-category older than the groom (the share of homogamous marriages refers to marriages where the groom and the bride are in the same age-category). The shares of hypogamous and homogamous marriage have also been used as outcome variable.

Measures of hypergamy, hypogamy and homogamy based on differences in terms of age categories lack of precision when compared to measures able to give precise age gaps. When a partner is at least one age category older, the actual age difference may vary. Considering 5-year age categories, the older partner could be, in fact, 1 year older than the partner, or more (its extremes depending, theoretically, on the minimum age for marriage and the maximum lifespan). Still considering 5-year age categories, when the spouses are in the same age category, the actual age difference may range from 0 to 4 years (irrespectively from which partner is younger). However, in this chapter, I am interested in exploring the factors affecting hypergamous and hypogamous marriages, and their estimation represents less of a problem, compared with the estimation of homogamous marriages. In fact, there are no doubts that marriages between spouses in different age categories are heterogamous (either hypergamous or hypogamous). Rather, the heterogamous couples will be underestimated, because some heterogamous marriages are missed because they are counted as homogamous. Another problem could be that the distribution of age at marriage within each age category varies by country or varies by gender. In fact, if the bias of underestimation was constant across the states, the above would not represent a problem at all for the cross-country comparison. Unfortunately, there is no way to check for such distribution with the data at hand. With regard to the variation by gender, we know that a similar problem was encountered in previous studies using comparable data. These are studies researching long-term trends in age-differences (Esteve et al., 2009b; Van Poppel et al., 2001). However, the same authors show that, comparing the patterns of homogamy, hypergamy and hypogamy using exact age differences and using differences based on age categories, the obtained trends are similar. More precisely, while the share of homogamous, hypergamous and hypogamous marriages do differ (because they are strictly dependent on the definition of such categories), the resulting trends from the two

methods indicate the same direction of travel. This issue will be discussed in length by the next chapter, in which I use a similar type of data to analyse the historical trends of age differences between Italian spouses, and where I am able to test the validity of the method. Finally, with regard to the reliability of the data used, we know from the data source the data collected includes at least 90% of registered marriages.

The independent variables are the socio-economic development and women's empowerment at country level. To operationalise the former, I used the composite indexes of Human Development Index (HDI). This is a summary measure of the average achievement of the country in key dimensions relative to life expectancy at birth, knowledge (mean of years of schooling for adults aged 25 or older and expected years of schooling for children) and standard of living (logarithm of gross national income per capita). The HDI corresponds to the geometric mean of normalized indices for each of the three dimensions. It refers to the whole of the population, regardless of their gender. For the purpose of this study, the HDI is used as a synthetic approximation of social development, in line with previous scientific literature. It is also assumed that countries scoring high in HDI are those more like to embody post-modern values and where the second demographic transition has at least started. Women's empowerment is operationalized with three indicators of opportunities for women: the gender ratio in education achievement (female/male population with at least some secondary education); the share of female population employed (excluding agriculture); and, the share of parliamentary seats occupied by women. I opted to use the share of female population employed, rather than the gender ratio in employment, because the active population may vary differently according to gender in various countries. Since the active population affects the estimation of unemployment, but not the estimation of employment, a cross country comparison of the share of employed women is preferred for cross-country comparison.

Control variables refer to the share of brides under 21, the legal age to marry and some characteristics of the age and gender composition of the population. The age of the bride is important because it affects directly the opportunities of brides to marry younger or older husbands. In fact, marrying at very young age means there will be virtually no opportunity to marry a younger partner. In this respect, I controlled for the share of brides who marry before age 21, and the female legal age necessary to marry (without the consent of the parents). While the former refers to the age of the bride de facto, the second refer to norms on the appropriate age for brides. In particular, the older the legal age is, the less appropriate it is to marry at a young age. I could have used the legal age at marriage with the consent of the parents, but the

chosen variable allows for more variability between states. Moreover, the legal age for marrying is also an indicator of the opportunity structure, since it affects the number of young(er) partners on the market. Data on the legal age to marry by gender and country is provided in table A-4 in the appendix. The variables related to the age and gender composition of the population are the gender ratio at birth (male/female population), the population density (i.e. population per square kilometre of surface area), and the gender differences in life expectancy at birth (female – male life expectancy). The gender ratio of a population may affect age differences through the age structure of opportunity, if the gender that is relatively scarce is able to impose their preferences on the marriage market. All data refers to the last year available up to 2017. All of the above data is collected from the United Nation Development Programme website unless otherwise specified.

Methods

I use Ordinary Least Squared (OLS) regressions to investigate the association between the shares of hypergamous (hypogamous) marriages in the country, on one hand, and the socio-economic development and women's empowerment, on the other. In order to test the robustness of results, I refer to the "extreme bounds" criteria (Leamer, 1985) and its relaxed version (Sala-I-Martin, 1997). These tests consist of: (1) running a series of different models for each independent variable of interest (that is, the variable we want to test), each model differing in its control variables; (2) analysing the distribution of the coefficients relative to the variable of interest across various models.

The models to estimate are the following:

(a) $$h = \alpha_j + \beta_{yj} y + \beta_{zj} z + \beta_{xj} x_j + \varepsilon$$

where h is the outcome variable that is, in our case, the share of hypergamous marriages; y is a vector of variables that always appears in the regressions (in this case, I use only one variable, that is the share of brides under 21), z is the variable of interest (drawn from the pool of following variables: HDI, the gender ratio in education, the share of employed women, the share of female seats in the parliament); x_j is a vector of two variables, consisting of the variables in the pool of variables of interest that have not been used as z, and control variables).

For each *z* variable to test we run *j* models. In each *j* model the vector x_j changes to include all possible combinations of the independent variables from the pool.

The reason to use the share of brides under 21 as a fixed variable is that it is considered as a structural variable. However, because it can also be argued that it is endogenous in HDI and women's empowerment, I also run the test omitting the term $\beta_{yj}y$, thus obtaining:

(b) $$y = \alpha_j \, \beta_{zj} z + \beta_{xj} x_j + \varepsilon$$

There are 8 variables in the pool: HDI, the gender ratio in education, the share of employed women, the share of female seats in the parliament, female legal age at marriage, the gender ratio of the population, the density of the population, and the gender gap in life expectancy. For each z variable, I estimated *j*=21 models which represent all the possible pairwise combinations of the remaining 7 variables. In other words, they correspond to the possible combinations of a group of *n* element with k possible permutations. Given n=7 and k=2, we find that the number of regressions for each z variables are $C_{7,2}$ = 7!/(7-2)!2!=21.

With regard to the interpretation of the coefficients, there are contrasting views on whether it makes sense to consider the level of significance of coefficients when data refers to an entire population (Babones, 2014; Bollen, 1995), or not (Berk, 2004). In order to defend the use of statistical significance testing on population data or a non-probabilistic sample the common strategy is to invoke the notion of a super-population or to refer to some stochastic processes underlying the observed patterns (Hoem 2008). The conditions to justify the notion of superpopulations are, however, rarely fulfilled in social sciences (Berk 2004). However, the UN data on marriages are deemed to be complete for at least the 90%, but such percentage depends on the country where marriages are registered. For this reason, I will take the levels of significance into account in the discussion of the results, but with cautions. Recent methodological literature in sociology has in fact warned us on the mis-use of significance test in the discipline of sociology (Bernardi et al., 2017).

3.5 Results

Descriptive results

In the 96 countries analysed, on average 51% of marriages were hypergamous, 36% homogamous, and 13% hypogamous. Although these proportions vary greatly across different countries, we can trace some patterns by geographical areas: Africa stands out for the relatively high shares of hypergamous marriages; the Caribbean and South America are notable for their relatively high shares of hypogamous marriages. In fact, in the African countries the share of hypergamous marriages was, on average, about 60%; in the other continents, it was 50% or below. In the Caribbean and South American countries, the share of hypogamous marriages was, on average, about 20%. In the remaining continents it ranged between 7% and 11%. Finally, the shares of homogamous marriages were about 30% in Africa and the Caribbean, while they ranged between 37% and 43% in Asia, South America, Europe and Oceania (37% in the first two continents, 39% in Europe, and 43% in Oceania). All in all, on average, South American countries show, relative to the other continents, the highest balance between hypergamous, homogamous and hypogamous marriages (44%, 37% and 19%, respectively). Caribbean countries show the highest share of hypogamous marriages but a relatively low share of homogamous marriages. As the data is organized in age-groups, we should bear in mind that it does, however, underestimate the proportions of hypergamous and hypogamous marriages.[24] A summary table showing the results by geographical areas is shown below (table 3-1). The summary statistics for all countries are shown in table A-1 of the appendix.

[24] The category of homogamy does include hypergamous and hypogamous couples up to 4 years apart. Thus, to be more precise, we can say that the proportion of hypergamous marriages can be virtually between the 51% and 87%, and the proportion of hypogamous marriages between 13% and (virtually) 49%. If we want to consider only homogamous marriages where the age gap is 0, we can reach a realistic approximation of the three shares. For instance, splitting the share of homogamous marriages in 6 parts and redistributing it as 2/6 to hypergamous, 1/6 to hypogamous and the remaining to homogamous, we obtain that 63% hypergamous marriages, 19% hypogamous, 18% homogamous.

Table 3-1. Summary statistics by geographical areas: shares of hypergamous, homogamous and hypogamous marriages; average shares of marriages where the bride is younger than 20, 20-44 and 45+by area. Selected countries. Source, UN YB 2017, my elaboration.

	Africa	**America, North (Caribbean countries)**	**America, South**	**Asia**	**Europe**	**Oceania**
Hypergamous marriages (%)	60	49	44	53	50	50
Homogamous marriages (%)	31	30	37	37	39	43
Hypogamous marriages (%)	9	21	19	10	11	7
Numb. Countries	8	16	6	20	43	3

Analytical results

Next, I explore the relationship between the share of hypergamous marriages, on one hand, and the Human Development Index (HDI) and women's empowerment, on the other. The results of three OLS models are shown in table 3-2. In model 1, the share of hypergamous marriages in the country is regressed on the HDI. In model 2, we control for women's empowerment in various dimensions of social life. In model 3, multiple explanatory variables, mainly describing structural factors, are controlled for. One must consider that adding variables in models 2 and 3 comes at the expense of the number of cases for which the data is available. Since the samples in the three models differ, it is more accurate to compare the sign of the coefficients across the models rather than their size or the significance level, which are affected by the specific sample.

The first two models show that the HDI and the three dimensions of women' empowerment are negatively associated with the share of hypergamous marriages in the country. Moving from model 1 to model 3, the coefficient for HDI shrinks from -46 to -22 and it is no more statistically significant. Its confidence intervals are also very broad. . While the coefficient remains negative, there is uncertainty around the point estimate. The HDI ranges between 0 and 1. Thus, the share of hypergamous marriages in a country increases, on average, by 2 percentage points (p.p.) for each additional decimal point of HDI score, everything else being equal. In our

dataset, the minimum score is 0.5 for Lesotho and the maximum is 0.943 for Switzerland. To have an idea of the association, we can think that, if Lesotho and Switzerland were equal under all aspects other than HDI, the share of hypergamous marriages in Lesotho could be about 20 p.p. lower compared to that in Switzerland. However, because the estimate are imprecise, we can only say that HDI is negatively associated with the share of hypergamous marriages in a country.

Concerning women's empowerment, higher female employment and political representation are associated with lower shares of hypergamous marriages. However, as in the case of HDI, there is uncertainty around the point estimated.

With regard to the other factors controlled for, the most important appear to be the gender gap in life expectancy (female- male life expectancy at birth) and the share of women who marry before age 21. For each additional year of female life expectancy (relative to male life expectancy), the share of hypergamous marriages decreases by 1.6 p.p., everything else being equal. Every two marriages with young brides bring at least one additional hypergamous marriage, all else being equal. The legal age necessary for a woman to marry is, as expected, negatively associated with the share of hypergamous marriages. The gender ratio of the population (more males relative to females born) is also negatively associated with hypergamous marriages, while the association between the density of population and the share of hypergamous marriages seems neglectable (in terms of the size of the effects). However, the last three mentioned coefficients are not precisely estimated.

Table 3-2. share of hypergamous marriages in the country, Human Development Index (HDI) and various indicators of women' empowerment. Selected countries, UN yearbook, various years 2006-2017.OLS

VARIABLES	(Model 1)	(Model 2)	(Model 3)
HDI	-46.120***	-29.460*	-22.480
	(14.62)	(15.15)	(15.27)
Secondary education (%, fem/male)		-0.474***	0.367
		(0.176)	(0.313)
Fem. Employment, no agric. (%)		-9.693	-22.620
		(16.28)	(19.49)
Fem. seats in parliament (%)		-0.131	-0.103
		(0.14)	(0.12)
Fem. Legal age marriage			-0.486
			(0.81)
Gender ratio (male/female)			-4.152
			(5.69)
Pop. density			-1.45e-05
			(0.00)
Gender gap in life exp. (female's-male's)			-1.586**
			(0.60)
% of brides <21			0.593***
			(0.10)
Constant	88.990***	108.900***	94.270***
	(11.98)	(21.73)	(28.08)
Observations	82	73	60
R-squared	0.111	0.244	0.564

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Robustness checks

When adding many variables potentially associated with a dependent variable into a regression, it is not uncommon to have coefficients switching signs or levels of statistical significance changing. In the case above, the coefficient for HDI loses statistical significance in model 3, relative to models 1 and 2. The coefficient for the gender ratio in education does both (changes sign and loses statistical significance) in model 3, relative to model 2 (table 3-2). For these

reasons, I test the robustness of the findings with two, relaxed versions of the extreme bounds test, as described in the methods section (please see explanations under "robustness checks"). I run a series of regressions always including the key variable of interest z (HDI etc) but varying the combination (not the total number) of the control variables. In the first version (model a) I keep a term fixed in the equation, called y (the share of brides aged 21 or below), beside the variable of interest (called z). In the second version (model b), I do not. The average coefficients and significance level for the *z* variables of interests, obtained from 21 models (a) and 21 models (b)are presented in table 3-3.

The results show that in all the regressions where the share of young brides is kept as a fixed regressor (models a), almost none of the coefficients for the z variables are statistically significant at conventional level. However, the negative association between the share of hypergamous marriages and the HDI, the gender ratio in education and the share of female seats in parliament, is confirmed. When the share of young brides is not controlled for (models b), the coefficients for both HDI and all dimensions of women's empowerment are confirmed to be negative. The coefficient for the female employment rate is also statistically significant at conventional level in 20 of the 21 regressions models run to test its association with hypergamy. The average coefficients, standard error and p-value obtained in the tests are shown in table 3-3. The same data has been also calculated using the adjusted r-squared values to weight each regression. The results did not vary substantially and therefore they have not been reported.

All in all, the use of additional models allows greater certainty with regard to the negative association hypothesized. Notwithstanding HDI, it has been confirmed that women empowerment in all the dimensions examined is negatively associated with hypergamy, especially the share of women employed. However, the share of brides who marry under the age of 21 appears to have a key role for the proportion of hypergamous marriage in a country.

Table 3-3. Extreme bound tests- results. Average coefficients, standard error, p-values; and number of regressions with p-values <0.01 and 0.05 for the z variables of interest: HDI, gender ratio in education, female employment rate, share of female seats in parliament. Dep. variable: share of hypergamous marriages. J=21 (number of regressions per model).

	(a) Including % brides <21					(b) Not Including %brides <21				
Variables of interest	Coeff.	St err.	p-value	N. ***	N. **	Coeff.	St err.	p-value	N. ***	N. **
HDI	-15.734	13.485	0.345	1	1	-41.697	15.357	0.030	8	1
Gender ratio education	-6.147	14.301	0.624	0	0	-14.773	17.836	0.479	0	0
Female employment (%)	0.048	14.301	0.628	0	0	-0.620	0.180	0.003	15	5
Female parliamentary seats (%)	-0.060	0.118	0.621	0	0	-0.291	0.134	0.089	3	3

*** p<0.01, ** p<0.05

We have considered the share of hypergamous marriages as the dependent variable. How are socio-economic development and gender egalitarian opportunities associated with the shares of hypogamous and homogamous marriages? To answer this question, I run models 1-3, with the share of hypogamous and homogamous marriages as the dependent variables (tables A-2 and A -3 in the appendix). The results show that the share of hypogamous and homogamous marriages, in contrast to hypergamous ones, increase in countries with a larger HDI. The relative coefficient is larger for homogamy and relatively small for hypogamy (17 and 6 respectively). In relation to women's empowerment, more opportunities for women in the field of employment and political representation are positively associated with both homogamy and hypogamy. However, a higher gender ratio in education is only positively associated with hypogamy (coefficient about 22), but negatively associated with homogamy. With regard to the other most important factors investigated, the shares of hypogamous and homogamous marriages are positively associated with the gender gap in life expectancy, and negatively associated with the share of young brides. Finally, the legal age to marry is positively associated with both hypogamous and homogamous marriages, while the gender ratio is only positively associated with hypogamy. The coefficient for the population density is, again, negligible in its size. It is however difficult to estimate the size of the effects, due to the uncertainty in the estimates, especially in the case of hypogamy.

3.6 Conclusions

The macro analysis of this chapter provides an overview of the patterns of age hypergamy and hypogamy among marriages around the world. In addition, it demonstrates their association with levels of socio-economic development and women's empowerment. The data used from 96 countries reveals that the majority of marriages are hypergamous in every country examined. Despite the fact that the data probably underestimate age heterogamous countries, we know that, on average, grooms are the older partner in at least 50% of marriages worldwide. However, there is some variation by country and by macro-regions. For instance, in Africa we find, on average, the highest share of hypergamous marriage, while in the Caribbean and South American countries exhibit the highest share of hypogamous ones (table 3-1).

With regard to the factors associated with the shares of hypergamous and hypogamous marriages at country level, the investigation focused on the most discussed factors in the literature: socio-economic development and women empowerment. The first one is operationalized with the HDI, and the second with three distinct variables: gender ratio in education (female/male population with at least some secondary education), the share of women employed (excluding agriculture), and the share of parliamentary seats occupied by women. The results show that countries with a higher HDI and where women are more empowered, hypergamous marriages are less common and hypogamous marriages are more common. In the case of HDI, the association is stronger in the case of hypergamy and weaker in the case of hypogamy. In the case of women's empowerment, the strength of the association is more similar (results in table 3-2 in the chapter and table A-2 in the appendix).

Two other factors have been found to be particularly relevant for the age assortation in marriage. The first one is the share of young brides (brides who marry before the age of 21). The second is the gender gap in life expectancy. Of course, what age women marry has a direct effect on the opportunities to marry a partner that is relatively older or younger. Therefore, higher shares of young brides are associated with higher shares of hypergamous marriages (table 3-2), and lower shares of hypogamous ones (table A-2 in the appendix). Furthermore, if women live longer than men, we may have more women (re-)marrying at an older age, the gender gap in life expectancy is linked to age heterogamy. However, these two factors may be also another measure of women's empowerment. The high proportions of young brides (in some cases child brides) may indicate a lack of alternatives for women other than being wives or mothers. Larger gender gaps in life expectancy (with women living longer) may indicate better women's health.

For instance, there may be a lower female mortality due to giving birth or there may be less feminicides in the country. These findings, thus, offer further support to the hypothesis of a link between women's empowerment and age differences.

Similarly, the female legal age to marry shapes the possibilities to marry older or younger men, but it can also be an indicator of women's empowerment in the society. Generally, by allowing young girls to marry, states facilitate and legitimize hypergamy and, crucially, in some country the male legal age to marry is higher than the female one. While the phenomenon of "child brides" is beyond the scope of this chapter, I cannot fail to mention that the phenomenon is directly linked with the legal age at marriage. Furthermore, it is a well-known indicator of low status and opportunities for girls and women (Nour, 2009). In fact, the female legal age for marriage is negatively associated with hypergamy, and positively associated with hypogamy.

Finally, age differences are associated with the gender ratio at birth and population density. The results tell us that the larger the male population is, relative to the female one, the more hypogamous (and less hypergamous) marriages in the country (table 3-2 and table A-2 in the appendix). We can speculate that this finding evidences that both women and men prefer younger partners. In fact, if we adopt the perspective of "competition mechanisms" on the marriage market, it appears that men marry younger women when they are in a position to choose (the demand of men is higher than the offer). Vice versa, when the demand of men is lower than the offer (women are in a position to choose), hypogamy would increase. However, the size of the association is small and to investigate the matter further we should analyse the gender ratio specifically at marriage age. The association between age differences and population density appear even smaller. The fact that the characteristics of gender ratio and density of population have small coefficients seem to support the hypothesis that, if the relative size of groups and/or their concentration have a role, they should be considered at the level of local marriage market and not at country level.

Homogamous marriages were not this chapter's direct object of interest. And yet, one important point should be highlighted. Homogamous marriages are more common among countries that score higher in socio-economic development; the same applies to hypogamous marriages. However, the effect of women's empowerment is mixed (table A-3 in the appendix). Historically, scholars have explained the rise in homogamy with reference to the socio-economic development, in terms of modernization, industrialization, urbanization. Here, I speculate that individuals living in more developed countries spend more time in age-

segregated types of institutions. Education, work and even leisure activities are targeted to include only specific age-groups of individuals (Hagestad & Uhlenberg, 2006). A larger participation of women and men in education, work and leisure activities facilitates encounters of individuals with a similar age.

To conclude, this study shows that HDI and women's empowerment are associated with less hypergamy and more hypogamy at country level. However, the uncertainty of the effects suggest that some of the effect of HDI and women's' empowerment are mediated by women's age at marriage (table 3.3). A further dimension that deserves deeper investigation might be the level of age segregation that exists at regional and local level. This could explain the relatively low shares of hypergamous marriages, and relatively high shares of hypogamous marriages, in the Caribbean and South American countries.

Appendix A

Table A-1. Summary statistics: Year of marriage, number of marriages (countries in the continent); Shares of hypergamous, homogamous and hypogamous marriages; Gender asymmetry ratio, if applicable (i.e. number of hypergamous marriages relative to hypogamous ones)

Area	**Country**	**year**	**Number marriages**	**Hypergamy (%)**	**Homogamy (%)**	**Hypogamy (%)**	**Gender Asymmetry Ratio**
Africa	Botswana	2014	5591	66.71	27.62	5.67	11.77
Africa	Egypt	2017	912606	75.11	20.56	4.33	17.33
Africa	Lesotho	2013	4443	67.72	29.01	3.26	20.75
Africa	Mauritius	2017	9754	55.29	35.54	9.17	6.03
Africa	Reunion	2008	3149	52.11	37.54	10.35	5.03
Africa	Saint Helena	2012	12	50	33.33	16.67	3.00
Africa	Seychelles	2017	2779	52.21	33.43	14.36	3.64
Africa	South Africa	2015	138622	58.35	32.9	8.75	6.67
Africa	**8**			**60**	**31**	**9**	**6.6**
America, North	Anguilla	2013	36	50	33.33	16.67	3.00
America, North	Aruba	2017	536	18.28	30.97	50.75	0.36
America, North	Bermuda	2016	450	46.22	34.67	19.11	2.42
America, North	Costa Rica	2017	25397	51.1	33.56	15.34	3.33
America, North	Cuba	2016	61899	53.27	28.62	18.11	2.94
America, North	Curaçao	2016	684	53.22	33.33	13.45	3.96

Area	Country	year	Number marriages	Hypergamy (%)	Homogamy (%)	Hypogamy (%)	Gender Asymmetry Ratio
America, North	Dominican Republic	2016	52433	51.33	31.68	16.99	3.02
America, North	El Salvador	2012	28953	52.21	33.3	14.49	3.60
America, North	Grenada	2014	617	52.35	32.9	14.75	3.55
America, North	Guatemala	2016	69598	46.88	39.9	13.21	3.55
America, North	Mexico	2016	542660	46.13	41.06	12.81	3.60
America, North	Montserrat	2016	18	61.11	0	38.89	1.57
America, North	Panama	2016	26937	55.52	7.65	36.83	1.51
America, North	Puerto Rico	2017	12786	34.5	40.8	24.7	1.40
America, North	Saint Vincent and The Grenadines	2015	572	58.57	28.67	12.76	4.59
America, North	Trinidad And Tobago	2013	8013	52.78	32.55	14.68	3.60
America, North	**16**			**49**	**30**	**21**	**2.3**
America, South	Brazil	2016	1.1e+06	50.65	33.4	15.95	3.18
America, South	Chile	2015	61744	15.1	40.38	44.52	0.34
America, South	Ecuador	2016	57738	48.1	39	12.89	3.73
America, South	Paraguay	2014	19517	52.14	34.76	13.1	3.98
America, South	Peru	2015	31888	47.03	39.93	13.04	3.61
America, South	Venezuela	2016	84349	48.37	37.01	14.62	3.31

Area	Country	year	Number marriages	Hypergamy (%)	Homogamy (%)	Hypogamy (%)	Gender Asymmetry Ratio
America, South	**6**			**44**	**37**	**19**	**2.3**
Asia	Armenia	2016	16294	58.28	36.2	5.52	10.55
Asia	Azerbaijan	2016	66771	66.18	28.74	5.08	13.04
Asia	Bahrain	2017	6593	59.12	35.51	5.37	11.01
Asia	China, Hong Kong Sar	2017	51817	48.09	40.54	11.37	4.23
Asia	China, Macao Sar	2009	3035	46.19	44.51	9.29	4.97
Asia	Cyprus	2016	6353	43.14	40.71	16.15	2.67
Asia	Iran	2016	704707	65.43	27.66	6.91	9.47
Asia	Israel	2016	50569	47.65	46.98	5.37	8.88
Asia	Japan	2016	496423	38.85	48.58	12.57	3.09
Asia	Kazakhstan	2017	141790	50.27	42.06	7.67	6.56
Asia	Kuwait	2017	13466	58.07	34.67	7.26	8.00
Asia	Kyrgyzstan	2017	43350	63.63	33.16	3.21	19.80
Asia	Philippines	2016	418857	11.33	42.6	46.07	0.25
Asia	Qatar	2017	7433	59.56	18.67	21.77	2.74
Asia	Republic of Korea	2017	264455	44.35	46.88	8.77	5.06
Asia	Singapore	2017	28212	43.94	47.01	9.05	4.86

Area	**Country**	**year**	**Number marriages**	**Hypergamy (%)**	**Homogamy (%)**	**Hypogamy (%)**	**Gender Asymmetry Ratio**
Asia	State of Palestine	2016	49930	70.97	26.63	2.39	29.65
Asia	Tajikistan	2016	72292	67.69	31.16	1.15	59.03
Asia	Turkey	2016	576348	55.75	36.97	7.27	7.67
Asia	Uzbekistan	2015	287582	60.67	37.57	1.76	34.44
Asia	**20**			**53**	**37**	**10**	**5.3**
Europe	Albania	2016	22562	71.33	24.71	3.96	18.00
Europe	Andorra	2016	295	45.08	35.59	19.32	2.33
Europe	Austria	2016	44890	48.69	39.26	12.04	4.04
Europe	Belarus	2016	64536	44.65	42.29	13.05	3.42
Europe	Belgium	2015	40049	46.97	41.67	11.36	4.13
Europe	Bosnia - Herzegovina	2012	18230	55.39	37.19	7.42	7.47
Europe	Bulgaria	2016	26803	53.76	37.76	8.48	6.34
Europe	Croatia	2016	20465	49.21	40.68	10.11	4.87
Europe	Czechia	2016	50768	48.88	38.99	12.13	4.03
Europe	Denmark	2016	28712	43.6	45.36	11.04	3.95
Europe	Estonia	2016	6161	46.36	40.45	13.2	3.51
Europe	Faeroe Islands	2017	215	50.7	43.26	6.05	8.38
Europe	Finland	2016	24341	41.91	44.47	13.61	3.08

Area	Country	year	Number marriages	Hypergamy (%)	Homogamy (%)	Hypogamy (%)	Gender Asymmetry Ratio
Europe	France	2016	219549	43.88	43.67	12.45	3.53
Europe	Germany	2015	400115	47.8	40.99	11.21	4.26
Europe	Greece	2016	49632	52.56	37.4	10.05	5.23
Europe	Hungary	2016	51805	49.81	37.93	12.26	4.06
Europe	Iceland	2011	1450	45.03	42.69	12.28	3.67
Europe	Ireland	2012	20713	40.53	47.35	12.12	3.34
Europe	Italy	2016	203258	50.78	38.53	10.69	4.75
Europe	Latvia	2016	13002	13.48	41.7	44.82	0.30
Europe	Lithuania	2016	21347	46.08	42.62	11.3	4.08
Europe	Luxembourg	2016	1884	48.73	38.32	12.95	3.76
Europe	Macedonia	2016	13199	51.55	41.38	7.07	7.29
Europe	Malta	2016	3056	97.05	2.36	.59	164.78
Europe	Montenegro	2009	3829	61.24	32.04	6.71	9.12
Europe	Netherlands	2014	75696	49.26	41.3	9.44	5.22
Europe	Norway	2012	24076	52.04	38.84	9.12	5.71
Europe	Poland	2016	193455	43.87	47.04	9.09	4.83
Europe	Portugal	2016	32399	43.77	42.21	14.02	3.12
Europe	Republic of Moldova	2012	18564	50.33	42.78	6.89	7.31

Area	Country	year	Number marriages	Hypergamy (%)	Homogamy (%)	Hypogamy (%)	Gender Asymmetry Ratio
Europe	Romania	2015	125454	53.41	37.47	9.12	5.86
Europe	Russian Federation	2012	1.2e+06	86.82	10.47	2.71	31.99
Europe	San Marino	2016	141	47.52	39.72	12.77	3.72
Europe	Serbia	2016	35719	52.34	37.85	9.8	5.34
Europe	Slovakia	2016	29897	48.85	41.06	10.09	4.84
Europe	Slovenia	2016	6667	46.56	40.99	12.45	3.74
Europe	Spain	2016	168765	44.96	42.32	12.72	3.53
Europe	Sweden	2012	45903	45.44	42.45	12.11	3.75
Europe	Switzerland	2016	41646	48.97	38.95	12.08	4.05
Europe	Ukraine	2016	229453	49.14	39.09	11.77	4.17
Europe	United Kingdom	2015	283519	41.89	44.3	13.8	3.04
Europe	Åland Islands	2016	123	52.85	38.21	8.94	5.91
Europe	**43**			**50**	**39**	**11**	**4.5**
Oceania	Australia	2016	118373	42.23	45.97	11.81	3.58
Oceania	New Caledonia	2010	908	52.97	36.56	10.46	5.06
Oceania	New Zealand	2016	20244	54.8	45.2	0	n.a.
Oceania	**3**			**50**	**43**	**7**	**7.1**

Table A-2. Share of hypogamous marriages in the country, Human Development Index (HDI) and gender dimensions of social life. Selected countries, UN yearbook, various years 2006-2017.OLS

VARIABLES	(Model 1)	(Model 2)	(Model 3)
HDI	7.515	4.044	5.792
	(10.44)	(10.95)	(13.14)
Secondary education (%, fem/male)		0.152	0.0793
		(0.128)	(0.270)
Fem. Employment, no agric. (%)		12.37	21.71
		(11.77)	(16.78)
Fem. seats in parliament (%)		0.00599	0.0255
		(0.104)	(0.103)
Fem. Legal age marriage			0.389
			(0.702)
Gender ratio (male/female)			6.681
			(4.906)
Pop. density			-0.000471
			(0.000968)
Gender gap in life exp. (female's-male's)			0.795
			(0.520)
% of brides <21			-0.0125
			(0.0887)
Constant	5.764	-10.76	-36.24
	(8.553)	(15.71)	(24.17)
Observations	82	73	60
R-squared	0.006	0.049	0.158

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A-3. Shares of homogamous marriages in the country, Human Development Index (HDI) and gender dimensions of social life. Selected countries, UN yearbook, various years 2006-2017.OLS

VARIABLES	(Model 1)	(Model 2)	(Model 3)
HDI	38.61***	25.43**	16.69
	(9.697)	(10.70)	(10.21)
Secondary education (%, fem/male)		0.322**	-0.446**
		(0.125)	(0.209)
Fem. Employment, no agric. (%)		-2.668	0.911
		(11.50)	(13.03)
Fem. seats in parliament (%)		0.125	0.0772
		(0.101)	(0.0801)
Fem. Legal age marriage			0.0973
			(0.546)
Gender ratio (male/female)			-2.529
			(3.811)
Pop. density			0.000486
			(0.000752)
Gender gap in life exp. (female's-male's)			0.790*
			(0.404)
% of brides <21			-0.580***
			(0.0689)
Constant	5.241	1.807	41.96**
	(7.944)	(15.34)	(18.78)
Observations	82	73	60
R-squared	0.165	0.283	0.713

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A-4. Legal age for marriage, with and without parental consent, by countries and gender. Source: UNDP, Selected countries. Footnotes as original.

Country or area	**Without parental consent**		**With parental consent**		**Source**
	women	**men**	**women**	**men**	**year**
Aland Islands[1]	18	18			2011
Albania	…	…	16	18	2011
Andorra	16	16	14	14	2001
Anguilla	18	18	…	…	2011
Armenia	17	18	…	…	2011
Aruba	18	18	15	18	2011
Australia	18	18	16	16	2011
Austria[2]	18	18	16	16	2011
Azerbaijan	…	…	17	18	2011
Bahrain	…	15	…	…	2011
Belarus[3]	18	18	…	…	2011
Belgium	18	18	<18	<18	2011
Bermuda[1]	18	18			2011
Bosnia and Herzegovina	18	18	…	…	2011
Botswana	21	21	18	18	2011
Brazil	18	18	16	16	2011
Bulgaria	18	18	16	16	2011
Chile	18	18	16	16	2011
China, Hong Kong SAR	21	21	16	16	2011
China, Macao SAR	18	18	16	16	2011
Costa Rica	18	18	15	15	2011
Croatia	18	18	16	16	2011
Cuba	16	18	14	16	2011
Cyprus	18	18	16	16	2011
Czech Republic	18	18	16	16	2011
Democratic People's Republic of Korea	17	18	…	…	2005
Denmark	18	18	15	15	2011
Dominican Republic	18	18	16	17	2011
Ecuador	18	18	<18	<18	2011
Egypt	21	21	16	18	2011
El Salvador	18	18	14	15	2011

Country or area	Without parental consent				With parental consent					Source
Estonia	18		18		15		15			2011
Fiji	21		21		16		18			2011
Finland[6]	18		18		…		…			2011
France[1]	18		18							2011
Germany[7]	18		18		16		16			2011
Greece[8]	18		18		…		…			2011
Grenada	21		21		16		16			2012
Guatemala	18		18		14		16			2009
Hungary	18		18		16		16			2011
Iceland[1]	18		18							2011
Iran	…		…		15		18			2011
Ireland[1,10]	18		18							2011
Israel[1]	17		17							2011
Italy	18		18		16		16			2011
Japan	20		20		16		18			2011
Kazakhstan	17		18		16		16			2011
Kuwait	15		17		…		…			2011
Kyrgyzstan	18		18		16		16			2011
Latvia	18		18		16		16			2011
Lesotho	21		21		16	n	18	n		2011
Lithuania[12]	18		18		15		15			2011
Luxembourg	16		18		…		…			2011
Malta	16		16		…		…			2011
Mauritius	18		18		16		16			2011
Mexico[14]	18		18		14		16			2011
Montenegro	18		18		16		16			2011
Montserrat[15]	18		18		16		16			2011
Netherlands	18		18		16		16			2011
New Caledonia	18		18		…		…			2011
New Zealand	18		18		16		16			2011
Norway	18		18		16		16			2011
Panama	18		18		14		16			2011
Paraguay	20		20		16		16			2005
Peru	18		18		16	g	16	g		2007
Poland[16]	18		18		…		…			2011
Portugal	18		18		16		16			2011
Puerto Rico	21		21		16		18			2011

Country or area	Without parental consent				With parental consent				Source
Qatar	16		18		<16		<18		2011
Republic of Korea	20		20		18		18		2011
Republic of Moldova	16		18		…		…		2011
Romania[1]	18		18						2011
Russian Federation	18		18		16		16		2011
Saint Helena ex. dep.	21		21		16		16		2011
San Marino	18		18		16		16		2011
Serbia	18		18		16		16		2011
Singapore[17]	21		21		<21		<21		2011
Slovakia[18]	16		16		…		…		2011
Slovenia	18		18		15		15		2011
South Africa	21		21		15		18		2011
Spain	18		18		14		14		2011
St. Vincent and the Grenadines	15		16		…		…		2011
State of Palestine[19]	…		15.5		14.5		…		2011
Sweden[20]	18		18		…		…		2011
Switzerland	18		18		16		16		2011
Tajikistan	18		18		17		17		2011
TFYR of Macedonia	18		18		16		16		2011
Trinidad and Tobago[21]	18		18		<18		<18		2011
Turkey	18		18		16		16		2011
Ukraine	17		18		15		15		2011
United Kingdom	18		18		16		16		2011
Uzbekistan	17		17		…		…		2011
Venezuela [1]	12		12						2011

Footnotes

… Data not available

1 The minimum legal age at which marriage can take place is the same respectively for bride and groom with or without parental consent.

2 Persons less than 18 years old need a decision of the court.

3 In compliance with the Marriage and Family Code of the Republic of Belarus, in the exclusive cases related to pregnancy, childbirth, and in case of acquiring by a juvenile of a full legal capacity under lawful age, the civil registration offices are in a position to reduce the marriage age of espousing persons, but not more than by 3 years. The marriage age is to be reduced by an application of espousing persons; the parental consent is not required.

6 Persons less than 18 years old need the permission of the Ministry of Justice.

7 Marriage at 16-17 years of age requires that the other spouse be an adult already betrothed (18 years) and an exemption from the requirement of majority by a competent family court.

8 Under some conditions (e.g. pregnancy) the marriage can take place without age restrictions.

10 An exemption on the minimum age can be granted by court order if granting of such an exemption is in the best interests of the parties to the intended marriage and good reasons for the application can be demonstrated.

12 In addition to parental consent, persons less than 18 years old need judicial approval. In case of pregnancy, marriage can be allowed below 15 years of age.

14 Each of the 31 Federal States and the Federal District has its own civil code for marriage. Exceptions to ages given in the table are as follows: without parental consent, the minimum legal age at which marriage can take place in Baja California and Tlaxcala is 16 years for males and 14 years for females whereas in Baja California Sur, it is 16 years for females. With parental consent, the minimum legal age for marriage is 16 years for both males and females in Aguascalientes, Campeche, Chiapas, Distrito Federal, Guerrero, Jalisco, Morelos, Puebla, Quintana Roo, Querétaro, San Luis Potosí, and Sonora. With parental consent, the minimum legal age for marriage is under 18 years for both males and females in Coahuila, Hidalgo, and Zacatecas. The Minimum legal age for marriage remains the same respectively for bride and groom with or without parental consent in Baja California, Baja California Sur and Tlaxcala.

15 Consent can be given by a guardian or a person who has custody of the child wishing to marry. Also, the Governor has discretion to permit persons as young as 15 years and 1 day old to marry, if he thinks that getting married is in the best interest of the persons who are intending to marry and the persons in this instance must have also received the necessary consent.

16 Females can marry at the age of 16 or 17 years with parental and court consent.

17 Specified minimum legal marriage age refers to marriages contracted under the Women's Charter. For Muslim marriages under the Administration of Muslim Law Act, no marriage shall be solemnised when either party is below the age of 18 years. Notwithstanding that, Muslim women below the age of 18 years who have attained the age of puberty may be married under the Administration of the Muslim Law Act.

18 A marriage cannot be entered into by a minor. The court may exceptionally and for important reasons approve of entrance into marriage by a minor older than sixteen years. Without this approval, the marriage is invalid, and the court shall declare the invalidity even without a petition.

19 The legal marriage age for females is 14 years, 6 months and 22 days. There must be parental consent (father or brother if the father is dead). The legal marriage age for males is 15 years, 6 months and 21 days. Parental consent is not required.

20 With parental consent, no limit but authorities must approve; without parental consent, 18 years of age for Swedish citizens.

21 With parental consent, age for marriage is 14 years for males and 12 years for females in a civil marriage; 16 years for males and 12 years for females in a Muslim marriage; 18 years for males and 14 years for females in a Hindu marriage; and 18 years for males and 16 for females in Orisa marriage.

g Requires authorization of civil court.

n Requires the written consent of the Minister responsible

4. Older women, younger men. Is there a new trend? Age differences between Italian spouses, 1870 – 2015

4.1 Introduction

In the previous chapter, I explored the patterns of age difference between spouses in various countries. The results showed that, on average, age differences vary across countries, that they are linked to the levels of socio-economic development and women empowerment on a macro level, and that the age of females at marriage has a key role in such patterns. In this chapter, I investigate whether the patterns of age differences between spouses have changed over the time. I focus on Italian marriages concluded between 1870 and 2015 and discuss the role that the increasing age at marriage may have played on these patterns. This chapter complements the previous one as they both focus on how the patterns of age differences change on a macro level across space and time.

A growing body of research in developed countries shows that the patterns of age differences between spouses do change. Previous findings have shown a reduction in the average age gap between spouses or an increase in the share of homogamous marriages in Sweden (Kolk, 2015), Australia (Qu, 1997) China (Mu, 2014), the Netherlands (Van Poppel et al., 2001), Spain (Esteve et al., 2016b), the US (Atkinson & Glass, 1985) and the regions of England and Wales (Bhrolcháin, 2005) over the 20th century, and even earlier on. Various explanations have been offered. In particular, the increasing homogamy between the end of the 19th century and the beginning of the 20th century was linked to the socio-economic effects of modernization. The protraction of its positive trend in the second half of the 20th century and thereafter is linked to the expansion of education and/or more gender egalitarian relationships and roles within the family.

However, more recent studies have suggested that since the seventies the share of age hypogamous marriages has increased slightly, as well as an upturn in the share of hypergamous marriages in places such as Sweden, Spain and China (Kolk, 2015; Esteve, Cortina, & Cabré, 2009; Mu, 2014). These trends require further investigation. So far, the relevant research has focused on a specific time period (mostly being restricted to the second half of the 20th century) and on first marriages only. In this paper, I aim to contribute to the literature on the historical patterns of age differences among spouses in three ways. Firstly, I use unexplored data from

Italy, which allows me to cover the long period of 1870 to 2015. Secondly, I include second order marriage in my analysis. Thirdly, I explore the role that increasing age at marriage played in the variation of the patterns of age differences in first marriages.

The case of Italy is particularly interesting to study due to its the patterns of age differences and the role of increasing age at marriage. In the past, like other Western countries, Italy has been characterized by the European marriage pattern (Hajnal, 1965), that is, it was maintained a relatively old age at marriage and high rates of celibacy. Compared to other European countries, however, even during the "golden age of marriage" (Murstein, 1976; Segalen, 1981), when the age at marriage dropped, Italian spouses did not marry as young as their European counterparts (Santini, 1986). Still today, Italian brides and grooms are among the oldest in Europe. Thus, these characteristics make Italy an interesting case for an examination of the effects of age at marriage on age differences between spouses.

Furthermore, the study of age differences among second order marriages is important in itself and may serve to deepen our understanding of the factors driving the patterns of age differences among first marriages. From a theoretical point of view, explanations focusing on cultural change, if correct, should apply also to second order marriage[25] Secondly, individuals who remarry are expected to do so at an older age compared to those marrying for the first time. By marrying at an older age, individuals have a greater chance of meeting partners who are younger than themselves, while such chances are lower when individuals marry at a younger age. And, the older individual is at the time of marriage, the larger the age gap between the spouses can be. Thus, the patterns of age differences among second order marriages contribute to our understanding of the role played by age at marriage on age differences between spouses.

For this study, official data on marriages was collected from different sources found in the archives of the Italian Institute of Statistics (ISTAT). Due to the quality of data made available and for reasons of comparability across years, the age of the spouses was aggregated into 5-year age-groups and cross-tabulated for each marriage cohort (years 1870-2015). Following the example of Esteve and his colleagues (Esteve et al., 2009b), who used a similar type of data for Spain, I present data on hypergamous, homogamous and hypogamous marriages distinguishing between smaller and larger age differences (i.e. one and two or more age-categories respectively) and separately by the civil status of the spouses at marriage.

[25] Perhaps the effects of cultural shifts should be even *more* evident among second order marriage, if the remarrying individuals are those who "brake the norms" with non-traditional" behaviour on the marriage market.

The chapter is organised as follows. Firstly, I present an overview of the theoretical and current empirical literature on historical changes in the patterns of age differences in various developed countries. Following on, I provide some background information about the Italian marriage context and outline my own empirical findings. I conclude by discussing the interpretation of my results.

4.2 Theoretical overview

In an attempt to explain the observed patterns of age assortation, much of the theoretical discussion relating to the trends and patterns of age assortation has followed an inductive approach. It has focused primarily on explaining the positive trends of homogamy and the decline of hypergamy. Recently, in line with new findings, various explanations have been offered for the appearance of signs of positive trends in hypogamy and the "return" of hypergamy. In short, such patterns have been linked to the three major areas of social change: cultural and economic modernization; the expansion of education; and, the diffusion of more flexible and egalitarian gender roles. These are the factors that I investigated in the preceding chapter. While previously the focus was on their role in explaining the variation of age differences between spouses between countries (space), here I shift the focus to the variation of age differences across time.

Economic and cultural modernization

Earlier studies, those focusing on the patterns of age differences among marriages registered in the 19th and 20th centuries, linked the positive trends in age homogamy to cultural and structural changes brought about by modernization. Firstly, the ideological shift from the idea of "instrumental marriage" to that of "romantic and more egalitarian marriage" was emphasised (Van de Putte et al., 2009; Van Poppel et al., 2001). Drawing on accounts on the history of family, the cited authors argued that economic interests became a less important criteria for partner selection, while attraction and feelings of companionship became more salient ones. This shift was facilitated by several socio-economic factors. Young people became increasingly free of the influence of third parties when choosing a partner, which allowed the selection criteria to change slowly. In addition, growing urbanization increased opportunities to meet new people of a similar age. New venues of opportunity include novel places of amusement, such as theatres, cinemas and restaurants, which began to pop up in urban agglomerates, or simply at an individual's workplace (Goode, 1963; Van Poppel et al., 2001). Finally, the expansion of wages and salaries weakened the link between marriage, on one side, and wealth

and property, on the other (M. Dribe & Stanfors, 2017). Additionally, marriage became less instrumental because more individuals in the cities were now able to "afford marriage" around the turn of the 20th century (M. Dribe & Stanfors, 2017). Implicit in the above explanations is the assumption that individuals "prefer" partners of the same age, when given the opportunity to choose. The problem with this view is that all marriages that are not homogamous become an indistinctive mass of "instrumental marriages", since they are not otherwise specified.

Homogamy kept rising in the 20th and 21st centuries, that is even after the modernization push had been exhausted. Theoretical arguments have pointed to the effect of other factors, namely, the expansion of education (Gustafson & Fransson, 2015a; Mignot, 2010) and changing gender roles (Casterline et al., 1986a; Esteve et al., 2009b; Gustafson & Fransson, 2015a).

Expansion of education

Educational expansion can be considered as a structural or cultural factor. In fact, the expansion of educational institutions provides more "opportunities" to meet individuals of the same age. It also shapes cultural tastes and lifestyle thereby making those individuals more similar and attractive to each other, compared to individuals outside such institutions (Blossfeld, 2009; Mare, 2017; Mignot, 2010). As female and male students spend a longer part of their life cycle in educational institutions, they widen their networks of same-education and same-age potential partners and reduce the opportunities to meet individuals in other age-groups, giving rise to the so-called filter effect (Murstein, 1976). While the cultural effect of education may have little variation over the life-course of individuals, the "institution effects" may vary (Mare, 1991). The latter will be stronger when individuals meet their partners at a young age, that is when they are enrolled in institutions, and weaker when individual start their stable relationships later in life, as is the case of second unions.

Changing gender roles

Finally, a recent strand of research links changing patterns of age differences between partners to changes in various aspects of the gender structure, namely, gender roles and gender opportunities (Mu, 2014) as well as the gender culture in general (Bozon, 1991b; Casterline et al., 1986a). On this view, hypergamy suits a patriarchal society, which is based on a gendered division of labour and sustained by unequal gender opportunities on the labour market. In such a society, one that is based on a strictly gendered division of labour, the man is the one who specializes in the earner role and the woman in the carer role. Hypergamous relationships may be the outcome of partner selection based on criteria that would suit such a division of labour.

Women seek partners older than themselves because of their ability to "signal" higher economic resources and stability (Oppenheimer, 2003). Men seek women younger than themselves for the value that they attribute to their reproductive ability and housework skills. However, as the gendered division of labour changes so do the selection criteria of partners. Moreover, as societies become more egalitarian, hypergamy is expected to become less common. Today, in developed countries, women became increasingly educated and more attached to the labour force. Consequently, gender roles within the family have become increasingly flexible. It follows that the traits and qualities sought in the partner may have changed for both women and men. Women, now able to rely on their own resources, may attribute less importance to men's ability to earn. Men, on the other hand, may seize up women's economic potential and resources, while seeking to increase the cumulative socio-economic resources of the couple as a whole. In a more gender egalitarian society, women may not necessarily look for men older than themselves, nor men for women younger than themselves, while the reverse may also happen. Despite agreeing with this argument, Mu (2014) argues that an increase in economic pressure and uncertainty may trigger a renewed desire for older, more established men, by women.

Furthermore, searching criteria on the marriage market are associated with the prevalent cultural definitions of femininity and masculinity in society. For example, if the concept of masculinity is associated with dominance and power and that of femininity with obedience and passivity, these qualities may correspond to symbolic qualities in terms of the relative physical appearance and the relative position in society. Both sets of qualities are associated with age. Accordingly, we can interpret hypergamy as a match corresponding to an ideal of "accepted" male domination (Bozon, 1991b). If this is true, we should expect that patterns of age differences will change in conjunction with the cultural shift towards more gender egalitarian values and norms (Inglehart & Norris, 2003).

Age at marriage

The above literature has implicitly explained the changing patterns of age differences with changes to preferences for partners. However, we know that the choice of partner also depends on the structure of opportunities. In this instance, I refer to the age structure of the population of potential partners available. This depends, in turn, on the age of the individuals seeking partners. We expect age to be positively associated to age heterogamy, since the older the age at marriage, the higher the chance to meet potential partners who are younger than themselves.

More specifically, female age at marriage should be positively associated to age hypogamy, and negatively to hypogamy. Male age at marriage, on the contrary, should be positively associated to age hypergamy and negatively associated with hypogamy. Thus, the trends in age at marriage could explain the variation in age hypogamy and age hypergamy. Clearly, since the effect of female and male age at marriage travels in opposite directions, the outcome of an increase of the pair is an empirical question. In addition, changes in the opportunity structure (thus age at marriage), should not be seen as an alternative explanation to changes in age preferences, but rather as complementary. In addition, it is possible that age at marriage has *mediated* the effect of modernization, education and changing gender roles. That is to say, the processes of modernization, education expansion and changing gender roles have affected age at marriage, and only indirectly, age differences.

4.3 Previous studies

Generally, the empirical literature on age differences has investigated trends of age differences in successive marriage cohorts. Age differences are measured in two ways. When the exact age of the spouses is available, the age gap is usually used, calculated as the groom age minus the bride age (marriages with a positive age gaps are hypergamous and marriages with a negative age gap are hypogamous). When the age of the spouses is available in age categories, differences are calculated in terms of age categories. For example, a marriage is hypogamous when the groom is one or more age-categories younger than the bride (i.e. groom's age category being 20-24 and bride's 25-29), and vice-versa for hypergamous marriages. The definitions of homogamy can also vary. When age-categories are used, age homogamy is approximated as being in the same age category. As an example, with five-year age groups, the age difference of homogamous spouses ranges between zero and four years and that of heterogamous couples can be of 1 or more years (in the specific example of groom's age category being 20-24 and bride's 25-29, the groom is between 1 and 9 years younger).

Despite the difference in the types of data and the definition of age differences, empirical findings on patterns of homogamy are extremely consistent. A tendency towards increasing shares of homogamous marriages and/or smaller mean age gaps during the 19th and the 20th century has been confirmed in Spain (Van de Putte et al., 2009), Sweden (M. Dribe & Stanfors, 2017; Gustafson & Fransson, 2015a; Kolk, 2015a), the Netherlands (Van Poppel et al., 2001), the United States (Atkinson & Glass, 1985; Presser, 1975; Qian & Preston, 1993), Italy (Bonarini, 2017), China (Mu, 2014), and a sample of Belgian and Dutch municipalities (Van

de Putte et al., 2009). One noticeable exception is that of the study of Bhrolcháin (2005), who found that the mean age gap did not decrease among first marriages in England and Wales between 1920 and 2001.

As most literature has emphasized the rise in homogamous marriages, the patterns of hypogamy was often overlooked, sometimes hidden by the general term of age heterogamous marriages (which includes a minority of hypogamous marriages and a majority of hypergamous ones). The share of hypogamous marriages appears to have followed a u-shaped trend over the 20th century in Australia, the Netherlands, England and Wales (Bhrolcháin, 2005; Qu, 1997; Van Poppel et al., 2001) with only a few authors discussing this trend. In addition, the sparse research covering the last decades of the 1900 and beyond suggests that hypogamy has increased since the sixties/seventies (Esteve et al., 2009b; Kolk, 2015a; Qu, 1997). In Italy, a recent study comparing age differences in first marriages of Italian brides born in 1941-1981 provides new evidence. It shows that hypogamy and homogamy became more common (and hypergamy less common) among younger brides. However, these trends reversed among the two youngest cohorts analysed, those born in 1976 and 1981 (Bonarini, 2017). The increase in homogamy and, in a minor part, hypogamy, have mostly run parallel to the decrease in hypergamous marriages. However, to complicate the matter further, a reversal of downward trends in hypergamy has been noticed in the last decades of the 20th century or later (Bhrolcháin, 2005). Sometimes, this was limited to hypergamous couples with larger age differences (Bhrolcháin, 2005; Esteve et al., 2009b; Kolk, 2015a; Mu, 2014).

With regard to the sample of couples analysed, the above studies focus mainly on age differences between spouses who are both singles, i.e. first marriages (Franco Bonarini, 2017; Esteve et al., 2009b; Kolk, 2015a; Mu, 2014; Van Poppel et al., 2001) or, rarely, on biological parents of new-borns when the baby was the first child for both parents (Kolk, 2015a). Other studies refer to the totality of registered marriages (Atkinson & Glass, 1985; Esteve et al., 2009b; Qu, 1997) and in one study the authors could not distinguish the marriage order (M. Dribe & Stanfors, 2017).

Only two studies, to my knowledge, have been able to analyse separately the patterns of first and second order marriages but only for relatively recent years. In England and Wales, it was found that the mean age gap decreased among second order marriages between 1941 and 2001 (Bhrolcháin, 2005). However, the trend reversed in the last five years based on an analysis of women remarrying to single men and among spouses that were both to remarry. The other,

which includes second marriages, is the already-mentioned study on Spain (Esteve et al., 2009). Here, the data on second marriages covers the years 1922-1934 and 1974-2006. The authors show that the share of homogamous marriages increased for all types of second marriages except when men were remarrying a single women. Such an increase started among couples where women were remarrying a single men around the 1970s, and a decade later among couples where both spouses were remarrying.

Finally, concerning age differences by the age of the spouses, we know little on whether this has changed over time. Some evidence comes from the latter study on Spain. This shows that, among first marriages, the proportion of age homogamous marriages decreased among the youngest grooms (age 15-24) and brides (15-24 and 30-34), while it has increased among the other age-groups, between the 1980s and 2001. It appears that this decrease translated into higher shares of hypergamous marriages among the young brides and higher shares of hypogamous marriages among the young grooms (Esteve et al., 2009).

To sum up, the empirical literature largely confirms a positive trend in homogamy among first marriages. However, more research is needed to deepen our understanding of hypergamy and hypogamy. In Italy, data on young cohorts of brides at the time of their first marriage[26] suggests that hypergamy is returning among the younger generation of brides. This picture deserves further investigation.

4.4 Overview of Italian marriages

In this section, I provide a brief overview of the developments of family law and marriage patterns in Italy, as a way of background[27]. In particular, I focus on the legal age at marriage and trends in first and second order marriage.

The Pisanelli civil code, in effect since 1865, set, among other things, the minimal legal age for marriages. It was age 21 for women and 25 for men without parental consent but it could be lowered to 15 for girls and 18 for boys with the consent of the parents, or the fathers only. The institute of marriage was "modernized" in the country only in 1975. The new family law raised the legal age for marriage to 18 for both sexes. Marriage at a younger age with parental

[26] Age differences are not the main focus of the analysis by Bonarini (2017), which has a much wider scope. However, the data is interesting in itself and the fact it is included in the study of nuptiality demonstrates the relevance of the subject.

[27] The data collected for this study starts from year 1875, 14 years after the unification of the country under the "Regno d'Italia" (Italian Kingdom) in 1861. While, before the unification, different laws were in place in different parts of Italy, by year 1875 we can expect that national laws were in effect in most areas of the country.

authorization was no longer possible, unless exceptional authorization was granted by a legal court. It must be noted, in this respect, that the low age at marriage granted in earlier times seemed to be in line with, if not auxiliary to, stronger influences of the parents on the choice of the spouse. Laws increasing the age at marriage and denying parents the right to authorize earlier marriage, on the contrary, aimed at guaranteeing the free choice of spouses (Goode, 1963).

Divorce was introduced in Italy in 1970. Before then, divorce could not be granted unless a guilt was proved, and this was easier to prove for husbands and harder for wives. The law was opposed by various parties and by the Church. These, together with other organizations, proposed a referendum to abolish the divorce law in 1974. The divorce law remained in place, but about 40% of voters voted against it. This shows how divided the society was, in a context where family norms were strong, as much as the influence of the Catholic Church and conformist moral. Divorcees were ostracized by the Church and the divorce rate did not take off until the nineties, where it remained relatively low compared to many other European countries. In summary, Italy has never adopted a strongly gender egalitarian view of marriage; age at marriage became gender-equal only in 1975 and divorce spread relatively late in comparison to other European countries.

The trends in family dynamics in Italy reflect the general tendencies observed in other European countries. Concerning trends in first marriages, these were relatively stable between 1861 and 1950. They experienced a boom during the sixties and have been in a steep decline since then. The crude marriage rates for the period 1861-2015 are shown in figure B.1 of the appendix. The average age at marriage of single spouses (irrespective of the civil status of the spouses) fluctuated moderately until the post-second world war period (around 29 years for men and 25 for women), and gradually decreased to reach its lowest level (27 for men and 24 for women) in the seventies. Around the eighties, age at marriage started its extraordinary increase and still seems to be on the rise. In 2014 the average age at marriage of single men was just above 34 and that of single women just below 32. The gender gap has decreased overall. Data on age at marriage of singles for years 1875 – 2015 are shown in figure B.2 of the appendix.

The trends in second order marriage differ from those of first marriage. While the rates of first marriage has declined since the seventies, the rates of second order marriage declined until 1970 and have since risen (figure B.3 in the appendix). This is mainly due to changes in the composition of the “population at risk” of second order marriages. This consisted mainly of

widows and widowers until 1970, while divorcees joined the group afterwards. The majority of marriages with at least one spouse remarrying consisted of marriages between single women and previously married men. However, since the seventies this has grown less than the share of marriages between single men and previously married women. As a result, the gap between the shares of these two groups of marriages (involving previously married men and single brides, on one hand, and previously married women and single men, on the other) has definitely shrank in 2015, when compared to 1870. In 1870 marriages between widowers and single women were over 10% of the total registered marriages, a proportion 3 times bigger than that of marriages between widows and single men (the latter being about 4%, similar to the proportion of marriages between widowers and widows). In 2015, the marriages of men remarrying to single women were about 6% of the total, a share very close to that of marriages between women remarrying to single men (about 5% of the total marriages) and between spouses who were both previously married). The shares of marriages with at least one partner remarrying over the totality of marriages by the civil status of the spouses is shown in figure B.4 of the appendix.

All in all, similar to many other Western-European countries, first marriage trends turned negative, and second marriage trends positive. For this reason, the patterns of second order marriages are increasingly relevant in the study of marriage and family in general, and of age differences in this instance. Age at marriage is on the rise and its link with age differences is also to be investigated.

4.5 Data and methods

Data and sources

For this study, I collected and analysed historical and recent data on marriages available from the online archives of the Italian National Institute of Statistics (ISTAT). Data refers to all marriages celebrated in Italy for a given year. I collected such data for the period 1870-2015 at five years intervals, subject to their availability. The final data collected refers to the following years: 1870, 1875, 1881, 1915, 1925, 1930, 1940, 1950, 1955, 1960 (…) until 2015. Marriages celebrated in different years are collected from different sources, mainly: the civil population registers ("*Movimento della popolazione civile*"), Statistics reports ("*Annuari di statistica*"); Reports on marriages, divorces and separations ("*Matrimoni, separazioni e divorzi*); Marriage statistics ("*Rilevazioni matrimoni*"). In the main analysis, I included marriages where both spouses were under 50 years old.

For most years the combination of spouses' age by different types of marriages is only available for the age of the spouses classified into age-categories. For more recent years, the precise age of each spouse is recorded. For reasons of comparability across time, hypogamy, homogamy and hypergamy are calculated as differences in age-categories of grooms and brides for the whole period (1870-2015). The results obtained were also compared with the results obtained using exact age combination (more details in the robustness checks section below). For each given year, I used a matrix containing the cross tabulation of the age-categories of bride and groom and elaborate the share of marriages with grooms one or more age-categories younger than their brides (age hypogamy), one or more age-categories older than their brides (age hypergamy) and in the same age-category of the bride (age homogamy). Age-categories of the spouses correspond to less than 20, 20-24, 25-29 and so on until 45-49.

Reliability of the data, Limitations and Robustness checks

Data on marriage was collected from ISTAT.[28]). Data seemed generally consistent, as I crossed-check the total number of marriages for the same years from different sources, when possible (i.e. from the civil population registers and the reports on marriages, divorces and separations. With regard to the comparison of marriage statistics over time, it must be highlighted that the boundaries of the country changed slightly, especially with regard to Northern part and islandic territories. However, the boundaries remained the same at least since the second part of the 20th century, which is where the most interesting results are.

Measures of hypergamy, hypogamy and homogamy based on differences in age categories lack precision, compared to measures able to give precise age gaps. Considering 5-year age categories, when the spouses are in the same age category the actual age difference may range from 0 to 4 years (irrespectively from which partner is younger). When a partner is one age category older, the actual age difference may range from 1 to 9 years. When a partner is two or more age categories older, the actual age difference may be 6 years or more. This problem was encountered in other studies (Esteve et al., 2009b; Van Poppel et al., 2001) and the authors tested, when computing trends of homogamy, hypergamy and hypogamy using single years. Their results were similar to those obtained using differences in age categories. It is not straightforward to know how to define homogamy, hypergamy and hypogamy for such comparisons. Compared to the results based on a strict definition of homogamy, (i.e. a

[28] The Italian National Institute of Statistics which, in turns, collects and aggregates and publishes the data from the single municipalities

difference of 0 years), the results based on a definition of homogamy as both spouses being in "the same age category", systematically overestimate the share of homogamous marriages and underestimate the proportion of hypergamous and hypogamous marriages. Compared to the results based on less strict definitions of homogamy (i.e. a difference of 2 years), the results based on a definition of homogamy as both spouses being in "the same age category", underestimate the share of homogamous marriages and overestimate the proportion of hypergamous and hypogamous marriages.

Overall, we cannot expect the proportions of marriages with any exact age differences to match the proportions of marriages with certain age differences measured in terms of age categories. That said, what is important is that the trends in age homogamy, hypogamy and hypergamy, observed in the long run using both methods, point in the same direction, and they do. As an example, in figures B.5 and B.6 of the appendix, I show the patterns of age differences obtained with the two methods for all marriages during the period 1950-2015. In figure B.5, the patterns are obtained using calculations based on single years. In figure B.6, the patterns are obtained with the calculations based on age categories. The patterns can be compared as follows: husband/wife is 10 or more years older (figure B.5) can be compared with husband/wife two or more age categories older (figure B.6); husband/wife is 5-9 years older (figure B.5) with husband/wife one age category older in (figure B.6); partners are less than 5 years apart (figure B.5) with partners in the same age category (figure B.6). Although the shares of each type of marriage differ, the trends are very similar. The test confirms that the patterns observed using age categories are similar to those based on yearly data, despite differences in the precise proportions.

The youngest (first) age category (less than 20) is kept open. This is because between 1866 and 1975, the legal age for marriage for females and males was 15 and 18 years with parental consent, and 21 and 25 years without consent. However, for a long time, until about the second half 20th century, there were several exceptions to the rules with cases of brides marrying between 12 and 14 and males between 16 and 18. Since 1975, the legal age for marriage was set to 18 for both sexes without the need for parental consent and exceptions to the law became rarer. In order to take changes in the legal and actual minimal age at marriage into account, and because age differences may be more meaningful at younger age, I repeated the analysis using different age categories for the youngest spouses: less than 18, 18-19, keeping the following categories as of 5 years. The outcome was very similar to the original results. With regard to

the latter age category, a further analysis has included more age categories (50-54, 55-59 and 60+) for the marriage cohorts where data allowed, and again the trends remained very similar.

On other approaches used in the literature

Some authors have investigated to what extent the patterns of age differences might have been affected by changes in the structure of the population. In particular, this is done analysing time series of data on age assortation with measures based on the *force of attraction*, that is a version of log-linear methods (Esteve et al., 2009b; Mu, 2014; Qian & Preston, 1993; Schoen, 1981). This method allows one to analyse changes in age assortation net the changes in the structure of the population "at risk of marriage", that is, single women and men the age of those who marry. The results show that, in general, the changing patterns of age difference are not a consequence of the changing structure of the population at risk. In other words, they would have happened in any case and are attributed to changes in age preferences.

Despite being a useful tool, this method has been criticized because the population considered to be "at risk of marriage" may be inaccurately estimated. For example, individuals who are married are not considered to be "at risk of marriage", but they might be. This is particularly important when we analyse marriages distinguishing by the marriage status of the spouses, as I do in this chapter. On the other side, individuals who are single may not want to be married, and thus erroneously considered to be at risk of marriage. Furthermore, over- and under-estimation of the population at risk may be contingent to exogenous factors (for example, economic crisis) thus being more problematic when analysing trends. For all these reasons, the measure of force of attraction is deemed not appropriate to the object of this chapter.

4.6 Results

The results of the study are presented in two parts. In the first part (4.6.1), I show the patterns of age differences among spouses for all marriages and by the civil status of the spouses. In the second part (4.6.2), I restrict the focus on first marriage only and explore the link between the changing patterns of age differences and the age at marriage of the spouses.

4.6.1 Patterns of age differences between spouses

Figures 4-1 to figure 4-4 show the distribution of age differences between spouses in different types of marriages for years of 1870-2015. Only marriages between spouses who married before age 50 are included. For the time being, please consider the data on marriages for the years in grey of the graphs as missing and the data for the years 1920, 1935 and 1945 as linearly

interpolated. The different areas in the graph represent the proportion of marriages where the groom is older or much older than the bride (i.e. respectively, one age category and two or more age categories older), where the bride is older and much older than the groom (i.e. respectively, one age category and two or more age categories older) and when the spouses are approximately of same age (i.e. in the same age category). Due to the limitations of the measures of age category, shares of different types of marriages should be interpreted with care. For this reason, the discussion of the results will focus mostly on the general patterns of differently age-assorted marriages, rather than the proportions themselves.

All marriages and first marriages

Figure 4.1 shows the results for all marriages, regardless the marriage order. The graph confirms that not all age combinations are equally likely. Marriages are more likely to be hypergamous or homogamous, and only a minority of them are hypogamous, at any time. On average, hypergamous marriages amount for 60% of the marriages registered in the observed period. The remaining marriages are mostly homogamous (32%) and only 8% of marriages are hypogamous. Focusing on the patterns of age differences, we notice that there has been a downtrend in hypergamous marriages, in favour of homogamous ones, over the observed years. Overall, the proportion of hypergamous marriages decreased from 64% to 49% and that of homogamous marriages increased from 27% to 33%. The shares of hypogamous marriages were almost equal in 1870 and 2015 (about 10%) but experienced a small u-shaped trend. Around the eighties, at a time while homogamy was expanding, only 5% of marriages were hypogamous.

The downward trend in hypergamy, with corresponding positive trend in homogamy, started slowly from the beginning of the period observed. However, the patterns have changed faster since the second half of the 20th century. One peculiarity is the small uptick in hypergamy in 1930. This, in parts, suggests a rebound effect due to the decrease of hypergamy in the preceding year. Further, 1930 is the year after the "*concordato*" between the Church and the State took place. This means that religious marriages began to have a legal value. It cannot be excluded that a higher percentage of hypergamy is found among religious marriages and, thus, that more hypergamous marriages were registered after the *concordato*.

Further, we can distinguish among smaller and larger age differences, the first being defined as one age category and the latter as two or more age categories. In general, it appears that larger age differences were more common in the past, both among hypergamous and hypogamous

marriages. However, larger age differences are also more common among hypergamous couples compared to hypogamous ones. Most importantly, we notice that the downward trend in hypergamy was driven mainly by the decrease of hypergamous marriages with larger age difference. In 1870, there were roughly as many marriages with larger age differences as those with smaller age differences, among hypergamous ones. The proportion went down to one in three by 2015. Among hypogamous marriages, the proportion of marriages with larger age differences never reached more than one third, and it was particularly low towards the end of the 20th century.

Restricting the sample of marriages to first marriages only, the patterns of age differences match those seen above (figure B.7 of the appendix), probably because single marriages represent the great majority of marriages. However, marriages with larger age differences are slightly less represented among first marriages compared with the whole sample of marriages. This is perhaps due to differences in the age composition of the spouses at first and second marriage. Larger age differences are more common at older age, and spouses at their first marriage are generally younger than spouses who remarry.

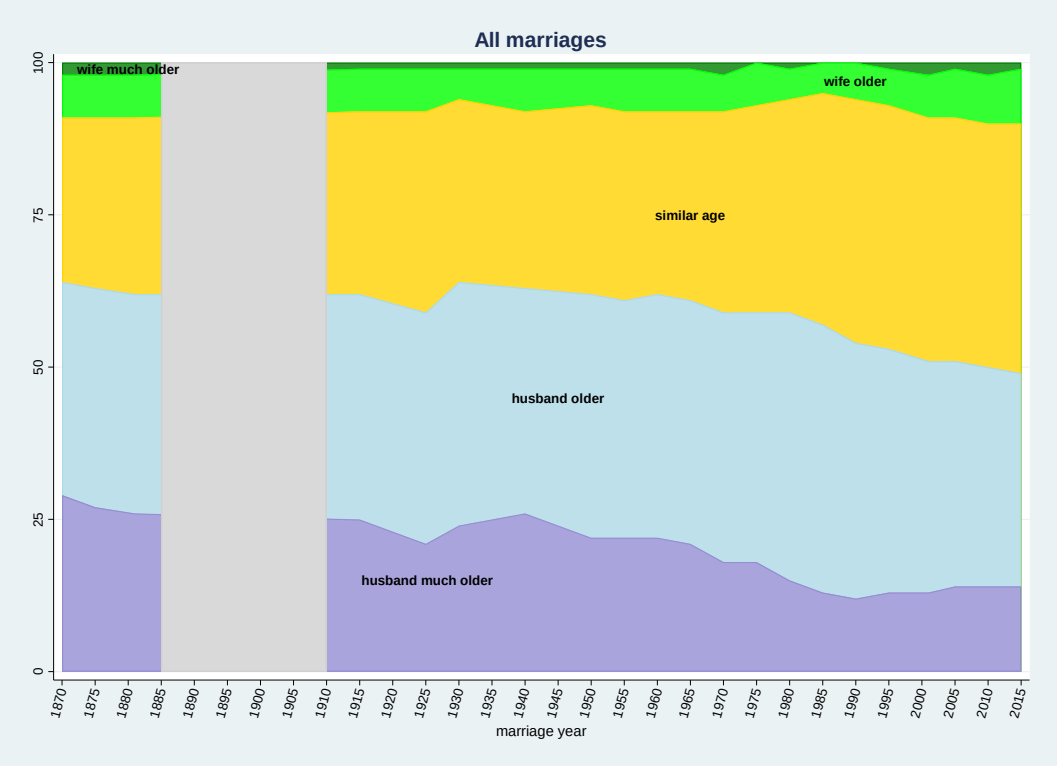

Figure 4-1Distribution of age differences for all marriages. Italy 1870-2015. All Spouses married under the age of 50, selected years. Various sources, my elaboration

Second order marriages

Moving to second order marriages, below I show the patterns of age differences among marriages between single brides and previously married grooms (Figure 4.2), between single grooms and previously married brides (Figure 4.3), and between spouses who were both previously married (Figure 4.4). Previously married spouses can include widow(er)s or divorcees. Nevertheless, considering that divorce was introduced in 1970, we can safely identify most remarrying women and men as widow(er)s before 1970, and as divorcees afterwards.

Figure 4.2 shows that, when remarrying to single brides, men are very much likely to do so with women younger than themselves. On average, 75% of the marriages between single brides and previously married men are hypergamous. And in at least half of these marriages there are large age differences between the spouses. Figure 4.3 shows that the reversal is not true when previously married women marry single grooms. In fact, in this case roughly one third of the marriages are homogamous, and the rest of them ranges across all other possible age combinations, among which all those with smaller age differences are slightly more common. Among the groups of marriages where both spouses were previously married, the patterns differ further (Figure 4.4). The share of hypergamous marriages is on average 58%, that of hypogamous ones 14% , and of homogamous ones 28%.

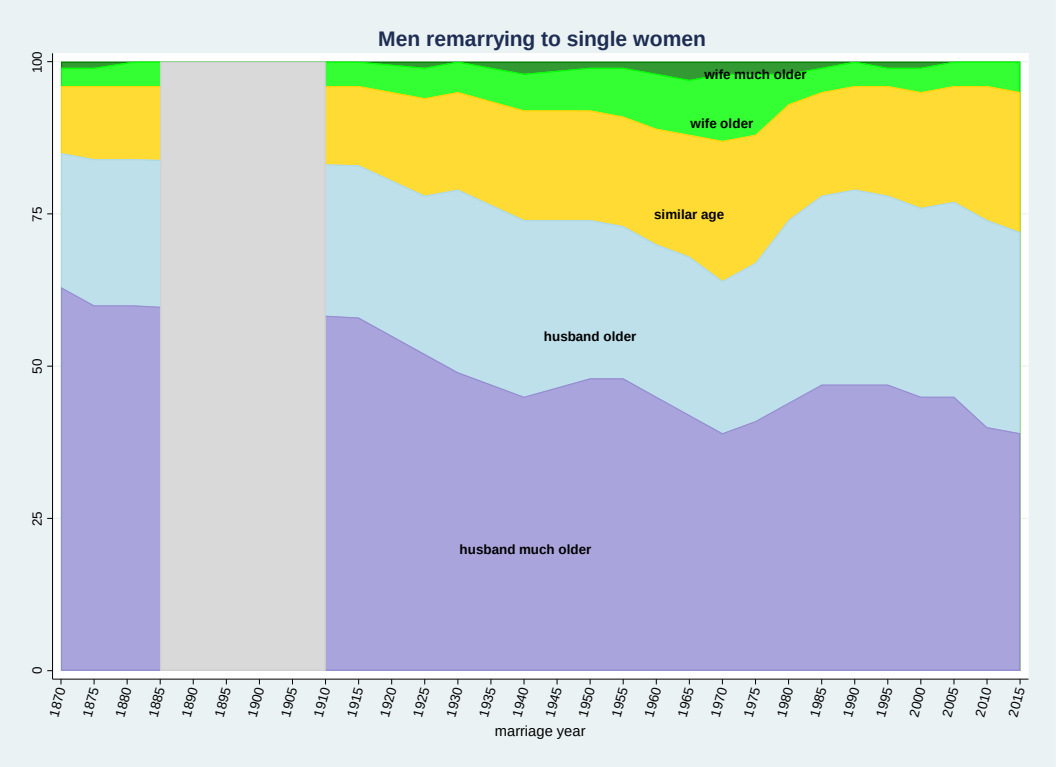

Figure 4-2. Distribution of age differences for marriages between single brides and previously married men. Italy 1870-2015. All Spouses married under the age of 50, selected years. Various sources, my elaboration

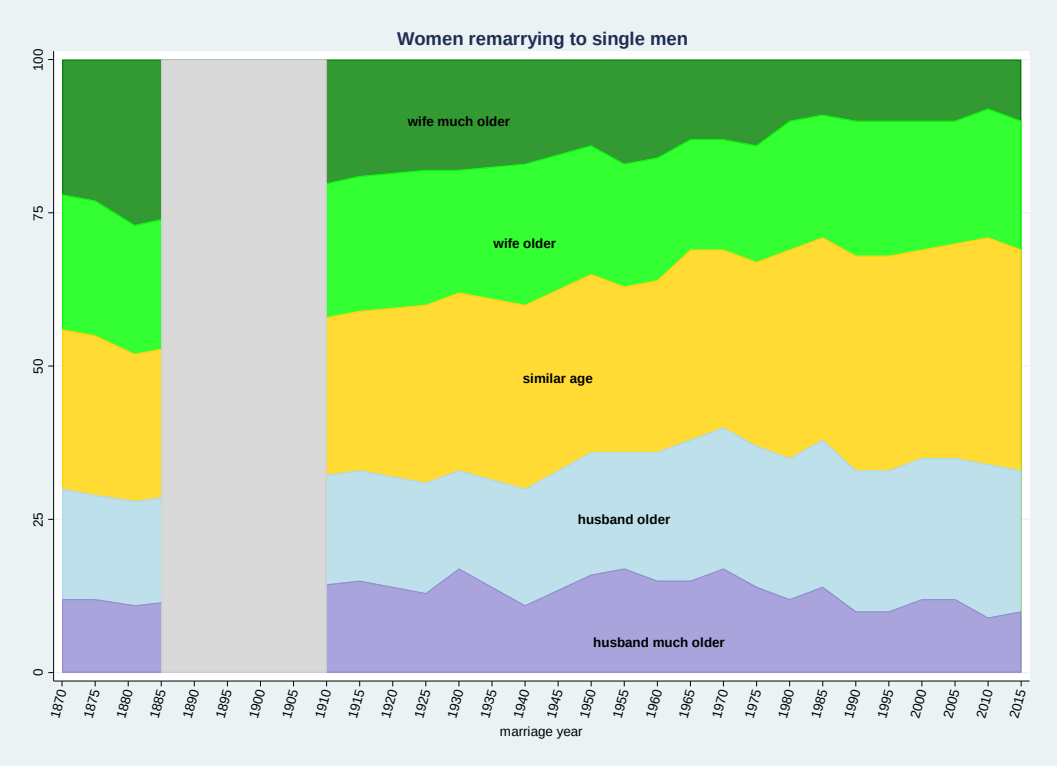

Figure 4-3. Distribution of age differences for marriages between single grooms and previously married brides. Italy 1870-2015. All Spouses married under the age of 50, selected years. Various sources, my elaboration

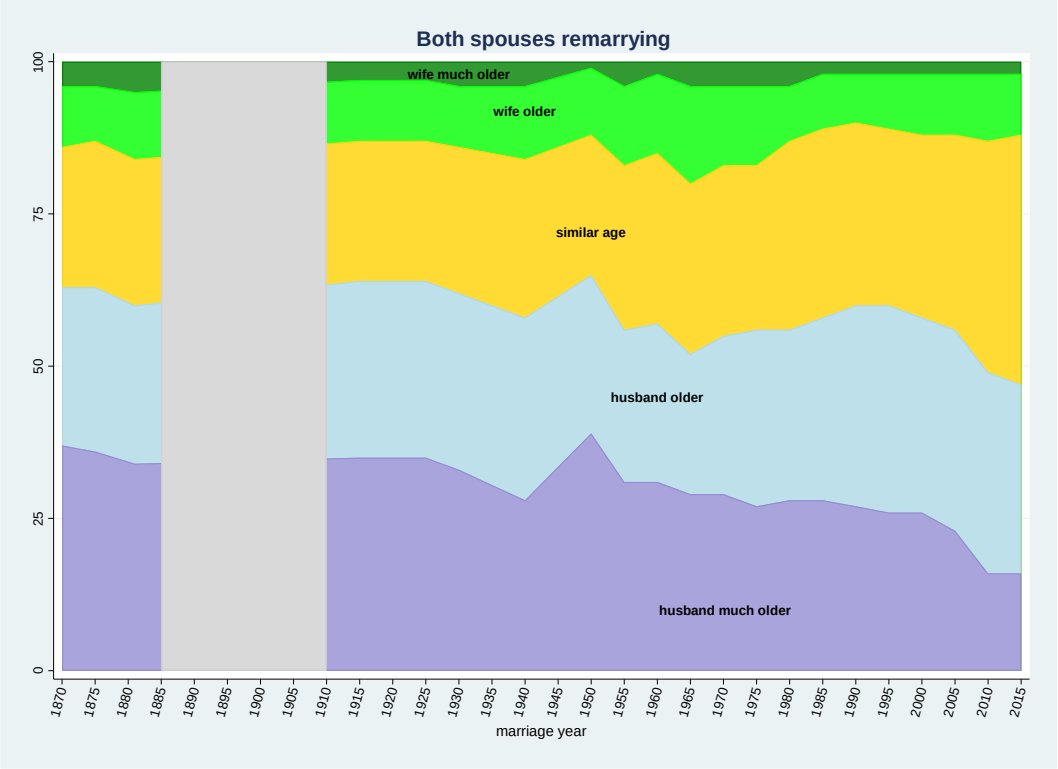

Figure 4-4. Distribution of age differences for marriages between spouses who were both previously married. Italy, Italy 1870-2015. All Spouses married under the age of 50, selected years. Various sources, my elaboration

In relation to trends over time, they also differ among the three types of second marriages. There seems to be a clear-cut division in the patterns of age differences of widowers (1870-1970) and divorcees (1970-2015) married to single brides (Figure 4.2). Among widowers there was a decline in hypergamy and an increase in hypogamy and homogamy between 1870 and 1970. Among male divorcees such trends reversed, at least between 1970 and 1990. The share of hypergamous marriages increased and that of hypogamous and homogamous marriages decreased. In addition, the decrease in the share of hypergamous marriages among widowers was concentrated among those marriages with large age difference, while the increase in hypergamy among divorcees includes both smaller and larger age differences. Trends in the share of hypogamy were observable for both types of age differences.

The patterns of age differences among marriages between remarrying brides and single grooms are similar across the groups of widows and divorcees (Figure 4.3). They are characterized by increasing shares of homogamous marriages, stable shares of hypogamous marriages with smaller age differences and decreasing shares of hypogamous marriages with larger age differences. However, the decreasing shares of hypogamous marriages are differently

compensated among widows and divorcees. Among widows, they are compensated by the increasing shares of hypergamous marriages; among divorcees by the increasing shares of homogamous marriages among divorcees. Summing up, the distribution of age differences among previously married women marrying single grooms was still highly diversified in 2015, although the share of hypogamous marriages with larger age differences was smaller in 2015 compared to 1870.

The patterns of age differences seem contiguous across the groups of widow(er)s and divorcees when we observe marriages between two previously married spouses. They are characterized by increasing shares of homogamous marriages and the decline of all hypogamous and hypergamous marriages with larger age differences. The results suggest that the proportion of hypogamous marriages increased among remarrying widowers and widows, and decreased only among remarrying divorcees. In addition, among divorcees the share of hypergamous marriages with smaller age differences increased, while hypergamous marriages with larger differences continued to decline.

To sum up, the results in this first part of the study show that homogamy increased among all types of marriage between 1870 and 2015. Hypogamy increased only slightly among first marriages. However, it followed a U-turn trend and the proportion of hypogamous first marriages in 2015 were similar to those in 1870. Hypogamy did not increase among any other types of marriages and it declined strongly among marriages between women remarrying to single men. Finally, the decrease in hypergamy was confirmed in all types of marriages, but mostly for what concerned hypergamy with large age differences. Hypergamy remains the prevalent pattern among Italian marriages, and it is particularly common when men remarry to single women.

4.6.2 Age differences and age at marriage

In this section, I explore the relationship between the patterns of age differences and the spouses' age at marriage, focusing on first marriages only. I illustrate the shares of hypergamous, homogamous and hypogamous marriages by the age groups of the brides and grooms at marriage. I try here to answer two questions. Did the patterns of age differences vary evenly across all age-groups of the spouses? And how did the increasing age at marriage contribute to the overall changing patterns of age differences between spouses?

To answer these questions, I show the shares of hypergamous, hypogamous and homogamous marriages by age group of brides and grooms, married below age 50, in 1870 and 2015 (figure

4.5). The percentages expressed on the right vertical axis indicate the shares of differently age-assorted marriages over the total, in a similar fashion to what we saw in the previous sections. The graphs include shadow areas in the background, indicating the number of marriages in each age group of the spouses. The absolute number of marriages is shown on the left vertical axis.

We see that the shadow area indicating the number of marriages slides to the right in 2015, showing that age at marriage increased towards older age. In 1870, most marriages were concluded by brides age 20-24 and grooms age 25-29. In 2015, most marriages were concluded by brides between 25-34 and grooms 30-34. Furthermore, the age distribution of the spouses is flatter in 2015, compared to 1870, especially for brides. This may be interpreted as more variety, and thus less normativity, regarding the (female) age at marriage. Next, we can observe how the patterns of age differences were distributed across the different age-groups of the spouses. In general, as the brides marry at older age, hypogamy increases and hypergamy decreases. In contrast, as grooms marry at an older age, hypergamy increases and hypogamy decreases. Concerning homogamy, it seems to increase up to a peak in a specific (relatively young) age group, and then decrease, for both sexes (with the exception of the brides' age group 45-49). These patterns hold in 1870 as in 2015.

Next, we are interested in whether the patterns by age groups changed in 2015 in comparison to 1870, and how. While the patterns varied by gender, they were pretty consistent across different age-groups within gender. Among brides, the shares of homogamy and hypergamy increased, and those of hypogamy decreased, across nearly all age-groups (with the only exception, of brides aged 20-24 concerning homogamy, and <20 concerning hypergamy). Among grooms, the shares of homogamy and hypogamy increased, and those for hypergamy decreased, across all age-groups (excluding <20). It appears that the overall patterns of age differences were at least in part affected by changes in the age at marriage. The general positive trend in homogamous marriages had been reinforced by the increasing proportion of marriages at an age when homogamy is more common, regardless the gender of the spouses. On the contrary, the general negative trend in hypergamy was confirmed across all age groups of the grooms, but not of the brides. It appears that it was made possible, instead, by the increasing proportion of women marrying at an older age, among which hypergamy is less common. Finally, the shares of hypogamous marriages across the two years were similar. However, hypogamy did not increase among any age groups of the brides (but it did across all age-groups of the grooms), therefore it appears to be the outcome of the increasing proportion of brides marrying at older age, when hypogamy is more common.

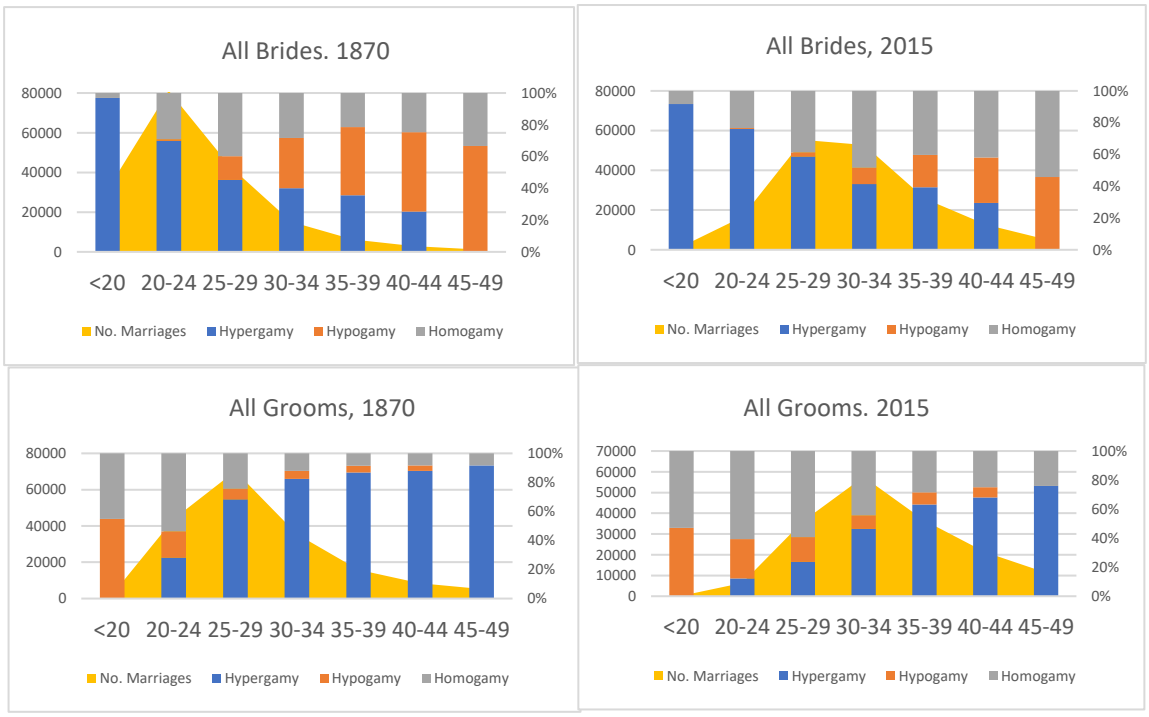

Figure 4-5. Number of marriages and shares of hypergamous, hypogamous and homogamous marriages by age of the brides and the grooms in 1870 and 2015. First marriages, spouses under 50

4.7 Conclusions

The aim of this study was twofold. Firstly, to investigate the patterns of age differences between spouses in Italy between 1870 and 2015 among first and second order marriages. Secondly, to show the role of age at marriage in determining the changing patterns of age differences among first marriages. With regard to the former, previous literature in other developed countries evidence a positive trend of homogamy, which goes hand in hand with a negative trend in hypergamy. Recently, hypergamy and/or hypogamy has started to increase in some countries. My research largely confirmed the positive trend in homogamy in Italy during the 20th century, both among first and second order marriages. However, trends in hypergamy and hypogamy differed across different types of marriages order. Concerning hypergamy, it did decrease among all types of marriages, although to different extents. However, only hypergamous marriages with large(r) age gaps did so. The share of hypergamous marriages with small(er) age gaps remained stable across the whole period. Finally, the positive trend in hypogamy among first marriages since the last decades of the 20th century is confirmed. However, in the longer-term perspective, it appears that hypogamy only followed a U-turn shaped trend among these marriages. In fact, in 2015 the proportion of hypogamous first marriages was similar to that of 1870. Furthermore, hypogamy did not increase, but rather decreased, among all other

types of marriages. This is especially true in the case of women remarrying to single men. To conclude, these analyses suggest that, despite the large increase in homogamous marriages, hypergamy remains the prevalent pattern, and there are no signs suggesting that the gap between hypergamous and hypogamous marriages may close, at least among Italian marriages.

In the second part of the empirical analysis, I made a distinction between changes in the patterns of age differences by age group and (delayed) age at marriage, in order to explain the role of age at marriage for the changing patterns of hypergamous, hypogamous and homogamous first marriages from 1870 to 2015. The data shows that homogamy rose evenly across all age groups of brides and grooms. In addition, the delay of marriage made homogamy even more likely because, in 2015, there were more individuals marrying at an age where homogamy is more common. This is not the case for hypergamy and hypogamy, for which the trends were more gender and age specific. Hypergamy seems more common, and not less, across all age groups of brides. However, the female postponement of marriage to age where hypergamy is traditionally less common, offset such increase. In the case of hypogamy, on the contrary, this did increase across all grooms' age groups (not brides'). This trend was reinforced by women' older age at marriage (when hypogamy is more common), but also contained by the male older age at marriage (when hypogamy is less common).

All in all the fact that homogamy increased across all types of marriages (first and second order) and across all age-groups (among first and all marriages) lends support to the theory linking homogamy to ideological and cultural changes. The expansion of education may only be part of the story because more hypogamy was observed across all age groups of the spouses. We cannot say the same for hypergamy and hypogamy. The decrease of hypergamy only applied to couples with large age gaps, and the small increase in hypogamy only went up to the 1870 levels. These patterns were more likely to be driven by the increasing female age at marriage, contrarily to the patterns of homogamy.

Going back to the differences between preferences and structural effects made clear in the theoretical chapter, these results suggest that the increased age at marriage makes hypergamous large age gaps less likely and hypogamous marriages more likely. Given the U-turn shaped trend of hypogamy, we cannot explain the recent rise in hypogamy entirely with more egalitarian gender roles. This is because gender roles became (slowly) more egalitarian overtime but, counterintuitively, there were more hypogamous marriages in in 1875 compared

with 1930, for instance. However, both gender equality and the expansion of education may have influenced hypergamy and hypogamy indirectly, by increasing the female age at marriage.

This study does have its limitations. The first one, already discussed and tested with regard to its potential bias, is that the analysis is based on the spouses' differences in age-categories, rather than in exact age-gaps. The second is that it is limited to marriages, thus the findings cannot be generalized to all couples. Finally, Italy is a country with a relatively recent history of immigration, and an older history of emigration. Migration patterns may affect the patterns of age differences if marriages between Italians and foreign-born individuals follow different patterns compared with marriages between Italians. For example, it is possible that the recent changes in hypogamy and hypergamy are driven by couples where one of the partners is not native, and we can speculate that native Italians tend to marry younger partners as a result of an exchange in resources, which would not be possible between natives (being mother tongue exchanged with young age). If this is the case, with regard to couples where both spouses are Italians, homogamy might be underestimated, and heterogamy overestimated. Despite the above limitations, the findings of this study are in line with previous findings on the patterns of homogamy in Italian marriages. Moreover, it offers new insights into the patterns of hypergamy and hypogamy.

Appendix B

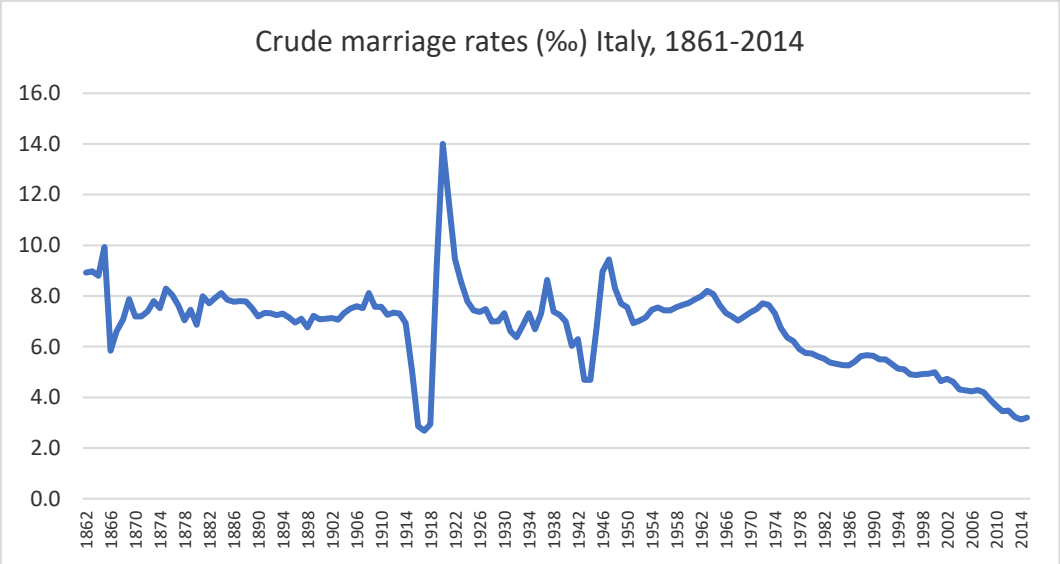

Figure B.1. Crude marriage rate (‰). Italy, 1861-2014. Source: ISTAT 2012, my elaboration

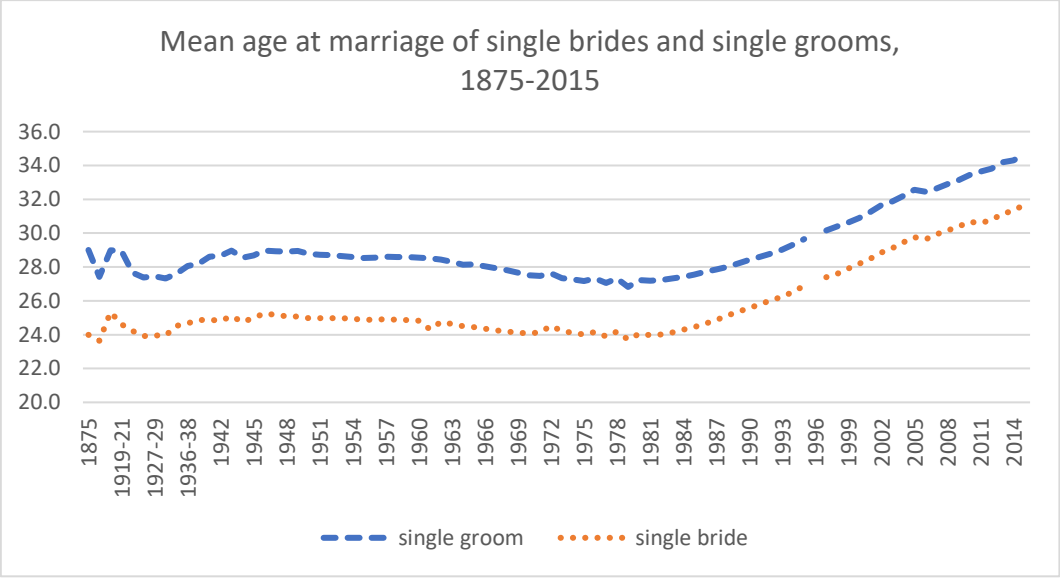

Figure B.2. Mean age at marriage of spouses, by gender. Various sources

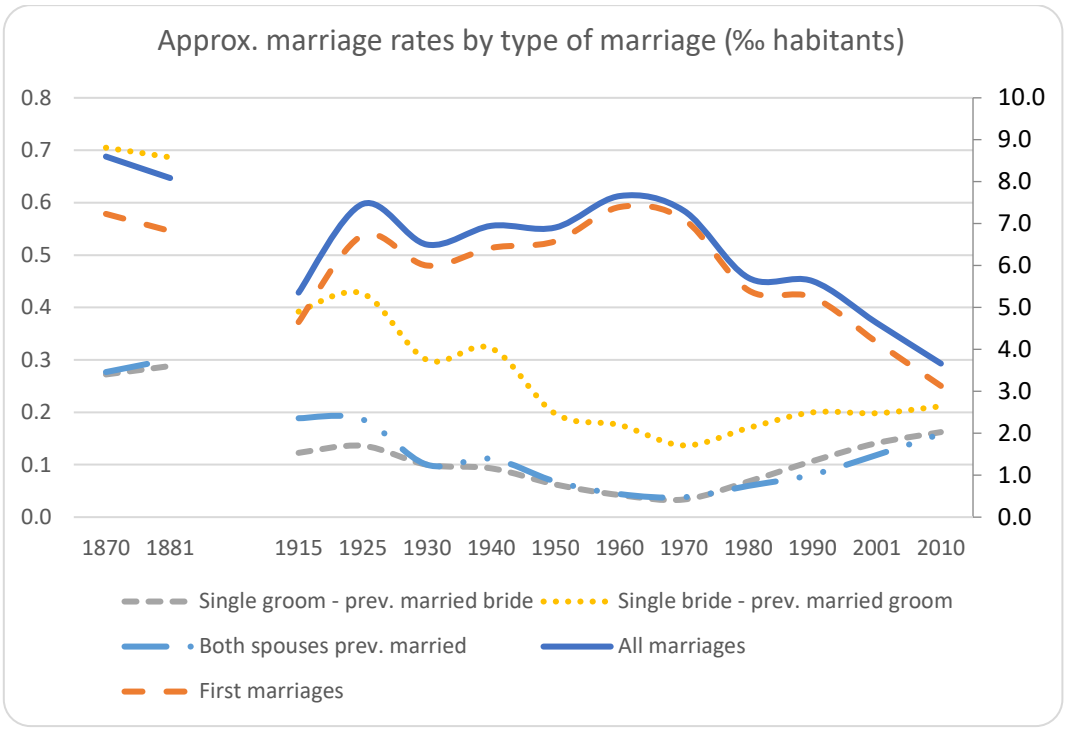

Figure B.3 Approximate marriage rates by marriage order. Scale for all marriage rates and first marriage on the right axis. Scale for the second order marriages on the left axis. Note: Rates are approximated because they refer to the whole population at the closest year data is available for from the registers of civil populations and population data from census. Various sources, my elaboration.

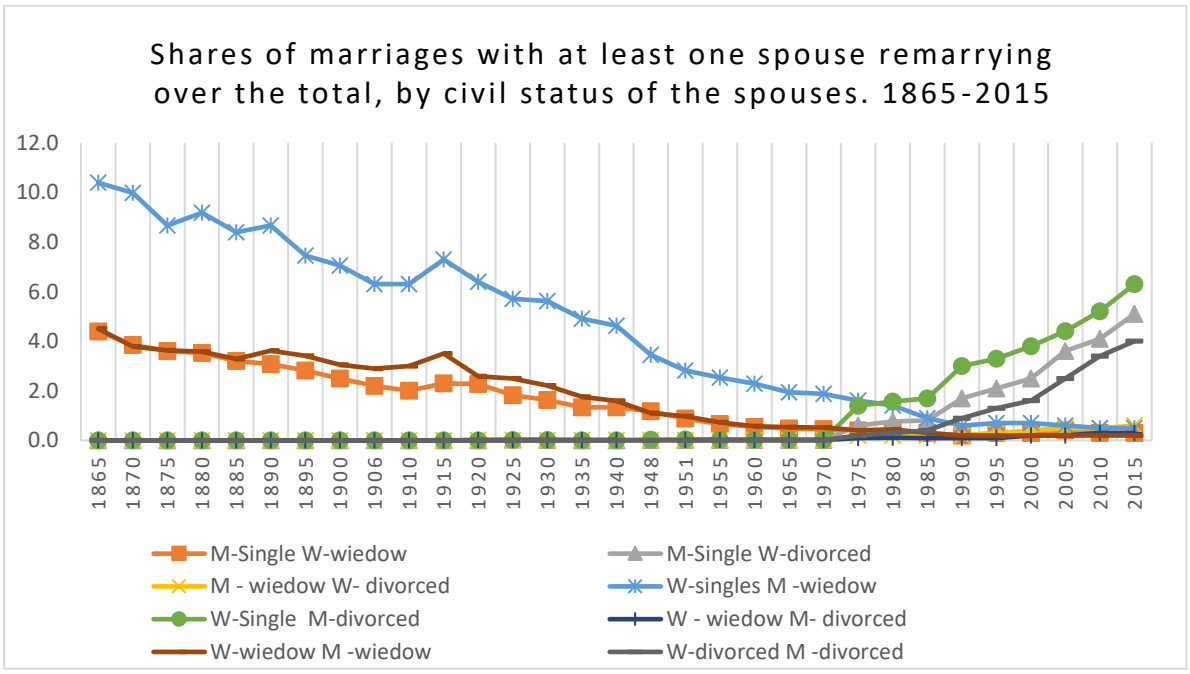

Figure B.4. Shares of second order marriages by civil status of the spouses. My elaboration

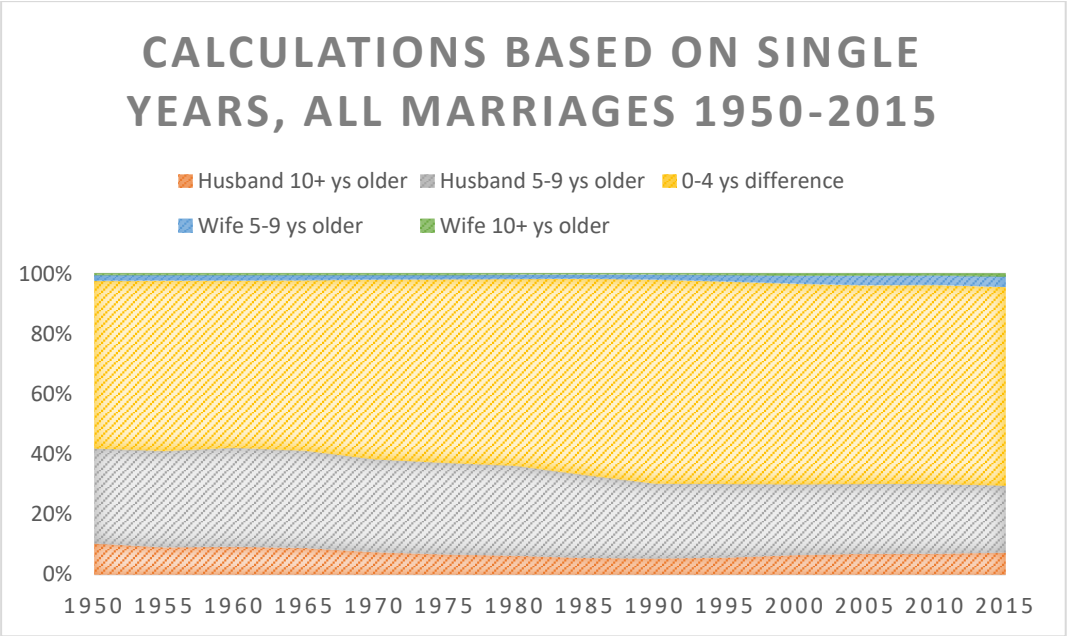

Figure B.5. Figure for methods comparison

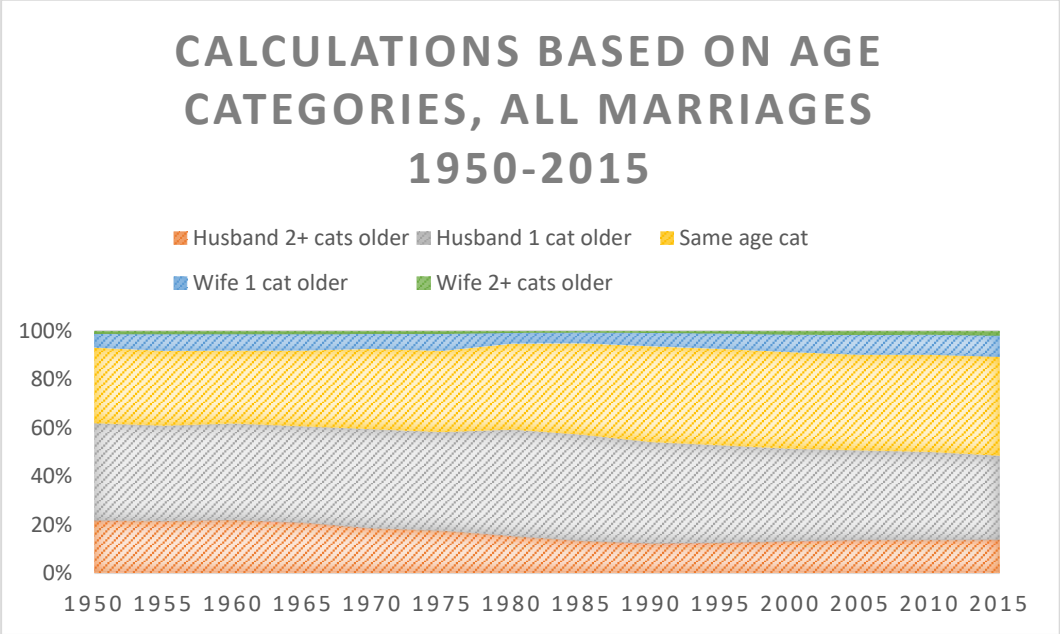

Figure B.6. Figure for methods comparison

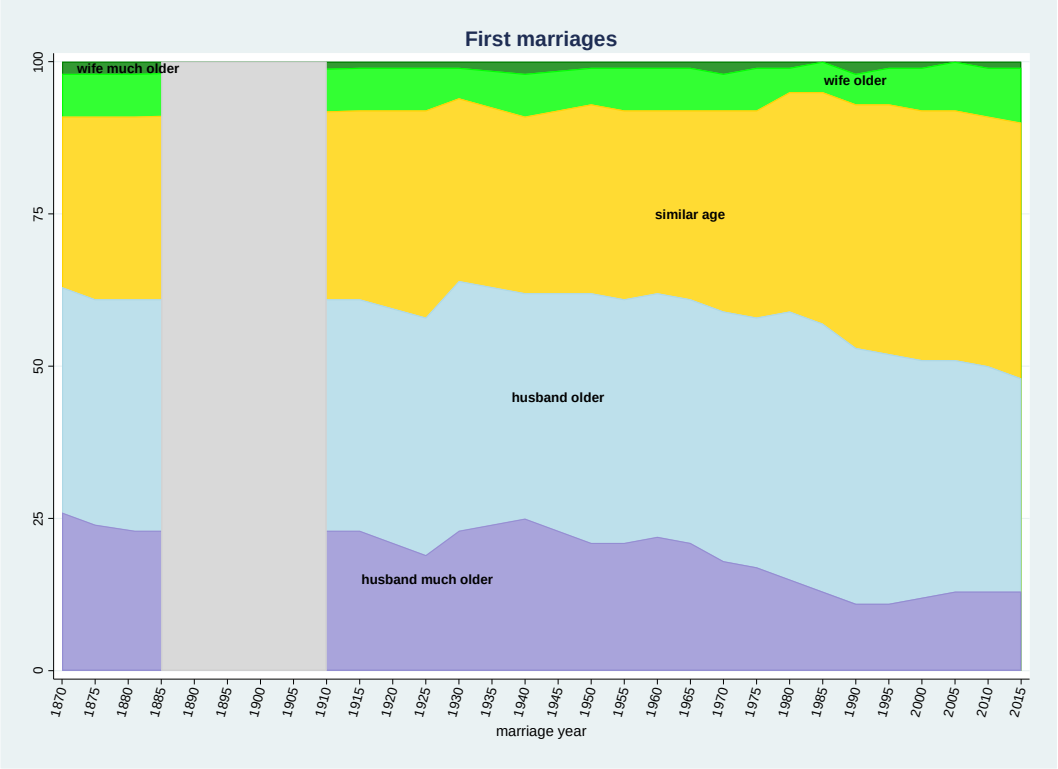

Figure B.7. Distribution of age differences among first marriages. Italy 1870-2015. All Spouses married under the age of 50, selected years. Various sources, my elaboration.

5. Higher education, younger partner? Women's education and age differences between partners in Europe

5.1 Introduction

In the previous chapters, I investigated the patterns of age differences between spouses across space (worldwide) and across time (in Italy). In both this and the following chapter, I move to explore potential factors affecting age differences at individual level. In particular, I test theories regarding the origins of female and male age preferences. In this chapter, I focus on one of the more widely accepted explanations for female preferences: that women "prefer" older men because they possess, or are able to signal the possession of, higher social status, earnings and employment stability, in comparison to younger men (Oppenheimer, 2003). As discussed in chapter 2, I argue that gendered age preferences partially originate from the gender structure of opportunities in society. Thus, in this study I aim to investigate how women's education, as well as other resources and constrains, affect the women's age preferences and, ultimately, are linked to different outcomes in terms of age differences on the marriage market.

In this chapter, I answer two research questions. Are women with more education less likely to start unions with older men? And, how are other women's socio-economic resources and constrains associated with the chances of being in a relationship with men who are older, younger or of a similar age, or remaining single? For instance, do women who are employed, born in the country, or have children from previous relationships have different chances of being with older partners? The departure point for the discussion is that age preferences on the marriage market, as with other preferences, partly depend on individual position in society and on the marriage market. If opportunities and constraints differ for women and men, their preferences will reflect such differences. In the case at hand, women may be more in "need" of socio-economic resources from partners because their own opportunities are limited in society, compared to men. This would explain why women seek older men; such men are better equipped to signal their role as "better providers" than younger partners. Consequently, I expect women with more resources (education, employment) to be less in need of good providers, and thus less likely to be with older men, and women with more constraints (children from previous relationships and foreign born) to be more likely to be with older men.

The study contributes to the literature on the gendered patterns of age differences in heterosexual couples in many ways. From a theoretical point of view, it investigates the role of various socio-economic characteristics of the women, aside from education, which can impact women's preferences and success on the marriage market. Empirically, the study includes married, cohabiting and single women. Most studies focus either on couples, most often married, to study age assortation or on singles, to study age preferences. Finally, this research explores women in the European context and includes younger cohorts of respondents. Previous pioneering studies were conducted in the eighties and referred mostly to the US-context (Alarie & Carmichael, 2015; Atkinson & Glass, 1985, 1985; Berardo et al., 1993; Bozon, 1991b; Qian & Preston, 1993; Shehan et al., 1991).

The empirical part of the study consists of two, cross-sectional analyses, based on data from the Generation and Gender Program survey in four European countries: Bulgaria, France, Lithuania and Sweden. In the first analysis, I investigate the association between various socio-economic characteristics of women in reproductive age and their relationship status. The latter is defined as being single or being in a cohabiting relationship with a man older/younger or of similar age (i.e. less than four years apart). The second analysis focuses on women who are in a cohabiting relationship and includes variables pertaining to the relationship itself (for example, the age at which the relationship started). In line with previous research, the study focuses on the observed outcomes on the marriage market, which are interpreted in the literature as "revealed preferences" (as opposed to true preferences, which are hidden).

The chapter is organized as follows. Firstly, I discuss the role of education on the marriage market and summarize the scientific literature on the link between education and age assortation. Next, I discuss the role of other resources and constraints and lay out the hypotheses and the analytical strategy of the study. The empirical study and the discussion of the results end the chapter.

5.2 Background

In this chapter I am interested in the resources and constraints that can affect women's age preferences for men. The theoretical and empirical discussion here will focus primarily on the role of education because it has been discussed more extensively in the theoretical and empirical literature on age assortation. Other resources and constraints relevant for women's age preferences will be discussed in greater detail afterwards.

Education and age differences

An extensive body of literature essentially explains age hypergamy with gender differences in the age preferences for partners. In particular, two assumptions are made. Firstly, age preferences for partners are, in part, unintended consequences of preferences for other resources correlated with age. For instance, preferences for older partners may be the consequence of preferences for individuals' Socio-Economic Status (SES), which is positively associated with age, at least for most of the "marriageable age". Preferences for younger partners may be the consequence of preferences for certain physical characteristics such as firm skin, which are negatively associated with age. The second assumption is that age preferences are gendered because preferences for the resources correlated with age are gendered. Following the example above, women are assumed to give more weight to the socio-economic status of the partner, thus preferring older men; men are supposed to give more weight to female physical characteristics associated with young age. This would lead to the de facto outcome of age hypergamy.

But what is the origin of these preferences and, in particular, female age preferences? The origins of gendered preferences are to be sought in the gender structure of society (England & Farkas, 1986), which determines individuals' opportunities and roles. Women value men for their higher earnings and social status (Becker, 1973; Elder, 1969; Taylor & Glenn, 1976; Waller, 1937; Goode 1966) in a society where men specialize in paid work on the labour market and women specialize in house and childbearing work. For Presser (1975), women's preferences for older men are the result of female "dependency" on their partner's status[29] (Blake, 1974). The argument here is that today gender roles have changed, and women work more outside the house. Moreover, women can attain SES on their own, by means of their education, for example. Therefore, we can expect that the age preferences of the women with higher SES, that is of highly educated women, come closer to those of men. In fact, the marginal gains from a partner's resources should decrease as the woman's own SES increases. As a result, woman with low-level job opportunities will have more to gain from the partner's resources, compared to women with high level job opportunities, and will keep prioritizing SES in their search for a partner. Women with higher opportunities will be able to prioritize other characteristics negatively correlated with the age of the partner. For example, younger men may

[29] Blake argue, more exactly, that women's status is (was) acquired from the status of men, being these men fathers or husbands. In our discussion, it is relevant that women obtain their status from that of their husbands.
is derived from the status of their partners .

be more attractive, more agreeable and hold more egalitarian attitudes and behaviour. As Press crudely put it, highly educated women may simply seek "cute buttocks and housework" (Press, 2004). Certainty, I am not claiming that lower educated women do not value alternative characteristics as much as highly educated women do. Simply, the latter may be in a better position to value them, since they are less economically and, consequently, emotionally dependent (Marie Bergström & Kramer, 2015; Dayan-Herzbrun, 1982) on a partner. Many scholars have also hypothesized that "independent women" may also want to give up marriage altogether. In fact, there has been a large debate on the effect of women's socio-economic opportunities on marriage rates and marriage delay (Becker, 1973; Goldscheider et al., 2015; Oppenheimer, 1988; Sweeney, 2002).

Women's level of education may affect their outcomes in terms of relationship status, which also depends on men's preferences and attitudes towards women with various levels of education (the other side of the marriage market). This may vary according to how men value the level of education of their partner and related SES. Theoretical economic models of the marriage market predict that women's financial success leads to hypogamy in the same way men's financial success leads to hypergamy (Bergstrom & Bagnoli, 1993; Coles & Francesconi, 2011; Siow, 1998). However, due to the gendered economic and social system, we can expect that the effects of female education on the age assortation cannot be as strong as the effect of male education. Firstly, salaries do not increase with education for women as much as for men. Thus, marrying a woman with high or low education often does not change substantially the "money in the pot", and such money does not increase as much with women's age as with men's age (with the exception of some professions). From a cultural point of view, some men may still fear the "intelligent woman" (supposing that higher educated women are perceived as more intelligent). For these reasons, even if men have particular preferences for their (female) partner's education, women's education should affect women's probability of finding a partner altogether, rather than the relative age of the partner they will end up with. In other words, two different mechanisms are at play. By affecting women's preferences and opportunities, the level of education influences the probability of being in hypergamous, hypogamous or homogamous relationships, or being single. By affecting women's competitiveness (male's preferences for women's' level of education), their level of education influence their probability of remaining single.

Short empirical literature review

Two lines of research explore how female education is associated with age differences. The first one focuses on the selection of women into various age-assorted couples. The second focuses on their stated age preferences. With regard to the former, the majority of studies to my knowledge have focused on married couples in the US. Earlier studies (Berardo et al., 1993; Bergstrom & Bagnoli, 1993; Vera et al., 1985) found that heterogamous married couples (both hypergamous and hypogamous) were consistently negatively selected on income and SES (as an index of income, education and occupational prestige, as per Nam and Terrie, 1981), regardless of which partner was older. More recent studies on married couples in the United States confirmed a negative association between levels of education and age heterogamy for both spouses (Atkinson & Glass, 1985; Mansour & McKinnish, 2011), or, where grooms were not included in the study, for brides (Shehan et al., 1991). In Sweden, scholars found, among the couples married between 2007 and 2008, that spouses in age heterogamous marriages were more likely to have low education, low income, and non-Swedish origins, compared with the spouses in the age homogamous marriages. However, these patterns were stronger in the couples where the man was the eldest partner, and weaker when, on the contrary, the woman was the eldest of the two (Gustafson & Fransson, 2015b). In particular, the women married to husband at least ten years older appear to have the highest probability of having low education. Studies on cohabiting couples on this topic are scarce, but some French studies suggest that the relationship between female education and age assortation might be weaker when cohabiting couples are included in the sample. For instance, Bozon (Bozon, 1991b) shows that, among the cohabiting women surveyed in 1984, the age gap (male age-female age) was larger in couples where the woman had lower education, compared to where women had higher education. However, the difference held only if the women had started the relationship before age 21 but disappeared if women had started the relationship at a later age (Bozon, 1991, table 7). Mignot (2010) studied a sample of French women and men born between 1935 and 1968 ("*étude de l'histoire familiale*, 1999)" who were either married or cohabiting at least once between 1978 and 1998. He found that having any types of diploma was associated with smaller age gaps for males (relative to not having a diploma). However, this was confirmed only for some types of diploma in the case of women.

The second strand of research focuses on women's age preferences, exploring their age preferences on surveys. South (1991) analysed the preferences of US singles (Sweet et al., 1988) and found no statistical differences between the stated preferences for partner's age of

women (and men) with different levels of education. More exactly, they refer to the preferences for partners at least five years older (or younger). Skopek and his colleagues (2011) analysed the preferences of online daters in Germany, using data from a survey launched by a particular online dating platform. Contrarily to the results by the above research, they found highly educated women show lower preferences for younger men and more indifference with respect to age, compared to women with medium education. In this case, findings differ by gender. In fact, highly educated men show stronger preferences for younger partners, compared to men with medium education.

5.3 The present study

To sum up, previous research appears to provide mixed evidence supporting the main hypothesis of this study, that is that women with higher education are less likely to be in hypergamous relationships. On one hand, research on the existing couples' age assortation suggest that this is the case among married couples but provide little evidence for cohabiting couples. On the other hand, the research on the topic based on the stated preferences is scarce and leads to inconsistent results. Furthermore, the two types of research have "opposite" shortcomings. Studies on the existing couples' age assortation are based on a selected group of couples (married or cohabiting) but exclude women who are not in a relationship (singles). Research on preferences focuses on singles but gives us no clues about the relative age of the person such singles will pair with, if successful on the marriage market. In this study I try to overcome the limitations of the previous studies and reconciliate the two approaches by using cross-sectional analyses on women in various relationship status. The possible relationship status considered are being single or in a cohabiting hypergamous/homogamous/ hypogamous relationship (either married or cohabiting).

Another contribute of this study is to extend the theory explaining women's age preferences bringing women' opportunities and constraints into the picture. In particular, by investigating how various women' social resources and constrains, besides education, might affect their age preferences, and ultimately their partnership status. Previous literature has been mostly empirically driven and made tentative conclusions on the "positive" and "negative" selection of individuals in differently age-assorted unions due to their ability to pick and choose on the market[30]. Essentially, if all women aim at older men, the most resourceful will get them. This

[30] Under the assumption of competition on the marriage market, resources and constraints drive the competition and success of individuals on the marriage market.

idea, however, assumes that age preferences are universal. For instance, if all women prefer older men, the more resourceful will get them. Here I turn this assumption upside down, and argue that there are not fixed preferences, but preferences that are influenced by the gender opportunities and constraints originated from the gender system. Thus, more resourceful women should be freer to choose a partner, independently from the partners' age. Thus, this chapter's aim is to understand to what extent women's resources and constraints might affect their age preferences, and consequently their chances to be with older men.

For this reason, I extend the theoretical framework used to discuss women's education to include other characteristics. The main argument of this chapter is that age hypergamy is driven by the female preferences for high(er) SES of the (male) partner. In other words, women seek "good providers". As an extension, we can hypothesise that the women who have more resources in general, and the less constraints, will be the ones less "in need" of good providers and therefore less likely to be in hypergamous relationships. Vice versa, the women who have less resources and more constraints will be the ones more "in need" of good providers and therefore more likely to be in hypergamous relationships. Here I focus on the resources of employment and being native, and the constraints related to previous partnership history.

While the former is an indicator of socio-economic status, being "native" can be considered to be a socio-economic as well as cultural resource (Kalmijn, 1998). For example, non-native could be disadvantaged on the marriage market because they have less familiarity with the norms and the culture prevalent in the country, or simply because they have limited access to social networks. Among individual constraints, we can include the existence of children from previous relationships in particular. Parents, compared to non-parents, may have more stringent criteria for partners and be less sought-after. For instance, they may value positive caring attitudes and willingness to share responsibilities towards children; may have less resources such as time, to spend on partner- seeking relating activities and dating; they may be less competitive if the other side of the market expect them to come with extra-burdens or require extra commitment. We can expect this type of constrain to apply more strongly to the parents who have the custody of children from previous relationships. These are, in the majority of cases, the mothers.

To sum up, the aim of this empirical study is to test the thesis that women prefer older men because in need of "good providers", i.e., men with higher SES. Consequently, the first hypothesis (H1) is that highly educated women have less probability of being in hypergamous

relationships, compared to lower educated women. The second hypothesis (H2) is that women who are not employed, who are not native, who have children from previous relationships are more likely to be in hypergamous relationships compared with women who are employed, native and who do not have children from previous relationships.

5.4 Analytical strategy

Analytical strategy

I used two cross-sectional analyses using multinomial logit models. The first one (section 5.6.1) focuses on a representative sample of women (and men) in reproductive age (age 35-49), in all relationship status, including singles (Women=6206 Men=5199). The second analysis (section 5.6.2) focuses on a different sample, where singles are excluded but younger individuals included. This sample includes individuals in a cohabiting relationship (married or cohabiting) age 30-49 (Women=6233 Men=5191). The sample in the first analysis includes, on average, older individuals compared to the sample in the second analysis in order to limit the number of "temporary singles", that is, individuals who are single at relatively young age (30-35) but find a partner later. Individuals who are known to be in a same sex relationship are excluded from both analyses. The two analyses are complementary and bring different advantages. The first one allows to include status of single. The second one allows to include variables that relate to the relationship, such as the age at the start of the cohabitation and the marital status of the respondent, that could not be included in the first one. Furthermore, the second analysis allows to reach out to previous literature which has focused on couples only.

I selected four countries for the analyses: Sweden, Lithuania, France and Bulgaria. Such choice was mainly due to the possibility of running sensitivity checks by restricting the analysis to countries with information on the first cohabitation of women. In the sample, more detailed data on the respondents and their partnership history is available. In particular, we know whether the respondent is born in the country and we know the age gap in the first cohabitation of the respondents. Although the main results of the paper refer to the current cohabiting relationship of the respondent, as part of the sensitivity checks it was possible to restrict the analyses on first cohabitations only.

To the extent that we consider, as I do in this paper, women's attainments in tertiary education (i.e. higher education) and women in hypergamous cohabitations as measure of women's empowerment in the society and in the family, these countries represent an interesting mix of these features. Sweden and Lithuania show a higher gender ratio in tertiary education

enrolment, compared with France and Bulgaria. However, Sweden shows also relatively high shares of women in hypergamous cohabitations, while Lithuania relatively low shares of it. Among France and Bulgaria, both scoring relatively low on the gender ratio in tertiary education, France has, similarly to Lithuania, lower shares of women in hypergamous cohabitations, while Bulgaria has higher shares of them. In a nutshell, comparing these four countries to each other's, Sweden scores higher in women's empowerment through education, but lower in gender empowerment in the family (as measured). France, on the contrary, scores higher in gender empowerment in the family but lower in gender empowerment through education. Lithuania scores relatively high, and Bulgaria relatively low, on both characteristics. In Sweden, Lithuania, France and Bulgaria the gender ratio in gross tertiary education enrolment is 1.55, 1.54, 1.25, 1.17 (UN data) and the share of women in hypergamous cohabitations is 26%, 15%, 21% and 31% among all women 30-49 in our dataset (including singles).

Because the partner selection criteria are assumed to be universal, the analyses are run on a sample including the four countries. However, I added country variables to take into account the fact that there may be differences in the societal context, especially given the differences above described. As a sensitivity check, the analyses are also repeated separately by country, and the results are presented in the appendix.

5.5 Data and methods

The data for all analyses comes from the first wave of the Generations and Gender Survey program (GGS) and refers to the following countries: Sweden, Lithuania, France, Bulgaria. However, conducting the research on these countries is interesting because they are characterized by different age and gender norms. The first wave was preferred to the second because of the higher number of respondents. Including both waves would have not brought any improvements to the results because the distance between waves is three years, therefore only a few respondents would have changed cohabiting partners in the second wave. The first wave of interview took place between 2003 and 2007 for all countries but it is more recent in Sweden, where it refers to year 2012.

Dependent and independent variables

The dependent variable is the relationship status of the respondent. This is a categorical variable which can assume the value hypergamous, homogamous, hypogamous (if in a cohabiting relationship) or single. Unions are classified as hypergamous when the woman is at least 4 years

younger than her partner; homogamous when the partners are within 3 years apart (the woman can be older or younger); hypogamous when the woman is at least 4 years older than her partner. The definition of the age gap defining hypergamy/homogamy/hypogamy follows the previous literature on the topic and it is consistent with the distribution of age gap in my sample (mean: 2.8 years). The age gap is calculated from the birth years (in century months) of the partners. I reject the strategy of using a double standard to measure hypergamy and hypogamy with a different number of years as age gap, as it would accept hypergamy, rather than hypogamy, normatively.

The independent variable is education level, operationalized as a dummy variable indicating whether the respondents had a college degree as a maximum attained educational level (ISCED code 5-6). The level of education could not be operationalized in more details for reasons of comparability between countries. However, a college degree is also the level of study most likely to change opportunities and SES for women.

Control variables:

In the first type of analysis (section 5.6.1, including singles) I controlled for whether the respondents are currently employed (yes/no), born abroad (yes/no), whether they had previous cohabitation (yes/no) and children from previous cohabitations (yes/no), age, birth cohort and country of interview. In the second model (section 5.6.2, where singles are excluded), I controlled for all the above characteristics but age, plus the age at which the cohabitation started, whether the respondent is married to the current partner (yes/no, where no indicates cohabitation without marriage), currently in education (yes/no). It was not possible to control for the latter variable in the first analysis because, given the young age of women who are in education, only a small number of them are in hypogamous cohabitations.

Methods

I used multinomial logistic regressions for all analyses. This method is appropriate when the dependent variable is categorical and there is not a criterion to order such categories on a scale, such is the case with relationship status (hypergamy, homogamy, hypogamy, single). Because of the limited samples in each country, I present the results of the analyses pooling the national samples all together and including country fixed effects. However, the results of the analyses for separated countries are included in the appendix and briefly discussed in the results.

5.6 Results

5.6.1 Current relationship status –including singles

Table 5-1 below show the results of the multinomial logistic model estimating the Relative Risk Ratio (RRR[31]) for being in homogamous, hypergamous and hypogamous relationships, relative to being single, for women (keeping all other variables constant at their mean value). The RRR of each variable shows how much that variable affects the risk of being in each relationship status (hypergamous, homogamous and hypogamous) relative to being single. Considering that the risk for the reference category (being single) is set to 1, and that the RRR shows the ratio of risks relative to the reference category, it is possible to order the RRR for all relationship status. The RRR for education are, in the order, 0.7 for hypergamy, 0.93 for homogamy and 1.2 for hypogamy. This means that having a college degree decreases the risk of being in hypergamous and homogamous relationships, and increases the risk of being in a hypogamous cohabitation, relative to the risk of being single. College-educated women are therefore the least likely to be in hypergamous relationships, relative to any other relationship status. The RRR is statistically significant, at conventional level, for hypergamy.

Turning to the other socio-economic characteristics examined, firstly we notice that employment, country of birth and children from previous relationships are constrains on the marriage market. In fact, they all make women more likely to be singles than in a relationship (the relative RRR for homogamy, hypergamy and hypogamy are all <1 with the exception of one, that is the RRR for born abroad for hypergamy). However, the RRR for employment is only statistically significant and substantial for hypogamy. Women who are born abroad are more likely to be single or in hypergamous cohabitations, compared with homogamous and hypogamous relationships. In particular, being born abroad increases the risks of being in hypergamous cohabitations (RRR=1.14) and decreases the risks of being in homogamous and hypogamous relationships (RRR about 0.6 for each), relative to single. In this case, the RRR is statistically significant statistically significant at conventional level only in the case of homogamy. The most important variables affecting the relationship status of women appear to be those related to their relationship history and the country of interview. The RRRs for these variables are statistically significant at conventional level for all relationship status. Age seems relatively uninfluential. This is understandable because, in this analysis, it catches cohort effects (it is not the age at the start of the relationship, which will be controlled for in the next analysis).

[31] The RRR is the ratio of the risk of one outcome relative to the risk of its reference category. RRR are obtained by exponentiating the multinomial logit coefficients.

The RRR for birth cohorts are not substantial nor statistically significant at conventional level for any of the partnership status.

Country differences. The country of interview shows that, in each country, there are more singles than cohabiting individuals, relative to Sweden. This can be explained by compositional effects. Sweden includes younger birth cohorts because the interviews were carried out in 2012 (in other countries between 2003 and 2007). Cohabitation at younger age, in particular without marriage, might be more common in Sweden compared to other countries. However, Sweden appears to be an anomalous country altogether, among the four considered. In fact, by repeating the analyses separately in the four countries, the effects of education on hypergamy appear to be much stronger in Lithuania, France and Bulgaria (the RRR for higher education is 0.5, 0.8 and 0.4 respectively, relative to being single). Differently, the RRR of hypergamy for women with higher education is 1.08 in Sweden, and it is very similar to RRR of homogamy. In addition, in Sweden the RRR for hypogamy is surprisingly high, that is 1.7, the highest among the countries considered. Considering the other factors that I expect associated with the thesis of the "good provider" that is, being employed, foreign born, and having children from previous relationships, in France the direction of the association with hypergamy (vs. single) equals that shown in the aggregated model (RRR < 1 for being employed and having children from previous relationship, and RRR > 1 for being born abroad). In Lithuania and Bulgaria, the association is similar for two of the three factors (in Lithuania, RRR < 1 for the three factors; in Bulgaria RRR < 1 for having children from previous relationships and RRR > 1 for being employed and being born abroad. The results by country are shown in tables C.1-C.4 in the appendix.

Table 5-1 Multinomial logistic regression results. Relative Risk Ratio (RRR). Ref. category: single. Women sample (age 35-49). GGS data, w1: Sweden, Lithuania, France, Bulgaria

VARIABLES	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
College degree (ref.: no)	0.927	0.703***	1.211
	(0.0764)	(0.0648)	(0.194)
Employed (ref.: no)	0.947	0.891	0.602***
	(0.0911)	(0.0927)	(0.107)
Age	0.996	0.987	1.023
	(0.0157)	(0.0170)	(0.0326)
Born abroad (ref.: native)	0.588***	1.144	0.639
	(0.0906)	(0.180)	(0.188)
Previous cohab. (ref : no)	0.101***	0.132***	0.466***
	(0.0110)	(0.0166)	(0.0951)
Children from prev. cohab. (ref.: no)	0.314***	0.398***	0.530***
	(0.0376)	(0.0551)	(0.110)
Born 1961-70	1.030	1.154	1.073
(ref.: 1941-1950)	(0.150)	(0.187)	(0.317)
Born 1971-80	1.362	1.345	1.237
	(0.395)	(0.429)	(0.703)
Lithuania (ref. Sweden)	0.240***	0.163***	0.238***
	(0.0391)	(0.0296)	(0.0749)
France (ref. Sweden)	0.296***	0.279***	0.474**
	(0.0489)	(0.0502)	(0.142)
Bulgaria (ref. Sweden)	0.309***	0.433***	0.238***
	(0.0541)	(0.0813)	(0.0821)
Constant	24.01***	15.38***	0.346
	(20.27)	(14.23)	(0.591)
Observations	6,206	6,206	6,206

Standard Error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Because the interpretation of ratio with multinomial logistic models may result somewhat cumbersome, it may help to think about the results in terms of the effects of education on the probabilities of being in a certain relationship status. The predicted probability of being in hypergamous relationships is about 5 percentage points lower for college-educated women, compared to lower educated women (all other variables fixed at their mean value). College-educated women have also higher probabilities of being singles, in homogamous or hypogamous cohabitations, relative to lower educated ones, although the marginal change is lower (about 2 percentage points for the formers and 1% for the latter). The baseline probability of being in a hypergamous cohabitation or single is about 25 percent (each), in homogamous cohabitations just below 50 percent, in hypogamous cohabitations about 3 percent (all other variables at their mean value). These results are shown in table C.5 in the appendix (for women and men separately).

5.6.2 Current relationship status – conditional on being in a relationship

Next, we restrict the sample to women who are in a relationship at the time of the interview. Singles are excluded from the analysis, and the reference category is being in a homogamous cohabitation for the time being. The results of the multinomial logit models for women are shown in table C.6 in the appendix. The estimated RRR and confidence intervals are shown graphically in Figure 5-1 below.

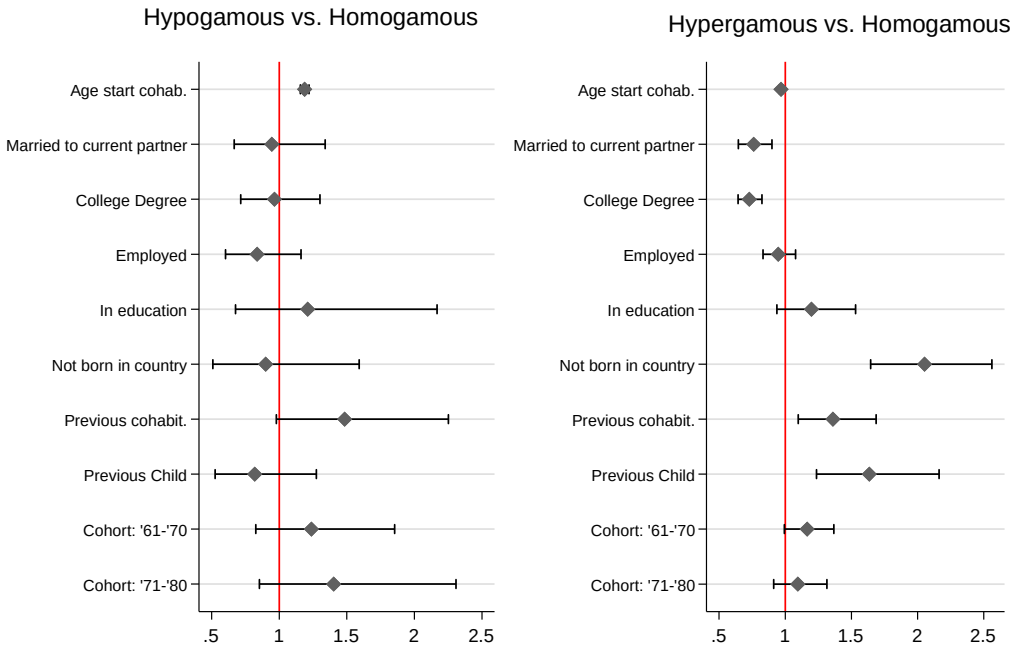

Figure 5-1 RRR, hypergamous and hypogamous relationships (relative to homogamous relationships). Women sample. Multinomial logit model (country fixed effects)

The risk ratio estimated for hypergamous relationships are shown on the right side of the figure; for hypogamous relationships on the left. The first thing to be noted is that, on one hand, women in hypogamous and homogamous relationships do not differ significantly with respect to the variables considered. This is clear from the fact that, considering the confidence intervals surrounding the risk ratio of all factors examined, they overlap 1 (a risk ratio of one means that a change in the variable does not change the risk of being in hypogamous relationships relative to the risk of being in homogamous relationships). The only exception is the age at the start of cohabitations (and some country effects, not shown in the graph and discussed later).

On the other hand, women in hypergamous relationships do differ from women in homogamous relationships under various aspects. To begin with, we can observe the effects of the new factors included in the analysis: age at the start of cohabitation, marriage status and being in education. As expected, the older women are when they start a relationship, the less likely they are to enter a relationship with older men relative to enter a relationship with men of similar age. Conversely, the older women are when they start a relationship, the more likely to start a relationship with younger men (relative to similar age). Being in education does not appear to affect substantially the risk ratio of being in differently age-assorted relationships. It appears that women tend to be more likely to be married when their partner is of similar age, compared to when they have younger or older partners. The difference is significant, at conventional level, for hypergamous relationships but not for hypogamous ones.

Now we can move on to the effects of the factors object of our hypothesis: education, employment, being native and having children from previous relationships. The results largely confirm the findings highlighted in the previous analysis. Higher-educated women have less chances to be in hypergamous relationships compared to lower-educated women (the probability for the first group is about 7 percentage points lower, table C.7 in the appendix). Employed women seem to be more likely to have partners of similar age, compared to both older and younger partners. However, employment has a smaller effect than education, which is also not statistically significant at conventional level. Being born outside the country and having children from previous cohabitations are positively associated with the chances of being in hypergamous cohabitations versus homogamous ones (risk ratio equal 2 and 1.6 respectively). The effect of having children from previous relationships differs slightly in this current analysis (5.6.2), compared with the previous one (5.6.1). In the previous analysis, women having children from previous relationships had the highest chances of being singles, and for them the chances of being in a hypergamous relationship was only slightly higher than those of being in homogamous or hypogamous ones. The current analysis shows that, conditional on being in a relationship, women with children are more likely to have older partners than partners of other relative age. It is likely that such effect was unveiled in this analysis because here the age at the start of the relationship is controlled for. Similarly, because of this additional controls, it appears that, conditional on being in a relationship, women who had previous cohabitations are also slightly more likely to have older partners than partners of similar age. As per the effects of birth cohorts, hypergamy seems to be slightly more common among younger cohorts (born 1971-180), which here we are able to include (because younger

women are included in the sample). This effect may also be due precisely to the fact that the sample include younger women, among which hypergamy is naturally more common. Again, relative to Sweden, hypergamy seems to be less likely than homogamy in Lithuania and more likely in Bulgaria. The risk ration relative to all listed factors (with the exclusion of being employed, being in education, cohorts and some country effects) are statistically significant at conventional level. The results table is shown in the appendix, table C.6.

Country differences. When analysing countries separately, the results show that in all countries women with higher education are less likely to be in a hypergamous cohabitation, compared with women with lower education (RRR are 0.96, 0.59, 0.63 and 0.79 in Sweden, Lithuania, France and Bulgaria respectively). When considering the other factors that I expect associated with the thesis of the "good provider" that is, being employed, foreign born, and having children from previous relationships, the association works in the hypothesised direction for at least two of these three factors in each country. The results of the multinomial logit model conditional on being in a relationship for each country are presented in tables C.8-C.11.

Robustness checks

In order to test the robustness of the findings, I repeated the analyses using different definitions of hypergamy, homogamy and hypogamy (in terms of age differences) and restricting the analyses to the women's first cohabiting relationships only. In the first case, the results are confirmed even when focusing on larger age gaps (five years or more and, separately, ten years or more) but the coefficients are not statistically significant. The major problem with this analysis is the reduction of numbers of women in hypogamous cohabitations. When focusing on the first cohabitations of women, the results are confirmed by way of event history analyses, which allows to take the age at the beginning of the relationships into account. In this case, the results concerning education are confirmed but we are not able to test the role of children from previous relationships. The results are available upon request.

Furthermore, the analyses are repeated on the men's sample, in order to test the gender-specificity of age preferences (tables A14 and A15 in the appendix). In contrast to women, more educated men are not less likely to be in hypergamous cohabitations. They are, in fact, more likely to be in hypergamous and homogamous relationships and less likely to be in hypogamous relationships, relative to single (RRR statistically significant only in the case of homogamy). When excluding singles from the analysis, highly educated men are still the most likely to be in homogamous relationships, but their likelihood of being in hypergamous or hypogamous

relationships (relative to homogamous ones) does not differ substantially. Interestingly, among men, employment seems to be far more important that education for being in a relationship (rather than single). In fact, employed men are more likely, in the order, to be in homogamous, hypergamous, hypogamous relationships (in both types of analyses). Unemployed men are the most likely to be single. A surprising similarity with the results for the female sample is that men, like women, are more likely to be single, compared to other relationship statuses, when they have children from previous relationships. However, conditional on being in a relationship (analysis 2), having children does not make men more likely to be either in hypogamous nor hypergamous relationships, but rather more likely to be in homogamous ones. All in all, the only factor affecting women and men likewise is to be born abroad. The individuals who are not born in the country of interview are the most likely to be in hypergamous relationships, regardless their gender. All results relative to men are shown in the tables C.12 (for section 5.6.1) and C.13 (for section 5.6.2) in the appendix.

5.7 Conclusions

The aim of this study was to investigate how women's opportunities and constrains affect their relationship status. In particular, I aimed to test one of the main theoretical explanation of age hypergamy that is that women seek "good providers" on the marriage market. In order to do so I investigated the association between some women's resources and constraints and their relationship status. I gave foremost importance to the role of education and considered, in addition, the role of employment, the place of birth and existence of children from previous relationships. I hypothesized that women who are college-educated, native and do not have children from previous relationships are less likely to be cohabiting with an older partner.

The hypothesis was fully confirmed concerning the role of education[32], and partially confirmed with regard to the latter characteristics. The probability of being in a relationship with a man older than themselves is between five and seven percentage points lower for college-educated women, compared with women with lower education (depending on whether singles are included in the analyses (and in appendix). Interestingly, college-educated women were not more likely to be single, compared with lower-educated ones.

Concerning women who have children from previous relationships, they were found to be the most likely to be single but, conditional on being in a (new) relationships, they were more likely

[32] Only in Sweden the effect of education is particularly small and only visible in the second type of analyses, where more controls are added, and the sample is larger.

to be in a relationship with an older man. No differences were found in the chance of being in differently age assorted unions, or being single, for employed and not employed women. Finally, women born abroad have greater chances to have a partner older than themselves, compared to native women, However, this is equally true for men too (contrarily to the previous results). For this reason, we can speculate that, if the majority of women (and men) born abroad come from similar geographical areas, the effect may be due to age and gender norms prevalent in the place of origin, and differing from the country of destination. Unfortunately, we do not have detailed information on the place of origin of the partner to confirm this.

These findings suggest that gendered differences in the relative age of the partner are, at least partially, due to gendered opportunities and constrains in the society. Women may not *want* older partners but *prefer* them because they *need* "good providers". I would also envisage a positive interpretation of the results, which are in line with what predicted by Presser in 1975 (1975). She predicted that increasing opportunities for women would have slowly changed their searching criteria for partners. Younger men may mean more gender egalitarian relationships between partners, which could be beneficial for both partners.

Another interesting result of this study is that, conditional on being in a relationship, women who have partners of similar age do not differ from women who have younger partners (at least with regard to the socio-economic characteristics that have been investigated and with the exception of the age at the start of the relationship). On the contrary, women who have partners of similar age (and hypogamous women) do differ from women with older men. This finding seems, on one hand, not in line with some previous research finding a "negative selection" of women in hypogamous, as well as hypergamous, marriages (Berardo et al., 1993; Vera et al., 1985). On the other hand, the findings go to engross another interesting strand of research. That is, the amount of qualitative and quantitative research that is dismantling the negative myths and stereotypes associated with hypogamous women (Alarie, 2019; Alarie & Carmichael, 2015; Cowan, 1984; Derenski & Landsburg, 1981; Shehan et al., 1991). It is possible that the results on US marriages just mentioned diverged simply because they refer to older cohorts of women who lived in the US and, most importantly, were married and not cohabiting.

This study has its shortcomings. The first one is related to the fact that the analysis is cross-sectional. In fact, it is not possible to know whether some characteristics have been achieved before or after the relationship started. This is important especially for the attainment of education and the employment status. However, the age-selection of the sample should ensure

that the large majority of women (and men) have ended their educational career by the time of the interview. The problem might subsist more in the case of the employment status, and for the female sample more than for the male one. In fact, it is more likely that the employment status of women changes during the life course in relation to the relationship status and the childbearing career. This might explain why the hypothesis related to the role of employment on women's age assortation is not confirmed, and the estimated risk-ratio are not statistically significant at conventional level. The second limitation relates to the theoretical interpretation of the role of education and represents a challenge for further research. The interpretation of this factor is, at best, threefold. Firstly, women with higher education have higher opportunities, as hypothesized. However, they may also join the marriage market at later age. Furthermore, they may hold more gender egalitarian attitudes and beliefs. While the age at the start of the relationship was controlled for in the second analysis, doubts remain on which differences drive the patterns of age assortation of higher and lower educated women: material opportunities or the conscious (or unconscious) renegotiation of gender roles in romantic relationship? Further research should address this question.

To sum up, the findings of the study are important because they confirm the role of the gender system in shaping women's romantic relationships. The less opportunities, the more inequality within the couple. A further contribution of the study is that it shows that women in a relationship with younger men are no evil or hunters. They are just like the women who are in a relationship with men of similar age.

Appendix C

5.6.1 Current relationship status – including singles

Results by country (C-1 – C-4)

Table C-1. Multinomial regression results. Relative Risk Ratio (RRR). Ref. category: single. Women sample (age 35-49). GGS data, w1: Swedish sample

VARIABLES	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
College degree (ref.: no)	1.011	1.084	1.705*
	(0.180)	(0.207)	(0.508)
Employed (ref.: no)	1.531*	1.753**	1.452
	(0.375)	(0.471)	(0.625)
Age	0.981	0.988	0.975
	(0.0385)	(0.0418)	(0.0647)
Born abroad (ref.: native)	0.408***	1.023	0.731
	(0.101)	(0.253)	(0.303)
Previous cohab. (ref : no)	0.394***	0.367***	1.564
	(0.0965)	(0.0961)	(0.603)
Children from prev. cohab. (ref.: no)	0.133***	0.202***	0.160***
	(0.0293)	(0.0495)	(0.0573)
Born 1971-80	1.102	1.160	0.690
(ref.: 1941-1950)	(0.368)	(0.417)	(0.391)
Constant	17.38	4.880	0.875
	(31.30)	(9.477)	(2.662)
Observations	1,287	1,287	1,287

Standard Error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C-2. Multinomial regression results. Relative Risk Ratio (RRR). Ref. category: single. Women sample (age 35-49). GGS data, w1: Lithuanian sample

VARIABLES	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
College degree (ref.: no)	0.948	0.490***	1.562
	(0.175)	(0.119)	(0.600)
Employed (ref.: no)	0.732	0.455***	0.300***
	(0.158)	(0.107)	(0.120)
Age	1.029	1.005	1.011
	(0.0336)	(0.0387)	(0.0714)
Born abroad (ref.: native)	1.312	0.656	8.21e-07
	(0.543)	(0.352)	(0.000690)
Previous cohab. (ref : no)	0.0329***	0.0815***	0.152***
	(0.00950)	(0.0269)	(0.0971)
Children from prev. cohab. (ref.: no)	0.705	0.692	0.968
	(0.227)	(0.253)	(0.662)
Born 1961-70	1.314	1.062	1.251
(ref.: 1941-1950)	(0.389)	(0.371)	(0.812)
Born 1971-80	1.236	0.0996*	0.788
	(0.756)	(0.118)	(1.116)
Constant	1.790	2.946	0.272
	(2.783)	(5.395)	(0.912)
Observations	1,309	1,309	1,309

Standard Error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C-3. Multinomial regression results. Relative Risk Ratio (RRR). Ref. category: single. Women sample (age 35-49). GGS data, w1: French sample

VARIABLES	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
College degree (ref.: no)	1.097	0.819	1.026
	(0.165)	(0.142)	(0.286)
Employed (ref.: no)	0.980	0.875	0.782
	(0.166)	(0.164)	(0.229)
Age	0.949*	0.953	1.081
	(0.0276)	(0.0311)	(0.0595)
Born abroad (ref.: native)	0.654*	1.360	0.550
	(0.157)	(0.333)	(0.271)
Previous cohab. (ref : no)	0.119***	0.183***	0.308***
	(0.0219)	(0.0389)	(0.118)
Children from prev. cohab. (ref.: no)	0.350***	0.345***	1.224
	(0.0775)	(0.0907)	(0.477)
Born 1961-70	0.686	0.857	1.306
(ref.: 1941-1950)	(0.183)	(0.260)	(0.608)
Constant	54.78***	19.13*	0.0109*
	(75.19)	(29.47)	(0.0285)
Observations	1,594	1,594	1,594

Standard Error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C-4. Multinomial regression results. Relative Risk Ratio (RRR). Ref. category: single. Women sample (age 35-49). GGS data, w1: Bulgarian sample

VARIABLES	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
College degree (ref.: no)	0.595***	0.407***	0.838
	(0.0986)	(0.0718)	(0.350)
Employed (ref.: no)	1.011	1.087	0.450**
	(0.181)	(0.201)	(0.172)
Age	1.032	1.023	0.971
	(0.0318)	(0.0325)	(0.0712)
Born abroad (ref.: native)	2.032	2.659	5.418
	(1.669)	(2.218)	(6.794)
Previous cohab. (ref : no)	0.0161***	0.0607***	0.960
	(0.00714)	(0.0194)	(0.458)
Children from prev. cohab. (ref.: no)	1.782	0.789	0.381*
	(0.847)	(0.285)	(0.209)
Born 1961-70	1.260	1.557	0.924
(ref.: 1941-1950)	(0.340)	(0.435)	(0.600)
Constant	1.839	1.433	0.836
	(2.616)	(2.100)	(2.820)
Observations	2,016	2,016	2,016

Standard Error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results in terms of probability

Table C-5. Average probabilities of being in each relationship status and marginal effects on probability for education, by sex. Predicted values from the multinomial logistic model including singles

Predicted average probabilities and marginal effects of education				
	Single	Homogamy	Hypergamy	Hypogamy
	Women			
Baseline Probability (avg prediction)	0.249	0.477	0.241	0.033
Marginal effects:	0.018	0.024	-0.052	0.010
College degree (vs not college degree)	(0.076)	(0.056)	(0.000)	(0.056)
	Men			
Baseline Probability (avg prediction)	0.222	0.521	0.224	0.032
Marginal effects:	-0.024	0.040	-0.004	0.013
College degree (vs not college degree)	(0.060)	(0.009)	(0.750)	(0.014)

5.6.2 Current relationship status – conditional on being in a relationship

Table C-6. Multinomial regression results. RRR, Ref. category: homogamy. Conditional on being in a relationship. Women sample (age 30-49). GGS data, w1: Sweden, Lithuania, France, Bulgaria

VARIABLES	Hypergamy RRR	Hypogamy RRR
Age start cohab.	0.968***	1.188***
	(0.00695)	(0.0163)
Married (ref: no)	0.762***	0.945
	(0.0646)	(0.168)
College degree (ref.: no)	0.728***	0.965
	(0.0460)	(0.147)
Employed (ref.: no)	0.947	0.837
	(0.0625)	(0.140)
In education (ref. no)	1.198	1.211
	(0.150)	(0.360)
Born abroad (ref.: native)	2.053***	0.900
	(0.232)	(0.262)
Previous cohab. (ref : no)	1.361***	1.484*
	(0.149)	(0.316)
Children from prev. cohab. (ref.: no)	1.635***	0.819
	(0.233)	(0.185)
Born 1961-70	1.165*	1.238
(rer.: 1941-1950)	(0.0951)	(0.255)
Born 1971-80	1.095	1.403
	(0.102)	(0.356)
Born>80	0.933	1.05e-06
	(0.227)	(0.000656)
Lithuania (ref. Sweden)	0.774**	1.361
	(0.0812)	(0.327)
France (ref. Sweden)	0.979	1.847***
	(0.0923)	(0.386)
Bulgaria (ref. Sweden)	1.444***	1.459
	(0.133)	(0.358)
Constant	1.080	0.000378***
	(0.248)	(0.000229)
Observations	6,233	6,233

Standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C-7. Predicted average probability and average marginal effects of having a college degree, by sex. As per multinomial logit models conditional on being in a relationship

Predicted average probabilities and marginal effects of education			
	Homogamy	Hypergamy	Hypogamy
	Women		
Baseline Probability (avg prediction)	0.63	0.32	0.038
Marginal effects:	-0-064	-0.066	0.002
College degree (vs not college degree)	(0.000)	(0.000)	(0.674)
	Men		
Baseline Probability (avg prediction)	0.67	0.28	0.046
Marginal effects:	0.081	-0.063	-0.018
College degree (vs not college degree)	(0.000)	(0.000)	(0.003)

Results by country (C-8 – C.11)

Table C-8. Multinomial regression results. RRR, Ref. category: homogamy. Conditional on being in a relationship. Women sample (age 30-49). GGS data, w1: Swedish sample

VARIABLES	Hypergamy RRR	Hypogamy RRR
Age start cohab.	0.989	1.166***
	(0.0129)	(0.0296)
Married (ref: no)	1.026	0.892
	(0.140)	(0.262)
College degree (ref.: no)	0.961	1.614*
	(0.121)	(0.452)
Employed (ref.: no)	1.074	1.545
	(0.188)	(0.634)
In education (ref. no)	1.302	1.237
	(0.269)	(0.546)
Born abroad (ref.: native)	2.312***	1.253
	(0.391)	(0.502)
Previous cohab. (ref : no)	1.072	1.895*
	(0.163)	(0.631)
Children from prev. cohab.	1.536**	0.469**
(ref.: no)	(0.334)	(0.180)
Born 1971-80	0.936	0.943
(ref.: 1961-70)	(0.125)	(0.288)
Born>80	0.823	8.92e-07
	(0.202)	(0.000457)
Constant	0.512	0.000412***
	(0.211)	(0.000416)
Observations	1,325	1,325

se in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C-9. Multinomial regression results. RRR, Ref. category: homogamy. Conditional on being in a relationship. Women sample (age 30-49). GGS data, w1: Lithuanian sample

VARIABLES	Hypergamy RRR	Hypogamy RRR
Age start cohab.	0.967*	1.184***
	(0.0184)	(0.0382)
Married (ref: no)	0.424***	0.854
	(0.121)	(0.447)
College degree (ref.: no)	0.586***	1.207
	(0.106)	(0.437)
Employed (ref.: no)	0.668**	0.619
	(0.111)	(0.222)
In education (ref. no)	1.040	0.642
	(0.296)	(0.494)
Born abroad (ref.: native)	0.582	2.39e-06
	(0.253)	(0.00145)
Previous cohab. (ref : no)	1.688	0.688
	(0.712)	(0.544)
Children from prev. cohab.	1.278	2.167
(ref.: no)	(0.561)	(1.585)
Born 1961-70	0.868	2.135
(ref.: 1941-1950)	(0.165)	(1.014)
Born 1971-80	0.899	3.122**
	(0.199)	(1.807)
Constant	2.565	0.000507***
	(1.591)	(0.000680)
Observations	1,109	1,109

Standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C-10. Multinomial regression results. RRR, Ref. category: homogamy. Conditional on being in a relationship. Women sample (age 30-49). GGS data, w1: French sample

VARIABLES	Hypergamy RRR	Hypogamy RRR
Age start cohab.	1.016	1.219***
	(0.0153)	(0.0318)
Married (ref: no)	0.715**	0.685
	(0.109)	(0.204)
College degree (ref.: no)	0.631***	0.574*
	(0.0842)	(0.167)
Employed (ref.: no)	0.920	1.036
	(0.126)	(0.318)
In education (ref. no)	1.209	2.312
	(0.442)	(1.378)
Born abroad (ref.: native)	2.161***	0.701
	(0.412)	(0.372)
Previous cohab. (ref : no)	1.104	0.723
	(0.228)	(0.294)
Children from prev. cohab.	1.015	0.944
(ref.: no)	(0.300)	(0.416)
Born 1961-70	1.175	0.858
(ref.: 1941-1950)	(0.176)	(0.259)
Born 1971-80	1.088	0.837
	(0.198)	(0.363)
Constant	0.411**	0.000735***
	(0.175)	(0.000667)
Observations	1,431	1,431

Standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C-11. Multinomial regression results. RRR, Ref. category: homogamy. Conditional on being in a relationship. Women sample (age 30-49). GGS data, w1: Bulgarian sample

VARIABLES	Hypergamy RRR	Hypogamy RRR
Age start cohab.	0.907***	1.246***
	(0.0127)	(0.0403)
Married (ref: no)	0.732	1.790
	(0.143)	(0.897)
College degree (ref.: no)	0.791**	0.735
	(0.0846)	(0.270)
Employed (ref.: no)	1.127	0.710
	(0.113)	(0.246)
In education (ref. no)	1.127	1.006
	(0.272)	(1.067)
Born abroad (ref.: native)	1.427	1.835
	(0.600)	(1.741)
Previous cohab. (ref : no)	3.898***	3.639**
	(1.568)	(2.299)
Children from prev. cohab.	1.159	0.504
(ref.: no)	(0.514)	(0.341)
Born 1961-70	1.254*	1.994
(ref.: 1941-1950)	(0.148)	(0.923)
Born 1971-80	1.176	1.970
	(0.164)	(1.154)
Constant	4.909***	6.32e-05***
	(1.831)	(8.08e-05)
Observations	2,368	2,368

Standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Men: Current relationships status – including singles (section 5.6.1)

Table C-12. Multinomial regression results. RRR, being in homogamous ,hypergamous, hypogamous relationships. Ref. category: single. Men sample (age 35-49). GGS data, w1: Sweden, Lithuania, France, Bulgaria

VARIABLES	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
College degree (ref.: no)	1.265**	1.135	0.744
	(0.124)	(0.124)	(0.159)
Employed (ref.: no)	3.220***	2.814***	1.995***
	(0.333)	(0.327)	(0.479)
Age	1.022	1.025	0.966
	(0.0167)	(0.0188)	(0.0344)
Born abroad (ref.: native)	0.785	1.472**	0.769
	(0.126)	(0.246)	(0.253)
Previous cohab. (ref : no)	0.187***	0.369***	0.454***
	(0.0220)	(0.0492)	(0.105)
Children from prev. cohab. (ref.: no)	0.318***	0.584***	0.553**
	(0.0456)	(0.0875)	(0.152)
Born 1961-70	0.952	0.863	0.592
(rer.: 1941-1950)	(0.148)	(0.148)	(0.206)
Born 1971-80	0.953	0.917	0.641
	(0.285)	(0.308)	(0.402)
Lithuania (ref. Sweden)	0.978	0.845	0.448**
	(0.163)	(0.159)	(0.154)
France (ref. Sweden)	0.533***	0.563***	0.433**
	(0.0895)	(0.106)	(0.148)
Bulgaria (ref. Sweden)	0.687**	1.406*	0.217***
	(0.124)	(0.280)	(0.0864)
Constant	0.996	0.296	1.963
	(0.875)	(0.292)	(3.750)
Observations	5,199	5,199	5,199

Standard Error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Men: Current relationships status – conditional on being in a partnership (section 5.6.2)

Table C-13. Multinomial regression results. RRR, Ref. category: homogamy. Conditional on being in a relationship. Ref. category: homogamous Men sample (age 30-49). GGS data, w1: Sweden, Lithuania, France, Bulgaria

VARIABLES	Hypergamy RRR	Hypogamy RRR
Age start cohab.	1.221***	1.090***
	(0.0105)	(0.0174)
Married (ref: no)	1.368***	0.442***
	(0.138)	(0.0724)
College degree (ref.: no)	0.652***	0.554***
	(0.0540)	(0.0945)
Employed (ref.: no)	0.788**	0.660*
	(0.0815)	(0.140)
In education (ref. no)	0.757	0.984
	(0.150)	(0.364)
Born abroad (ref.: native)	1.780***	1.256
	(0.246)	(0.321)
Previous cohab. (ref : no)	0.995	1.238
	(0.125)	(0.257)
Children from prev. cohab. (ref.: no)	0.682**	1.145
	(0.120)	(0.313)
Born 1961-70	1.100	0.902
(rer.: 1941-1950)	(0.103)	(0.191)
Born 1971-80	1.413***	1.384
	(0.157)	(0.325)
Born>80	1.829*	1.573
	(0.625)	(0.774)
Lithuania (ref. Sweden)	1.335**	0.711
	(0.160)	(0.156)
France (ref. Sweden)	1.459***	1.232
	(0.172)	(0.236)
Bulgaria (ref. Sweden)	3.505***	0.596**
	(0.416)	(0.147)
Constant	0.00119***	0.0222***
	(0.000377)	(0.0130)
Observations	5,191	5,191

Standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. Age hypergamy: a reproductive strategy?

6.1 Introduction

In the previous chapter I have discussed women' age preferences on the marriage market. In this chapter, I investigate the origins of men' age preferences. I cross the boundaries of sociology to test the explanations for hypergamy coming from evolutionary psychology. According to classic evolutionary perspectives, the physical attraction, leading to mating, is rooted in primal instincts (Barber 1995; Fink and Penton-Voak 2002; Grammer et al. 2003). Since one of the human primal instinct is to reproduce one's own genes, reproduction purposes direct men in search of women with higher "reproductive capacity" (M. Buss & Schmitt, 1993; H. Fisher, n.d.), that is, young women. Young women are more fertile at the time of mating and have a longer reproductive "career" ahead. In other words, they are more fertile in the short and long term. However, the society today is characterized by relatively low fertility and postponement of childbearing, so both reproduction goals and reproductive capacity should be less relevant in the choice of mates. Therefore, in this chapter I set out to understand to what extent the aim of reproduction can explain men' age preferences for younger women today. I examine whether men's fertility intentions are related with the age gap in the couple they form; and, whether the age gap between partners is associated with the number of children they have during the relationship. The analysis focuses on selected countries, mainly in the European geographical area.

Previous empirical studies have analysed either the direction of men' age preferences or the link between age differences and the number of children of couples (Fieder & Huber, 2007). A large number of studies confirmed that men are attracted to young women. However, this is hardly a test of the evolutionary theory, because the reason of such attraction can be diverse. For instance, beauty is highly valued in women, and strongly associated with young age (Cowan, 1984; Paula England & McClintock, 2009; Sontag, 1982). Concerning the research on the relationship between age-gap and number of children, the results are inconsistent. In this chapter I develop a multidisciplinary perspective enriching the evolutionary arguments with sociological and demographic knowledge on the process of fertility and fertility decisions. The contribute of the chapter to the literature on the topic is twofold. Firstly, I use a novel strategy to investigate men's preferences for young partners from a causal perspective. Drawing on research on fertility based on the theory of reasoned action and planned behaviour (Ajzen, 2011; Ajzen & Klobas, 2013) I research the link between single men' intentions to have children and their likelihood to form a hypergamous couple. If the reason for being attracted by young women rests in the men's reproductive instinct, the implication

is that single men who intend to have children are the ones that most likely mate with younger women. Secondly, I re-examine the link between age-gaps in the couples and number of children born from the relationship. In so doing I improve on the previous research by including both married and cohabiting couples, by including childless couples; and, by using data on selected countries in the European geographical area.

The importance of this study is twofold. Firstly, it contributes to the understanding of the role of men' preferences for age assortation and in particular age hypergamy. Previous studies reasonably explained women's preferences for older men with their will to "marry up", but there is a lack of explanations for men's preferences for younger women. Secondly, the study brings constructively in arguments from other disciplines and shows the usefulness of interpreting the marriage market with multidisciplinary lenses. On one hand, the measure of fertility intentions, a measure well known to demographers, is used to test theories in the field of evolutionary psychology. On the other hand, the theoretical approach of evolutionary psychology is useful to complement the sociological and demographic explanations of age differences. The findings of this chapter suggest that fertility intentions may have a role for age preferences, and this opens up to research on the role of fertility intentions for mating assortation on the marriage market in general.

This chapter is organized as it follows. In section 6.2. I present the theoretical background for the study. This is divided in two parts (6.2.1 and 6.2.2). In the first part (6.2.1), I summarise the evolutionary theory linking age hypergamy to the sexual selection strategy. In the second part (6.2.2), I discuss separately two arguments contesting such theory. Part 6.2.2 is therefore divided in two subsections, one for each argument. The first argument is about the link between men' reproductive purposes and age hypergamy (6.2.2.1). The second argument regards the supposed link between age gaps and fertility (6.2.2.2). Each argument leads to specific hypotheses, that are tested in the empirical part of the study (6.4), following a short empirical literature review (6.3). the empirical part of the chapter is presents two, separate studies, corresponding to each of the arguments outlined in the theoretical section. The first empirical study investigates the link between men's intentions to have children and their partnership status (6.4.1). The second study investigates the link between partners' age gaps and their number of children (6.4.2). The results of the two studies are summarised and discussed in light of the main theoretical background in the last, conclusive section (6.5).

6.2 Theoretical Background

In this section, I discuss the theoretical argument, borrowed from the evolutionary theory, that relates hypergamy to men's reproduction strategy. There are two sub-sections. In the first one, I present the main argument (6.2.1), while in the second I present potential counterarguments (6.2.2).

6.2.1 Evolutionary theory: age hypergamy as a reproductive strategy

The theory that I explore in this chapter is related to one of the two fundamental mechanisms ruling evolution, that is, sexual selection. While the other fundamental mechanism ruling evolution, natural selection, has to do with the genes' survival, sexual selection has to do with mating selection and the reproduction of the species (Campbell, 2013). According to the evolutionary theory, mating selection and reproduction are related, the first being in function of the second. According to evolutionary psychologists, over time humans develop reproductive strategies, including strategies relative to mating selection, in order to improve their chances of reproduction. Most evolutionary scientists agree on that such strategies differ by gender (M. Buss & Schmitt, 1993; Dunbar & Barrett, 2007). In particular, women invest in parenting, seeking partners that can be the best "parents" for the children (in terms of genes or resources) [33]. Men, on the contrary, invest in attracting partners (Barrett et al., 2007; David M. Buss, 2005).[34] Men's investment in partners takes two forms: accessing many partners, and accessing the partners with high(er) reproductive capacity. The two strategies are not mutually exclusive, but here I focus on the second one, for two reasons. Accessing many partners (first strategy) seems to be less of viable strategy for reproduction among the human species, compared with the animal kingdom. In many societies, in fact, polygyny is not allowed. In the animal kingdom males may impregnate many females and leave but, among humans, out of the wedlock births come often with the risk of financial, practical, and moral responsibilities for childrearing. In today society, it is more realistic that the second type of strategy applies. The second strategy is to access the partners with high(er) reproductive capacity, and this strategy is relevant here because of its direct implications for age assortation. Men would seek young(er) women because of their (expected) high(er) reproductive capacity. The consequence of this preference

[33] It is interesting that the prediction of classic evolutionary approaches coincides with those by classic economic theory concerning women's mating "strategy" (aiming at resources when selecting males), that has been tested in the previous chapter.

[34] It has to be noted that terms used in the literature are males, females, mates, and sex rather than men, women, partners(spouses) and gender. For consistency, I will try to use the latter terms, that sociologists are familiar to.

would be the prevalence of hypergamy among couples. This explanation not only reflects the evolutionary perspective, but it is often endorsed by popular wisdom.

The expected reproductive capacity of women depends on age, because age is related to both actual fertility and remaining reproductive capacity (R. A. Fisher, 1930). Actual fertility refers to the expected fertility at one point in time, that is the current probability of reproduction with one single copulation. In a woman, this peaks among the 20ies and then decreases (Sohn, 2016) to reach zero. The remaining reproductive capacity refers to the future expected reproduction, that is the reproductive capacity expected during the woman's remaining lifetime. It peaks among mid-teens and then decreases (Sohn, 2016). In biological terminology, men seek to maximize their fitness ("producing" the maximum number of offspring) by mating with the females with the highest "reproductive capacity" (that is, simply put, young age), regardless their own age.

The implications of this view are that men seek younger partners at older, rather than younger, age. In fact, if the reproductive capacity of women is the highest around age 20, and men of any age prefer women of the same age, this would translate in a preference for age homogamous partners for men aged 20. As men age, their preferences turn to hypergamous relationships with an increasing age gap.

The evolutionary theory presented above describes a clear causal direction. That is, men's desire of maximizing fitness cause (or lead to) hypergamous relationships[35]. However, we could argue that: (1) men do not aim at maximising their fitness, when seeking a partner; and (2) hypergamy might not be an effective strategy to improve the chances of reproduction I will address the two arguments separately below, in sections 6.2.2.1 and 6.2.2.2Before moving on, I should clarify my view of reproduction instincts. Evolutionism, by treating the human species similarly to other species, refers to reproduction mostly as an instinct. As a sociologist, I believe individuals perform reasoned action. In particular, for fertility it has been showed that fertility behaviour is the outcome of decisions, rather than of instincts (see, for example, the theory of planned behaviour (Ajzen, 2011) and the trait- desire-intentions behaviour (Miller, 2011). Thus, I interpret the instinct of reproduction broadly as the desire and intentions to have children. Whether by instinct or true desire of children, this does not change the substance of the idea discussed in this chapter. That is, that reproduction is the reason behind mating.

[35] perhaps mediated by men's attraction to young women.

6.2.2 Critiques to the evolutionary theory

6.2.2.1 Maximization of fitness is not the cause of hypergamy

Several arguments in sociology and demography suggest that reproduction is not the main purposes of relationships. Spreading genes is hardly the main driver of mating among humans altogether, and in particular in post-modern societies. While among the majority of mammals' sexual activity takes place at the time females' fertility peaks, this is not the case among humans. The latter specie, humans, (together with bonobos) show interest in sex during the whole ovulation cycle of women. That is, even when sex does not lead to procreation. Furthermore, it can be argued that the majority of men do not wish to have as many children as possible, at least in developed countries. While in pre-industrial societies a higher number of children as they represent additional, often zero-costs employable labour force for the family (Zelizer, 1985), the reproduction focus has shift from the quantity to the quality of children (Becker, 1981) in the industrialized and post-industrialized societies. This means that individuals nowadays may wish *not* to have *many* children, and/or may wish not to have children at all. For instance, in Europe the ideal number of children expressed by individuals is about two (Sobotka & Beaujouan, 2014). The demographic patterns of developed societies show decreasing fertility, postponement of childbirth and increasing childlessness since about the seventies, as largely documented and explained by the second demographic transition (Ron Lesthaeghe, 2010). All these reasons suggest that the reproductive capacity of the female partner may not be the biggest and primary concern of men seeking partners.

6.2.2.2 Hypergamy may not lead to the maximization of fitness

The second argument is that, even if men aimed at maximizing reproduction, having as many children as possible, it is not obvious that seeking young partners is the best strategy to achieve this. to achieve this target. Firstly, today age is not a good predictor of the fertility capacity of women and men. Their family planning, preferences and intentions to have children matter more. In fact, the wide use of reliable contraceptives gave women control over the probability and timing of pregnancy, and increasing education and career opportunities may well push for birth postponement.

Let's take the example of a man, age 35, desiring to have children and seeking a partner. Lt's say that there are two, childless women, on the market, aged 20 and 30 respectively. The reproductive capacity of the younger woman is not necessarily higher than the older one. For instance, the 20 years old woman is pursuing a career and uses contraceptive methods to postpone the birth of her first child to approximately age 30. The 34 years old woman, on the contrary, has already

reached a good position on the labour market and, because is closer to the end of her reproductive age, intend to have children as soon as possible. In this case, the current fertility capacity is higher for the older woman, compared to the younger one. The remaining fertility capacity after first birth would be, in theory equal for the two women. However, the 34 years old may be ready to have children. In this case, the current fertility is higher for the older woman, compared to the younger one. The remaining fertility capacity after first birth would be, in theory equal for the two women. Furthermore, by marrying the younger woman, the man postpones birth thus increasing uncertainty on the fertility outcome. By the time the younger woman reaches age 30, the man will be 10 years older. In the meanwhile, his fertility capacity will be smaller, and the chances of the couples splitting up further decrease the chances of having children. In other words, "better an egg today, than a hen tomorrow". Thus, the best reproductive strategy, for this man, would be marrying the older woman. This example is not very far from the reality, since in Europe the average age of mothers at first birth is 29.

There are other arguments suggesting that seeking a partner of the same age could be better, in terms of fertility, than seeking a younger woman. According to the matching hypothesis, age homogamous partners enjoy more intimate relationships, including sexual relationships, better communication and a better quality of the relationship in general (Casterline et al., 1986b; Kalmijn, 1998; Van de Putte et al., 2009). All this would lead to higher fertility for age homogamous couples, compared with age hypergamous ones. Clearly, what the best strategy to have children is, in terms of age differences, depends on the age of the man himself. If he is 50 or older, for example, homogamy is hardly the best choice because a woman of similar age has low chances to have children. Thus, the evolutionary theory would be reasonable in the case of men who have passed the reproductive age limit of women.

Summing up, the evolutionary theory describes men's instinct of reproduction as the cause of hypergamy. This is based on two assumptions. Firstly, that mating in general, and hypergamy in particular, is driven by the reproduction instinct. Secondly, that hypergamy leads to a higher number of children in the couple, compared with other age assortation of couples. I argued against both assumptions, while agreeing that age hypergamy might be the best reproduction strategy for men after a certain age threshold. Below, I summarise the literature on the topic

6.3 Empirical review

Testing the reason why men seek younger partner, and in particular whether they do so to have more children (argument in section 6.2.2.1), is not an easy task. The scientific literature provides plenty of evidence showing that men are attracted by young women (Antfolk, 2017; Buss & Schmitt, 1993; Buunk, Dijkstra, Kenrick, & Warntjes, 2001; Kenrick, Keefe, Gabrielidis, & Cornelius, 1996; Skopek, Schmitz, & Blossfeld, 2011; Sohn, 2016). And many scholars claim that this is evidence of their aim to maximize fitness (Antfolk et al., 2015; Dunn et al., 2010; Fieder et al., 2008; Fieder & Huber, 2007; Helle et al., 2008; Kenrick et al., 1996; Kenrick & Keefe, 1992) . However, I could not find any evidence that the attraction to young women is due to the aim of maximizing fitness, or even to the desire of children. On the contrary, there is evidence that men prefer young women (to older one) even when seeking prostitutes, as shown, for instance, by an ingenious study on Indonesians sex workers' tariffs (Sohn, 2016). The most plausible reason why men paying more for younger prostitutes, compared with older ones, is they are sexually attracted more by the first group of prostitutes. In the context of paid sex, the reproductive capacity seems to be out of the picture. In a nutshell, while we do know that men are attracted by young women, we still do not know why.

The second argument, that hypergamous couples have more children than other couples (section 6.2.2.2)is debated. Comments flocked on the academic publication "biology letters", following a study by Fieder and Huber on the topic (Fieder et al., 2008; Fieder & Huber, 2007). The study analysed the relationship between the age gap between parents and the total number of children , using Swedish population register data on individuals born between 1945 and 1955 at the end of their reproductive chances (offspring count in year 2000) [36]. Analysing the samples of men and women separately, the authors found that the relationship between the age difference (male - female age) and the number of children followed an inverted u-shape. It increased for larger age differences up to a certain point, and then decreased. The number of offspring was maximized with an age gap of 6 years in the study on men, and 4 years in the study on women. The study was criticized in many ways. For instance, the results differed too much among the men's and women's sample and, at least in the first study presented by the authors, the age of the woman (as a proxy of the reproductive capacity) was not taken into account (Boyko, 2008; Kokko, 2008; Linqvist et al., 2008). When replicating the analysis on pre-modern Swedish

[36] Only individuals who had not changed partner between first and last child born were included in the study.

women who married once[37], including the age of the woman, the new research found no effects of the age gap on the total number of offspring (Linqvist et al., 2008). Later, a further study found that, in contemporary Taiwan, age hypergamy was associated with fewer children, and not more (Tsou et al., 2011), and that the distribution of resources such as education or income in the couple were more important than the age gaps. On the contrary, a study on historical Sami claimed that the maximum number of offspring (evolutionary fitness) was maximized, in such society, among couples where the women were even 15 years younger than their partners (Helle et al., 2008).

6.4 Sum up and hypotheses

To sum up, the empirical research so far has not proved, nor disproved, that the evolutionary theory correctly explains why men prefer younger women. Essentially , this is due to the fact that the nexus between reproduction goals-mating selection-fertility outcome has not been explicit and, consequently, the theory has been only partially tested. The empirical research was only concerned with the investigation of the link between age-gaps and number of children born, which would test the argument 6.2.2.2). This is not an adequate research design. In fact, the argument in section 6.2.2.1 is overlooked, by assuming that all men want to have as many children as possible. In addition, this strand of research has given inconsistent results from an empirical point of view, as some studies found that the association between age-gaps and number of children being positive, some negative, and some contests any association. The variation of the results can be in part explained by the fact that may studies refer to different societies. And yet, we should expect that the evolutionary theory, if correct, applied to all men. Another issue in these studies is that they analyse age differences and age-gaps among parents only. This can cause serious problems of selection, if couples with specific age-gaps systematically do not have children, and are not included in the analysis.

In this study, I take a two-steps approach to test the theory. Firstly, I investigate the link between men's fertility intentions and the age differences in the couples they form. Secondly, I analyse the association between the age differences between partners and their number of children, replicating previous analyses on a more inclusive sample of women and men. Fertility intentions have been extensively used in sociological and demographic research on fertility behaviour and add a useful perspective to biological arguments. By fertility intentions I mean

[37] The sample is appropriate because of the low pre-marital birth and absence of modern contraception in pre-industrial Sweden.

the intention to have children in the short term (3 years), which have been found to be a good predictor of fertility behaviour in theoretical and empirical research (Gillmore et al., 2002; Vinokur-Kaplan, 1978). In a loose interpretation of the evolutionary theory, we can expect that that fertility intentions are positively associated with the age gap (male -female age) in the relationship that single men will form. In a stricter interpretation of the theory, I expect that such positive relationship increases with the age of the men. That is, the older the men are when starting a relationship, the stronger the association between fertility intentions and age gap is. Formally, I test the following hypotheses:

H1. Fertility intentions are positively associated with the chances to form a couple (stable relationship);

H2. Men who intend to have children are more likely to start hypergamous relationships, compared with other types or relationships and remaining single;

H3. There is a positive association between fertility intentions and the age gap of the couples, for men who form a couple;

H4. The association in H3 is stronger for men who start the relationship at older, rather than younger, age.

In the second step of the research, I test the relationship between age differences and fertility outcomes, similarly to what has previous empirical research done. I contribute to the literature in three ways. Firstly, I use a new dataset including new countries. Secondly, I include the couples with no children in the analysis. Thirdly, I add sociological and demographic control variables. For this second study, we can hypothesise that, if the evolutionary theory is right, and hypergamy is a result of men's reproductive strategy, hypergamous couples should have more children than homogamous of hypogamous couples.

6.5. Research strategy, data and methods

I present there the results of the two, separate analyses. For both of them, I used data from the Generation and Gender Survey program (GGS) relative and excluded couples where known to be same sex, since the thesis's concern is with heterosexual couples. However, the research strategy, sample and variables differ for the two analyses and therefore are presented separately.

6.5.1 Men's fertility intentions and age differences

I exploit longitudinal data from the Generation and Gender Survey program (GGS) to investigate the relationship between single men's intentions to have children within three years (wave 1), and their relationship-outcomes three years later (wave 2). To do so, I select single men in reproductive age (under age 60) in wave 1 and examine their partnership status (i.e. being single, in hypergamous/homogamous/hypogamous relationships) and, if partnered, the age gap in the couple in wave 2.

I selected individuals who were singles, that is, not in a cohabiting relationship, in w1 (dummy variable yes/no) and who were also interviewed in w2. To ensure that the respondents were in reproductive age, I restricted the sample to men under age 60 in w1. Individuals of both sexes are minimum 17 years old in the survey. Individuals who were not born in the country were excluded from the analysis to avoid bias due to the exogeneity of different preferences for age assortation and children.

The heterosexual relationships include relationships with co-resident and non-resident partners, although the large majority of such relationships are with co-resident partners. The only exception is Russia, where information on non-resident partners is not available. Although men are the focus of the analyses, the results for women are also shown separately (under age 45 in wave 1).

Since the evolutionary theory applies to all human species, I pooled data from several countries and used country fixed effects in order to control for cultural variance in terms of norms on age differences. However, the results of the analyses for separated countries are included in the appendix and briefly discussed in the results, when relevant. The selection of countries was mainly data-driven, that is, they correspond to the countries for which both wave 1 and 2 were available, as well as the data on the independent variable on fertility intentions: Bulgaria, Russia (years of the survey 2004, 2007), Georgia (2006, 2009), France (2005, 2008/9), Netherlands (2002, 2006/7), Austria (2008/9; 2012/13), Lithuania (2006, 2009) and Czech Republic (2005, 2008).

Variables

The independent variable is fertility intentions, operationalised as the intention to have children within 3 years, measured in wave 1. This is measured on a scale 1-4 (1: “Definitely not”, 2:” probably not”; 3: “probably yes” and 4: “definitely yes”). The dependent variable is, alternatively, categorical or numerical. To test H1 and H2, I used the categorical dependent variable “partnership status”, measured in wave 2. This takes the following, not ordered values: 0"Single" 1"Homogamy" 2"Hypergamy" 3"Hypogamy". The categories 1-3 are based on the age gap in the couple (male-female age). Homogamy correspond to couples less than four years apart; hypergamy to couples where the man is more than three years older than his partner, hypogamy when the woman is more than 3 years older than her partner. I also tested the result with a broader definition of age differences (homogamy as less than six years apart, hypergamy when the man is at least six years older than his partner; hypogamy when the woman is at least six years older than his partner). To test H3 and H4, I use the numerical variable “age gap”, measured in wave2, conditional on being in a relationship (in wave 2).

I controlled for the age of the respondent in wave 1, the presence of children from previous cohabitations (dummy yes/no), and country fixed effects. I did not control for the birth cohorts of the respondent because this is highly correlated with the age of the respondent, since the sample is limited to individuals who are single at specific age. However, the results are confirmed even when including birth cohorts (not shown).

Methods

I proceeded in two steps. Firstly, I used multinomial logistic regressions to test H1 and H2 (see section 6.4 for the hypotheses). The men’s relationship status in wave 2 was regressed on their fertility intentions, as expressed 3 years earlier (when single, wave 1). I estimated the relative risk ratio of being in a hypergamous/homogamous/hypogamous relationships relative to remaining single, to test H1. Secondly, I used OLS models to estimate the coefficient of the association between the fertility intentions (wave 1) and the age gap in the relationship (wave 2) to test H3, as well as the interaction effect of men’s age and their fertility intentions (H4). The multinomial logit model allows to include the category of single in the dependent variable (partnership status and not age gap). This is useful to estimate the effects of the fertility intentions on any partnership status in future, relative to remaining single. The OLS model allows to investigate more precisely the effects of the fertility intentions on hypergamy, but it

refers to individuals who are in a relationship (the age gap cannot be calculated for men who remain singles).

6.5.2 Age differences and number of children

I use cross-sectional data from wave 1, to investigate the relationship between age-gaps in the couple and number of children. I focused on individuals (men and women) at the end of their reproductive career (over 60 years old) and the age gap in their current, co-resident, relationship. Individuals who had children from previous relationships are excluded, because of the lack of data on the age of the previous partners. Individuals who started a cohabitation after age 60 are also excluded from the analyses.

I included the following 15 countries in the analysis: Bulgaria, Russia, Georgia, Germany, France, Hungary, Italy, Netherlands, Romania, Estonia, Belgium, Lithuania, Poland, Czech Republic, Sweden.

Variables and methods

The independent variable is the age gap in the couple, measured as male-female age (independent variable). The total number of biological children is the dependent variable. The statistical analysis consists of linear regressions accounting for nonlinear effects (quadratic). The number of biological children of the respondent (with no children from previous relationships) is regressed on the age gap of the current relationships and its squared value. I control for the age of the female partner at the start of the relationship, as a proxy for the reproductive capacity of the woman, the gender of respondent, whether the respondent is born in the country (native), birth cohort of the respondent (born before 1940 or later), and country fixed effects. Because of the limited samples in each country, I present the results of the analyses pooling the national samples all together and including country fixed effects. However, the results of the analyses for separated countries are included in the appendix and briefly discussed in the results.

6.6. Results

6.6.1 Men's fertility intentions and age differences

The sample includes 4207 men between 17 and 59 years old, singles in wave 1 and interviewed in w2[38], from the following countries: Bulgaria, Russia, Georgia, France, Netherlands, Austria, Lithuania, Czech Republic. The descriptive data are shown in table D-1 in the appendix. They show that, of all single men analysed, almost one third intended to have children (definitely or probably) in the next 3 years, and the remaining part not (definitely or probably, 70% and 30% respectively). About one fourth of the men who were singles in wave 1 had a partner in wave 2 (28%). Interestingly, the share of singles in wave 1, who had a partner in by wave 2, was higher among the individuals who intended to have children, compared to those who did not. 34% of men with positive fertility intentions had a partner after 3 years, compared with 26% of men with "negative" intentions (as described in the data section, there are no "neutral intentions", as the possible answers in the survey are "definitely yes", "probably yes", "probably no", "definitely no"). This already suggests that fertility intentions are a motivating factor for starting a partnership. Finally, and more importantly, hypergamous relationships are nearly twice as common among men who intended to have children, compared with men who did not (16% versus 9%). Differences in the partnership status by fertility intentions are not as strong in the case of homogamous and hypogamous relationships[39]. The descriptive results seem to support the evolutionary theory.

a) Multinomial logistic model

Table 6-1 below shows the results of the multinomial logistic model estimating the Relative Risk Ratio (RRR) for each relationship status (homogamy, hypergamy and hypogamy) relative to remaining single (in wave 2). The RRR shows how much each increasing unit of the independent variable (or control variables) changes the risk of a partnership status relative to the risk of remaining single, holding all other variables constant. The risk ratio for the reference category (remaining single) is 1. Thus, an RRR of 1 means that that an increase of the independent variable does not change the relative risk. An RRR>1 means a one unit increase of the independent variable increases the risk of starting a relationship relative to the risk of

[38] Women sample: 3570, 17- 44 years old.

[39] As a comparison, we can see how the same data look for women. The share of women who were single in wave 1, and had a partner by wave 2, (by fertility intentions, is very similar to that of men. However, differences in the proportions of women in different relationship status, by their intentions, vary. Women who intend to have children (definitely or probably) are more represented among homogamous relationships (22%), compared with women who do not intend to have children (neither definitely nor probably, 17 % in total). Descriptive data for both sexes is shown**Error! Reference source not found.** in table D-1 in the appendix.

remaining singles. Vice versa, an RRR<1, means that one unit increase of the independent variable decreases the risk of starting a relationship relative to remaining singles. The RRR can be ordered.

The results of this model show that fertility intentions increase the chances of finding any partners, relative to remaining singles[40] (RRR hypergamy =1.405, RRR homogamy and hypogamy = 1.18, RRR for hypergamy and homogamy are statistically significant at conventional level). That means that the higher the individuals' intentions to have children in the next three years, the more likely the individuals are to find a partner, compared to remaining single (three years later). Looking at the risk-ratios for the other covariates, the RRR for age is negative for any types of relationships (relative to remaining single). That is, the older the men are, the lower their chances to find a partner (of any age, and the RRR are similar in the three age-assorted types of relationships). The RRR for being native, on the contrary, is negative for hypergamous and hypogamous relationships, but positive for homogamous relationships. This means that men who are born in the country are more likely to start homogamous relationships compared to both remaining single and starting other age-assorted relationships. The RRR for having children from previous relationships is positive for all types of relationships. That is, having children from previous relationships increases the chances of starting relationships more than it increases the chances of remaining singles. Finally, there appears to be strong RRR for the country of interview. In particular, men seem to have more chances of being in a relationship, in particular hypogamous relationships (relative to being singles), in the Netherlands, France and Austria 8relative to Bulgaria[41]. These results confirm H1 that is, fertility intentions are positively associated with the chances to start stable relationships of any age assortation.

Moving to H2, we are interested in the relevance of the fertility intentions for starting hypergamous relationships in particular. We have seen that the RRR is the highest for hypergamous relationships (RRR=1.405, table 6-1). In terms of in probabilities, we can say that, for each additional unit on the scale of the fertility intentions, the probabilities of starting hypergamous, homogamous and hypogamous relationships increase of 3.3, 1.4 and 0.2 percentage points respectively (table not shown). Conversely, the probability of remaining single decreases of about 5 percentage points. This means that the probability to start

[40] The changes refer to the increase of one unit on the scale of the fertility intentions. The effect is modelled as linear.

[41] The models are also run separately for different countries, and the results are shown in tables D3-D9 in the appendix.

hypergamous relationships is about 10 p.p. higher for men who definitely intend to have children, compared with men who definitely do not want children (the respective figures for homogamous and hypogamous relationships being about 4 and 1 p.p.). These are substantial change, especially considering that the baseline probability of starting hypergamous relationships is about 11%, (for ending up single and in homogamous and hypogamous relationships 72%, 15% and 2% ca.)[42]. When running the model on samples of men in different age groups, the effects remain also on the younger groups, although the size of the coefficient for hypergamy become smaller and, in some groups, loose significance (results not shown). The H2 seems also to be confirmed. That is to say, while fertility intentions positively affect the chances of starting stable relationships with partners of any relative age, its effects are stronger for hypergamous relationships.

The results are gender specific. When running the same model on the sample of women in reproductive age, the results show that fertility intentions increase the probability to start homogamous relationships, and not hypergamous ones, among women. However, similarly to men, fertility intentions increase the chances of starting any relationships. The results of the equivalent multinomial logistic model on the sample of women in reproductive age are shown in table D-2 in the appendix.

[42] Although the RRR for homogamy and hypogamy is similar, the relative change in the probability of starting hypogamous relationship is very small because it is proportional to the baseline probability. However, it is a substantial change relatively to the baseline probability. This shows the importance of translating RRR results in terms of probability.

Table 6-1. Multinomial logistic regression result: Relative Risk Ratio, (ref. category: remaining single). Single men 17-59, selected countries

	Homogamy	Hypergamy	Hypogamy
Ref. Single	(RRR)	RRR	RRR
Wants children	1.184***	1.405***	1.183
	(0.0638)	(0.0806)	(0.165)
Age	0.936***	0.993	0.969**
	(0.00628)	(0.00606)	(0.0149)
Being native	1.526	0.565**	0.893
(yes ref.no)	(0.462)	(0.151)	(0.556)
Has children	1.998***	1.946***	2.217*
(yes ref.no)	(0.399)	(0.370)	(0.954)
Country			
(ref. Bulgaria)			
Russia	0.742	0.413***	0.200
	(0.158)	(0.111)	(0.210)
Georgia	1.088	1.185	0.817
	(0.156)	(0.176)	(0.365)
France	2.970***	1.112	2.314*
	(0.507)	(0.239)	(1.092)
Netherlands	2.849***	1.812***	6.771***
	(0.574)	(0.403)	(2.837)
Austria	3.286***	2.040***	3.257***
	(0.531)	(0.381)	(1.407)
Lithuania	0.859	0.480*	1.116
	(0.256)	(0.195)	(0.863)
Czech Republic	1.230	0.989	1.845
	(0.279)	(0.243)	(1.011)
Constant	0.442**	0.141***	0.0300***
	(0.165)	(0.0510)	(0.0256)
Observations	3,578	3,578	3,578

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.

Note: Hypergamy(hypogamy): man(woman)>3 ys older. Homogamy: less than 4 years apart. Wants children: intentions to have children within 3 years, scale 1-4 (definitely not, probably not, probably yes, definitely yes).

b) OLS

Next, among men who did form a couple, I test H3 and H4, that is, whether the age gap in the relationship formed is positively associated with the men' fertility intentions (expressed when they were single); and, that such ass association gets stronger for men who start the relationship at older, rather than younger, age. To do so, I analyse the relationship between the fertility intentions of men and the age gap of the relationship they will form, conditional of starting a relationship. I regress the age gap of the couple (to be) on the men's age, men' intentions to have children within 3 years, and on the interaction of the two terms. The same control variables of the previous model are added (being native, having children from previous relationships and country fixed effects). The OLS results with robust standard error are shown in table D-10 in the appendix (results for men and women presented separately in the table), while in figure 6-1 below I show the average marginal effects (AME) that single men' intentions to have children have on the age gap of the couple they will form, by the age of the man.

The results show that fertility intentions are negatively associated with the age gap. Men who intend to have children tend to start relationships with women closer in age, compared with men who do not intend to have children[43]. On the contrary, men's age is positively associated with the age gap in the couple. The coefficient of the interaction terms (men's age and fertility intentions) is positive. This mean that, while fertility intentions are not associated with larger age gaps themselves, their effect vary by age. Fertility intentions make no difference for the age gap at young age but, as men age, the association between the fertility intentions and the age gap turns positive. Therefore, older men that intend to have children are more likely to start relationships with larger age gaps, compared with same-age men who do not intend to have children. The average marginal effects of the fertility intentions on the age gap, as obtained in the model, are shown in the below. The results show that there is no difference in the age gap of men who definitely intend to have children and who definitely don't, for men younger than 25, all other values being the same. However, 59 years old men who intended to have children may end up in a relationship with an age gap about 5 years larger, compared with same-age men who did not want to have children. The results for men are presented graphically in figure 6-1.

[43] This should not be understood as in contrast with previous analyses, but as a complementary result. In fact, the previous analysis considered as hypergamous couples all couples with an age gap >3 years. In this model, the age gap is continuous. This means that, in theory, it may decrease even being, in any case, hypergamous.

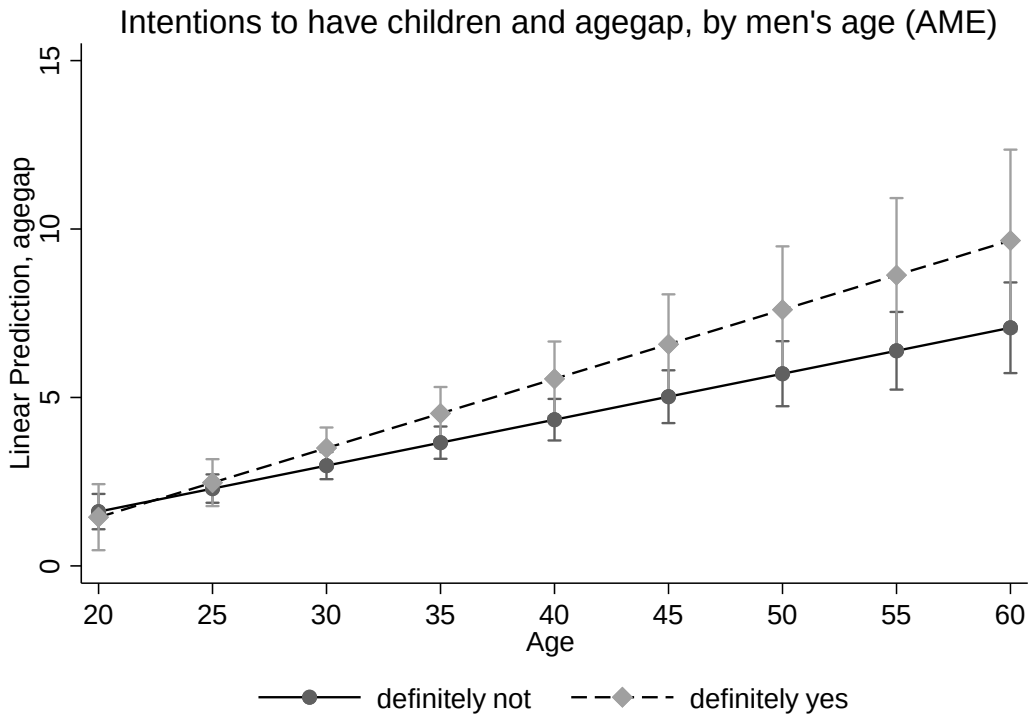

Figure 6-1.Average marginal effects (AME) of intentions to have children and age of the man (interacted terms) on the age gap of the couple. OLS, controls for being native, having children from previous relationships, country fixed effects. OLS regressions, Men

Comparing the results for men with those for women, the sign and size of the association between fertility intentions and age gap, age and the interacted term are gender specific, i.e., only show for men, table D-10 in the appendix, graphical results for women in figure D.1 in the appendix). The results do not vary substantially when adding other controls (birth cohorts, having previous relationships). Interestingly, running the analyses separately by country, in France, the Netherlands and Austria, very young men who intend to have children appear to have age gaps even smaller than very young men who do not intend to have children. And yet, the effect of the intentions does not change for other age groups. However, even in the whole sample including all countries, the average difference in the age gap for men who definitely intend and definitely do not intend to have children is not very large, and the confidence intervals of the predicted values for the groups overlap. All in all, there appears to be some support for H3 and H4, but further research on larger samples is needed to confirm the results.

The results of the OLS model, taken together with the results of the multinomial logit, suggest that, while men who intend to have children are more likely to start hypergamous relationships (compared with men who do not), this effect may be driven mostly by men who start

relationships at older, rather than younger, age. Among men who start relationships at older age, those who intend to have children also tend to start hypergamous relationships with large (r) age gaps, compared with those who do not intend to have children. Altogether, the results of these analyses suggest that the motivation behind men's preferences for younger women may vary with the age of the men. The results of the analyses for separated countries are included in the appendix (tables D11- D12). However, it is not possible to draw conclusions from them because of the limited samples in each country.

Let me summarise here the results against the 4 hypotheses formulated. The findings reveal that men' fertility intentions are positively associated with the chances to form a couple (first hypothesis). Men (women) who intend to have children are more likely to start stable relationships (in particular hypergamous and homogamous ones), and less likely to remain singles, compared with men (women) who do not intend to have children. This shows some support for the thesis of the instinct of reproduction. However, it could also be interpreted as a family desire. Because family is one of the basic social organization individuals are socialized to it, individuals do tend to reproduce family. The desire for children and for a partner can go together, the latter does not necessarily follow the former.

The second hypothesis was that men who intend to have children are more likely to start hypergamous relationships, compared with other types of relationships. This hypothesis has been confirmed in the sample of countries analysed. The probability to start hypergamous relationships is about 10 p.p. higher for men who definitely intend to have children, compared with men who definitely do not want children. As a comparison, women who do intend to have children are more likely to start homogamous relationships instead.

Testing hypotheses three and four, we get a better insight on this aspect. The third hypothesis is that there is a positive association between men's fertility intentions and the age gap in the couple. The fourth hypothesis is that this association gets stronger as the men get older (age at the start of the relationship). The results show that the age gap in the relationships tends to be larger among the couples formed by men who want children, compared with men who do not. However, this is only true for men who start the relationship at older age, and not for younger men. In other words, H3 is not confirmed for young men. H4 is confirmed. However, from the statistical point of view, the results for the third and fourth hypotheses are not as robust as the previous ones.

6.6.2 Age differences and number of children

Descriptive statistics

The sample is initially composed of 21657 individuals for which the age gap ranges between -27 and 38, with a mean age gap of 2.75 years and a standard deviation of 3.97. Below I show the mean number of children of individuals among couples with different age gaps (woman 10+ys older, woman 2-9 ys older, partners less than 2 ys apart, man 2-9 ys older, man 10+ ys older). The mean number of children is the lower the older the woman is relative to the man. It is the highest among couples with where men are 2 to 9 years older (mean=1.98). Then, it decreases again among couples where men are 10 or more years older than the woman (to the same levels of the homogamous couple, i.e. 1.89), although the standard deviation is also the highest in this category, suggesting high variation[44]. Using a different categorization of age gaps (woman 10+ys older, woman 4-9 ys older, partners less than 3 ys apart, man 4-9 ys older, man 10+ ys older) the tendency of the mean number of children to increase with the age gaps is confirmed up to the category of couples where the man is 4 to 9 ys older, where it peaks. This shows that relatively high numbers of children are more common among hypergamous couples, even when the age gap is larger than 3 years). However, the association between the age-gap and the number of children follows an inverted u-shape, increasing with hypergamy, but decreasing when hypergamous age-gaps become large.

Table 6-2. Total number of children by age gap in current relationship. Individuals who did not have children from previous relationships. GGS data, wave 1, 16 countries. Men and women 60+. Descriptive statistics

	Number of observations	**Mean number of children**	**St. Dev.**	**Min**	**Max**
Woman 10+ys older	94	1.32	1.35	0	6
Woman 2-9 ys older	1650	1.70	1.31	0	7
Partners less than 2 ys apart	6951	1.89	1.31	0	11
Man 2-9 ys older	11845	1.98	1.32	0	11
Man 10+ ys older	1090	1.90	1.38	0	10
Total	21657	1.92	1.32	0	11

[44] While the mean number of children may appear high, compared with the numbers of Total Fertility Rates (TFR) we are used to know, I should recall this table refers to individuals in a stable relationship, aged 60 or older. Thus, singles are not included (as it is the case with national statistical measures such as the TFR).

Multivariate analyses

Further, I restrict the analyses to couples with an age-gaps of 20 years or under (19754 individuals). The table 6-3 below shows two regression models. In the first one, the number of children is regressed on the age gap and its squared value, with other control variables (birth cohort, gender, born in the country). In the second model the reproductive capacity at the time the cohabitation started is added to the model. The results of the first model show that the total number of children is positively associated with the age gap, but the coefficient for the squared value of age gap is negative. This means that there is a curvilinear relationship between the dependent and independent variables. This is to say, the number of children increases up to a certain value of age gap, and then stabilizes or decreases. Concerning the other control variables, the number of children is lower among younger cohorts of respondents (born after 1940 relative to before then), and among individuals born in the country (relative to not born in the country). It is, as expected, similar among men and women[45]. The coefficients for the last two variables are not statistically significant at conventional level.

When adding the reproductive capacity to the model (model 2), the added control variable is, as expected, negatively associated with the number of children. That is, the later women started the cohabitation, the lower the total number of children in the couple. More importantly, the coefficients for age gap and age gap squared become smaller and not statistically significant at conventional level, but still show that there is a curvilinear relationship between age gaps and number of children. As the age gap increases, so does the number of children, but only up to a certain value of age gap. After such value, to increasing age gaps correspond decreasing numbers of children. Since the function identified with our quadratic term is a parabola, we can also identify the vertex, or "turning point" of the function. This is the value of x (age gap) corresponding to the highest value of y (number of children), that is, the point where the parabola crosses its axis of symmetry. The turning point identified by Model 2 is at age-gap=2, which means that the number of children increases with the age gap of the couple up to an age gap of 2 years, and then decreases[46]. Figure 6.2 shows, graphically, the adjusted mean of the

[45] It is slightly lower among males, relative to females, but effect is close to 0, as it should be. This control has been added because the analysis is at individual (not couple level), but clearly the results have to be similar across the male and female respondents, because they refer to the children had as a couple.

[46] The "turning point" is calculated from the polynomial function of the equations $y = \alpha + \beta x + \beta 2x^2 + (other\ controls) + \varepsilon$, where *y*= number of children, *x*= age gap and x^2 =squared age gap. The turning point of age gap, *xmax* =(-β1/(2* β2)), where β is the coefficient for age gap (*x*) and β2 the coefficient for its squared term(x^2). By substituting the coefficients in β1 and β2 in the formula with those obtained in Model 2, we obtain that *xmax=2*

number of children obtained from model 2, by the age gap of the couple. . The slope of the quadratic relationship between the number of children and age gaps is, however, relatively flat, and the confidence intervals become larger as we move to values on either sides of the turning point (hypergamous and hypogamous age gaps).

Overall, the reproductive capacity remains the most important factor driving the fertility outcomes of the couples. Once taking this into account, there are no large differences in terms of the total number of children by the age gap of the couples, and there is also much variance among couples with larger age gaps. In terms of the outcome value, the number of children ranges between 1-5 and 2.2. This data is realistic in the countries object of the study, compared with the results obtained in previous research (for instance, 6 children in the study, in Sweden, by Fieder & Huber (2007). The results of the analyses for separated countries are included in the appendix (tables D11-D12). However, it is not possible to draw conclusions from them because of the limited samples in each country.

Table 6-3 Number of total biological children and age gap between partners. OLS. Women and men 60+ in a cohabiting relationship. Selected countries. Country fixed effects are controlled for

VARIABLES	Model 1	Model 2
Age gap	0.0260***	0.000850
	(0.00323)	(0.00330)
Age gap^2	-0.00192***	-0.000210
	(0.000289)	(0.000289)
Born after 1940	-0.0536***	-0.0608***
(ref.1920-1940)	(0.0187)	(0.0184)
Male	-0.0272	-0.0276
(ref. female)	(0.0176)	(0.0174)
Born in country	-0.0495	-0.0428
(ref.no)	(0.0363)	(0.0359)
Repr. Capacity		-0.0364***
(at start cohab.)		(0.00160)
Constant	1.859***	2.671***
	(0.0437)	(0.0557)
Observations	19,754	19,754
R-squared	0.181	0.206

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

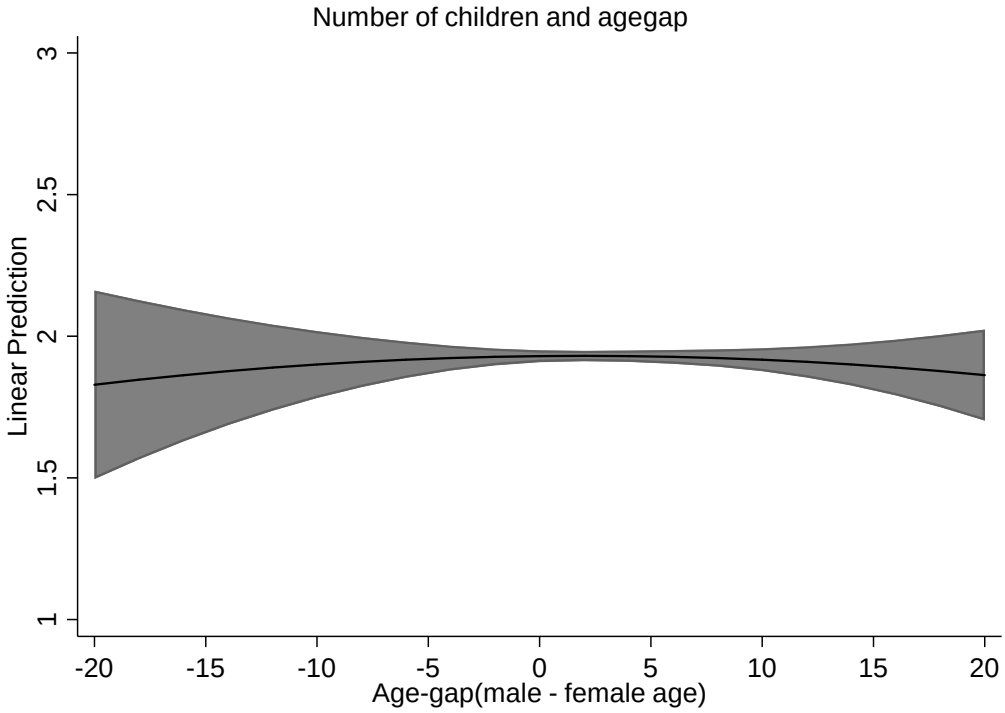

Figure 6-2. Number of children by age gap, adjusted means. Results from OLS model 2

6.7 Conclusions

The aim of the chapter was to test one of the explanation of men's preferences for younger women based on the theory of evolutionary psychology. According to this approach, men seek younger women to improve their chances of reproduction. I investigated whether men's intentions to have children affect their probability to start a relationship with younger women, and whether positive (i.e. hypergamous) age differences between partners are associated with more children. I summarise here the main results and conclusions from the two studies.

Single men who intend to have children are more likely to start a cohabiting relationship (H1), and in particular hypergamous relationships (H2). The association between men's fertility intentions and the age gap in the couple is positive only for men who start the relationship at older age, but not for younger men. This, H3 is not confirmed while H4 is. This means that, among men who start a relationship at older age, the age gaps in the relationships tend to be larger if the same men want children, compared with those who do not. In the second step of the research I investigated whether couples with larger age gaps have more children, compared with couples with smaller age-gaps. The results show that the relationship between age-gaps

and total number of children is not linear, but follows an inverted, but flat, u-shape. The number of children appears to be slightly higher among hypergamous couples, but only when there are small age-gaps.

Thus, we know that, for men who start relationships at older age, having a younger partner is partially the result of a "reproductive strategy". However, is this "reproductive strategy" effective? The answer is positive, at least as long as the age gap is not too large. In fact, we have seen that the best "reproductive strategy" for men is to have a partner just slightly younger.

One puzzle remains to be solved, that is why the intentions to have children affect the likelihood of hypergamous relationships among older, but not younger men. At first, this differences seems to be due to a simple "structural effect". For instance, men who are over 50, and who desire to have children, seek women younger than themselves because women of their age, or older, cannot easily have children. On the contrary, men who are, for example, 25, do not have as strong restrictions on the age of the partner, for reproduction purposes. In principle, they can have children with partners who are younger, but also same age or older than themselves. Another explanation of the difference in the results for the groups of men who start the relationship at younger and older age could be, however, that hypergamy is the outcome of an *unconscious* reproductive motivation, among the former group of men. Since hypergamy is, in fact, an effective reproductive strategy, it is possible that even the men who start relationships at younger age use it as a reproductive strategy, but at an unconscious level. As evolutionary psychologists argue, mating selection mechanisms are rooted in innate instincts, leading humans to the reproduction of the species.

Unfortunately, the data used for this study does not allow for further tests of the theory, because the survey has only been conducted in two waves, at the moment. In order to improve on this design, further research would benefit from the use of longer longitudinal data. This would allow to merge the two analyses into a multi-process analysis. This ways, it would be possible to investigate the link between single men's intentions to have children, the age-gaps in their future relationships and, eventually, their final fertility outcomes (at the end of the reproductive career). This design would allow also to understand whether, and to what extent, the intentions to have children of men can affect their number of children, and therefore whether the age gap mediate such relationship.

Appendix D

6.6.1 Men' fertility intentions and age differences

Table D-1 Descriptive table. Partnership status after 3 years from expressing intentions to have children (rounded %)

	Relationship status after 3 ys (t1)							
	Single		Homogamy		Hypergamy		Hypogamy	
Intend to have children	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)	Men (%)	Women (%)
No	74	70	15	17	9	11	2	2
Yes	66	63	16	22	16	13	2	2
Tot	72	68	15	18	11	11	2	2

Table D-2. Intentions to have children and partnership status. Multinomial logistic regression result. Relative Risk Ratio of starting differently age-assorted couples (ref. category: remaining single). Single women 17-44, selected countries.

	Homogamy	Hypergamy	Hypogamy
Ref. Single	RRR	RRR	RRR
Wants children	1.287***	1.259***	1.398**
	(0.0684)	(0.0793)	(0.186)
Age	0.931***	0.956***	1.047***
	(0.00685)	(0.00792)	(0.0187)
Being native	0.551***	0.620*	2.497
(yes ref.no)	(0.118)	(0.163)	(1.838)
Has children	1.341*	1.324	2.130***
(yes ref.no)	(0.209)	(0.235)	(0.622)
Country			
(ref. Bulgaria)			
Russia	0.579**	0.338***	0.829
	(0.133)	(0.0956)	(0.399)
Georgia	0.850	0.650**	0.529
	(0.135)	(0.114)	(0.261)
France	2.499***	1.433*	2.145*
	(0.420)	(0.276)	(0.892)
Netherlands	2.904***	1.250	2.463*
	(0.570)	(0.307)	(1.145)
Austria	3.400***	2.024***	3.112***
	(0.571)	(0.382)	(1.282)
Lithuania	1.686**	0.737	0.851
	(0.381)	(0.221)	(0.565)
Czech Republic	1.767*	1.690*	2.552
	(0.530)	(0.525)	(1.723)
Constant	1.441	0.606	0.000986***
	(0.462)	(0.231)	(0.00103)
Observations	3,126	3,126	3,126

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.

Multinomial logit: Results by country (D-3 – D-9)

Table D-3. Intentions to have children and partnership status. Multinomial logistic regression results by country: Bulgaria. Relative risk ratio for starting differently age-assorted couples (ref. category: remaining single). Single men 17-59.

Bulgaria	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
Wants children	1.099	1.608***	0.875
	(0.128)	(0.185)	(0.299)
Age	0.908***	0.968**	0.981
	(0.0158)	(0.0130)	(0.0310)
Being native	452,276	256,732	486,144
(yes ref.no)	(7.445e+08)	(4.485e+08)	(2.488e+09)
Has children	2.221	2.969***	2.361
(yes ref.no)	(1.140)	(1.187)	(2.235)
Constant	3.74e-06	4.61e-07	6.98e-08
	(0.00615)	(0.000805)	(0.000357)
Observations	957	957	957

se in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-4. Intentions to have children and partnership status. Multinomial logistic regression results by country: Russia. Relative risk ratio for starting differently age-assorted couples (ref. category: remaining single). Single men 17-59.

Russia	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
Wants children	1.296	1.112	2.010
	(0.270)	(0.327)	(2.320)
Age	0.957**	0.991	0.223
	(0.0213)	(0.0245)	(0.275)
Being native	0.964	0.328	114,512
(yes ref.no)	(0.747)	(0.223)	(2.234e+08)
Has children	1.345	1.519	7.262
(yes ref.no)	(0.836)	(1.028)	(4,606)
Constant	0.248	0.163*	49,998
	(0.250)	(0.179)	(9.756e+07)
Observations	353	353	353

Se in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-5. Intentions to have children and partnership status. Multinomial logistic regression result by country: Georgia. Relative risk ratio for starting differently age-assorted couples (ref. category: remaining single). Single men 17-59.

Georgia	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
Wants children	1.319***	1.517***	1.116
	(0.142)	(0.166)	(0.406)
Age	Homogamy	1.002	0.932
	(0.0143)	(0.0119)	(0.0517)
Being native	0.577	111,383	164,543
(yes ref.no)	(0.675)	(4.196e+07)	(2.570e+08)
Has children	1.703	3.299***	7.913
(yes ref.no)	(1.035)	(1.363)	(11.30)
Constant	0.661	5.27e-07	3.80e-07
	(0.803)	(0.000199)	(0.000593)
Observations	870	870	870

se in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-6. Intentions to have children and partnership status. Multinomial logistic regression result by country: France. Relative risk ratio for starting differently age-assorted couples (ref. category: remaining single). Single men 17-59.

France	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
Wants children	1.206	1.023	1.042
	(0.164)	(0.191)	(0.403)
Age	0.936***	1.013	0.921
	(0.0158)	(0.0219)	(0.0466)
Being native	2.122	0.496	91,146
(yes ref.no)	(1.400)	(0.275)	(3.658e+07)
Has children	1.448	1.635	3.120
(yes ref.no)	(0.587)	(0.717)	(3.360)
Constant	0.972	0.169*	3.98e-06
	(0.831)	(0.171)	(0.00160)
Observations	342	342	342

se in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-7. Intentions to have children and partnership status (RRR. for starting differently age-assorted couples ref. category: remaining single). Multinomial logistic regression results by country: The Netherlands. Single men 17-59.

The Netherlands	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
Wants children	1.433**	1.452**	1.560*
	(0.258)	(0.271)	(0.385)
Age	0.946**	0.974	0.965
	(0.0204)	(0.0216)	(0.0313)
Being native	0.797	0.403	0.505
(yes ref.no)	(0.603)	(0.306)	(0.582)
Has children	4.514***	1.003	0.642
(yes ref.no)	(2.183)	(0.641)	(0.727)
Constant	1.091	0.739	0.321
	(1.083)	(0.760)	(0.481)
Observations	264	264	264

se in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-8. Intentions to have children and partnership status (RRR. for starting differently age-assorted couples ref. category: remaining single). Multinomial logistic regression results by country: Austria. Single men 17-59.

Austria	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
Wants children	1.117	1.473**	1.221
	(0.194)	(0.267)	(0.469)
Age	0.883***	0.984	1.002
	(0.0202)	(0.0204)	(0.0434)
Being native	3.159**	0.829	1.264
(yes ref.no)	(1.657)	(0.359)	(1.369)
Has children	1.931	1.917	3.677
(yes ref.no)	(1.263)	(1.136)	(3.396)
Constant	3.571*	0.242**	0.0239**
	(2.623)	(0.171)	(0.0390)
Observations	379	379	379

se in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-9. Intentions to have children and partnership status (RRR. for starting differently age-assorted couples ref. category: remaining single). Multinomial logistic regression results by country: Czech Republic. Single men 17-59.

Czech Republic	Homogamy RRR	Hypergamy RRR	Hypogamy RRR
Wants children	0.967	1.059	0.778
	(0.224)	(0.281)	(0.504)
Age	0.974	1.001	0.978
	(0.0156)	(0.0174)	(0.0352)
Being native	0.205	0.102**	0.0319**
(yes ref.no)	(0.259)	(0.106)	(0.0448)
Has children	6.79e-06	4.09e-06	6.72e-06
(yes ref.no)	(0.00543)	(0.00366)	(0.0132)
Constant	1.668	0.893	1.851
	(2.444)	(1.226)	(4.088)
Observations	277	277	277

se in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-10. OLS. Intentions to have children and age gap in the couple. Men 17-59 and women 17-44. Selected countries

	Men.	Women
Age	0.113***	-0.0433
	(0.0331)	(0.0448)
Wants children	-0.515	-0.00656
	(0.516)	(0.663)
Age* Wants children	0.0230	0.000748
	(0.0169)	(0.0234)
Has children	-0.754	-0.567
(yes ref.no)	(0.507)	(0.483)
Being native	-1.777**	-1.153*
(yes ref.no)	(0.714)	(0.632)
Country (ref. Bulgaria)		
Russia	-0.899	-1.171
	(0.663)	(0.745)
Georgia	0.135	0.0822
	(0.397)	(0.499)
France	-1.548***	-0.998**
	(0.481)	(0.503)
Netherlands	-2.152***	-1.664***
	(0.534)	(0.600)
Austria	-1.097**	-1.062**
	(0.437)	(0.492)
Lithuania	-1.255	-0.911
	(0.917)	(0.733)
Czech Republic	-1.386**	0.0952
	(0.653)	(0.854)
Constant	1.904	5.497***
	(1.282)	(1.463)
Observations	1,010	987
R-squared	0.102	0.032

Notes. Age gap = male- female age. "Wants children" refers to intentions to have children within 3 years, measured on a scale 1-4 (definitely not, probably not, probably yes, definitely yes).

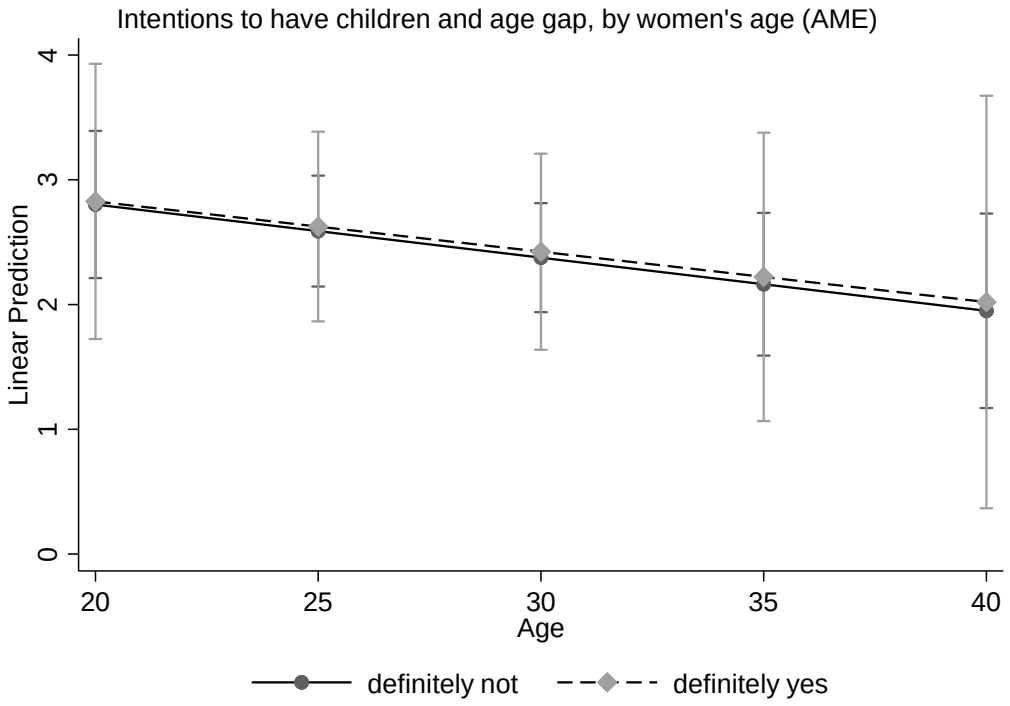

Figure D.1Average marginal effects (AME) of intentions to have children and age (interacted) on age gap of the couple. OLS controls for being native, having children from previous relationships, country fixed effects. Women 17-44. Selected countries.

OLS model – results by country (D11- D12)

Table D-11. OLS. Intentions to have children and age gap in the couple. Men 17-59. Selected countries (models separated by country).

	Bulgaria	Russia	Georgia	Czech Republic
Age	-0.0449	0.336**	0.144**	0.140
	(0.0843)	(0.134)	(0.0678)	(0.153)
Wants children	-2.387**	4.862*	-0.159	1.693
	(1.091)	(2.709)	(0.855)	(3.771)
Age* Wants children	0.104***	-0.196*	0.0256	-0.0289
	(0.0379)	(0.0972)	(0.0290)	(0.128)
Has children	-0.0603	1.502	0.432	-
(yes ref.no)	(1.070)	(1.680)	(1.162)	
Being native	-	-1.499	-0.990	-1.399
(yes ref.no)		(1.933)	(3.756)	(2.503)
Constant	3.616	-4.930	-0.750	-1.609
	(2.310)	(4.528)	(4.093)	(5.249)
Observations	231	52	245	59
R-squared	0.113	0.185	0.177	0.086

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-12. OLS. Intentions to have children and age gap in the couple. Men 17-59. Selected countries (models separated by country) – cont.'.

	(1) France	(1) Netherlands	(1) Austria	(1) Lithuania
Age	0.220**	0.0243	0.256*	0.294
	(0.0915)	(0.111)	(0.147)	(0.204)
Wants children	0.598	-2.758	1.392	-5.167*
	(1.625)	(2.376)	(1.648)	(2.587)
Age* Wants children	-0.0371	0.0697	-0.0523	0.157*
	(0.0496)	(0.0690)	(0.0631)	(0.0890)
Has children	-0.00411	-2.166	-3.431**	-12.40***
(yes ref.no)	(1.175)	(1.546)	(1.674)	(3.063)
Being native	-5.204***	-1.689	-0.726	-
(yes ref.no)	(1.707)	(2.139)	(1.242)	
Constant	1.527	3.892	-3.474	-2.201
	(3.405)	(4.532)	(3.832)	(5.300)
Observations	127	99	173	24
R-squared	0.182	0.054	0.061	0.658

6.6.2 Age differences and number of children

Results by country (D-13 – D-25)

Table D-13. Number of total biological children and age gap between partners. OLS by separate country: Russia. Women and men 60+ in a cohabiting relationship.

Russia		
	Model 1	Model 2
Age gap	0.0228**	-0.00175
	(0.0106)	(0.0112)
Age gap^2	-0.00359***	-0.00155
	(0.00109)	(0.00120)
Born after 1940	-0.0845	-0.113
(ref.1920-1940)	(0.0864)	(0.0870)
Male	0.0589	0.0200
(ref. female)	(0.0666)	(0.0647)
Born in country	-0.0314	-0.0417
(ref.no)	(0.110)	(0.107)
Repr. Capacity		-0.0331***
(at start cohab.)		(0.00589)
Constant	1.902***	2.766***
	(0.113)	(0.186)
Observations	1,025	1,025
R-squared	0.014	0.060

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-14. Number of total biological children and age gap between partners. OLS by separate country: Georgia. Women and men 60+ in a cohabiting relationship.

Georgia		
	Model 1	Model 2
Age gap	0.0254*	-0.0209
	(0.0145)	(0.0143)
Age gap^2	-0.00189	0.000573
	(0.00129)	(0.00117)
Born after 1940	-0.264***	-0.258***
(ref.1920-1940)	(0.0778)	(0.0722)
Male	-0.107	-0.0874
(ref. female)	(0.0755)	(0.0712)
Born in country	0.0905	0.166
(ref.no)	(0.171)	(0.172)
Repr. Capacity		-0.0784***
(at start cohab.)		(0.00673)
Constant	2.524***	4.343***
	(0.171)	(0.236)
Observations	1,281	1,281
R-squared	0.011	0.111

Table D-15. Number of total biological children and age gap between partners. OLS by separate country: Germany. Women and men 60+ in a cohabiting relationship.

Germany		
	Model 1	Model 2
Age gap	0.0280***	0.0109
	(0.0109)	(0.0112)
Age gap^2	-0.00268***	-0.00128
	(0.000801)	(0.000802)
Born after 1940	-0.221***	-0.237***
(ref.1920-1940)	(0.0708)	(0.0697)
Male	-0.0535	-0.0571
(ref. female)	(0.0704)	(0.0697)
Born in country	-0.147	-0.138
(ref.no)	(0.129)	(0.126)
Repr. Capacity		-0.0298***
(at start cohab.)		(0.00535)
Constant	1.972***	2.713***
	(0.136)	(0.190)
Observations	1,445	1,445
R-squared	0.014	0.036

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-16. Number of total biological children and age gap between partners. OLS by separate country: France. Women and men 60+ in a cohabiting relationship.

France		
	Model 1	Model 2
Age gap	0.0650***	0.0274**
	(0.0110)	(0.0126)
Age gap^2	-0.00461***	-0.00202*
	(0.000937)	(0.00109)
Born after 1940	-0.258***	-0.281***
(ref.1920-1940)	(0.0817)	(0.0801)
Male	-0.0129	-0.0121
(ref. female)	(0.0823)	(0.0813)
Born in country	-0.379***	-0.387***
(ref.no)	(0.142)	(0.139)
Repr. Capacity		-0.0475***
(at start cohab.)		(0.0105)
Constant	2.730***	3.867***
	(0.148)	(0.297)
Observations	1,326	1,326
R-squared	0.033	0.054

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-17. Number of total biological children and age gap between partners. OLS by separate country: Italy. Women and men 60+ in a cohabiting relationship.

Italy	Model 1	Model 2
Age gap	0.0261*	-0.0250
	(0.0151)	(0.0158)
Age gap^2	-0.00249**	0.000348
	(0.00103)	(0.00112)
Born after 1940	-0.108	-0.108*
(ref.1920-1940)	(0.0677)	(0.0637)
Male	-0.196***	-0.153**
(ref. female)	(0.0699)	(0.0660)
Born in country	-0.000175	-0.0858
(ref.no)	(0.362)	(0.328)
Repr. Capacity		-0.0624***
(at start cohab.)		(0.00633)
Constant	2.108***	3.811***
	(0.361)	(0.373)
Observations	917	917
R-squared	0.017	0.127

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-18. Number of total biological children and age gap between partners. OLS by separate country: The Netherlands. Women and men 60+ in a cohabiting relationship.

The Netherlands	Model 1	Model 2
Age gap	0.00603	-0.0235*
	(0.0137)	(0.0136)
Age gap^2	-0.00188**	-0.000386
	(0.000863)	(0.000838)
Born after 1940	-0.443***	-0.482***
(ref.1920-1940)	(0.0966)	(0.0937)
Male	0.0515	0.00532
(ref. female)	(0.0918)	(0.0898)
Born in country	-0.670	-0.872
(ref.no)	(0.525)	(0.551)
Repr. Capacity		-0.0503***
(at start cohab.)		(0.0121)
Constant	3.388***	4.912***
	(0.528)	(0.599)
Observations	899	899
R-squared	0.028	0.059

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table D-19. Number of total biological children and age gap between partners. OLS by separate country: Romania. Women and men 60+ in a cohabiting relationship.

Romania		
	Model 1	Model 2
Age gap	0.0341***	-0.000434
	(0.00974)	(0.0103)
Age gap^2	-0.00291***	-0.000412
	(0.000826)	(0.000851)
Born after 1940	0.126*	0.130*
(ref.1920-1940)	(0.0738)	(0.0726)
Male	0.0602	0.0556
(ref. female)	(0.0656)	(0.0645)
Born in country	-0.0402	0.0104
(ref.no)	(0.562)	(0.529)
Repr. Capacity		-0.0495***
(at start cohab.)		(0.00568)
Constant	1.979***	3.066***
	(0.563)	(0.543)
Observations	2,097	2,097
R-squared	0.008	0.044

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-20. Number of total biological children and age gap between partners. OLS by separate country: Estonia. Women and men 60+ in a cohabiting relationship.

Estonia		
	Model 1	Model 2
Age gap	0.0270***	0.0129
	(0.00887)	(0.00906)
Age gap^2	-0.000386	0.000511
	(0.000804)	(0.000835)
Born after 1940	0.0413	0.0515
(ref.1920-1940)	(0.0675)	(0.0667)
Male	-0.0764	-0.0716
(ref. female)	(0.0612)	(0.0606)
Born in country	0.118*	0.141**
(ref.no)	(0.0611)	(0.0608)
Repr. Capacity		-0.0191***
(at start cohab.)		(0.00381)
Constant	1.787***	2.280***
	(0.0640)	(0.114)
Observations	1,156	1,156
R-squared	0.017	0.036

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-21. Number of total biological children and age gap between partners. OLS by separate country: Belgium. Women and men 60+ in a cohabiting relationship.

Belgium		
	Model 1	Model 2
Age gap	0.0489***	0.0233
	(0.0152)	(0.0171)
Age gap^2	-0.00328**	-0.00147
	(0.00146)	(0.00172)
Born after 1940	-0.167*	-0.185**
(ref.1920-1940)	(0.0912)	(0.0902)
Male	-0.158*	-0.154*
(ref. female)	(0.0929)	(0.0919)
Born in country	-0.153	-0.170
(ref.no)	(0.201)	(0.197)
Repr. Capacity		-0.0349***
(at start cohab.)		(0.00776)
Constant	1.976***	2.842***
	(0.209)	(0.307)
Observations	1,096	1,096
R-squared	0.013	0.030

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-22. Number of total biological children and age gap between partners. OLS by separate country: Lithuania. Women and men 60+ in a cohabiting relationship.

Lithuania		
	Model 1	Model 2
Age gap	0.0157	-0.00490
	(0.0141)	(0.0152)
Age gap^2	-0.00115	0.000268
	(0.00143)	(0.00147)
Born after 1940	-0.0323	-0.0464
(ref.1920-1940)	(0.0610)	(0.0610)
Male	0.0506	0.0489
(ref. female)	(0.0640)	(0.0634)
Born in country	0.151	0.158
(ref.no)	(0.107)	(0.106)
Repr. Capacity		-0.0284***
(at start cohab.)		(0.00651)
Constant	1.633***	2.348***
	(0.113)	(0.198)
Observations	1,266	1,266
R-squared	0.004	0.028

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-23. Number of total biological children and age gap between partners. OLS by separate country: Poland. Women and men 60+ in a cohabiting relationship.

Poland		
	Model 1	Model 2
Age gap	0.0315***	-0.00169
	(0.00827)	(0.00836)
Age gap^2	-0.00213***	0.000349
	(0.000745)	(0.000698)
Born after 1940	-0.0115	-0.0162
(ref.1920-1940)	(0.0496)	(0.0488)
Male	-0.108**	-0.0978**
(ref. female)	(0.0455)	(0.0446)
Born in country	0.0713	0.0774
(ref.no)	(0.0933)	(0.0904)
Repr. Capacity		-0.0460***
(at start cohab.)		(0.00424)
Constant	2.262***	3.365***
	(0.0996)	(0.140)
Observations	3,312	3,312
R-squared	0.007	0.049

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-24. Number of total biological children and age gap between partners. OLS by separate country: Czech Republic. Women and men 60+ in a cohabiting relationship.

Czech Republic		
	Model 1	Model 2
Age gap	-0.00912	-0.0246
	(0.0146)	(0.0149)
Age gap^2	0.000877	0.00167
	(0.00106)	(0.00114)
Born after 1940	0.108*	0.102*
(ref.1920-1940)	(0.0601)	(0.0593)
Male	-0.0192	-0.0151
(ref. female)	(0.0605)	(0.0596)
Born in country	-0.209	-0.215
(ref.no)	(0.150)	(0.149)
Repr. Capacity		-0.0217***
(at start cohab.)		(0.00497)
Constant	1.961***	2.508***
	(0.158)	(0.193)
Observations	1,106	1,106
R-squared	0.007	0.030

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D-25. Number of total biological children and age gap between partners. OLS by separate country: Sweden. Women and men 60+ in a cohabiting relationship.

Sweden		
	Model 1	Model 2
Age gap	0.0111***	0.0142***
	(0.00325)	(0.00400)
Age gap^2	0.000527	0.000254
	(0.000444)	(0.000450)
Born after 1940	0.114***	0.114***
(ref.1920-1940)	(0.0160)	(0.0160)
Male	0.0655***	0.0669***
(ref. female)	(0.0204)	(0.0206)
Born in country	-0.111*	-0.111*
(ref.no)	(0.0614)	(0.0614)
Repr. Capacity		0.00366*
(at start cohab.)		(0.00200)
Constant	0.0443	-0.0468
	(0.0523)	(0.0661)
Observations	1,323	1,323
R-squared	0.051	0.054

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7. Conclusions

7.1 Outline of the study

This thesis set out to investigate the patterns of age differences between partners and the mechanisms behind them. Its motivation originates from the observation that, in the majority of heterosexual couples, men are the older partner. Accordingly, gender and age play a key role in mating selection mechanisms on the marriage market. We know from sociological theory that age differences are the outcome of the age preferences of women and men and their age structure of opportunities. As shown by previous empirical research, the age preference of an individual will vary according to their gender; men prefer women that are younger than them and women prefer men who are older or of the same age. However, there remains little empirical research on the reasons for gender differences in age preferences. With regard to the age opportunity structure, this varies according to the age of the individual on the marriage market. The older an individual is, the more likely they are to find a younger partner. Conversely, the younger an individual is the more likely they are to find an older partner. In this thesis, I have focused on the mechanisms influencing the age preferences of women and men. In this task, I have continuously considered the role played by age of women and men at the time of starting cohabiting relationships or marriages. The overarching question was why, in the majority of couples, do men have younger partners and women older ones?

The study adopted a multidisciplinary perspective and a macro-micro approach. Each chapter focused on specific factors influencing age differences. Firstly, it was recognised that marriage markets are embedded in societal settings with specific socio-economic and gender systems. Thus, the first two empirical chapters investigated how age differences change(d) over space and time (chapter 3 and 4). Secondly, there are gender-specific mechanisms at the individual level, which influence the age preferences of women and men. Therefore, in chapters 5 and 6, I investigated the hypotheses that women seek older men because of the latter's Socio-Economic Status (SES), and that men seek younger women because of the latter's higher reproductive capacity. Following these hypotheses, I tested whether age differences vary with the level of education of women (chapter 5) and with the intention of men to have children (chapter 6). Below I summarise the findings of each chapter, discuss their implications for the theory on mating selection, and discuss ideas for future research together with some general reflections on the topic.

7.2. Summary of findings

Below, I summarise the main research questions and findings of each chapter and discuss some conclusions drawn from the study. The results of all chapters are also summarised in table 7-1.

Table 7-1. Summary of findings

Chapter	Level	Aim	Findings
3	macro	Investigating the importance of societal factors	• Socio-economic development (HDI) and women empowerment (% female employment and female seats in parliament) are negatively associated with the share of hypergamous marriages. • Structural factors correlated with shares of hypergamous marriages: negative correlation with gender gap in life expectancy[47], legal age at marriage and gender ratio of population; positive correlation with the female age at marriage.[48]
4	macro	Describing the development of patterns of age differences and link to the history of marriage	• Shares of hypergamous, homogamous and hypogamous marriages vary by marriage order. In general: • Hypergamy with large age gaps decreased • Hypergamy with small age gaps stable • Homogamy increased • Hypogamy: did not increase • Among first marriages potentially important role of the increasing female age at marriage for the patterns of age differences.
5	micro	Investigating how age differences are affected by women's opportunities and constrains. The thesis of the "good provider" seeker	• College-educated women are less likely to cohabit with older partners • Women with children from previous relationship and foreign born are more likely to cohabit with older partners.
6	micro	Investigating how age differences are affected by men's reproduction instinct /children desire and their preferences for more fertile partners. The thesis of the "reproductive strategy"	• Single men who intend to have children are more likely to start a cohabiting relationship, especially hypergamous relationships • Men's fertility intentions positively associated with the age gap in the couple, but only for men who start the relationship at older age, and not for younger men.

[47] Female – male life expectancy
[48] % women who marry before age 21

In chapter 3, I investigated how age differences between spouses vary across the world and how the shares of hypergamous, homogamous and hypogamous marriages are associated with socio-economic development and women's empowerment on a country level. The results confirmed that the majority of marriages are hypergamous in each of the 96 countries analysed. We can say that, on average, grooms are the older partner in at least 50% of marriages worldwide, although this data is likely to be an underestimation. However, there is some variation by country and by macro-regions. For instance, on average, the highest share of hypergamous marriages are found in Africa and the highest share of hypogamous ones in the Caribbean and South American countries. Concerning the factors associated with age differences at country levels, hypergamous marriages are less common and, to a lesser extent, hypogamous marriages more common in countries with higher socio-economic development (HDI) and where women are more empowered (more women employed and higher participation in politics). Factors related to the age opportunity structure are also shown to be particularly important. In particular, the female age at marriage and the legal age required to marry. To conclude, the socio-economic development and women's empowerment are important but, even in today's most developed countries, there are relatively high shares of hypergamous and low shares of hypogamous marriages.

In chapter 4, I showed the patterns of age differences between spouses in first and second order marriages in Italy between 1870 and 2015.[49] I was able to identify whether, and how, the shares of marriages with "larger" or "smaller" age gaps[50], and their trends, differed between: (a) first and second order marriages; and, (b) among second order marriages, by the gender of the re-marrying/single spouse. In addition, I discussed the patterns of age differences among first marriages in light of the changing age at marriage of the spouses. When considering all marriages (regardless of the civil status of the spouses), the spouses are more likely to be hypergamous or homogamous, and only a minority of them are hypogamous in any time period considered. Marriages are most likely to be hypergamous when men remarry a single woman. Conversely, marriages are most likely to be hypogamous when women remarrying a single man. However, men and women do not tend to remarry younger partners at the same rate. Approximately three quarters of remarriages of men with single women are hypergamous (the majority of which have large age gaps). However, just approximately one quarter of remarriages of women with single men are hypogamous (the majority of which have small age gaps). On

[49] First marriages are those between single spouses, second order marriages are those where at least one spouse was previously married.
[50] Larger age differences are defined as 2 or more age categories; smaller as a difference of 1 age category.

average, about one third of marriages of any types (first or second order), with the exception of men remarrying single women, are homogamous.

Interestingly, the trends of homogamy and hypergamy were similar across all types of marriages. Homogamy increased across the 20th century and, among most marriages, afterwards. Hypergamous marriages did decrease, but only those with large age gaps. The share of hypergamous marriages with small age gaps remained rather stable for all kinds of marriages. Finally, the positive trends of hypogamy in the last decades of the 20th century, found in other countries, was only confirmed among first marriages. However, overall the shares of hypogamous marriages remained minimal and, importantly, the trends appeared to have followed a small U-turn, but rather flat, trajectory in the longer-term perspective (about 8% in 1870 as well as in 2015). Furthermore, hypogamy decreased among all other types of marriages. This is especially true in the case of women remarrying single men (among which, on average, hypogamous marriages are more substantial when compared to other types of marriages).

Finally, I looked at the distribution of hypergamous, homogamous and hypogamous first marriages by the age group of the spouses in 1870 and 2015 and discussed it in light of the postponement of marriage (i.e. older age at marriage in 2015). Homogamy rose across all age groups of brides and grooms, which suggests a change in age preferences. These trends were probably reinforced by the changed age opportunity structure of the spouses. This is because of the parallel increase in age at marriage (postponement) to an age where homogamy is more likely. This is not the case for hypergamy and homogamy. Hypergamy seems more common across all age groups of brides in 2015. Coupled with increasing male age at marriage, this explains the persistence of hypergamy (with smaller age gaps). However, this increase may have been tampered by women's postponement of marriage to (older) ages where hypergamy is less common. Postponement by women also explains the (recent) positive trend in hypogamy. This is because hypogamy is necessarily more common when women marry at older ages. However, hypogamy did not increase among any of the age groups of the brides. Therefore, its trend seems to be explained by the postponement of marriage by women, rather than by a change in preferences. Overall, the results suggest that the general trend is towards smaller age gaps, rather than towards more hypogamy.

In chapters 5 and 6, I moved the analysis of the thesis to the micro level by testing hypotheses on the origins of women's preference for older men and men's preference for younger women (both corresponding to preferences for hypergamy). I examined how the preferences of women

may be affected by their opportunity and constraints, in particular their education level. In contrast, I assumed the preferences of men to be affected by their "reproduction instinct" and, more concretely, their intention to have children in the near future. These hypotheses were schematised in the directed acyclical graph shown in the introduction (Figure 2-1).

In chapter 5, I tested the hypothesis that women seek older men because the latter signal themselves to be "good providers". Accordingly, women with more resources and less constraints would be less likely to have older partners. Across four European countries, I looked at women's education, employment status, place of birth and children from previous relationships, and their likelihood of being in cohabiting relationships with older/younger/same age partners (or remaining single). The results show that college-educated women are less likely to be in hypergamous relationships, compared with lower-educated women. In addition, women who had children from previous relationships and who were born abroad were more likely to be in hypergamous relationships.[51] The results partly confirmed the thesis that women seek "good providers" and, consequently, older men. In fact, women with higher education are considered to be more resourceful, to have higher socio-economic status and opportunities on the labour market. Therefore, a higher-educated woman might be "freer" to choose a partner independently from his ability to be a good provider. Conversely, a woman with children form previous relationships may be more in need of a good provider, from both a psychological and material point of view, and might have to compromise on other characteristics of the partner. The case for foreign-born women is more debatable and should be the subject of further investigation, where it is possible to distinguish at least between the various places of origin. The results are stronger and more consistent (when tested separately by country) in the case of education.

Finally, in chapter 6 I tested the hypothesis, borrowed from evolutionary psychology, that men's mating selection mechanisms reflect a specific reproduction strategy. Consequently, men seek younger women because the latter have a higher "reproductive capacity". The empirical analyses were divided in two parts. In the first part, I focused primarily on the associations between the intentions of having children of single men and their likelihood to start hypergamous relationships as well as the age gap in the couple they form. In the second part, I investigated the association between the age gap between partners and their fertility outcome (number of children at the end of the individuals' reproductive careers). The results of the first

[51] However, men born abroad are also more likely to be in hypergamous relationships and therefore its effect is not simply conducible to women's constraints.

part of the study showed that single men who intend to have children are more likely to start cohabiting relationships in general, specifically hypergamous ones. Furthermore, there is a positive association between men's fertility intentions and the age gap in the couple, but only among older men. In the second part of the study I showed that, concerning the relationship between the couples' age gaps and their total number of children, the number of children appears to be slightly higher among hypergamous couples, but only when there are small age gaps. In fact, the number of children does not increase with increasing age gaps when the partners are more than two years apart. All in all, seeking younger partners might be part of a reproductive strategy for older men who wish to have children. And yet, being more than two years older than the partner does not seem to be the best reproductive strategy for men. Rather, it might be a necessity for men wishing to have children at an age when coetaneous women would have passed menopause. In short, to intend to have children does not fully explain preferences for younger women.

The findings at the macro level are consistent with those at the micro level. There are less hypergamous marriages in countries that are more socio-economically advanced and where women are more empowered (chapter 3). At the micro-level, women with a higher education level are less likely to be in a relationship with an older man (chapter 5). In Italy, hypergamy decreased and homogamy increased among all marriages with the exception of those where men remarried single women (chapter 4). One explanation for this exception is that men tend to remarry at an older age, compared with men at their first marriage. As shown in chapter 6, among men marrying at older age, those who intend to have children are more likely to find younger partners and with a large age gap. This may be one of the reasons why hypergamy is hard to change among older, remarrying men.

7.3. Implications for the theory

The findings have three major implications for the theory on mating selection. Firstly, they show that the societal settings, and in particular the gender opportunities and gender roles in the society, affect individuals' chances on the marriage market. Secondly, the results also confirm the importance of the structure of opportunity, in this case the age structure of opportunity. Thirdly, this study shows the importance of individual predispositions, specifically towards children, for their outcome on the marriage market.

The results suggest that gender opportunities and gender roles prevalent in the society affect individuals' chances on the marriage market by affecting their preferences and expectations.

Hypergamy is lower in societies where the level of socio-economic development is higher and where women are more empowered. Lower educated women and women with children from previous relationships are more likely to have older partners. These findings suggest that women's "preferences" for older men reflect the lack of own resources and opportunities, as well as their role of primary carer in the family. Consequently, some women "prefer" older partners because they "need" good providers. Moreover, a higher level of socio-economic development and women's empowerment may directly affect the expectations of individuals from their partners. Where the social and economic roles of men and women are more equal and gender attitudes more egalitarian, individuals may want to reproduce such gender equal relationships and egalitarian attitudes in their romantic relationships and family. Partners closer in age are more likely to have "fairer" relationships, where women and men have similar rights, responsibilities and bargaining power. Therefore, women and men may prefer partners close in age as they prefer, or even expect, egalitarian roles in the family.

With regard to the importance of the structure of opportunity for mating selection, we have seen that the age at marriage is of utmost importance for age differences between partners. We know that an individual's chance to be with older (younger) partners decreases (increase) according to their age. The role of female age at marriage seems particularly relevant. We have seen this in all chapters: hypergamy is less common in those countries with lower shares of young brides (chapter 3); trends of hypergamy decrease as women's age at marriage increases (chapter 4); women that start cohabitation at an older age have a lower chance to cohabit with older men (chapter 5); and, younger women are more likely to be with older men, especially if the latter intend to have children (chapter 6). One implication for the theory is therefore that the structure of opportunities is confirmed to be one of the most relevant determinants of the outcomes of the marriage market.

The most original contribution, and perhaps unexpected, of this thesis is that it shows the importance of individuals' children predispositions for their outcome on the marriage market. In chapter 6, I analysed the effects of single men's fertility intentions for their chances of hypergamy. It turned out that single men who intend to have children not only have a higher chance of starting relationships with younger partners but have a higher chance of starting relationships in general, when compared with men that do not intend to have children. These findings clearly speak for the need to consider the agency of the actors on the marriage market, and their dispositions and desires. Individuals may seek partners for specific reasons, and the desire for children or for family is one of them. Other drivers may be the desire of company,

sex or domination. The factors driving individuals' search for partners are likely to influence the type of partners they seek (mating selection criterion) and find. One implication for the theory is therefore that the role of specific predispositions, even latent, of (single) individuals on the marriage market deserves more attention when explaining mating selection processes.

7.4. Limitations of the study and ideas for future research

It is important to acknowledge the various limitations of this study and the opportunities that exist for future research on the topic. Firstly, the findings of this thesis would benefit from the replication of the analyses using new sources of data. This would allow the use of new definitions of age-differences (expanding the findings of chapters 3 and 4), comparison with the mechanisms at play on the market for marriages and cohabitations (expanding the findings of chapters 3 and 4), and incorporation of the study of family dynamics into that of mating selection (expanding the findings of chapter 6). Secondly, the findings in chapters 3, 4 and 5 call for more comparative research on the topic of mating selection to highlight similarities and differences in different countries. Finally, and relatedly, future research may make use of an updated research design to investigate the interplay between the macro and micro levels of society. The single chapters of the thesis showed the importance of both levels, but specific interconnections may be fertile ground for further exploration. Below I discuss the above areas for improvement in greater detail as well as further ideas for future research.

One limitation in the results obtained in chapters 3 and 4 is related to the type of data used, and the consequent definition of age-differences. In a similar fashion to previous research on age differences, the sources of data only allowed for calculating differences in age-categories of the spouses, but not exact age gaps. Where possible, I replicated the results with other data (see chapter 4) and validated the results. It would be useful to replicate the analyses of these chapters using other sources. There is always a trade-off between the level of detail of the data and the number of cases, or length of time, that is possible to analyse with the data at hand. For the study in chapter 3, the data used allowed a comparative study of 96 countries, however, other types of data is not available for so many countries. Future research might focus on a smaller number of countries in order to produce more detailed analysis. For the study in chapter 4, the data used allowed me to conduct the analysis of Italian marriages over a very long period of time. Future research might focus on a shorter period of time to allow for the use of more detailed data. In chapters 5 and 6, I have defined hypergamy and hypogamy as an age-gap of 4 years or more, in line with previous empirical literature. These definitions are appropriate

because I am concerned with age differences that may impact gender relations in the family. Should other scholars be interested in non-normative behaviour, the research could focus on very large age gaps. One possibility for future research could be to compare the findings among couples with small and larger age gaps, to test whether the mechanisms at play differ, and explore why.

One further limitation of chapters 3 and 4 is that they refer to marriages only. While marriages are important, it would be interesting to replicate such analyses on cohabitations, to compare the results obtained studying marriages and cohabitations. In fact, the literature on mating selection does not often distinguish, nor compare, the mechanisms at play on the marriage market that lead to the two forms of union.

The findings in chapter 6, on a different note, would benefit from replication based on new longitudinal data, allowing the improvement of the research design. In particular, it would be useful to integrate the two-step analysis that I conducted in the chapter in one, multi-process, study. The findings supporting the evolutionary theory could be further tested by researching the life-course of men, linking their intentions to have children when single, to their cohabiting relationships (in terms of age differences) and final fertility outcomes. Furthermore, ideally, the analysis should be extended to women, in order to test whether starting a relationship with younger partners might be a (successful) reproductive strategy for women who intend to have children.

One further development of the research would be the integration of the mechanisms at micro and macro level. This could consist of replicating the research in a particular country with contrasting societal settings. For example, the findings in chapter 5 showed that women seek partners that may be good providers. This study focused on 4 countries and in one of them, Sweden, the role of women's education was particularly small, compared with the other countries. Further comparative research might expand this investigation by researching whether the role of opportunities and constraints vary in countries according to the attitudes towards gender roles prevalent in the country.

More generally, future research might explore the effects of the interplay of factors at the macro and micro level for the patterns of age differences. For instance, multilevel models can be used. This would represent a methodological advancement in the research, mirroring a development in the theoretical framework adopted. It is outside the scope of these conclusions to discuss possible theoretical developments. However, further reflection on the findings might lead to an

updated theoretical framework, leading to the application of the theory of macro-micro dependency in social life (Coleman, 1990) on mating selection mechanisms.

While I have discussed how the research conducted in this thesis may be further developed, below I would like to outline further ideas for alternative strands of research on the topic. Firstly, in future research it could be worth exploring new definitions of age differences that do not make use of the standard measurements of time and years. For instance, differences in the "biological age" of the partners. Recent medical research suggests that people age at different speeds, depending on their specific genes (Belsky, 2015). Therefore, it would be interesting to study age differences considering how specific gene-sequences affect age. While this may be important, such a study would be complementary to studies based on chronological age. The regularity of the patterns of chronological age differences leaves no doubt that age is a very important criteria in mating selection.

Another topic that merits further investigation is the association between education and age differences. I have discussed how highly educated women have a higher socio-economic status and may postpone cohabiting relationships. Doubts remain as to which mechanism drives the patterns of age differences of higher and lower educated women and men: is it material opportunities (socio-economic status, labour opportunities, income or institutions effects), or specific gender attitudes, leading to the conscious (or unconscious) renegotiation of gender roles in romantic relationship? Further research should address this question.

Finally, future research may wish to focus on the exceptions, rather than the rule. That is, on hypogamous couples. Research focusing on youth could help us investigate young boys' relationships. It is possible that hypogamous encounters happen more often than we know (among young men), but they don't make it to the stage of a committed relationship. If this is the case, survey data based on cohabitations does not fully capture age hypogamy. Such a study could be complemented with qualitative, in-depth interviews exploring the role of social norms and age norms in the success of romantic relationships. The pioneering work of couple-therapists Derenski & Landsburg in 1981 highlighted that hypogamous couples did feel like black sheep, at times. It would be fascinating to investigate whether, in contemporary societies, this is still the case.

7.5. What can we expect in the future?

From the study, we can also speculate on what we can expect to see, in the near future, in terms of age gaps between couples. Can we expect to see less hypergamous couples, at least in the

developed world? In terms of societal factors, the negative trends of hypergamy will be supported by increasing egalitarian gender attitudes together with more equal gender roles and gender relations. At the level of the individual, both women's and men's preferences for hypergamous relationships may decrease. Increasing opportunities for women in education and the labour market may free women from the need for partners that are good providers. The increasing use of assisted reproductive techniques may also make men less dependent on woman's age for reproduction purposes.

One question is how persistent hypergamy remains, that is, to what extent it might decrease. This depends on many factors beyond men's preferences for younger women. As discussed, hypergamy results only partially from reproductive purposes. Other authors have linked men's preferences for younger women to the double standard of ageing (Cain, 1993; Sontag, 1982). Accordingly, the standards of beauty for women are strictly related to their age (the younger women are, the more beautiful they are considered to be). Therefore, men seeking beautiful women will seek young women. We might expect this to change with increasing gender egalitarian attitudes. For instance, there appears to be an increase in the (sexual) interest of men towards mature women (and vice-versa), as suggested by the advent of recent terms such as of *cougars*, *milfs*[52] and the like (Alarie, 2019; Alarie & Carmichael, 2015). However, the very labels attached to mature women suggest this is still a stigma associated with such taste, and such women.

Furthermore, the future trends of age at marriage will affect the patterns of hypergamy, homogamy and hypogamy. As opportunities for women continue to expand, their age at marriage will keep increasing (probably up to a certain limit). This will make hypergamy less likely by changing the structure of opportunities for women on the marriage market. Furthermore, in comparison to women, men are more likely to have second and further unions. Thus, they are more likely to have these types of unions at an older age and, consequently, with younger partners. If the number of women who have second and third unions increases, we can expect hypergamy to decrease among these unions.

More importantly, it is not clear whether the decrease in hypergamy will correspond to an increase in homogamy and/or hypogamy. The study of age differences in Italy (chapter 4) showed that increases in hypogamy have been minimal in the recent past and almost negligible

[52] Partly derogatory names used to refer to mature women who "chase" younger men and sexually attractive mothers.

from a long-term perspective. Can we expect anything different in the near future? The study in chapter 5 suggests that women in hypogamous and homogamous relationships do not differ in terms of their socio-economic characteristics. However, one reason why the share of hypogamous relationships cannot rise to substantial levels, by which I mean levels equal or higher than hypergamous relationships, is the age of men at marriage. Hypogamy is more likely among young men, as hypergamy is more likely among young women. Consequently, if men's age at marriage was to decrease, hypogamy would increase. However, this is unlikely to happen. In comparison to women, men tend to start committed relationships (marriage or cohabitation) at an older age. The most likely scenario for the near future is that women and men start cohabiting at a similar age. This might contribute to a decrease of hypergamy, but not necessarily to an increase of hypogamy.

In addition, homogamy is also are reinforced by the effects of institutions. Our society is so strongly age segregated (Hagestad & Uhlenberg, 2006) that it is much easier for individuals to meet partners of similar age than younger or older ones. Although seeking or meeting partners of different age might be facilitated by online dating, the "offline" marriage market will still be affected by the way social institutions are organised around age. For all these reasons, a substantial increase of hypogamous relationships is not very likely, at least in the near future. On the contrary, homogamy is more likely to expand. Theory on matching maintains that humans have the tendency to look for partners that are similar to themselves. Age homogamy may be one outcome of this tendency, but it is also due to the mentioned institutions effects. One thing is certain: any change in the patterns of age differences will take time to be revealed. In the case of Italy, we have seen a substantial change in the patterns of age differences between spouses. But this change took place over many decades.

To sum up, this thesis showed that age differences between partners result from a complex interplay of societal and individual factors. This demonstrates that, even our romantic life, choices are not exempt from social forces. Brigitte Macron is half-right, "*Times are changing. There are those who are on the train of change, women are there with you, like you, you've almost all understood, gentlemen.*" However, only time will tell whether her prediction that those "*still on the platform…will soon get on the train.*"

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For chapter 4 I used data available from the archives of the Italian Institute of Statistics (ISTAT), see:
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For chapters 5 and 6 I used data from the Generation and Gender Survey. see Gauthier, A. H. et al. (2018) above or visit the GGP website (https://www.ggp-i.org/) for methodological details. DOIs: 10.17026/dans-z5z-xn8g, 10.17026/dans-xm6-a262.

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