Age Differences in Unions – Continuity and Divergence in Sweden between 1932 and 2007

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This study examines the evolution of age differences within unions in Sweden in the 20th century. Registry data on parents (1932-2007) is used together with data on spouses (1968-2007) to follow the evolution of partner age differences in marriages and childbearing unions. Trends in means and changes in the distribution of age differences over time are computed. This study discusses the importance of theoretically and methodologically distinguishing between age heterogamy and age hypergamy. Changes in both the degree of absolute age heterogamy and female age hypergamy are examined. Results show that age differences in unions show great continuity over the century with a long decline in age hypergamy and an u-shaped pattern in age heterogamy. This study finally reveals new diverging patterns of increasing age hypergamy for unions with at least one foreign born partner in the last 30 years.

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Age dissimilar unions are common across the world. In all societies men are on average older than their female partners. Though age differences between partners in opposite sex unions have broad demographic and societal consequences on patterns of widowhood, the partner market and gender relations, they have been neglected in research. Women are on average 2-4 years younger than their partners in the west, and this pattern remains the norm in all developed countries. Age differences in unions between men and women have decreased slowly for the majority of the last century, but recent research indicates more ambiguous trends the last decades (Qian 1998; Van Poppel et al. 2001; Esteve et al. 2009).

This article is the first study examining trends in Sweden over time, and makes several contributions to the general study of trends in age differences in unions. The study is based on monthly data on marriages and childbirths, providing detailed information on age of partners and their internal age difference. Unlike most previous research on couple age differences the study is not limited to married couples. Married couples represent an increasingly selective group of couples in most western countries (see e.g. Lesthaeghe 1995), particularly in Sweden. Cohabiting couples with children are included by using data on first parenthood regardless of civil status simultaneously with data on marriages.

A main point of the paper is that it is important to conceptualize the methodological and theoretical difference between age difference between partners indifferent of sex and the gendered age gap. The former I will refer to as (absolute) age heterogamy. I will call the latter (female) age hypergamy, the degree to which unions are characterized by men on average being older than women. Age heterogamy will be used throughout the paper in reference to absolute age difference (male age-female age) between two partners, while the term age hypergamy will be used for the degree of gendered age gap, the degree to which the man is older than the woman (male age-female age). To understand the changes in age differences in unions, it is necessary to follow the separate development of both trends over time.

Increasing age heterogamy in the last decades has been shown in the US (Qian 1998), Spain (Esteve et al. 2009) the Netherlands (Van Poppel et al. 2001) and, in this study, Sweden. This study will argue that these changes are not consistent with a view of age heterogamy associated with non-egalitarian unions. The degree of age heterogamy is not viewed as an indicator of egalitarianism and gender equality in a relationship. Instead, increasing age heterogamy is interpreted as a weakening of societal age norms on unions, and plausibly loosely associated with recent individualization of family demographic behavior sometimes
referred to as the second demographic transition (Van de Kaa 1987). Finally the article reveals new diverging patterns in partner age differences for unions with at least one foreign born partner. Unions with two foreign born partners currently exhibit mean age differences that are more than twice as high as for couples where both are Swedish born. Possible explanations for these new developments are discussed.

This study is based on Swedish couples and parent dyads based on all 1st births and all 1st marriages in Sweden between 1932 and 2007 (1967-2007 for marriages). Results in this study are presented as age differences in months for all births/marriages over one year for the relevant subpopulation. Means and quantiles are calculated using the difference between male age and female age. The degree of absolute age heterogamy and the degree of age hypergamy will both be analyzed.

The first section of this study will discuss different perspectives on consequences of partner age differences followed by empirical trends in various countries. This will be followed by a novel interpretation of recent changes in age hypergamy and heterogamy. Finally a section on data and methods will then be presented after which results will be shown and discussed.

**Consequences of age dissimilar unions**

An age gap between a woman and a man in a relationship has important implications that will often influence the rest of the life course for both partners (Presser 1975). Researchers have pointed at age hypergamy as a key factor explaining female disadvantage in public life (Bozon 1991; Rothstein 2010), and as one of the most important aspects of the partner/marriage market (Veevers 1988). Age differences in unions have profound influence on many aspects of modern life, but continue to be neglected by demographers and sociologists.

Age hypergamy have several important societal consequences. First it has implications for gender inequality in society by influencing both the power dynamics in a relationship and by creating gendered incentives for investments in career, parental leave and child care. Secondly they impact the dynamics of the partner/marriage market. A final important implication is that age hypergamy in conjunction with differential mortality by sex further reinforcing patterns of biased sex ratios as well as gendered patterns of widowhood and union formation at later stages of life.
Men exercise the majority of economic and political power in most societies in the world and cross cultural comparisons reveal an association between age hypergamy and gender inequality (Casterline et al. 1986). Age hypergamy has often been linked to limited female opportunities, inegalitarianism and patriarchy in social science literature. Age is associated with higher access to resources at ages of union formation in western societies for young and middle aged adults. Interestingly in a society where women have reached complete legal parity and wage/workplace equality with men, age hypergamy could still reproduce gendered inequality in economic life. As income and productivity increases with age, older men have a higher return from work than their younger female partners. For rational couples trying to maximize union utility, it would then make sense for men to invest more in their careers, while women invest in child care, even if the preference for work and family is equal for both genders.

Different age preferences are also an important factor shaping the partner market. It affects the availability of acceptable partners at different stages of the life course. The partner market consequences of typical levels of 2-3 years of age hypergamy shapes demographic imbalances affecting partner selection more than changing cohort sizes and differential mortality (Veevers 1988; Bhrolcháin 2008). Age hypergamy is also an essential underpinning on theories of a marriage squeeze caused by changes in cohort size (e. g. Akers 1967), which has been the focus of much demographic research. Another consequence of a female/male preference for age hypergamy, as observed in western countries, is the challenge for young men and older women to find a partner (Veevers 1988). While the early disadvantage of men is going to decrease over time as they age the situation of women is reversed with an optimum reached early in life followed by a continuous decline. This pattern will reinforce patterns of age hypergamy as in order to maximize their situation on the partner market women benefit from early and men benefit from late union formation.

Partner selection in early adulthood has important consequences later in life. While health and mortality related differences of a few years might be relatively unimportant at early and middle stages of life, the combination of differential mortality and age hypergamy reinforce each other. The result is a very high probability of women in a union outliving men in western societies. Age hypergamy and differential life expectancy in Sweden are both important in shaping patterns of mortality, widowhood and living arrangements at older ages (Charles and Sevak 2005). Age hypergamy not only shapes relations between partners, but may also be important for the relationship between children and their fathers and mothers at late ages. This
effect is further reinforced in age differences between children and grandparents, as the difference in age for a maternal grandmother and a paternal grandfather is affected by age hypergamy in two generations. Age differences in a relationship could also in itself cause differential mortality for the man and the woman (e. g. Drefahl 2010).

**Trends in Sweden and other countries**

Sweden is characterized by comparatively high gender equality, egalitarian and individualistic values regarding relationships and family formation, as well as an extensive individualized welfare system. Historically Sweden has been an early adapter of recent demographic trends in Europe (e. g. Popenoe 1987; Lesthaeghe 1995). Changes and trends in age differences of partners in Sweden could therefore be relevant to interpreting changes in other western countries.

Time series on age differences are available for several developed industrialized countries. Research on the evolution of age differences is available from the US (Qian and Preston 1993; Qian 1998), the UK (Bhrolchain 2005), Australia (Qu 1998), the Netherlands (Van Poppel et al. 2001), Spain (Esteve et al. 2009), China (Mu and Xie 2011) and a cross country comparison of developing countries (Casterline et al. 1986). Common for the studies is that they exclusively looked at age differences of spouses (an exception being Qian and Preston 1993; Qian 1998) and in many cases used broad age categories to determine trends and changes. Trends in western countries are overall remarkably similar and show comparable patterns of men in a union on average being 2-3 years older than women. Historical patterns are also broadly similar (Laslett 1977). Developments over time show a consistent but very moderate decline from somewhat higher levels in the first part of the century.

Variance in age differences is high in developed countries both now and in the past (e. g. Bhrolchain 2001). While mean age hypergamy has been remarkably constant and declining consistently, the degree of variance in age differences between partners (absolute heterogamy) has shifted through time. The highest degree of heterogamy is found in the early part of the 20th century. Throughout the 20th century homogamy typically decreased reaching a minimum around 1970 or somewhat later after which it has again increased.

Same-sex unions would provide a very relevant comparison group to opposite sex unions. Unfortunately data on homosexual registered partnerships and marriages are only very recently available due to new legal advances, and long time series are not available in
Swedish population registers. Therefore this study is limited to heterosexual unions. Same sex unions are overall characterized by higher age heterogamy than opposite sex unions in Sweden (cf. Andersson et al. 2006).

**Theoretical perspectives**

There is a tradition in the social sciences to attribute instrumentalist reasons for union formation to age dissimilar unions (Shorter 1975). Similarly unions with lower age differences are accordingly described as being based more on mutual affection. According to this tradition, with the rise of modernity and improvements in women’s status, unions have become more egalitarian, and increasingly age homogenous. Within such unions, mutual satisfaction and attraction is more important than economic and status concerns (cf. Giddens 1993). The evolution of age differences in unions is conceptualized as a linear process. This transitional process starts with the past, characterized by large age differences in marriage, inegalitarian relationships and instrumentalist reasons for union formation, and moves towards the present, characterized by gender equality and high age homogamy.

Age hypergamy has similarly often been characterized as a sign of male patriarchal dominance (e. g. Bozon 1991). Being the younger person in relationship has been thought of as being associated with a weaker bargaining position due to differences in access to resources and life experience. According to this theoretical view men dominate public and economic life and therefore accumulate resources over their life course at a faster pace than women. As women on average have a weaker economic position they have incentives to marry older and richer men to promote their social/economic position. Men are less concerned about the socioeconomic contributions of their partner and put a higher premium on age and appearance. As husbands are older and more established on the labor market than their wives, their incentive to invest in the labor market is greater and their incentive to sacrifice their career for childcare lower. A preference for age hypergamy would then help to maintain a patriarchal gender order in which men continues to dominate public life (Bozon 1991). According to this interpretation of age hypergamy this mechanism will be present to some degree in any relationship in which one of the partners remain older than the other partner.

Following in this tradition, age homogamy has often been interpreted as a measure of advances in gender equality and the status of women in a society (e. g. Shorter 1975; Atkinson and Glass 1985; Wheeler and Gunter 1987; Bozon 1991; Van de Putte et al. 2009). The (modest) declines in age hypergamy in the 20th century are in line with this broad
argument, as the period also saw a general rise in gender equality. Both individuals unions and societies in which men are significantly older than women are expected to be less egalitarian and exhibit more traditional gender roles than unions/societies with higher age heterogamy. Researchers have argued that non-age homogenous unions are associated with non-egalitarian relationships (Van de Putte et al. 2009), lower socioeconomic status (Atkinson and Glass 1985), marital instability (Bumpass and Sweet 1972) and domestic violence (Mercy and Saltzman 1989) even if this is disputed (Vera et al. 1985).

An interpretation of recent trends

In this study I will introduce a novel theoretical explanation for the emergency of a recent pattern of increasing age heterogamy. Traditional explanation of age heterogamy in unions fails to explain the recent increase in absolute age heterogamy than can be observed in many western countries since the 1970s and which will be examined in detail in this study. Recent changing patterns increasing age heterogamy have been noted in previous research, it has also been left without a theoretical explanation.

Declining age heterogamy in the first half of the century was primarily caused by a decline in the proportion of unions in which the man was significantly older than the woman. However, one can also observe a decline in this period for the small group of unions in which the woman was older than the man. The decrease in age heterogamy in most of the 20th century is consistent with the strengthening of societal norms on what constituted an ideal age difference in a (modern) marriage. Empirical studies show the growth of a patterns in which the husband is around 2-3 years older than his wife. Deviations from this ideal were increasingly rare and socially undesirable reaching a peak in the late 1960s. This is consistent with the decrease in age hypergamy and absolute age heterogamy until the 1970s which can be observed in this study and previous research on other countries in the west.

After 1970, in which absolute age heterogamy reached a minimum, the empirical trends on heterogamy is no longer consistent with the old pattern. While age hypergamy has continued to modestly decrease overall, age heterogamy has increased. The results of this study will show an increase in age heterogamy with a higher frequency of unions with women older than the man, and a small growth of unions with the man significantly older than the wife than in the 1960s and 1970s. Overall age heterogamy seems to be increasing not only in Sweden but similarly in the US (Qian 1998), Spain (Esteve et al. 2009) and the Netherlands (Van Poppel et al. 2001).
This new pattern of increasing age heterogamy is not compatible with a simple analysis of homogamy as an indicator of gender progressive values and egalitarianism, unless one also accepts a decline in gender inequality and a resurfacing of inegalitarian unions. Age homogamy, as associated with unions characterized by personal preferences like ‘romantic love’ and individual homogamy in factors like education or values, and negatively associated with instrumentalist reasons for partner selection, is hard to reconcile with empirical observations of increasing age heterogamy, unless one also argues there has been a decrease in unions characterized by mutual affection as compared to more instrumentalists reasons.

Beginning in the 1970s it becomes more important to theoretically disentangle the role of absolute age heterogamy and age hypergamy. I will argue that they are fundamentally different processes and while age hypergamy is plausibly associated with gender equality, the argument that age heterogamy is associated with egalitarian relationships is less compelling. In the past age hypergamy was the main cause of large age dissimilarities in unions, but as age hypergamy has declined it is today necessary to conceptualize the difference between absolute age heterogamy and age hypergamy.

As an alternative to interpreting heterogamy as an indicator of gender equality, I will argue that it should be interpreted more narrowly as a measure of the strength of norms regarding appropriate age differences in a union. The weakening of age norms governing unions, and the increase in age heterogamy can then be interpreted as a symptom of the general movement towards greater individual heterogeneity in family life since the 1970s. The increase in age heterogamy also appears at a similar period in Sweden as the increase of cohabitation as an alternative to marriage, increasing divergence of family forms, later establishment on the labor market, increase in divorce, and other common indicators of recent family change. The fact that the reversal in age heterogamy appears somewhat earlier in Sweden than in other western European countries is in accordance with the view of Sweden as a forerunner of recent demographic trends. This contrary interpretation of age heterogamy in unions is contrary to common interpretations in the social sciences. An argument of increasing age heterogamy among couples is in accordance with a possible weakening of age norms in all of society (Vera et al. 1985; Neugarten and Neugarten 1986).

A possible competing and less positive interpretation of the recent increasing age heterogamy is that is a side effect of a possible rise in assortative mating the last decades. Researchers have argued that men and women are gradually more likely to marry individuals with similar
characteristics like education (Schwartz and Mare 2005; Blossfeld 2009), even if the evidence from Sweden (Henz and Sundström 2001; Henz and Jonsson 2003) and other countries (Smits 2003) is ambiguous and possibly reversed. The increasing preference for homogamy in other aspects than age might have affected partners to be less concerned with age differences. If partners put a very high premium on homogamy in other traits than age the pool of available partners decreases and they are forced to be more tolerant of age heterogamy. To the author this mechanism, even though it might exist, appears to be less convincing than a general decrease in strengths of norms on age differences between spouses.

While most research on trends in age differences have focused on long term ideational changes demographic factors like age structure could also be important. Fluctuations in cohort size could produce large short term changes as people are unable to find a partner in their preferred age range and instead accept a partner with a non-ideal age. In this way even given constant preferences for a normative age differences and stable desires for singlehood, age differences could both increase and decrease. If there is a preference for age homogamy, large cohorts will increase unions with higher homogamy. In years with few partners of the same age there will instead be a shortage and homogamy will decrease. Given female age hypergamy, increasing fertility typically result in lower age differences 25 years later as there briefly is shortage on females on the partner market. Decreasing fertility would have the opposite effect. Bergström and Lam (1994) examined the effect of cohort fluctuations on the Swedish marriage market for the 1883-1942 cohorts and found that it had a significant effects even if long-term ideational changes also most likely took place.

**Divergence in age differences by country of origin**

Another finding of this study are rapidly diverging patterns for the growing group of unions which include at least one foreign born partner. The numbers of unions with one and two foreign born partners have increased dramatically the last fifty years in Sweden. The existence of a growing number of international marriages in Sweden in which a foreign born partner forms a relationship with a native Swede is established in the literature (Niedomysl et al. 2010). Results show high age hypergamy between native Swedish men and foreign born women. They also find large differences in the degree of age hypergamy based on the development level of the foreign partner’s country of origin. Previous research is, however, concerned with international marriage migration in a very narrow sense. In this study an
international union is defined as simply consisting of at least one partner born outside Sweden. Niedomsyl et al. looked at unions in which Swedish born persons with Swedish born parents form a union with a foreign born partner directly after the immigration of the foreign partner.

Different explanations could explain rising age differences in unions with foreign born partners observed in this and previous studies. Changes could be caused by changes in migration patterns. Over the study period, migration to Sweden has shifted from neighboring Nordic countries and labor migration from southern Europe, to increasing and fluctuating numbers of refugee migrants from low income countries. Alternatively the rise of age hypergamy could be due to an increase in the previously documented international marriage migration (Niedomysl et al. 2010) that could have grown to a larger share of all unions with foreign born partners. To try to differentiate between the two explanations separate analysis will be carried out following migrants from different regions, in order to examine if a changing selection of migrants can explain the divergent trends for unions with foreign born partners.

Data and methods

The data used in this study is a collection of Swedish administrative registers including all births and marriages. The primary data source is Swedish civil registration of births (available from 1932 to 2007, N=2 583 231) and marriages (available from 1968 to 2007, N=1 304 591). Year and month of the birth is available for both partners and is used to compute individual age differences for all first time parents and spouses in one calendar year. The population is further decomposed by country of origin. Both changes in mean and quantiles are examined over time. Data on parents is based on biological parents of a child and is limited to births that were the first birth of both parents. Marriages are similarly limited to first marriages for both spouses. Modern Swedish register data are constructed from the census of 1960. Information on births before 1960 is therefore constructed retrospectively and often selected on the parents surviving to this date even if in cases of mortality this information frequently was amended and is nearly complete after the late 1930s. To limit the population to 1st births/marriages is important as age differences for reformed unions differ significantly from first unions (Bhrolcháin 1992). One also avoids biases from the large changes in patterns and frequencies of union dissolution and post-dissolution union formation in the 20th century.
A large share of unions in Sweden consists of cohabiting couples as compared to marriages. Close to 60% of all births take place outside marriage but the vast majority takes place in stable cohabiting unions. A large proportion of cohabiting unions are eventually transformed into a married union. The low and fluctuating rate of marriage in Sweden makes it untenable to restrict this study to marriages exclusively, as they consist of a minority of all new unions. Using data on all 1st births is a reasonable way to examine age differences in unions capturing both childbearing cohabiting and married unions. Using data on births in general is a good approximation of unions involving children in Sweden. Between 5-10% of childbirths take place outside a stable unions with two parents (Thomson and Eriksson 2010).

Period fertility has varied frequently the last century in Sweden but cohort fertility shows little variation and a high stable proportion do eventually have children. Marriage propensities decreased steadily for most of the second half of the 20th century (Andersson and Kolk 2011) even though the 21st century has been characterized by a trend reversal (Ohlsson-Wijk 2011). Births out of wedlock decreased in the 1930s and early 1940s but have since then steadily increased with the rapid growth of cohabiting unions (Statistics Sweden 1999). The peak in marriages in 1989 was caused by changing legislation on widows’ pensions, giving incentives to large number of cohabiting couples to marry.

Figure 1 about here

Previous studies, have not explicitly simultaneously analyzed absolute age heterogamy and age hypergamy (find refs). In more descriptive studies on trends in age differences (e. g. Qu 1998; Bhrolcháin 2005) age hypergamy has typically been examined while in more theoretical guided studies, absolute age heterogamy has more often been the focus of research, typically either using measures on the force of attraction (e. g. Qian and Preston 1993; Qian 1998) and/or looking at the degree to which marriages overlap in 5-year age groups (e. g. Van Poppel et al. 2001; Esteve et al. 2009; Van de Putte et al. 2009). Despite the theoretical difference between looking at age hypergamy and absolute age heterogamy researchers have seldom argued explicitly for their choice, and rarely explored both aspects. When interpreting both outcomes and causes of age differences in unions, the degree of age heterogamy and the degree of hypergamy is often confounded.

This study will use a partly different approach than other studies on partner age differences. Trends in mean absolute age heterogamy and age hypergamy will be computed simultaneously using similar measures. By means of monthly individual-level data on age
quantiles (at 10%, 25%, 50%, 75% and 90%) will be computed yearly to follow changes in median age differences, as well as the change in the distribution of unions for each quantile. The different quantiles will be plotted as yearly line graphs that can be conceptualized as yearly series of box plots. In this way, trends for unions with an unusually older man or woman can be analyzed separately, and changes in heterogamy can be detected and analyzed separately from changes in mean age differences. Large changes in age dissimilar unions could go unnoticed by only studying trends in mean age hypergamy and heterogamy. Looking at changes for different quantiles is more informative regarding changes in age hypergamy than, for example, looking at only changes in the proportion of unions with an younger, older or similar aged partner (e. g. Van Poppel et al. 2001; Esteve et al. 2009).

Means and quantiles are analyzed and presented graphically to keep results directly interpretable, to fully utilize the detail of the data. Both in policy and in relation to academic research, presenting results on actual age differences in years is very informative. Using measures on harmonic means, occasionally referred to as ‘the force of attraction’, as an alternative (Schoen 1981), controlling for the sex and age structure of the population, has been considered but will not be used. I will instead standardize for age structure directly. A number of contour graphs, plotting male age, female age and number of events by partner age and year will also be presented.

Yearly cohort fluctuations could shape availability of partners and therefore predict short term changes in age heterogamy. Large cohorts could produce both increased age homogamy and increased age hypergamy given different assumptions on normative preferences. To examine the role of changing cohort sizes the proportion of men and women in common ages of union formation is divided by all men and women between age 20 and 35. The mean age of childbearing is computed every year (x) and a numerator consisting of men (with age x, x+1 , x+2) and women (with age x-2, x-1 , x) in surrounding ages is divided by all men and women between age 20 and 35. Mean age hypergamy for parents is then standardized against this ratio.

Late union formation is associated with larger age differences in unions (Bhrolcháin 1992), in particular for men (England and McClintock 2009). To examine how changes in age at union formation influence age differences in a union, mean age hypergamy is directly standardized by changes in the mean age of 1st birth/marriage for men and women every year, by country of origin. Year 2000 is chosen as a reference year. Age hypergamy is lower for younger
couples; therefore mean age hypergamy is divided the inverse relative mean age of 1st birth and marriage by year. A comparison between the standardized and non-standardized trend is helpful to interpret the possible influence of changing ages at union formation. Non-standardized trends will be used for most presented results in the paper.

The population is also decomposed by country of origin of the partners. Data on country of origin is shown starting from 1960, as the number of non-Swedish born individuals was too low to compute stable yearly age series before that time. Unions involving at least one foreign born parent increased rapidly in numbers over the study period. A small fraction of unions in the 1930s and 1940s included at least one foreign born partner, but after the 1970s they have consistently represented more than 25% of unions defined by 1st parenthood every year (Figure 2 & 3). Couples with two foreign born partners contribute slightly above 10% of all unions defined by 1st parenthood, and unions including either a foreign born man or a woman each represent a little less than 10% of all unions by the end of the study.

To examine possible explanations for the diverging patterns of couples with a foreign born partner the population is further decomposed by region of country of origin. The trend for couples from selected regions is also followed to understand the degree to which the changing origin of migrants to Sweden can explain recent changes. The regions looked at are; the Nordic countries, rich “western” countries (including western Europe, the US, Canada, Australia/New Zealand), ex-communist European countries including Russia and Central Asia, Latin America, the Middle East, Sub-Saharan Africa, East Asia and finally South and South East Asia.

Results

First an overview of overall age patterns for 1st births and 1st marriages will be shown using contour plots. Then main trends on age hypergamy are presented. Afterward changes in the patterns of heterogamy will be shown by examining changes not only in means but also for unions at all ranges of the distribution by using quantiles. Results on age hypergamy will then be compared with results on absolute heterogamy. The degree to which this is affected by
changing ages of union formation and the overall age structure will be shown. In a final section recent trends in couples involving foreign born partners are presented.

To show main patterns of age differences in unions contour graphs with male age on the x-axis, female age on the y axis and the density of unions on the z-axis are shown in Figure 4, presenting overall age patterns at 1st birth and 1st marriage in Sweden. Typical age differences in Swedish unions have been very stable both in the beginning, middle and end of the study. Men are on average 2 years older and this is true despite large changes in timing of 1st birth and 1st marriage. Over the entire study period age dissimilar unions are quite frequent; this is particularly for the early part of the century.

Figure 4 about here

Results for overall trends for hypergamy are presented in figure x. The overall trend since 1932 is characterized by great continuity in age differences in unions. Unions characterized by a somewhat older man appear to have been the norm for decades, with only modest changes over time. There is however also a clear pattern of a declining age gap between men and woman in unions in Sweden (table 3). Age hypergamy of 1st parents, measured as the mean of male age subtracted by female age, declined from around 3½ years in 1932 to around 2 years 2007. The difference for 1st marriages was largely stable from 1968 but declined from slightly above 2 years to slightly below 2 years at 2007 (table 3). Unions defined by marriage were characterized by lower mean differences than unions defined by a 1st birth at all years after 1968. Age hypergamy does however not decline continuously. Hypergamy decreases rapidly in the 1960s reaching a minimum in the 1970s after which it instead increases for a decade before it once again starts to decline. Age differences of spouses are overall very similar to those of parents. Interestingly age heterogamy is stronger in childbearing unions than in married unions. Age hypergamy is characterized by a long term secular decline. The main exception is the unusually low levels of age differences around 1970.

Figure 5 about here

Results examining changes in age hypergamy for the 10th, 25th 50th, 75th and 90th percentile over time are presented in figure 6 and 7. The median age difference is constantly lower than the mean illustrating the concentration of unions with rather small age differences. The picture for the other quantiles also shows that there was significant continuity over the time period for both parents and spouses. For parents, the difference between the 10th and 90th as
well as the 25th and 75th quantile was largest in the 1930s and reached a minimum in the 1970s, consistent with trends for the means at the same period. The 10th and 25th percentile with a relatively older mother appears to have been declining since the 1970s, while the 75th and 90th have remained largely unchanged. The moderate decrease in mean age hypergamy appears to mainly been caused by an increasing prevalence of unions with an older female. Unions with a significantly older father appear to have become much less common since the start of the century, while unions with a somewhat older mother were common 80 years ago, and have only recently reached the same prevalence. For marriages, the overall picture shows higher variation in age differences since the 1970s in a similar fashion as the trends for parents. The main change is an increase in marriages with an older woman.

Figure 6 about here

Figure 7 about here

Results on absolute age heterogamy are presented in figure 8. Measures on absolute age heterogamy are higher than measures on age hypergamy (|male age-female age| ≥ (male age-female age)). The overall pattern of mean absolute age heterogamy is similar to the measure of age hypergamy, but the trend in the last decades with stable or increasing age heterogamy, are substantially different from trends for age hypergamy. This is due to that, as revealed in analysis on quantiles (Figure 6 & 7), the age difference in unions with high age hypergamy are stable, while unions with an older woman is increasing. When looking at quantiles of absolute age difference (Figure 9), one can even more clearly observe the stability in absolute age heterogamy over time. Absolute age heterogamy was slightly lower in the 1970s but has been largely unchanging in the last decades, with only a small increase in highly age dissimilar unions.

Figure 8 about here

Figure 9 about here

To examine the effect of changing population structure, age hypergamy is standardized against cohort size for people in union formation ages (Figure 10). The peak in age homogamy in the 1970s is associated with large cohorts in ages of union formation. When comparing the age structure standardized and non-standardized population it is clear that
many changes in age hypergamy, including the 1970s, is associated with unusually large or small cohorts those years. The long term secular decline is unaffected by the standardization.

Figure 10 about here

Figure 11 about here

Mean ages of first birth and first marriage also saw large changes during the period. Average ages of first birth show a u-shaped pattern with mean age of first birth around 28 years in the 1930s and today, and reaching a minimum of around 24 years in the 1960s (Figure 12). The mean age of first marriage has increased steadily after 1968. As younger partners tend to have smaller age differences it is reasonable to examine the degree to which trends in age of union formation follow trends in age hypergamy. Therefore results standardized by female age of 1st birth/ are presented with 2000 as an index year. Standardization reveals that if taking into account the rising ages of 1st births, the decline in age hypergamy is more pronounced (Figure 13). This indicates that one reason for the small changes in age hypergamy observed in previous studies may be the fact that rising ages of union formation have counterbalanced other trends in society associated with reduced age hypergamy, such as decreased gender differentiation on the labor market.

Figure 12 about here
Figure 13 about here

Decomposing 1st marriages and 1st births by country of origin of the partners reveals an increasing divergence from patterns of Swedish born couples in the last decades (Figure 14 & 15). In the 1960s there were only minor differences between unions composed of Swedish/-non Swedish born partners. In 2007, the difference between couples with two Swedish born and no Swedish born partners was more than 2½ year. There has been a trend reversal in unions including one Swedish born and one non-Swedish born partner. Couples involving a foreign born woman and a Swedish born husband were characterized by the largest age difference in the 1960s but have afterwards converged and now trace the pattern of unions with two Swedish born partners. Unions in which only the man is foreign born are similar to unions with two foreign born partners. Age hypergamy for unions with one partner born outside Sweden is higher than unions with no foreign born partner but lower than in unions were both are born outside Sweden.
It is possible that changing selection of migrants to Sweden is the prime mechanism explaining increasing age hypergamy for unions with two foreign born 1st parents. To examine, these unions were further decomposed by region of the country of origin for the woman. As can be seen in figure 16 the trend within regions is overall quite flat seeing only minor changes. Only couples with a Middle Eastern woman are characterized by a rising pattern in line with the overall trend for the group. This strongly suggests that a changing composition of migrants is the main underlying reason for the rising average age difference in international couples. The foreign born population coming from countries with high age hypergamy (e. g. the Middle East, Sub-Saharan Africa and South Asia, cf. Casterline et al. 1986) has increased in proportion over time while unions with partners from Northern Europe have declined.

Discussion

The trends presented for age differences of couples are in many ways similar to time series available in other western countries (e. g. Qian 1998; Van Poppel et al. 2001; Bhrolcháin 2005; Esteve et al. 2009). Age hypergamy have been overall stable with a consistent moderate decline in age hypergamy for both marriages and unions with a child. Absolute age heterogamy was increasing until the 1970s and have after that increased moderately. This supports the importance of methodologically and theoretically differencing between age heterogamy and age hypergamy. Trends of heterogamy and hypergamy are tightly connected until the 1970s but after that the trends start to differ. The increase in age heterogamy it consistent with an explanation based on individualization of family behavior and a decline of age norms in unions. Trends for age hypergamy are consistent with interpretations of age hypergamy as associated with traditional family values that have been declining in importance in Sweden the last decades. Overall results support an interpretation in which the period since the 1970s have been characterized by higher levels of non-conforming family behavior consistent with theories on individualization of family behavior (Lesthaeghe 1995). It is however important not to confound a decrease in age hypergamy due to changing gender roles with gender-neutral changes in age heterogamy.
The development of unions defined by 1st marriage and 1st parenthood were overall similar. An interesting finding is the consistent lower degree of age hypergamy found in marriages compared to cohabiting unions going against interpretations of cohabitation being associated with non-traditional values on union formation. Unusually large cohorts entering typically ages for union formation most likely explain the dip in age heterogamy in the 1970s. Controlling for changing age structure shows that the availability of partners increase age homogamy. Standardizing for mean age of birth and marriage showed that increasing ages of union formation have contributed to higher age heterogamy. The decline in age hypergamy most likely would have been stronger without increasing ages of union formation.

Another result of the study is the increasing divergence in patterns of Swedish born and non-Swedish born couples. In particular unions with a foreign born woman or where both partners are foreign born have had rapidly increase in age hypergamy. Decomposing the foreign born population shows that diverging patterns over time are mainly a result of a changing selection of immigrants coming to Sweden, even if marriage migration could play a minor role. Changes in couples with one foreign born partner and couples with two foreign born partner gives insights in how gendered patterns of migration have changed in the last century. Current patterns in age hypergamy for international unions may have demographic implications for unions with non-native born partners. A high and rising degree of widowhood in couples involving a foreign born partner might emerge as a social concern in the future even if these implications most likely are many decades away. If these unions also are characterized by low female formal labor market activity, widows with a foreign background might emerge as group characterized by low pensions and socioeconomic situation in the future.

The results highlight several important areas for more research. Trends examining the role of age norms in unions over time are needed. Both research on preferences looking at overall importance of age heterogamy in and research examining preferred age differences over time are needed. Comparative research for other countries on changes in the distribution of age differences, studies incorporation cohabiting couples and studies examining both changes in hypergamy and heterogamy are also needed.

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References


Figure 1: Number of 1st births and 1st marriages in Sweden

![Graph showing number of 1st births and 1st marriages in Sweden from 1932 to 2007. The y-axis represents the number of events with a scale ranging from 0 to 350,000. The x-axis represents the years from 1932 to 2007. The graph includes two lines, one for 1st births and one for 1st marriages.]  

- **1st births**
- **1st marriages**

Figure 2: Distribution of 1st births in Sweden by country of origin of the parents

![Graph showing the relative frequency of 1st births in Sweden from 1932 to 2007. The y-axis represents the relative frequency ranging from 0 to 1. The x-axis represents the years from 1932 to 2007. The graph includes five lines, each representing a different category of parents' country of origin: both Swedish born, male Swedish born, female Swedish born, and neither Swedish born.]  

- **Both Swedish born**
- **Male Swedish born**
- **Female Swedish born**
- **Neither Swedish born**
Figure 3: Distribution of 1st marriages in Sweden by country of origin of the spouses

Figure 4: Contour plot of number of 1st births and 1st marriages by age of male and female in Sweden 1940, 1970 and 2007
Figure 5: Mean age hypergamy for Swedish born parents and spouses in Sweden

Figure 6: Distribution of age hypergamy by quantile for Swedish born parents in Sweden
Figure 7: Distribution of age hypergamy by quantile for Swedish born spouses in Sweden

Figure 8: Mean age heterogamy for Swedish born parents and spouses in Sweden
Figure 9: Distribution of age heterogamy Swedish born parents in Sweden

Figure 10: The ratio of men aged $x, x+1, x+2$ and women aged $x-2, x-1, x$ divided by all men and women aged 20-35, where $x$ is mean age of 1st birth that year

The ratio of men aged $x, x+1, x+2$ and women aged $x-2, x-1, x$ divided by all men and women aged 20-35, where $x$ is mean age of 1st birth and 1st marriage that year
Figure 11: Mean age hypergamy and heterogamy standardized for large cohort size in union formation ages for Swedish born parents and spouses in Sweden

![Graph showing mean age hypergamy and heterogamy standardized for large cohort size in union formation ages for Swedish born parents and spouses in Sweden.](image)

- Mean age hypergamy standardized by proportion in union formation ages
- Mean age hypergamy not standardized by proportion in union formation ages

Figure 12: Mean age of 1st birth and 1st marriage for Swedish born men and women

![Graph showing mean age of 1st birth and 1st marriage for Swedish born men and women.](image)

- Mean age of 1st birth, Swedish born parents
- Mean age of 1st birth, Swedish born spouses
Figure 13: Mean age hypergamy and heterogamy standardized for mean age of 1st birth for Swedish born partners

Figure 14: Mean age hypergamy for parents by country of origin of the partners in Sweden
Figure 15: Mean age hypergamy for spouses by country of origin of the partners in Sweden

Figure 16: Mean age hypergamy for parents with two foreign born partners by region of country of origin of the mother in Sweden