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Published in:
Population Studies: A Journal of Demography

Publication date:
2001

Document Version
Peer reviewed version

Love, Necessity and Opportunity: Changing Patterns of Marital Age Homogamy in The Netherlands, 1850-1993

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ABSTRACT

This article examines long-term trends in the pattern of age homogamy among first marriages, using vital registration data on all first marriages contracted between 1850 and 1993 in the Netherlands. After discussing the main mechanisms that could account for trends in age differences, we show that age differences between spouses have narrowed considerably between 1850 and 1970. After 1970 the trend becomes less clearcut.

INTRODUCTION

The level of social homogamy between spouses is often used to study changes in the bases of social stratification in modern societies (Blau 1994; Kalmijn 1991a, 1994). The basic assumption of these studies is that homogamy based on ascribed characteristics, like religion and parental social status, decreases in the course of the modernization process, whereas homogamy based on achieved characteristics, like educational attainment, increases.

Trends in *age* homogamy within marriage have received less attention than other forms of homogamy (Atkinson and Glass 1985; Mensch, 1986; Veevers, 1984; Wheeler and Gunter 1987; Knodel 1988, pp. 137-141; Shorter 1975, pp. 334-335). This is surprising, given that trends in age homogamy could be indicative of important social changes in our society. For instance, historians and sociologists alike have viewed the level of age heterogamy as an indicator of the nature of the relationship between men and women. Large age differences in favor of the male are thought to reinforce the husband's ability to demand submission from his bride during marriage (Ware 1981, pp. 92-93) and to lower the standard of marital sexuality (Mitterauer and Sieder 1982, pp. 126-127). The alleged trend towards smaller age differences between spouses has therefore been interpreted as indicative of a shift towards increasing gender equality (Atkinson and Glass, 1985; Hochstadt, 1982, p. 542; Veevers, 1984).

Shorter offers the best-known treatment of age differences between spouses. In his opinion (1975, pp. 253-262), the level of age homogamy is one of the criteria that can be used to judge whether sentimental considerations are of greater importance for mate selection than instrumental ones. Increasing age similarity points to romantic love, increasing disparity in age to instrumental

considerations. One reason for this is that, at the level of daily routines, romantic love means conversation and to feed this conversation people must have common experiences, a commonality to which the experience of belonging to the same age cohort contributes powerfully.

Shifts in the level of age differences between spouses can have multiple causes. In most accounts, shifts in age differences are linked to broad processes of industrialization and modernization that have swept Western societies during the last century and a half. However, as yet no systematic attempt to outline the relevant mechanisms has been made. Therefore, the *first* aim of this paper is to discuss the main mechanisms and to integrate them within a coherent framework. The *second*, and most important, aim is to further our understanding of the long-term changes in age homogamy by analyzing the pattern of change in age differences in the course of the process of modernization. For that purpose, vital registration data on all first marriages contracted in the Netherlands between 1850 and 1993 are analyzed.

CAUSES OF SHIFTS IN AGE DIFFERENCES BETWEEN SPOUSES

Empirical studies on trends in age differences between spouses are usually hampered by poor representativeness of the samples used (Atkinson and Glass, 1985; Hajnal, 1965; Knodel, 1988; Shorter, 1975; Veevers, 1986; Wheeler and Gunter, 1987) or by a focus on a relatively short period of time (Mensch, 1986; Ni Bhrolcháin, 1992; Smeenk, 1998). In addition, most of them use relatively crude techniques of analysis.[1] These shortcomings notwithstanding, the

[1] Smeenk (1998) clearly is an exception to the rule. She uses elaborate log-linear models to study trends in age differences between spouses between 1942 and 1994 in the Netherlands.

general picture that emerges from these studies is that of an increase in age homogamy between spouses during the last one to one-and-a-half centuries.

Kalmijn (1991b) offers a simple, yet elegant framework to integrate the potential causes of changes in age homogamy. According to Kalmijn, patterns of marital homogamy arise from the interplay between three social forces: the *preferences of the marriage candidates*, the *influence of the social group*, and the *structure of interaction opportunities*. The first factor focuses on the marriage candidates and suggests that age homogamy is the outcome of individuals searching for partners with valuable socio-economic and cultural resources in the marriage market. If economic and cultural preferences shift in a direction that increases the attractiveness of partners of similar age and decreases the attractiveness of partners who are much younger or much older, an increase in age homogamy results. The second factor focuses on the groups to which the marriage candidates belong and posits that age heterogamy follows from the social pressure that networks of family, friends and acquaintances exert on younger generations to marry members of a given age group. If these 'third parties' retreat from the marriage market (Kalmijn 1991b), and if marriage candidates themselves would have stronger preferences for a partner of about their own age than these 'third parties' have, an increase in age homogamy might be expected. The third factor emphasizes that marriage patterns depend on the opportunities people have to meet individuals with given characteristics. If the degree of age stratification of the marriage market increases, an increase in age homogamy between spouses is expected. Relevant developments affecting each of these three mechanisms will be discussed below.

Changing socio-economic and cultural preferences

The marriage market can be regarded as a place where unmarried men and women try to maximize status, income, affection and social confirmation by looking for spouses that are socioeconomically attractive and culturally similar (Kalmijn 1994).

Until well after the Second World War, marriage in most Western societies was based on the benefits that stemmed from the sex-specific division of paid and domestic labor in the household (Becker 1981). Men's socio-economic resources, income and social standing generally increased with age and therefore females had ample reason not to marry young males. The main socio-economic resources a woman brought to the marriage market were related to her capacity to perform domestic labor. These skills were acquired in the parental home relatively early in life. Other important female resources, such as energy and good health, and beauty and sexual attractiveness, were also already high at relatively young ages, and declined with age. Thus there were good reasons for men to prefer marrying a relatively young bride.

The increases in female educational attainment and labor force participation after the Second World War profoundly changed this process. Matching labor market skills of males with domestic skills of females became less important and as a result, both males and females may have become increasingly likely to use the same criterion, namely career prospects (Oppenheimer 1988), in searching for an attractive partner. This can result in stronger age homogamy, because it will often entail a postponement of the search for a partner by both sexes until the uncertainty about the career prospects of potential partners is reduced.

The greater economic independence of women could also have stimulated age homogamy between partners because it allows women to reduce the relative importance attached to socio-economic resources

in searching for a suitable match. As a result, females may prefer a partner with about the same level of socio-economic resources, thus a man of about the same age, rather than an older partner with greater socio-economic resources.

In contrast to the role of socio-economic resources, the role of cultural resources in spouse selection is based on a preference to marry spouses that are culturally similar (Kalmijn 1994).

Two developments in the cultural domain may have led to an increase in preferences for spouses of about the same age. First, the appearance of youth as a separate phase in the life course may have strengthened the cultural barriers between age cohorts and thus increased the preference for a partner of about the same age (Ariès 1982, p. 19; Mitterauer, 1992, pp. 226-229; Modell 1989, pp. 85-88, 224-225). The relatively short-lived nature of cultural fashions and tastes in the youth scene, as well as the relatively rapid changes in the value-orientations of young people (Easterlin and Crimmins 1991), also contribute to large cultural differences between people of different ages, and thus to a preference for age peers.

A second change in the cultural sphere concerns the decreasing authority and the lessening of the cultural resources of age seniors in comparison to younger men (Mitterauer and Sieder 1982, pp. 65-66; MacFarlane 1986, pp. 135-140). Linked to this, the notion that a husband was his wife's moral and spiritual superior, — a notion which attributed a positive aura to older men — lost much of its power (Bozon 1991). The demand for equal rights for women and men in morals and law made an end to the acceptability of large age differences between spouses, as these increased the chance of power differences between husband and wife (Braun 1992, pp 47-59). The women's movement with its stress on political and legal equality began around 1860 and remained influential until the present day (Jansz 1990, pp. 60-61).

In summary, changing preferences with regard to the socio-economic characteristics of potential partners may have led to an increase in age homogamy between spouses, in particular after the Second World War. The increasing cultural barriers between age groups and the decrease in the cultural preference for older males, may have led to greater age homogamy between spouses from the second half of the nineteenth century onwards.

Changes in the influence of 'third parties'

Marriage decisions are influenced by individuals who are not directly involved in the marriage, such as the spouses' parents and the peer group. Changes in the role of such 'third parties' are relevant if differences exist between the age preferences of spouses on the one hand and those of parents and peers on the other. In the past, parents were concerned with protecting the family property and administering the family business (Gay 1986, pp. 96-102). As age was a major factor determining the husband's income, this could result in a stronger preference for relatively old men among parents than prevailed among their children or the informal peer group.

Three important changes in this domain have occurred since the last century. First, the power of parents to impose their preferences on their offspring has declined as children have become economically and legally less dependent (Mitterauer 1992, pp. 44-45). Second, the views of parents themselves on their role in the partner selection process have undergone change. In particular, they have placed growing emphasis on the importance of children's autonomy in choosing a spouse (Ariès 1983, p. 126). Finally, as young people came to spend an increasing amount of their time with age peers and as specific youth cultures came into existence, the importance attached to the views of members of the peer group with

their stronger preferences for an age-homogamous partner choice vis-à-vis those of parents increased.

In summary, both the weakening authority of parents over their children and the growing reluctance of parents to interfere with the marriage choices of their children will have led to a decrease in age differences between spouses in first marriages during the last century.

Changes in the structure of interaction opportunities

Marriage choices are also constrained by the opportunities people have to meet future spouses. The more one interacts with age peers, the higher the chances of marrying a person from the same age group (Kalmijn 1991a, p. 45). Interaction opportunities are determined by the age and sex composition of the population as a whole and by the composition of smaller social settings, such as the school, the neighbourhood and the workplace, in which youngsters are embedded when they are searching for a spouse.

The marriage squeeze is probably the best-known example of how changes in interaction opportunities can influence age differences between spouses. A temporary shortage of partners in the 'preferred' age range, for instance as a result of war casualties or a baby boom, forces people to look for partners in another age range, leading to a change in mean age difference between partners. However, a major characteristic of the marriage squeeze is that it is a temporary phenomenon. Therefore, it is not well suited to explain long-term changes in age differences between spouses.

The prolongation of school enrollment (Modell 1989, p. 76-97; Mare 1991) has had a much more lasting influence on the interaction opportunities of marriage candidates. A first increase in educational enrollment at secondary and tertiary levels in the

Netherlands started in the last quarter of the nineteenth century whereas a further increase took place since the 1950's (Mandemakers 1996, pp. 475-480). It seems likely that the school as a meeting place for partners has gained importance since the 1950's, both because educational enrollment has expanded dramatically during this period and because the age at marriage has decreased markedly.

A second development that might have influenced the age-composition of the settings in which potential partners meet, has been the rise of youth organizations and the creation of a specific youth culture. In the Netherlands, different types of youth work for the free-from-school youth were established from the end of the nineteenth century on, creating an age-homogamous meeting place (Selten 1993). New leisure-time meeting places like dance halls and cinemas, reserved almost exclusively to members of the same age group, at the same time increased the opportunities of the sexes to meet each other in a leisurely atmosphere (May 1980, pp. 68-69). Both developments have increased the opportunities for interaction with potential partners of the same age group.

Since the 1970's, unmarried cohabitation has become increasingly popular in the Netherlands. Nowadays, the large majority of Dutch people cohabit before marriage. This may affect the marriage process in several ways. On the one hand, if consensual unions end by marriage, this 'new' behavior will have little consequence for the age differences between spouses. However, as many of these matches are probably made at relatively young ages in rather age homogamous settings like the school or the youth scene, but are converted into marriage at ages at which people used to marry who had met each other in less age homogamous settings like the work place, an increase of age homogamous marriages at somewhat higher marriage ages could be expected. On the other hand, quite a number of consensual unions dissolve before marriage. The partners

have to enter the marriage market anew at ages at which the structure of the marriage market is quite different from the one they encountered when they met their first partner. In particular, the age stratification of the potential meeting places like public spaces and the work place will be weaker than of those places in which they searched for their first partner. As a result, the age difference between partners who marry after they have been cohabiting with another partner will probably be larger than that between spouses who have not cohabited with another partner before marriage.

In summary, the likelihood of contracting marriages with small age differences between partners will have increased, especially after the 1950's, during the period of rapid educational expansion. However, since the 1970's, the increase in young adults who search for a partner after the dissolution of a consensual union may have led to larger age discrepancies between spouses.

Implications for trends in age differences

Almost all of the factors reviewed above point to decreasing age differences between partners during the period of modernization. Changes in cultural preferences and the partial retreat of parents from the marriage process are the most likely candidates to explain this decrease in the pre-World War II era. After the Second World War, changes in socio-economic preferences and changes in the structure of interaction opportunities seem to be the main driving forces behind this trend. The only factor that suggests a potential increase in age differences is the growing importance of unmarried cohabitation since the 1970's. People who marry after they have left a consensual union will probably be characterized by relatively large age differences.

DATA

To study the long-term development of age differences between spouses, data on all first marriages – marriages in which neither of the spouses has been married before – contracted in the Netherlands during two periods: 1850-1910 and 1936-1993, are used (N=6,080,189)[2]. Unfortunately, information for the period 1911-1935 was not available.

During the period under study, small changes in the classification of the data occurred. Before 1942, data are available for quinary age categories only. Until 1936, the youngest age category includes men and women aged 20 or under. After this date the youngest age category includes men and women aged 19 or under. From 1942 onwards, data for one-year age categories for brides and grooms below age 40 are available. However, to allow a comparative analysis for the whole period, the data for the period after 1941 are also aggregated into quinary age categories. Few first marriages were contracted at older ages. Therefore, the analysis will be restricted to marriages in which both spouses are 54 years or under at marriage, resulting in eight consecutive age categories.

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[2] Data for the period 1850-1910 have been published by the Departement van Binnenlandsche Zaken in the Statistisch Jaarboekje (1850-1864), the Statistische Bescheiden van het Koninkrijk der Nederlanden (1865-1874), the Bijdragen tot de Algemeene Statistiek van Nederland (1875-1877), and the Statistiek van den loop der bevolking (1878-1910 and 1937-1941; from 1900 on published by Statistics Netherlands). Statistics Netherlands also has unpublished datasets for the period 1942-1993.

Two main objections to analyzing trends in age differences using quinary age categories can be put forward. First, most marriages are characterized by age differences of less than five years. Therefore, only changes in the occurrence of marriages with relatively large age differences can be studied using a cross-classification of spouses into quinary age categories. Second, as a result of the arbitrary age classification, some marriages with a small age difference —e.g. a man aged 25 and a woman aged 24— will be classified as age-heterogamous, whereas some marriages with larger age differences —e.g. a man aged 24 and a woman aged 20— will be classified as age-homogamous. Although there is some truth in both arguments, they do not invalidate our approach. For one thing, our main thesis is exactly that the occurrence of marriages with relatively large age differences will become less common, and this can be studied adequately with our data. Relatively small changes in age homogamy run the risk of staying unobserved, but are of less importance viewed from the long-term perspective employed here. Second, although the age classification is arbitrary and some marriages with small age differences will be classified as age-heterogamous, whereas some with larger age differences will be classified as age-homogamous, we do not expect this to be of much influence on the core results of our analysis. To verify this, we separately analysed data from the period 1974-1993, analysed earlier by Smeenk (1998). On this period, information on the ages of spouses in one-year intervals is available. We estimated the same classes of log-linear models that are presented below in the section on Results, first with data using a one-year age classification and next with the same data classified in quinary age-groups. Details of this comparison are presented in the Appendix. Our conclusions from these additional analyses is that the same basic trends in age homogamy are visible irrespective of whether five-year or one-year

age-intervals are used. As a result, we feel confident that our data enable us to capture significant changes in age homogamy during the period under study. More subtle changes in age homogamy, however, might be better studied with data that allow a more detailed classification of age at marriage.

To study the trend in age similarity between spouses, 25 periods have been distinguished. In general, information has been grouped for five successive years. However, there are a few exceptions to this rule. As information about the period between 1911 and 1935 is lacking, information about 1905-1910 rather than about 1905-1909, and about 1936-1939 rather than about 1935-1939 has been combined. Furthermore, given the sudden changes in age at marriage in the Netherlands during the years immediately following the Second World War, 1945-1946 and 1947-1949 are treated as separate periods. Finally, the last period contains information about 1990-1993, rather than about 1990-1994.

DESCRIPTIVE RESULTS

First, some descriptive information on trends in age at marriage, age differences between spouses and proportion of age-homogamous marriages will be presented. To begin with, in Figure 1 information is presented on the trend in age at first marriage for both men and women. For men, age at first marriage slowly declined during the second half of the 19th century from 29 years to 27.5 years. Afterwards, it rose somewhat to around 28 years in the 1910's.[3] In the second half of the 1930's, male's mean age at first marriage was still (or again) around 28 years. The post-war years showed large changes. First, a sharp increase in the age at first marriage occurred in the years 1945 and 1946. Presumably, this resulted from

[3] **For the period 1920-1935 no information is available.**

a delay in marriage during the Second World War. During the 1950's and 1960's the mean age at marriage fell rapidly from 28 years to less than 23 years. From the 1970's onwards, however, the trend was reversed, leading to a mean age at first marriage in the 1990's that even surpassed that of the 1850's and '60s. The trend in the mean age at first marriage for women basically shows the same pattern as for men.

In Figure 1, we also present information on the age differences between spouses. The trend in the difference between the average ages at first marriage for men and women shows that this age difference increased from 1.5 years to 2 years during the 19th century. Since the 1930's it has constantly been between 2 and 2.5 years, with two exceptions. It was higher during 1945 and 1946 as men who postponed marriage during the Second World War started marrying relatively young women, and it was lower during the end of the 1960's. The use of the difference between the average ages can be misleading. A lack of change in mean age differences between spouses over time may mask substantial change in the distribution of age differences (Ni Bhrolcháin, 1992). The use of the average age difference between men and women offers a better indicator of changing age differences. The trend in this indicator is also shown in Figure 1.[4] During the 1850's the average age difference between

[4] This measure was calculated on the basis of our data in which spouses were categorized into 5-year age categories. We assigned an age difference of 0 years to spouses from the same age category, an age difference of 5 years to spouses from adjacent age categories, and so forth. This procedure underestimates age differences between spouses within the same age category, but overestimates age differences between spouses from different age categories. We checked the reliability of our method by calculating the average age difference between spouses married in 1974. For that year, we have information on the age at marriage of both spouses grouped in one-year categories. The average age difference using this grouping was 3.3 years. The average age difference based on the five-year grouping gave exactly the same result. Although this exact correspondence is accidental, it suggests that our procedure will usually approximate the 'true' average

spouses in first marriages was about 4.5 years. This difference decreased almost linearly to a minimum of 2.6 in the early 1970's. During the last twenty years the age difference between spouses has increased slightly to just over 3 years in the early 1990's.

Figure 1 and Figure 2 about here

Taken together, the stability in the difference between average ages of both spouses and the decrease in the average age difference between spouses suggest that both marriages in which the husband is much older than the wife and marriages in which the wife is older than the husband are becoming less common. This interpretation is supported by the data shown in Figure 2, where the trend in the proportion of first marriages in which both spouses belong to the same 5-year age categories, as well as the trends in the proportion of marriages in which either the husband or the wife is older, are presented. It shows an increase in the proportion of age-homogamous marriage from 35% in the mid-19th century to more than 50% in the 1970's and early 1980's. During the last decade, the proportion of age-homogamous first marriage has decreased slightly. The proportion of first marriages in which the husband is one age category older than the wife has also increased during most of the period of interest. It rose from just under 30% to 40% in the early 1960's, and then stabilized at about 38%. Marriages in which the wife is older than the husband and marriages in which the husband is much older than the wife have become much less common in the last century and a half. However, these types of first marriages are becoming somewhat more popular during recent decades.

Some tentative conclusions can be drawn from these descriptive

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age difference between spouses quite closely.

measures. It seems that a steady trend towards smaller age differences between spouses at first marriage has been occurring from the 1850's until the early 1970's. Because this trend towards smaller age differences occurred both among marriages in which the husband was older and among marriages in which the wife was older, this did not result in a decrease in the difference between the average marriage ages of men and women. Since the 1970's a reversal of this long-term trend towards smaller age difference between spouses can be observed.

Trends in age differences may depend on the distribution of age at marriage of both spouses (the so-called 'marginal distributions'). For instance, if many males and females marry between age 25 and 29, marriages in which both partners are aged 25-29 will be very likely, even if people have no special preference to marry someone in that specific age range. Models of *relative* homogamy try to adjust for these changes in the age structure. It is to these kinds of models that we turn now.

A LOG-LINEAR ANALYSIS OF CHANGES IN AGE DIFFERENCES

Modeling strategy

The general log-linear model for the three-way table of husband's age by wife's age by period is:

$$\log(F_{ijk}^{HWP}) = \lambda + \lambda_i^{H} + \lambda_j^{W} + \lambda_k^{P} + \lambda_{ik}^{HP} + \lambda_{jk}^{WP} + \lambda_{ij}^{HW} + \lambda_{ijk}^{HWP} \quad (1)$$

with *H* denoting husband's age at marriage, *W* wife's age at marriage and *P* period. Because our focus is on modeling the HW- and HWP-interaction, all first-order effects and all interactions between age of husband and period and between age of wife and period are left unrestricted. However, the models differ in two respects, viz. the specification of the interaction between age of husband and age

of wife (HW-interaction) and the specification of the period-specific differences in the interaction between age of husband and age of wife (HWP-interaction).

Four alternative specifications of the HW-interaction are presented. The simplest one assumes no association between the ages of spouses. This null-association model (*NA*) is used as a baseline. At the other extreme, a full interaction model (*FI*) is estimated. Two additional models that model the HW-interaction in a more parsimonious way are estimated as well. First, we estimate Goodman's (1986) row and column effects models II (*RC*). Next, because the RC model underestimates the extent of intermarriage between age peers and between couples in which the male is one age category older than the female, two additional diagonal parameters are added to the RC model (*RC+DIA1+DIA2*). The specification of the HW-interaction in this last model is:

$\lambda_{ij}^{HW}=\theta\mu_i\nu_j+\delta_1+\delta_2$**, with the following constraints:**

$\Sigma\mu_i=\Sigma\nu_j=0$**,** $\Sigma\mu_i^2=\Sigma\nu_j^2=1$**,** $\delta_1=0$ **if** $i\neq j$**, and** $\delta_2=0$ **if** $i\neq j+1$**.**

In this model μ_i **scales the distances between age categories of the husband,** ν_j **scales the distances between age categories of the wife,** θ **estimates the uniform association between age of husband and age of wife,** δ_1 **indicates to what extent marriages between age peers are more or less likely than the RC-model suggests, and** δ_2 **estimates the extent to which marriages between spouses in which the husband is one age-category older than the wife are more likely than expected under the RC-model.**

Three different specifications of the trend in age homogamy between spouses are presented. The first approach is simply to assume a constant level of age homogamy throughout the whole period ($\lambda_{ijk}^{HWP}=0$**). These models are termed *homogenous* models. The second**

class is Xie's (1992) *log-multiplicative layer effect* model. If the HW-interaction is denoted by ψ_{ij}, Xie proposes to estimate the HW-interaction and the HWP-interaction jointly by the term $\psi_{ij}\varphi_k$. This model implies that the same basic association between age of husband and age of wife exists for all periods, but that the strength of the association varies with a factor φ_k from period to period. Models within this class can become quite complicated. For instance, in the case of the *RC+DIA1+DIA2*-model discussed above, both the uniform association-parameter and the diagonal parameters could be allowed to vary independently from each other from period to period, as follows:

$$\lambda_{ij}^{HW}+\lambda_{ijk}^{HWP}=\varphi_{k1}\ \theta\mu_i\nu_j+\varphi_{k2}\ \delta_1+\varphi_{k3}\ \delta_2.$$

Although the most general specification contains three sets of φ-parameters, it is also possible to simplify the model by assuming that two or three of these sets are equal to each other, indicating that trends in uniform association and in diagonal parameters run parallel.

Recently, Goodman and Hout (1998) suggested an alternative way to analyze changes in the association between two qualitative variables. Whereas Xie (1992) uses the $\psi_{ij}\varphi_k$-term to model both the HW-interaction and the HWP-interaction at the same time, Goodman and Hout (1995) suggest to use the $\psi_{ij}\varphi_k$-term to specify the HWP-interaction only. This term can be interpreted as the period-specific deviation from the overall HW-interaction. Goodman and Hout (1995) term this model the *regression-type layer effect* model. Compared to the approach proposed by Xie (1992), this approach focuses on deviations from an overall pattern. Furthermore, ψ_{ij} as specified for the HWP-interaction does not have to match the ψ_{ij} in the HW-interaction. Here, we will leave the parameters for the HW-

interaction unrestricted, and model the HWP-interaction in the same way as we model the HW+HWP-interaction in Xie's log-multiplicative approach.

We use three indices to assess the fit of the estimated models, namely the log-likelihood ratio χ^2-statistic (L^2), *BIC* and the index of dissimilarity (*D*). A drawback of L^2 is its sensitivity to the size of the data set. As a result, simple models hardly ever fit larger data sets well, according to L^2. In addition, the data refer to the whole population, rather than to a sample drawn from it. Therefore, L^2 will only be used in a descriptive sense. The *BIC*-criterion, proposed by Raftery (1986), is better suited to large data sets. A negative *BIC*-score indicates that the model performs better than the saturated model.[5] In addition, the index of dissimilarity (*D*) will be presented. *D* indicates the proportion of cases misclassified by the model. The closer this proportion comes to 0, the better the model predicts the actual distribution of marriages.

Model outcomes

[5] ***BIC* is defined as L^2 - *df* * log(*N*). Even *BIC* is sensitive to the size of our dataset. This is because log(*N*) hardly changes if the dataset becomes as large as in this study.**

In Table 1, an overview is presented of the goodness-of-fit statistics of a number of models fitted to our data.[6]

Table 1 about here

The first four models in Table 1 all assume that no trend in age homogamy has occurred between 1850 and 1993. The first of these models (NA) further assumes that no association between the ages of brides and grooms exists at all. This model fits the data very poorly. Some 19% of the marriages are misclassified (indicated by *D*). The full HW-interaction model (FI_h), on the other hand, assumes that marital ages of brides and grooms are related, but does not specify this association in any specific way. Although the overall fit of this model is still poor, it fits much less worse than the NA-model. L^2 drops by almost 94%, and *D* by 73%. Two more parsimonious approaches to model the HW-interaction are presented as well. The homogeneous RC II-model (RC_h) already accounts for 95.7% in the difference in L^2 between the NA-model and the FI_h-model. Adding two diagonal parameters to the RC_h-model improves the model even further. Although the fit is less than that of the FI_h-model, this model accounts for 99.2% of the L^2-difference between NA and FI_h. Therefore, the $(RC+DIA1+DIA2)_h$-model seems to offer a fairly reasonable approximation of the general association between the ages of spouses at first marriage.

The next class of models in Table 1 estimates the trend in age homogamy in a log-multiplicative fashion. These models fit the data much better than the homogeneous models, implying that the level of

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[6] **All models have been estimated with the LEM-software package (Vermunt, 1997a, 1997b). Examples of setups to estimate all models presented in Table 1 can be obtained from the authors.**

age homogamy clearly is not constant, but varies across marriage cohorts. For instance, a log-multiplicative model with a completely unrestricted parameterization of the HW-interaction has a negative *BIC*-value. In addition, only 1.2% of all marriages are misclassified using this model. Although the other log-multiplicative models fit somewhat less well than the FI_m-model, they still perform quite reasonable. Two things are of particular interest. First, RC-models with diagonal parameters perform much better than RC-models without diagonal parameters. Second, models that allow the trends in uniform association parameters and trends in diagonal parameters to diverge perform better than a model in which these trends are assumed to be parallel to each other.

The final class of models uses the regression-type approach to modeling trends in the association between age of bride and age of groom proposed by Goodman and Hout (1995). These models all assume that the HW-interaction is left unrestricted and only differ from each other in the way the differences from this general pattern are specified. With the exception of the regression-type RC II-model all these model have negative BIC-values. According to this criterion the best model (RC_r+$DIA1_r$+$DIA2_r$) is a model in which the deviation from the overall HW-pattern is 'broken down' into three aspects: a trend in uniform association parameters, a trend in the main diagonal parameter and a trend in the parameter for the diagonal representing marriages in which the groom is one age category older than the bride. Less than 1% of all first marriages is misclassified with this model, indicating that this model —and most other log-multiplicative and regression-type models— describe the patterns of age differences between spouses very well.

Table 2 about here

The most important parameter estimates for the RC_r+$DIA1_r$+$DIA2_r$-model are presented in Table 2.[7] In panel A the λ_{ij}-parameter estimates for the two-way HW-interaction are presented. These parameters describe the 'average' association between the ages of brides and grooms. The higher the λ_{ij}-parameter for a specific combination of the ages of spouses, the more likely such a combination is. The highest λ_{ij}-parameters are located on or near the main diagonal, and values become lower with increasing distance from the main diagonal. This implies that marriages become less likely with increasing age differences between men and women. Furthermore, parameters on the main diagonal and first sub-diagonals are lower for 'intermediate' age categories than for both young and old ones, indicating that the tendency to marry someone of approximately the same age is weaker for people in their thirties than for younger and older brides and grooms. A final important aspect is that, up to age category 30-34, λ_{ij}-parameters for combinations in which the groom is one age-category older than the bride are as high as those in which both spouses have approximately the same age. This implies that marriages of males marrying somewhat younger females are as likely as age-homogamous marriages, at least for marriages in which both partners are under age 35.

The parameters in panels B and C of Table 2 have to be interpreted jointly. To identify the model two restrictions on the φ_k-parameters are needed (Goodman and Hout, 1998). The two restrictions used here are $\varphi_{1850\text{-}1854}=1$ and $\Sigma\varphi_k=0$. These restrictions imply that the parameters in panel B indicate in what way the

[7] Given limitations of space, only results of this model will be discussed at length. A more detailed comparison of log-multiplicative and regression-type models would show that these classes of models lead to the same conclusions with regard to the trend in age homogamy. Parameter estimates for all models in Table 1 can be obtained from the authors.

marriage pattern during 1850-1854 differed from the 'average' pattern presented in panel A. The trend parameters in panel C, finally, show to what extent the deviations from panel B apply to each of the periods of interest.

The parameters in panel B show, firstly, that –with the exception of small disturbances at high age categories– the age categories are neatly ordered. This suggests that the use of the RC II-model to model the deviations from the overall association is a good one. Furthermore, the distances between categories are somewhat larger at young ages than at old ages, suggesting that barriers between age-groups are easier to cross at high ages and thus that larger age differences exist at high ages than at relatively young ages. The negative parameters for the uniform association and for the main and first sub-diagonal suggest that the level of uniform association in 1850-1854 was lower than the average level of age homogamy during 1850-1993. The same is true for grooms' likelihood of marrying a bride of the same age category or one age category younger.

The φ_k-parameters in panel C show the trends in uniform association, diagonal and sub-diagonal parameters. Because these trends use the deviations for 1850-1854 as a baseline, a decrease in the trend parameter can be interpreted as an increase in uniform association, or in the diagonal parameters, respectively. This trend in reproduced in Figure 3, together with the trend parameters for the RC_r-model in Table 1. The RC_r-model tries to capture the change in age homogamy by modeling the trend in the uniform association parameter only, whereas the model presented in Table 2 uses three parameters to model trends in age homogamy.

Figure 3 about here

The trend in the φ_k-parameter for the RC_r-model suggest an almost linear trend towards smaller age differences between spouses in first marriages from the 1850's until the first half of the 1960's. After a stabilization between 1965 and 1975 a further decrease in age differences is observed between 1975 and 1990. The results from the RC_r+$DIA1_r$+$DIA2_r$-model help to qualify this general trend. Until the end of the Second World War, the trend in the uniform association parameter and in the diagonal parameters run parallel. The change in the uniform association parameter means that, in general, a shift towards smaller age differences between partners occurs; marrying a spouse who is much older or younger than oneself is becoming increasingly unlikely. The parallel trends in the diagonal parameters suggest that the shift towards age homogamous marriages and towards marriages in which the groom is one age category older than the bride is even stronger than implied by the change in the uniform association parameter. After the Second World War, the patterns in the uniform association and diagonal parameters start to diverge. Between 1945 and 1955 the general tendency towards smaller age differences increases, but this is matched by a simultaneous decrease in diagonal parameters. This suggests that the changes in these post-war years mainly consisted in a decline of marriages in which the age differences between the spouses was particularly large. Between 1955 and 1970 hardly any changes in age homogamy are observed. From then onwards, a decrease in the level of uniform association is matched by an increase in the diagonal and subdiagonal parameters. Inspection of the resulting pattern in HWP-parameters shows that two effects are occurring. The difference between age-homogamous marriages and marriages in which the husband is one age category older than his wife on the one hand and other marriages on the other hand is still increasing. At the same time, differences between other age combinations are reduced. Together,

these two trends suggest a partial reversal of the general trend towards smaller age differences. Marriages with small age differences still become increasingly likely. At the same time, if people do not strike a match in which the partners are of about the same age or in which the husband is one age category older than his bride, larger age differences are becoming increasingly likely.[8]

DISCUSSION

The descriptive analysis has shown that age differences between spouses in the Netherlands have become much smaller in the course of the last century and a half. This narrowing of the age gap between spouses has been a gradual process starting at least as early as 1850, and continuing until about 1970. After 1970 the trend becomes less clear. In recent years the proportion of marriages with relatively large age differences has shown a slight increase.

The results of the log-linear analysis support the descriptive results to a large extent, but enable us to qualify them with regard to the period since the 1960's. The log-linear analysis suggests that the likelihood of marriages with small age differences has increased even during the most recent period. This result may seem

[8] One might wonder whether the trend in age differences between spouses might depend on trends in age at marriage, as both depend on changes in the marriage process. To examine this relationship, we correlated the φ-parameters of the Rc_r+$DIA1_r$+$DIA2_r$-model with the mean age at marriage of females. Between 1850 and 1910, a very strong correlation (r>.9) for all three φ-parameters was observed. After 1935, however, trends in the φ-parameters and in age at marriage were uncorrelated (r varied between .15 and -.27).

counterintuitive, but it can be explained by taking the changes in the mean age at marriage into account as well. Since the 1970's this mean age at marriage has risen rapidly. It is well-known that marriages that are contracted at later ages are generally characterized by somewhat larger age differences than marriages contracted at early ages. What our analysis shows is that the *absolute* decrease in age-homogamous marriages and in marriages in which the husband is one age category older than his wife is smaller than might have been expected given the increase in the mean age at marriage. As a result a *relative* increase in age-homogamous marriages has occurred. At the same time, our analysis suggests that, if one does not marry age-homogamous or with a male who is one age category older, the likelihood of large age-differences is increasing. Our suggestion is that both of these tendencies are the result of the recent increase in unmarried cohabitation. On the one hand, unmarried cohabitation leads age-homogamous couples to legalize their union at a later age than they used to do in the past. This results in more age-homogamous marriages at relatively late ages. On the other hand, the instability of consensual unions leads to more people re-entering the marriage market. They have to search for a new partner in a marriage market that is usually not strongly age-stratified anymore. This increases the likelihood of relatively large age differences between spouses who have been cohabiting with another partner before they met their spouse.

This last observation suggests that the usefulness of age at marriage as an indicator of the extent to which the partner market is age-stratified is weakening. Given the relatively high rate at which consensual unions dissolve, more and more people are entering into a first marriage in which the spouse is not the first partner with whom they cohabited. In the past, many of these marriages would have been classified as second marriages. Given this change in the

'meaning' of first marriage, a focus on the age differences between partners in any union, irrespective of whether they are married or not, seems to be asked for in order to get a good impression of the importance of age in the partner selection process in countries in which unmarried cohabitation is experienced by a significant proportion of people.

The observed trends in age differences correspond rather neatly with the expectations generated from our overview of the main mechanisms that influence age homogamy between spouses. As such, it adds credibility to the usefulness of Kalmijn's (1991a) framework of factors influencing partner choice. However, our data do not enable a direct test of the mechanisms behind trends in age homogamy. Further research is needed to pinpoint the possible factors influencing the level of age homogamy within marriages. One way to proceed would be to use time-series analysis in which the log-multiplicative age homogamy parameters are used as indicators of trends in age homogamy. The main obstacle is a lack of suitable time-series to measure the kind of concepts deemed important in determining trends in age homogamy. Another way to proceed would be to use survey data in which information about the economic and cultural characteristics of individuals and spouses can be linked to the difference in age between bride and groom. Finally, by using differences in age homogamy between areal units varying according to the factors under consideration a partial solution to the problem is possible.

APPENDIX

The trends in age homogamy presented in this article are based on log-linear analyses of the age at first marriage of both spouses, aggregated into quinary age categories. For the period 1974-1993, information on age at marriage in one-year age categories is available (see Smeenk (1998) for an in-depth analysis of trends in age homogamy during this period). This information can be used to assess whether or not using quinary age categories leads to an unacceptable distortion of the trend in age homogamy that would be observed if the more detailed one-year classification was used. Data from the period 1974-1993 allow for a strong test of the validity of using the quinary age classification, because the data in Figure 3 suggest that this was a period in which quite opposite trends occurred. We will first compare the results of a relatively simple model in which one parameter is used to describe the trend in age homogamy and subsequently compare the results of a more complex model in which three parameters are used to describe the changes in age homogamy. We will present trend parameters for the same models as have been shown in Figure 3. More details on the exact nature of the models specified can be found in the section on modeling strategy in the article.

Figure 4 about here

The RC_r-model has been used to examine whether the general trend in age homogamy differs according to whether one-year or five-year age categories are used. The trend parameters for both classifications are depicted in Figure 4. Given the restrictions on the parameters, a *decline* in the trend parameter indicates an *increase* in age homogamy. Irrespective of whether a five-year or a one-year

classification is used, a clear increase in age homogamy is visible during the period 1974-1987. From 1987 onwards, the general level of age homogamy remains more or less constant. What is particularly striking is the strong similarity in the trend for one-year and five-year age categories. This suggests that the use of quinary age categories does not distort the general trend in age homogamy.

Figure 5 about here

Next, we turn to the more complex RC_r+$DIA1_r$+$DIA2_r$-model. The main problem of using this model if one has quinary age categories is illustrated in Figure 5. If one would consider marriages in which the age differences between spouses is two years or less as age-homogamous, all marriages in the shaded part of Figure 5 would be classified as age-homogamous. However, using five-years age categories, all marriages within bold lines are classified as age-homogamous. Comparing these two classifications, it becomes clear that if one uses data classified into five-year age intervals some marriages are wrongly classified as age-homogamous (e.g. between a 24-year old woman and a 21-year old man), whereas other marriages are wrongly classified as age-heterogamous (e.g. between a 20-year old woman and a 21-year old man). To examine the consequences of this type of misclassification we selected a model in which information on the shaded part of Figure 5 is used. The one-year age-interval model that comes closest to the RC_r+$DIA1_r$+$DIA2_r$-model for a five-year classification, is one in which the diagonal parameter applies to all marriages in which the age difference between spouses is two years or less, and in which the subdiagonal parameter applies to marriages in which the husband is three to seven years older than the wife. Figures 6 and 7 show the trends in uniform association, main diagonal and first subdiagonal parameters

for models using one-year and five-years age intervals respectively.

Figures 6 and 7 about here

Given the restrictions on the trend parameters and the values of other parameters in the model, a *decline* in the uniform association parameter indicates a *decline* in the overall level of age homogamy, whereas a *decline* in the parameters for the main diagonal and the first subdiagonal indicate an *increase* in the likelihood of a marriage in which spouses are about the same age and in which the husband is approximately five years older than the wife.

Although the correspondence between the trends for the one-year and the five-years age-interval data are not as strong as in Figure 4, the main conclusions are the same. First of all, the trends in the main diagonal parameters and the parameters for the first subdiagonal are highly similar to one another and go in the direction of a stronger preference for both age-homogamous marriages and marriages in which the husband is about five years older than the wife. Second, the general level of age homogamy, after controlling for trends in diagonal and subdiagonal marriages, is declining. These conclusions substantiate the ones made in the main body of the article. The main difference between Figures 6 and 7 is that using five-year categories seems to smooth the trend in the age-homogamy parameters. It is unclear why this is the case. However, one might speculate that this results from the fact that the number of cells to be fitted if one uses one-year age intervals is much larger (1600 rather than 64) and given the small numbers within many of these cells, the resulting parameter estimates might be more susceptible to small fluctuations in the data from one year to the next.

REFERENCES

Ariès, Philip. 1982. "Two Successive Motivations for the Declining Birth Rate in the West.". Pp. 123-130 in *Determinants of Fertility Trends*, edited by Charlotte Höhn and Rainer Mackensen. Liège: Ordina Editions.

Ariès, Philip. 1983. "Les Classes d'Âge dans les Sociétés Modernes Occidentales." Pp. 18-20 in *Les Âges De La Vie. VIIe Colloque National De Démographie*. Actes Du Colloque. Tome II. Paris: Presses universitaires de France.

Atkinson, Maxine P., and Becky L. Glass. 1985. "Marital Age Heterogamy and Homogamy, 1900 to 1980." *Journal of Marriage and the Family* 47:685-700.

Becker, Gary S. 1981. *A Treatise on the Family.* Cambridge, Mass.: Harvard University Press.

Blau, Peter M. 1994. *Structural Contexts of Opportunities*. Chicago: University of Chicago Press.

Bozon, Michel. 1991. "Women and Age Gap between Spouses: An Accepted Domination?" *Population. An English Selection* 3:113-148.

Braun, Marianne. 1992. *De Prijs van de Liefde. De Eerste Feministische Golf, het Huwelijksrecht en de Vaderlandse Geschiedenis*. Amsterdam: Het Spinhuis.

Easterlin, Richard A., and Eileen M. Crimmins. 1991. "Private Materialism, Personal Self-Fulfillment, Family Life, and Public Interest: The Nature, Effects, and Causes of Recent Changes in the Values of American Youth." *Public Opinion Quarterly* 55:499-533.

Gay, Peter. 1986. *The Bourgeois Experience. Victoria to Freud. Vol. II. The Tender Passion*. New York: Oxford University Press.

Goodman, Leo A. 1986. "Some Useful Extensions of the Usual Correspondence Analysis Approach and the Usual Log-Linear Models Approach in the Analysis of Contingency Tables." *International*

Statistical Review 54:243-309.

Goodman, Leo A. and Michael Hout. 1998. *Statistical Methods and Grafical Displays for Analyzing How the Association Between Two Qualitative Variables Differs Among Countries, Among Groups, and Over Time: A Modified Regression-Type Approach*. Sociological Methodology, 1998: xx-xx.

Hajnal, John. 1969. "European Marriage Patterns in Perspective." Pp. 101-143 in *Population in History*, edited by David V. Glass and David E. C. Eversley. London: Edward Arnold (1965[1]).

Hochstadt, Steve. 1982. "Appendix: Demography and Feminism." Pp. 541-560 in *An Experience of Women. Pattern and Change in Nineteenth-Century Europe*, edited by Patricia Robertson. Philadelphia: Temple University Press.

Jansz, Ulla. 1990. *Denken over Sekse in de Eerste Feministische Golf*. Amsterdam: Sara/Van Gennep.

Kalmijn, Matthijs. 1991a. *From Family Origins to Individual Destinations: The Changing Nature of Homogamy in the United States.* Unpublished Ph.D. University of California, L.A.

Kalmijn, Matthijs. 1991b. "Shifting Boundaries: Trends in Religious and Educational Homogamy." *American Sociological Review* 56:786-800.

Kalmijn, Matthijs. 1994. "Assortative Mating by Cultural and Economic Occupational Status." *American Journal of Sociology* 100:422-452.

Knodel, John E. 1988. *Demographic Behavior In The Past. A Study of Fourteen German Village Populations in The Eighteenth and Nineteenth Centuries*. Cambridge: Cambridge University Press.

Macfarlane, Alan. 1986. *Marriage and Love in England. Modes of Reproduction 1300-1840.* Oxford: Basil Blackwell.

Mandemakers, Cees A., 1996. *HBS en Gymnasium*. Amsterdam: Stichting Beheer IISG.

Mare, Robert D. 1991. "Five Decades of Educational Assortative Mating." *American Sociological review* 56:15-32.

May, Elaine T. 1980. *Great Expectations. Marriage and Divorce in Post-Victorian America*. Chicago and London: University of Chicago Press.

Mensch, Barbara. 1986. "Age Differences between Spouses in First Marriages." *Social Biology* 33: 229-240.

Mitterauer, Michael, and Reinhard Sieder. 1982. *The European Family*. Chicago: University of Chicago Press.

Modell, John. 1989. *Into one's Own. From Youth to Adulthood in the United States 1920- 1975*. Berkeley etc.: University of California Press.

Ni Bhrolcháin, Máire. N. 1992. "Age Difference Asymmetry and a Two-Sex Perspective." *European Journal of Population* 8: 23-45.

Oppenheimer, Valerie K. 1988. "A Theory of Marriage Timing." *American Journal of Sociology* 94: 563-591.

Poppel, Frans van, Aart C. Liefbroer, and Wendy J. Post. 1998. "Vers Une Plus Grand Homogamie d'Age entre Conjoints: Différences entre les Classes Sociales et Différences Regionales aux Pays-Bas, 1812-1912." *Annales de Démographie Historique*, 1998: 73-110.

Raftery, Adrian E. 1986. "Choosing Models for Cross-Classifications (Comment on Grusky and Hauser)." *American Sociological Review* 51: 145-146.

Selten, Peter. 1993. "The Religious Formation of Youth. Catholic Youth Movements in the Netherlands from 1900 to 1941." *Paedagogica Historica* 29: 165-187.

Shorter, Edward. 1977. *The Making of the Modern Family*. Glasgow: Fontana (1975).

Smeenk, Wilma. 1998. *Opportunity and Marriage. The Impact of Individual Resources and Marriage Market Structure on First Marriage Timing and Partner Choice in the Netherlands*. Amsterdam:

Thela Thesis.

Veevers, Jean A. 1984. "Age-Discrepant Marriages: Cross-National Comparisons of Canadian-American trends" ***Social Biology*** **31:18-27.**

Vermunt, Jeroen K. 1997a. ***LEM: A general program for the analysis of categorical data*****. Tilburg: Department of Methodology/WORC, Tilburg University.**

Vermunt, Jeroen K. (1997b). ***Log-linear models for event histories*****. Thousand Oakes: Sage.**

Ware, Helen. 1981. ***Women, Demography and Development*****. Demography teaching notes No. 3. Canberra: Australian National University.**

Wheeler, Raymond H., and B.G. Gunter. 1987. "Change in Spouse Age Difference at Marriage: A Challenge to Traditional Family and Sex Roles?" ***The Sociological Quarterly*** **28: 411-421.**

Xie, Yu. 1992. "The Log-Multiplicative Layer Effect Model for Comparing Mobility Tables." ***American Sociological Review*** **57: 380-395.**

Table 1 Goodness-of-Fit Results of Models Applied to Cross-Classified Data on Age at Marriage of Husbands and Wives, the Netherlands 1850-1993

Model	Description	L^2	*df*	*BIC*	*D*
NA	Null HW-Association	2103608	1225	2084473	.192
RC_h	Homogeneous RC II-parameters	217218	1212	198286	.052
$(RC+DIA1+DIA2)_h$	Homogeneous RC II + homogeneous diagonal parameters	148526	1210	129625	.045
FI_h	Homogeneous full HW-Interaction	133464	1176	115094	.044
RC_m	Log-multiplicative trend in RC II-parameters	66142	1188	47584	.024
$(RC+DIA1+DIA2)_m$	Equal log-multiplicative trend in RC II + diagonal parameters	22902	1186	4345	.014
$RC_m+(DIA1+DIA2)_m$	Log-multiplicative trend in RCII + equal log-multiplicative trend in diagonal parameters	20187	1162	2035	.013
$RC_m+DIA1_m+DIA2_m$	Log-multiplicative trend in RCII + log-multiplicative trend in diagonal parameters	19247	1138	1471	.011
FI_m	Log-multiplicative trend in full HW-interaction	13064	1152	-4931	.012
RC_r	Regression-type trend in RC II-parameters	19609	1140	1801	.015
$(RC+DIA1+DIA2)_r$	Equal regression-type trend in RC II + diagonal parameters	10825	1138	-6967	.011
$RC_r+(DIA1+DIA2)_r$	Regression-type trend in RC II + equal regression-type trend in diagonal parameters	8865	1115	-8552	.010
$RC_r+DIA1_r+DIA2_r$	Regression-type trend in RC II + regression-type trend in diagonal parameters	8133	1092	-8925	.009
FI_r	Regression-type trend in full HW-interaction	8710	1104	-8535	.010

Table 2 Parameter estimates for RC_r+$DIA1_r$+$DIA2_r$-model in Table 1

Panel A: Parameter Estimates λ_{ij}

		Age Wife at Marriage							
		<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54
Age Husband at Marriage	<20	5.33	3.24	1.26	-0.43	-1.69	-2.42	-2.71	-2.58
	20-24	3.13	2.66	1.27	-0.23	-1.24	-1.94	-2.16	-1.48
	25-29	1.34	1.68	1.45	0.40	-0.55	-1.20	-1.51	-1.62
	30-34	-0.19	0.27	0.77	0.83	0.29	-0.26	-0.65	-1.06
	35-39	-1.35	-0.92	-0.16	0.56	0.92	0.68	0.34	-0.08
	40-44	-2.26	-1.83	-1.00	0.06	0.97	1.50	1.45	1.12
	45-49	-2.84	-2.44	-1.60	-0.39	0.78	1.78	2.37	2.34
	50-54	-3.17	-2.67	-1.98	-0.79	0.53	1.85	2.87	3.35

Panel B: Parameter Estimates ψ_{ij}

	Age							
	<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54
Scaled Distances Husband	0.70	0.35	0.13	-0.01	-0.15	-0.26	-0.34	-0.41
Scaled Distances Wife	0.65	0.39	0.19	-0.04	-0.22	-0.34	-0.40	-0.22
Uniform Association	-5.55							
Main Diagonal	-0.27							
Males 1 Category Older	-0.25							

Panel C: Trend Parameter Estimates φ_k

Period	φ_{RC}	φ_{DIA1}	φ_{DIA2}	Period	φ_{RC}	φ_{DIA1}	φ_{DIA2}
1850-1854	1.00	1.00	1.00	1936-1939	-0.46	-0.26	-0.40
1855-1859	0.98	1.02	0.98	1940-1944	-0.54	-0.36	-0.34
1860-1864	0.91	1.08	0.98	1945-1946	-0.61	-0.38	-0.42
1865-1869	0.86	1.11	0.97	1947-1949	-0.76	-0.08	-0.20
1870-1874	0.77	0.93	0.93	1950-1954	-1.09	-0.11	-0.21
1875-1879	0.71	0.96	0.83	1955-1959	-0.92	-0.39	-0.47
1880-1884	0.66	0.81	0.72	1960-1964	-0.91	-0.45	-0.45
1885-1889	0.58	0.74	0.65	1965-1969	-0.86	-0.66	-0.43
1890-1894	0.53	0.58	0.56	1970-1974	-0.61	-0.71	-0.41
1895-1899	0.47	0.44	0.40	1975-1979	-0.37	-1.04	-0.69
1900-1904	0.32	0.44	0.42	1980-1984	-0.42	-1.43	-1.18
1905-1910	0.20	0.32	0.30	1985-1989	-0.34	-1.76	-1.75
				1990-1993	-0.10	-1.79	-1.80

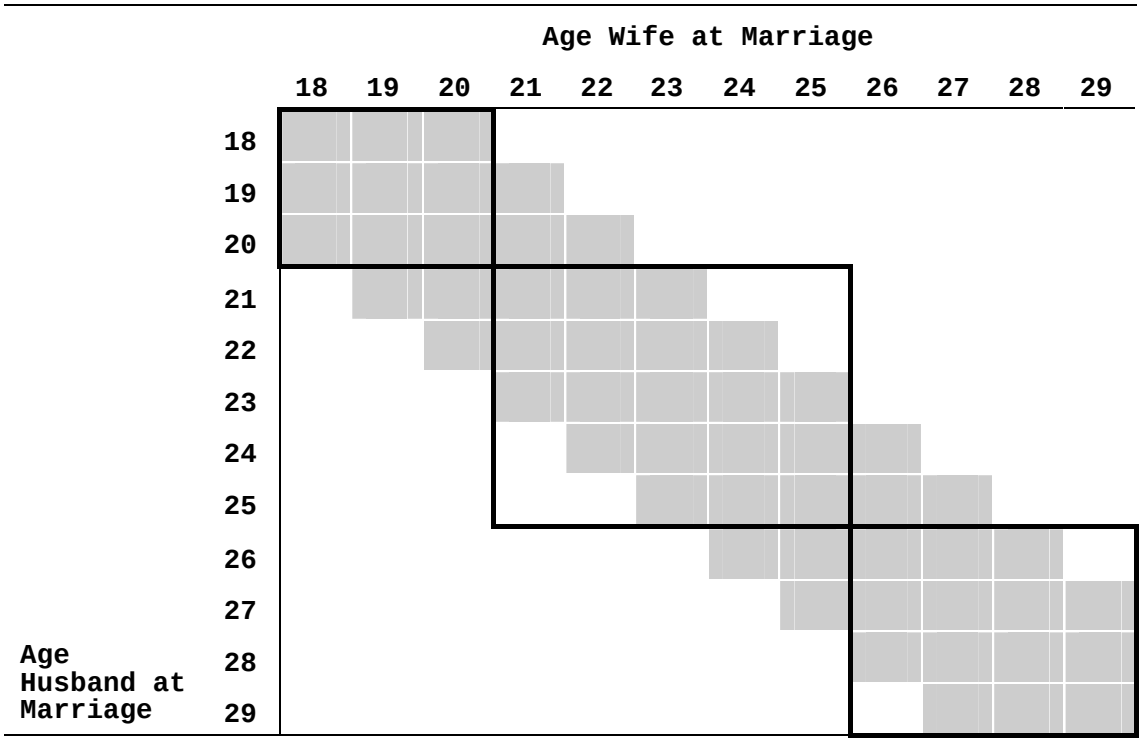

Figure 5 A graphical comparison of measuring age-homogamy using five-year or one-year age-intervals