Introduction

It is well known that the incidence of non-marriage was particularly high in European populations in the past. Hajnal (1965) provides several examples indicating an east-west division with permanent non-marriage particularly common in Western Europe and much lower in Eastern Europe. In Ireland during the second half of the 19th and the first half of the 20th century non-marriage was preferred among women to marrying below their social class (Dixon 1978). Engelen and Kok (2003) present evidence that is consistent with expectations held by parents that the youngest daughter would care for her aging father and mother rather than marrying. That the incidence of non-marriage seems strongly related to family background leads us to posit that non-marriage patterns may be transmitted between generations. The setting for our study is 14 German villages from 1700 to 1899. As shown in Figure 1, non-marriage was a common feature throughout the period in these villages.

Aim & hypotheses

The main purpose of the study is to investigate to what extent the incidence of non-marriage is transmitted between generations and to identify whether the transmission of non-marriage operates through distinctive paths or displays certain patterns. Our main hypothesis is that the path of transmission is gender dependent.

Conceptual model

The study is complicated by the simple fact that non-marriage is non-replicating through direct descendants. Hence our strategy entails testing whether non-marriage among aunts or uncles is a significant predictor of non-marriage among nephews and nieces. We treat non-marriage as a trait of the aunt or uncle, that is, an aunt or uncle that had not gotten married by the age of 45 is considered to be destined to never marry and thus have an effect on members of the second generation once they enter the marriage market at age 20.

Data

The Knodel dataset, comprising 14 villages with populations monitored over two centuries, is used for testing the hypotheses that follow from our line of interest. The Knodel dataset uses genealogical records over a long span of time, and is thus suited for examining intergenerational transmission patterns. We define exposure to risk as beginning at 20 years old, and ending at age 35, in order to avoid influential outliers. Siblings are defined by having the same mother. We censor by the year at which, in each village, no more marriages are recorded.

Model

We use a competing risks model, split by gender and clustered by mother in order to avoid double-counting sibling characteristics. The two competing risks are a) marriage and b) death before marriage, and we fit a single model that stratifies by these outcomes. Non-marriage among aunts and uncles was defined dichotomously - for instance, if at least one of the subject's mother's aunts never married, we code a ‘1’ for the variable ‘unmarried maternal aunt.’ Where there are no maternal aunts or uncles to be married or unmarried, we treat this as missing data. We control for region, changing number of brothers and sisters over time, changing number of married brothers and sisters over time, whether the subject is the first born child, the number of aunts and uncles they have on either side, and period. We treat non-marriage among aunts and uncles as a trait while marriage in the subsequent generation is considered an event; hence non-marriage among nephews and nieces is the resultant survival.

Results

We found that a person's hazard of getting married decreases when at least one maternal aunt does not ever marry, and that this effect appears to be similar for men and for women. Furthermore, a somewhat weaker negative relationship between maternal aunts and women exist. Non-marriage may be the result of role modeling, where the older adult provides a demonstration of how non-marriage operates through distinctive paths or displays certain patterns. Our main hypothesis is that the path of transmission is gender dependent.

Bibliography

- Engelen, T. and Kok, J. 2003. Permanent Celibacy and Late Marriage in the Netherlands, 1890-1960, Popula-
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**Figure 1.** The 14 German villages

**Figure 2.** Illustration of transmission path of non-marriage

**Figure 3.** Share that never marry

**Figure 4.** Hazard of marriage by non-married aunt or uncle

**Figure 5.** Kaplan-Meier survival estimates

**Table 1.** Cox proportional hazards model with competing risks estimating the influence of non-married aunts and uncles on hazard of mar-

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1. Non-marriage and the first half of the 20th century non-marriage was particularly high in European populations, and the incidence of non-marriage particularly common in Western Europe and much lower in Eastern Europe. In Ireland during the second half of the 19th and the first half of the 20th century non-marriage was preferred among women to marrying below their social class. Engelen and Kok (2003) present evidence that is consistent with expectations held by parents that the youngest daughter would care for her aging father and mother rather than marrying. That the incidence of non-marriage seems strongly related to family background leads us to posit that non-marriage patterns may be transmitted between generations. The setting for our study is 14 German villages from 1700 to 1899. As shown in Figure 1, non-marriage was a common feature throughout the period in these villages.

2. The Knodel dataset, comprising 14 villages with populations monitored over two centuries, is used for testing the hypotheses that follow from our line of interest. The Knodel dataset uses genealogical records over a long span of time, and is thus suited for examining intergenerational transmission patterns. We define exposure to risk as beginning at 20 years old, and ending at age 35, in order to avoid influential outliers. Siblings are defined by having the same mother. We censor by the year at which, in each village, no more marriages are recorded.

3. We use a competing risks model, split by gender and clustered by mother in order to avoid double-counting sibling characteristics. The two competing risks are a) marriage and b) death before marriage, and we fit a single model that stratifies by these outcomes. Non-marriage among aunts and uncles was defined dichotomously - for instance, if at least one of the subject’s mother’s aunts never married, we code a ‘1’ for the variable ‘unmarried maternal aunt.’ Where there are no maternal aunts or uncles to be married or unmarried, we treat this as missing data. We control for region, changing number of brothers and sisters over time, changing number of married brothers and sisters over time, whether the subject is the first born child, the number of aunts and uncles they have on either side, and period. We treat non-marriage among aunts and uncles as a trait while marriage in the subsequent generation is considered an event; hence non-marriage among nephews and nieces is the resultant survival.

4. We found that a person’s hazard of getting married decreases when at least one maternal aunt does not ever marry, and that this effect appears to be similar for men and for women. Furthermore, a somewhat weaker negative relationship between maternal aunts and women exist. Non-marriage may be the result of role modeling, where the older adult provides a demonstration of how non-marriage operates through distinctive paths or displays certain patterns. Our main hypothesis is that the path of transmission is gender dependent.


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