

Intergenerational transmission of life expectancy (extended abstract)

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1 Extended abstract

We know very little about intergenerational transmission of well-being for women. An extensive literature explores traditional dimensions of transmission such as income or education, but data about women are imperfect in these areas. Since income is hard to evaluate and most of the time measured at the household level, it is difficult to distinguish between male and female individual income (Parman, 2012). Education is individual, but going back in time, we find very little heterogeneity in the level of education, especially for women, and only the recent improvements in education lead to an increase in the variance of education levels (Black & Devereux, 2010). As a consequence, we know much less regarding levels and determinants of mobility for women than for men. To address this gap, we propose to focus on another dimension of economic well-being : health. Lifespan and health are, as income and education, key dimensions of individual welfare (Baland, Cassan, & Decerf, 2021). There is a large heterogeneity in income transmission, but we still need to understand better the mechanisms of life expectancy transmission, especially for women.

In this project, we seek to evaluate the degree of intergenerational transmission of health, measured by life expectancy for men and women separately, and to explore the mechanisms of transmission. This will enable us to answer the important questions of whether mobility / intergenerational transmission differ by gender and why. Thanks to high-quality data, our study is able to link individuals with their female ancestors, data about women being most of the time harder to obtain and literature often forgetting or excluding (at least partially) females (Maystadt & Migali, 2021). Nowadays, in developed societies such as the Netherlands and Sweden (the countries we study), females enjoy a higher life expectancy than males. Historically, they benefited from such an advantage once they survived childbearing age (Fletcher, Topping, & Joo, 2023). It is interesting to evaluate if women are more or less affected than males by intergenerational transmission and, if so, if this difference consists of improving women survival in child age or later.

Regarding the difference in intergenerational transmission of income across genders, the literature points to similar intensity for males and females (Mazumder, 2005) or finds a lower transmission of income for women

(Bukodi & Paskov, 2020). In the USA and the UK, the cause of this lower level of persistence for women is assortative mating, which reduces female labor supply (Raaum et al., 2008). Indeed, women with high-earning potential (i.e. daughters of high-income parents) tend to marry males with high-earning potential as well, and decide to reduce their labour supply (the presence of children increasing this effect). Hence, this mechanism decreases women’s real income. The literature remains however very scarce and we do not know much about the income transmission mechanisms for females. For lifespan, some studies suggest that males are also more affected by the longevity of their ancestors. This ”advantage” can take place in a positive way, as males are more likely to benefit from having a centenarian in the family (Montesanto et al., 2011), or in a negative way, as they are also more likely to suffer from a health event of one of their ancestors, such as becoming a war prisoner (Costa, 2021). The authors mostly attribute the difference between genders to genetic factors, ruling out some other potential explanations such as cultural transmission. Literature widely debated about the role of genetics when analyzing health transmission (Gavrilov & Gavrilova, 2015; McGue, Vaupel, Holm, & Harvald, 1993; Mourits et al., 2020) and genetics, maybe to a lower extent, is also a matter of concern for transmission of social status (Clark, 2023). In this study, we mainly discuss the impact of other determinants of life expectancy transmission, such as early-life environment and socioeconomic conditions, but genetics needs to be considered as well. Another interest of our study is the role of the parents gender. The importance of mothers in intergenerational transmission is not to demonstrate, since mother weight is a key-determinant of children birth weight (Currie & Moretti, 2007). Fathers’ health status matter too, but the effects are most of the time a bit lower than the maternal ones (Giuntella, La Mattina, & Quintana-Domeque, 2022).

Based on these developments, we will address the following research questions to investigate systematically the intergenerational effects and explore their mechanisms.

1. What is the role of the ancestor gender? Do mothers transmit more their lifespan than fathers?
2. Do we observe a difference in the level of intergenerational transmission between boys and girls? Do we observe a higher transmission between fathers and sons and between mothers and daughters like in Parman (2012) ?
3. How do intergenerational effects materialize? Does the advantage of having a long-lived ancestor take place in the early age or in the later age? Until which age does parents’ additional survival transform into effects for children?

We study these questions in the context of two European countries : the Netherlands and Sweden. Both countries offer a high-quality database allowing us to track families over time and to link individuals with their ancestors, including women. The first one is the LINKS-gen Zeeland 2017.01 (Mourits et al., 2020). This database contains information on family and life course for all individuals who were born, married or died in the province of Zeeland between 1796 and 1962. The other database used in our paper is the POPLINK database

(Westberg, Engberg, & Edvinsson, 2016). This database includes births from 1611 to 1912 in three Swedish regions, although individuals born in the early years of the sample are very few. Thanks to parish registers, individuals are tracked across time and the deaths are available until 1912 as well. Both databases also contain information on occupations and socioeconomic status, and the Swedish one is even more complete, including data on migration and smallpox vaccination. Data on migration are useful since they provide information on the reasons some individuals enter/leave the database (this of course happens but it does not rule out the relevance of these data). Data on vaccination inform on the protection against one of the most widespread cause of death at that time and could create a difference in the transmission between vaccinated and non-vaccinated people.

Linear regression models and Cox survival models are developed to help us answering our research questions. Preliminary results are the following:

1. We find that the degree of intergenerational transmission of longevity is similar for women and men, whether we measure longevity as pure death age, as the probability to reach a certain age (for example, 70) or as the probability to belong to the top ten percentiles of survivors in the cohort. This result is consistent with the literature finding that both parents contribute equally to children survival (Mourits et al., 2020) but in contradiction with some others surveys pointing to a higher effect of mothers (Maystadt & Migali, 2021). When considering individuals of both genders, the effects of the parents are quite close. In both cases, the coefficient associated to the mother is a bit higher than the one of the father, and both are significant. In Cox survival models, mother survival is associated to a higher decrease in the death probability at each point in time than father survival, but coefficients are very comparable. When studying the effects of grandparents, we find no significant transmission to the grandchildren in Sweden, whatever the gender of the ancestor. In Zealand, grandfathers seem to influence more their grandchildren lifespan than grandmothers. This once again contrasts with Maystadt and Migali (2021), who find a significant influence of grandmothers on the grandchild lifespan in their Chinese sample.
2. Proceeding to separate regressions for boys and girls, we obtain that mother coefficient is higher for girls than for boys, and father coefficient is higher for boys than for girls. Yet we find no significant difference between these coefficients. Both are very close and indicate that a one-year increase in one of the parent lifespan is associated to a 0.1 year increase in child lifespan. These results contrast with the ones of Parman (2012) who find a deep within-gender correlation and no significant effect of parents on children of the opposite gender.
3. Before the child reaches 5 years, we find that the role of mothers is much higher than the one of fathers, however only the father extreme longevity benefits to the child. Indeed, Having a mother belonging to the top 10% of survivors of her cohort increases the probability that a child escapes to child mortality by 3.7%, whereas the increase associated to a top 10% father is lower than 1% and non significant. On the opposite,

having a very long-lived father is much more valuable than having a very long-lived mother. After she reached 50, each additional year lived by the mother does not increase the children lifespan significantly, whereas each additional year of the father after 50 is associated to an almost two-month increase in child lifespan. This is line with Montesanto et al. (2011), who find that the benefits of having a centenarian in the family are higher if the centenarian is a male. It is also interesting to notice that in Zealand, women survival advantage materializes only during the first five years. After 5, we find no difference in survival between men and women, but child mortality, which was really important in this region at that time, is much reduced for females.

The next steps of our work will consist of adding information about socioeconomic status in our analysis, to determine if the transmission is more intense in some groups of the society. We will also focus on other potential determinants of death we have in our database, such as migration or vaccination against smallpox. Moreover, we will try to study specifically the intergenerational transmission between twin siblings, in order to isolate as much as possible the effects of adult life by naturally isolating the effects of early-life shared environment.

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