Fertility Trajectories and Health Later In Life: A Cross-National Approach

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Although life expectancy in developed countries has increased over the last few decades, so too have health inequalities among older people. This is due to the longer periods of morbidity and disability associated with higher life expectancy (Mc Munn, Breeze, Goodman, & Nazroo, 2006). For this reason, it is critical for social policies in industrialized countries (where population is ageing rapidly) to identify possible determinants of well-being inequality. Life course events, their timing and sequencing, can explain some of the variation in health inequality. The transition to adulthood is important for health and subjective well-being in the long term because it is a phase of social development. Young people become active members of society when they assume adult roles: workers, partners, and parents (Furstenberg, 2008).

Parenthood is one of the most important events in the life course trajectory, and having children is the ultimate step to being considered an adult. Moreover, it has substantial short and long-term implications: physiological and psychological effects of pregnancy and childbirth are well known, but parents' health may also be influenced by "stress, role changes, differences in the allocation of personal and family resources" (Grundy and Tomassini, 2005 p. 217). Importantly, childbirth can take place in very different conditions. Parents can be married, cohabiting, just dating or even single parents. Also they can be full-time or part-time workers, or even unemployed. All these characteristics have to be taken into account when evaluating the negative or positive effects on health later in life. These effects can be influenced by the fertility trajectory and by the context in which these take place.

To be more precise, the mechanisms through which fertility history can influence health later in life are manifold. For women these include the physiological effects of childbearing (Grundy and Tomassini, 2005). Also, previous literature established connections between fertility patterns and diseases like cancer (Madigan, Ziegler, Benichou, Byrne, & Hoover, 1995). Also, having children has been found to have both positive and negative effects on mental well-being and life satisfaction, depending on the number of children, partnership status and timing (see Kohler et al, 2005; Aassve et al. 2011; Stanca, 2012; Myrskala and Margolis; Hansen, 2012). The impact of these strains on subjective wellbeing depends on socio-economic status, and, for example, research has shown high rates of depression and stress in lone mothers but not in married mothers (Grundy and Tomassini, 2005; Harrison, Barrow, Gask, & Creed, 1999).

Most prior research on this topic has focused only on the link between the number of children – and sometimes age at first birth – on later physical and mental health (Kohler et al., 2005; Aassve et al., 2011; Grundy and Kravdal, 2010) or alternatively, has considered the association between life course events and health outcomes at the same

point in time or in the short run (Barban, 2013). Moreover, pathways to adulthood are usually not contextualized in time and place. Hence, it is central to take a cross-national comparative perspective. Findings in the current literature are based only on a single country, and it is uncertain to what extent they can be translated to other societies or be dependent on country-specific characteristics. A comparison of existing studies shows how fertility trajectories differ and how the impact of parenthood on health outcomes can be expected to be heterogenous across societies. This lack of homogeneity would be due to the mediating role of welfare regimes, the institutional context, and culture. Both institutional and cultural factors – in particular family systems – influence life course trajectories by creating prospects and constraints to which people adapt (Billari and Wilson, 2001; Mayer, 2001; Breen and Buchmann, 2002; Blossfeld et al., 2012). At the same time, these factors affect health at older ages by means of health insurance schemes, welfare transfers, and intergenerational support. Hence, the role of fertility trajectories in shaping health outcomes changes depending on the specific context and country characteristics. One may expect that the effect of parenthood on later health is less evident where welfare states are more generous and where social norms on parenthood and co-residential unions are less severe (e.g. Scandinavian as opposed to Southern European countries).

This work aims at investigating the later-life consequences of fertility trajectories from a comparative, cross-national perspective. Outcomes to be investigated include subjective wellbeing (life satisfaction and depression) and health (heart diseases, diabetes, cancer, BMI, disability, health behaviors such as smoking and drinking). Specifically, the first step involves studying the effect of different fertility trajectories on health using data from several countries collected in the Survey of Health and Retirement in Europe (SHARE), the English Longitudinal Study of Aging (ELSA, United Kingdom), and the Health and Retirement Survey (HRS, United States).

SHARE is a multidisciplinary and cross-national panel survey. It covers individuals aged 50 and older as well as their spouses in over 10 European countries (depending on the specific Wave). The first wave of the SHARE data was collected in 2004–2005 and the second wave in 2006–2007. SHARELIFE is the third wave of data collection for SHARE, conducted in 2008–2009. It focuses on the SHARE respondents' life histories, so it allows one to assess the influence of fertility history on health and subjective wellbeing in old age. In November 2012, Wave 4 was released, which created an opportunity to add information on health conditions and trajectories that started in 2004. The third wave of SHARE contains an extensive module on the individuals' family history. This data is collected retrospectively using a life grid method: a grid is filled in during the course of a respondent's interview and represents their lives graphically.

The English Longitudinal Study of Aging (ELSA) is also a longitudinal study that collects multidisciplinary data from a representative sample of the English population

aged 50 and older. The first wave of ELSA achieved a sample comprising 11,050 respondents aged 50 and over and was collected in 2002-2003. The second and third wave took place in 2004-2005 and 2006-2007, respectively. Wave 3 includes an extensive life-history interview that collects information on lifetime family circumstances, place of residence, employment, and major health events prior to the baseline interview. Retrospective information on life course such as this provides a way to build fertility trajectories. Three other waves have been collected so far: 2008-2009, 2010-2011, and 2012-2013.

The Health and Retirement Study (HRS) is the oldest of the three data sets that I will use in this paper. It started in 1992 and surveys a representative sample of more than 26,000 Americans over the age of 50 every two years. Supported by the National Institute on Aging (NIA) and the Social Security Administration, the HRS explores the changes in labor force participation and the health transitions that individuals undergo toward the end of their work lives (and in the years that follow). Moreover, the HRS includes extensive sections on family structure and family history (i.e. partnership and childbearing events).

By harmonizing these longitudinal datasets, it is possible to characterize fertility trajectories in a cross-national perspective. According to the life course approach, health outcomes are the result of the cumulative influence of multiple risks and protective factors experienced during the life course. For this reason, to study the association between fertility patterns and health outcomes, it is necessary to take into account the whole fertility trajectory. The discussion above shows how difficult it may be to assess precise causal effects of fertility trajectories, unless the researcher relies on very strong assumptions. Also, taking the whole trajectory as an input in statistical analysis is not straightforward (George, 2009). As I mentioned previously, I will do this by exploiting sequence analysis techniques (Abbott, 1995; Elzinga, 2006; Brzinsky-Fay and Kohler, 2010; Gabadinho, 2011), which allows me to capture characteristics of the fertility trajectory such as complexity, sequencing and timing. This set of techniques has been used in life course analysis, but it has so far never been used to build fertility pathways and to explore their impact on health later in life.

Life courses of individuals will be analyzed between age 18 and age 49, and then each year will be associated to a different state. For every individual in the sample, I will collect information on partnerships and fertility. The combination of union status with parenthood gives multiple possible states: Single (S), Dating (D), Cohabiting (C), Married (M), and all these states can be also combined with "being a parent P of *n* children" (SP1, DP1, CP1, MP1, SP2, DP2, CP2, MP2. etc.).

The process is iterative and cumulative, and its complexity is relevant to consider. After defining the different sequences and describing them in terms of timing (age at each event), quantum (number of events), and sequencing (order of events), it will be possible to identify specific typologies of fertility – and infertility – trajectories. I will do this by

using clustering techniques, which allow me to group trajectories on the basis of their similarity (or dissimilarity). The analytical strategy adopted in this case uses the Longest Common Subsequences metric (LCS) proposed by Elzinga (Elzinga 2010), whose goal is to compute a matrix of dissimilarities between pairs of sequences, and thus of life courses (Billari 2005). The dissimilarity measure is based on the length of common distinct subsequences between life course trajectories. This technique has never been used arch to evaluate the role of fertility history for old health conditions. Both partner and fertility history have been partially reconstructed and used to determine their impact on mental well-being and mortality/morbidity trends, but only specific statuses or events have been considered such as age at first birth, parity, age at last birth, birth intervals shorter than 18 months, presence of twins (Grundy and Tomassini, 2005; Grundy and Kravdal, 2010; Hank and Wagner, 2013), number of union dissolutions, timing of dissolutions, relationship being a marriage or a cohabitation (Peters and Liefbroer, 1997). The only time that it has been implemented for a similar purpose, Barban (2013) performed an evaluation of family trajectories – considering both union formation and childbearing – on young women between 30 and 33 (Barban, 2013).

This group characterization of life sequences can be used as an input for further analysis; in particular, regression analysis in order to explore how belonging to each typology is related to mental and physical health at older ages. These models will allow me to take into account the effect of selection and confounding variables. Given that health is a continuous process that develops over time, it is very likely that health at older ages is influenced by the kind of health experienced in adolescence, childhood, and infancy. Previous health levels, in turn, influence the fertility transitions. To account for these selection issues, I include childhood health conditions in the model as a control variable. Other confounding variables that can be taken into account through regression models include the level of education, socioeconomic status (in general), parental social class, and family background.

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