Family-work Trajectories and Inequalities in Later-life Cognition in China: Evidence from CHARLS

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Extended abstract

Within a growing body of literature showing the associations of variations in individuals' partnership, fertility, and employment histories over the life course with inequalities in later-life health (Arpino et al., 2023; Di Gessa et al., 2020; O'Flaherty et al., 2016; Tosi & Grundy, 2021), cognition is a critical health outcome frequently assessed (Bonsang & Skirbekk, 2022; Gemmill & Weiss, 2021; Ice et al., 2020; Kobayashi & Feldman, 2019; Read & Grundy, 2016; Saenz et al., 2019; Sironi, 2023; Zhang et al., 2023). Assortative mating, parenthood, family size, and labor market outcomes are intertwined domains all of which are affected by individuals' educational attainment which contributes to building and preserving cognitive reserve throughout childhood, adulthood and old age (Zhang et al., 2024). There is evidence that early union formation, early/late transition to parenthood, large family size, and consistently lower-skill employment were separate demographic and socio-economic characteristics associated with poor later-life cognition (Kobayashi & Feldman, 2019; Zhang, 2022). However, less is known about how the intersections/clusters of partnership, fertility, and employment histories (e.g., early union formation and early transition to parenthood are shown to be paired with large family size and lower-skill employment) relate to inequalities in later-life cognition in lower- and middle-income countries with varying human capital landscapes and socio-economic institutions. Therefore, taking a holistic approach, our study aims to investigate the relationships between various family-work trajectories and inequalities in later-life cognition.

In this study, we focus on China which has undergone substantial transformations in educational and socio-economic developments over the last couple of decades despite enduring social inequalities (Wu, 2019). Data will be drawn from the China Health and Retirement Longitudinal Study (CHARLS) whose baseline survey fielded in 2011 covers 150 counties and 450 villages with a sample of approximately 10,000 households and 17,500 individuals aged 45 or older, collecting information on older adults' socio-demographics, economic activities,

and health (Zhao et al., 2014). We will use CHARLS's life-history wave (2014) with retrospective information on respondents' marital and childbearing history and past spells of work, as well as regular waves (2011, 2013, 2015, 2018). In particular, for life-history wave we will use the Harmonized CHARLS Life History dataset Version A as of July 2022 developed by the Gateway to Global Aging. In this wide-shaped dataset, wherever applicable and possible, each respondent's partnership status (binary), total number of children, and employment status (categorical: agriculturally employed or self-employed, non-agriculturally employed or self-employed, family business, unemployed, retired) is recorded or imputed every year from age 15 to age 80. By combining information on these domains, we will create a categorical family-work status for each respondent for each year from age 15 to 80 (e.g., "unmarried, no child, agriculturally employed at age 16" followed by "married, no child, agriculturally employed at age 17" followed by "married, 1 child, agriculturally employed at age 18"). The exact number of categories of this family-work status variable will be determined in the process of data analysis. To account for the retirement age arrangements in China (only applicable to urban workers: 60 for men, 55 for white-collar women, and 50 for blue-collar women), we choose respondents aged 50 or above in CHARLS 2011 who were interviewed in all four follow-up waves (2013, 2015, 2018, 2020) (n = 10,920).

The dependent variable (cognition) will be operationalized in two ways. The first is memory recall based on a respondent's ability to immediately repeat in any order ten Chinese nouns just read to them (immediate word recall) and to recall the same list of words 4 minutes later (delayed recall). Informed by a prior study (Lei et al., 2014), we will create an episodic memory measure ranging from 0 to 10 as the average of immediate and delayed recall scores. Our second cognitive measure is based on some components of the mental status questions of the Telephone Interview of Cognitive Status (TICS) battery established to capture intactness of individuals. In CHARLS, mental status questions contain the following items – serial 7 subtraction from 100 (up to five times) and whether the respondent needed any explanation or used an aid such as paper and pencil, naming today's date (month, day, year, and season), the day of the week, and the ability to redraw a picture shown to him/her. Answers to these questions will be aggregated into a single mental status score that ranges from 0 to 11.

Our analytical strategy takes three steps.

First, using sequence analysis (Abbott & Tsay, 2000; Liao et al., 2022), we expect to identify and figuratively present a statistically justifiable finite class of family-work trajectories using the "sadi" syntax in Stata (Halpin, 2017). These trajectories will be attuned to China's

unique social-economic history (e.g., one-child policy, *hukou* (household registration) system and rural-urban disparities, segregation across employment sectors, etc.).

Second, estimating multivariate linear regression models, we aim to explore how various family-work trajectories are associated with inequalities in older adults' cognitive function cross-sectionally in 2011 (i.e., CHARLS baseline wave).

Third, fitting growth curve models, we seek to assess whether these inequalities widen or narrow over a 9-year follow-up period from 2011 to 2020. This part of analysis is informed by arguments about cumulative advantage/disadvantage (Ferraro & Shippee, 2009).

We expect to see some results consistent with prior research (e.g., large family size or consistently lower-skill employment is associated with poor cognition), but our contributions lie in considering China's unique socio-economic institutions (*hukou* (household registration) system and rural-urban disparities, segregation across employment sectors, etc.) as well as the dynamics of inequalities in later-life cognition over time. We have already started data cleaning and expect to obtain the full results by the end of October 2024.

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