How siblings shape cognitive aging. Evidence from American families

Yiang Li | May 4, 2026

Yiang Li's research on Americans born in the early 20th century shows that adults who grew up with multiple brothers and sisters, especially siblings close in age, experienced markedly faster cognitive decline than only children.

Brothers and sisters teach us to share secrets, negotiate for the last slice of cake and slam doors. Such childhood tussles may do more than shape our childhood lives. Until recently, scholars had mostly considered sibship size for educational attainment, showing how each extra child dilutes parental time and resources (Blake 1985). Extending to a life course perspective, in a recent study (Li 2026), using historical Census records of Americans born in the 1920s and 1930s, I find evidence that the number, spacing, and sex of our childhood companions leave a lasting imprint on our health as we age.

Siblings and the long shadow of childhood

Two competing ideas attempt to explain why siblings might matter. *Resource dilution theory* argues that each additional child reduces the money, time, and emotional support that parents can devote to each offspring (Downey 1995). *Confluence theory* counters that older siblings may act as tutors and role models, enriching the developmental environment for younger brothers and sisters (Zajonc 1976). Gender also matters: sisters are often more emotionally supportive but may shoulder heavier caregiving responsibilities later in life (Grigoryeva 2017).

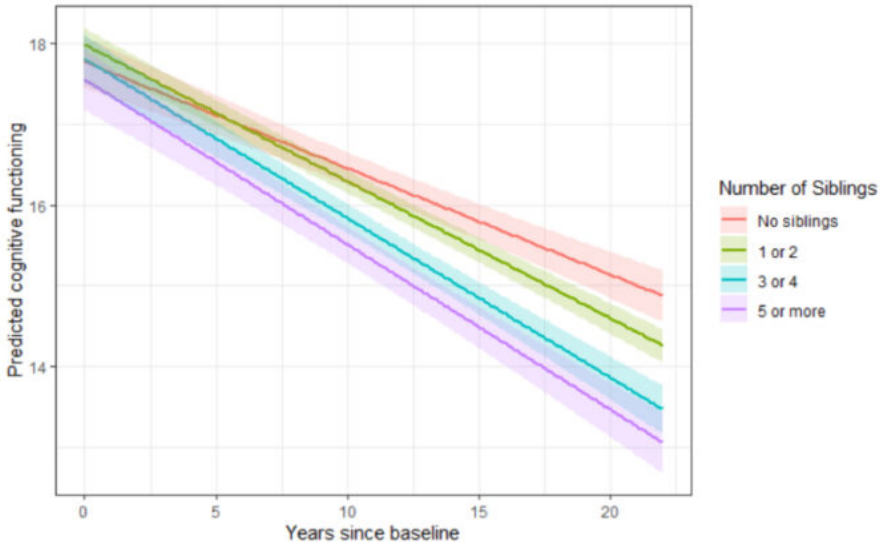
In a recent study (Li 2026), using data from the American health and Retirement study (HRS), I compared adults aged 51 and over who had grown up as only children with those who shared their childhood homes with one to several siblings, with attention to how close in age siblings were and whether they were boys or girls. Adults from very large families were more likely to come from disadvantaged socioeconomic backgrounds. To minimize such selection effects, I adjusted for an extensive range of time-invariant demographic, socioeconomic, and contextual

characteristics in childhood alongside time-varying health conditions in later life. The main result is that, everything else (more or less) equal, adults growing up with more siblings had markedly faster cognitive decline in later life.

Big families and cognitive aging

Americans who shared their childhood homes with siblings do not simply remember more squabbles; they also lose cognitive sharpness more quickly than those who grew up alone. Even having one or two siblings speeds up cognitive decline by roughly one-fifth relative to only children (Figure 1). Among people who grew up with three or four siblings, decline was around 30% faster.. The descent into cognitive frailty is even more pronounced for those with five or more siblings: by their mid-80s, adults from such large families had lost about a third more cognitive capacity than their peers who grew up alone.

Figure 1. Predicted cognitive functioning trajectory with years since baseline by sibship size (US, 1998-2022. Respondents aged 51 years and over).



Source: Li (2026).
Note: The figure shows predicted cognitive functioning on the Telephone-Interview for Cognitive Status modified for the Health and Retirement Study (HRS) that ranges from 0 to 27, with higher scores indicating better cognitive functioning. Respondents were followed from the HRS wave of 1998 to 2022. The predicted trajectories adjust for time-invariant conditions, including birth year, race, ethnicity, gender, parental education, childhood financial conditions, father's occupation, childhood region of residence, farming status, dwelling ownership, urban/rural status, and family structure, alongside time-varying health conditions including self-rated health, depression, and stroke.

Large sibships often go hand in hand with fewer resources per child (Downey 1995). People from big families completed about half a year less schooling than only children, even after adjusting for an extensive range of family and contextual socioeconomic characteristics. Each additional year of education raises baseline cognitive function and slows decline a little, but it does not fully make up for the long-term effects of resource dilution. This suggests that the real damage is done in childhood, when a parent's time and attention must be divided among many mouths and minds.

Policy should focus on levelling the playing field rather than discouraging big families. Programs that provide scholarships, tutoring, and childcare subsidies can help children from large sibships secure the education and stimulation that only children take for granted. Evidence from other studies suggests that investing in the eldest child's schooling benefits younger siblings too. Such targeted support need not dictate family size, but it can ensure that

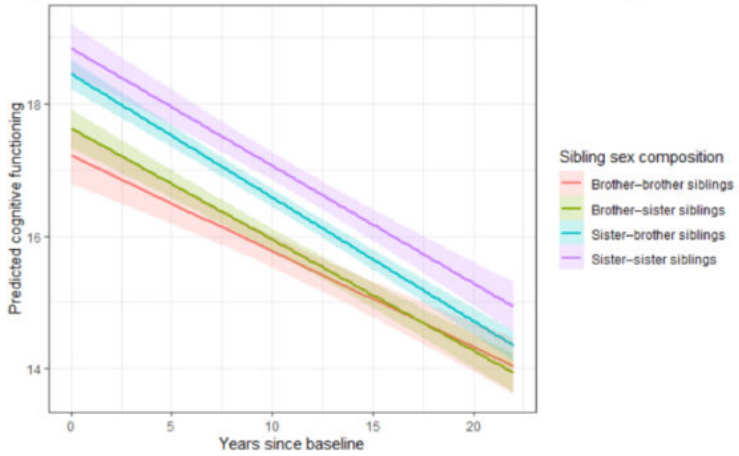
families with many children do not face a cognitive penalty that manifests decades later (Zang, Tan, and Cook 2023).

Spacing and gender: hidden traps in sibships

Numbers are not the only factor; configurations matter too. When brothers and sisters are born within two years of each other, the competition for parental attention intensifies. Adults from such closely spaced sibships experienced almost as rapid cognitive declines as those from large families. It seems that having several children at once, rather than across a wider span, strains a household's capacity to nurture each child's brain.

Women generally experience higher cognitive functioning at baseline than men (Levine 2021). Yet the gender composition of the siblings matters for men and women. Men who grew up with only brothers entered adulthood with the lowest cognitive scores (brother-brother siblings, red line), whereas women raised with only sisters (sister-sister siblings, purple line) fared best (Figure 2). Over time, however, compared to women with only sisters (sister-sister siblings, purple line), women with at least one brother (sister-brother siblings, blue line) descended slightly faster into cognitive decline. Without sisters, earlier studies show that the daughters often shoulder more care for aging parents, leaving less time for paid work and cognitive stimulation, while sons reap the benefits of their sisters' support (Grigoryeva 2017). Such asymmetric caregiving burdens may explain why women with brothers pay a steeper cognitive price.

Figure 2. Predicted cognitive functioning trajectory with years since baseline by sibling sex composition (US, 1998-2022. Respondents aged 51 years and over).



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Policies that help parents to space births and that relieve daughters of disproportionate caregiving responsibilities could mitigate these hidden traps. Access to family planning allows couples to space births and reduce intense competition for attention. More generous parental leave and elder-care services, along with incentives for men to share care work, would support daughters' cognitive health and, by extension, that of their brothers. Encouraging equitable sharing of family responsibilities may be just as important for cognitive aging as encouraging

further years of schooling.

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