

# Examining How Healthy Brain Aging Begins in Childhood

*IMAGE*  
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# Paradigm Shift in Social Gerontology

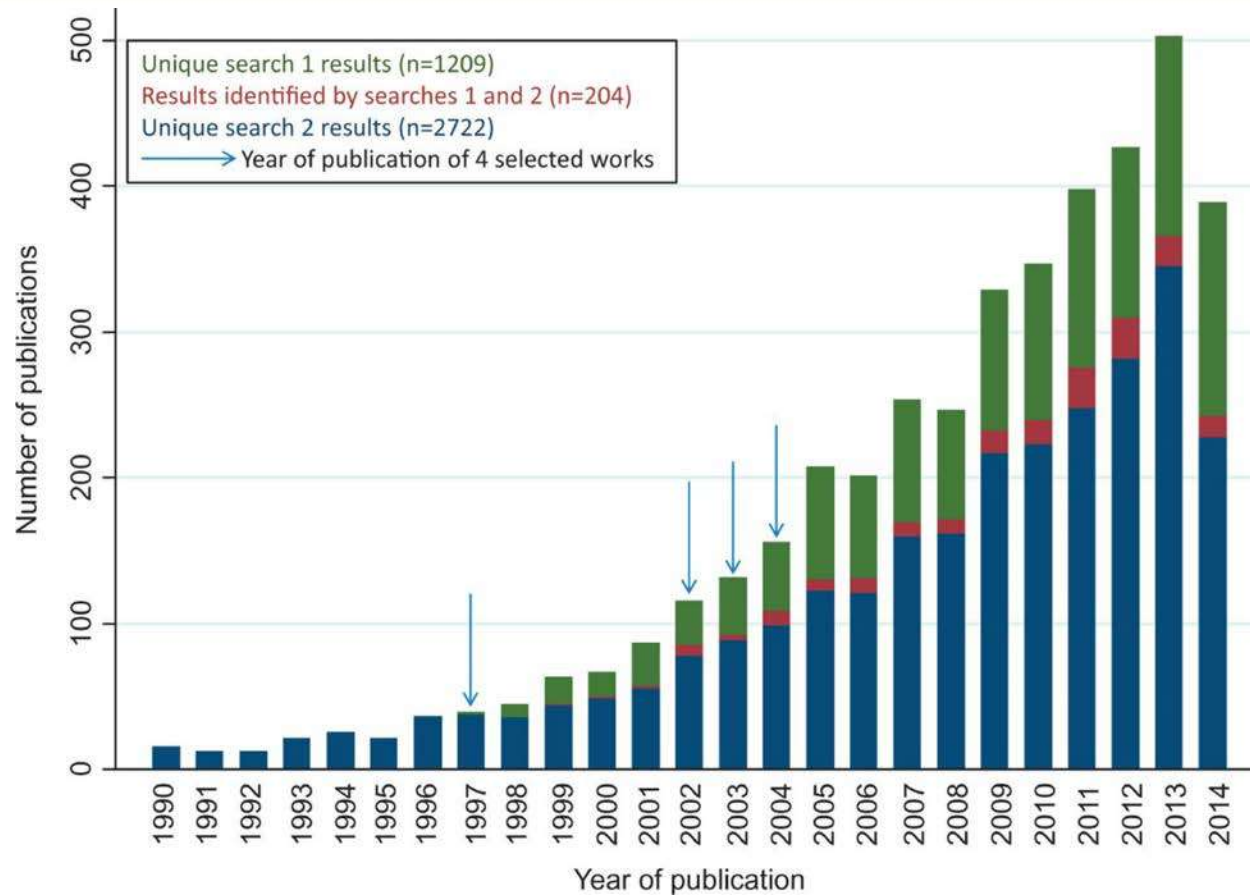
*IMAGE*  
(not included for mass  
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Settersten, R.A. (2017). Some things I have learned about aging by studying the life course. *Innovation in Aging*, 1(2). doi: 10.1093/geroni/igx014

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<https://www.tomhussey.com/PROJECTS/REFLECTIONS/thumbs>

“Old age as a life phase is inherently different from earlier phases because there is a long past that must be taken into account. That long past reflects the fact that aging is a lifelong process.”

# Paradigm Shift within Epidemiology



Ben-Shlomo, Y., Cooper, R., & Kuh, D. The last two decades of life course epidemiology and its relevance for research on ageing. *International Journal of Epidemiology*, 45(4), 973-988.

doi: 10.1093/ije/dyw096

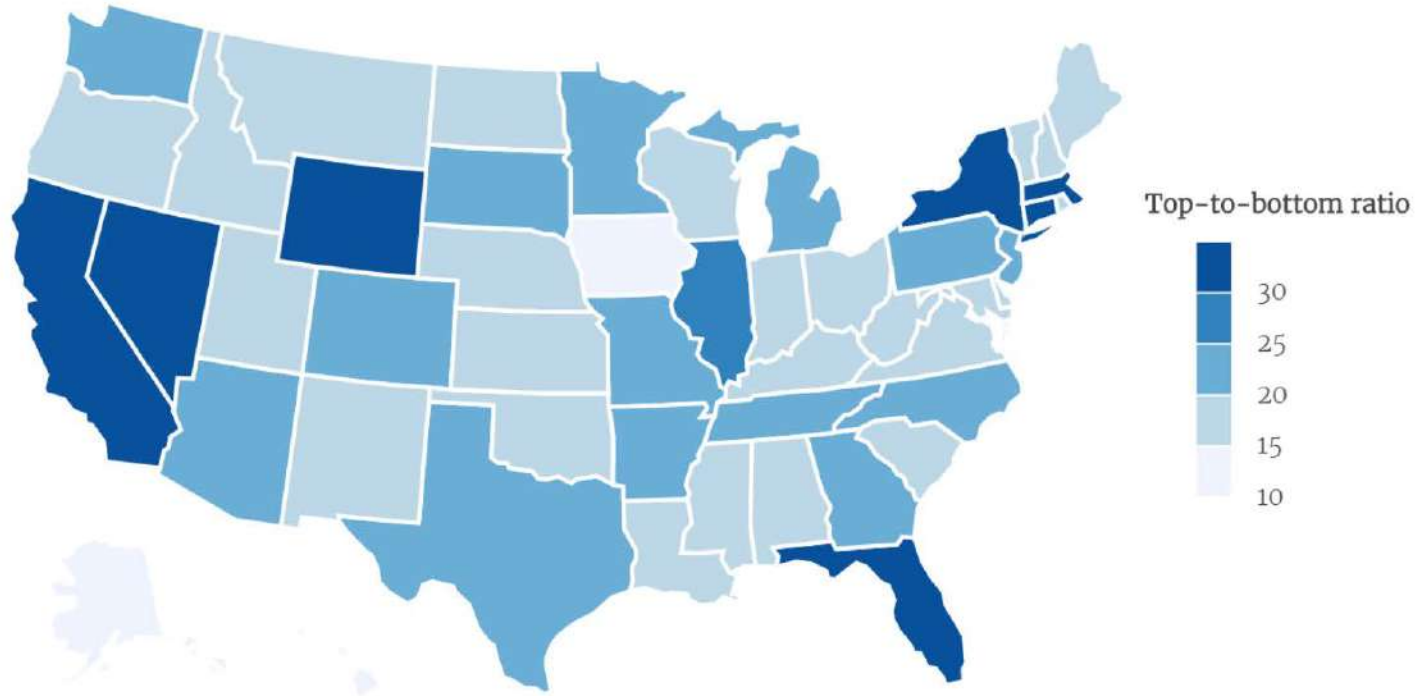
# Do Inequalities from Childhood Matter for Later Life Cognitive Health?

*IMAGE  
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# Inequality among Families Today

8 states have top-to-bottom ratios over the national gap of 26.3

The top-to-bottom ratio measures the difference in the incomes of the top 1 percent versus the bottom 99 percent



Source: EPI created with [mapinseconds.com](https://www.mapinseconds.com)

<https://www.cnbc.com/2018/07/19/income-inequality-continues-to-grow-in-the-united-states.html>

# U.S. National Plan to Address Alzheimer's Disease: 2017 Update

## Goal 1: Prevent and Effectively Treat Alzheimer's Disease and Related Dementias by 2025

Research continues to expand our understanding of the causes of, treatments for, and prevention of AD/ADRD. Goal 1 seeks to develop effective prevention and treatment modalities by 2025. Ongoing research and clinical inquiry can inform our ability to delay onset of AD/ADRD, minimize its symptoms, and delay its progression. Under this goal, HHS will prioritize and accelerate the pace of scientific research and ensure that as evidence-based solutions are identified and quickly translated, put into practice, and brought to scale so that individuals with AD/ADRD can benefit from increases in scientific knowledge. HHS will identify interim milestones and set ambitious deadlines for achieving these milestones in order to meet this goal.

In 2016/2017, Goal 1 showed substantial progress across a spectrum of research areas, thanks to the continued support from our national leadership and the American public, the dedication of study volunteers and their families and caregivers, and the valued work of clinicians and scientists.

Federal funding devoted to AD/ADRD research has expanded over the past several years, reflecting intensified national interest in finding ways to treat these devastating diseases. The National Institutes of Health (NIH) played a lead role by redirecting \$50 million in funding in fiscal year (FY) 2012 and allocating \$40 million in FY 2013 to promising avenues of AD/ADRD research. Federal appropriations increases to the NIH budget by \$100 million in FY 2014 and \$25 million in FY 2015, primarily directed toward AD/ADRD research, were also approved. However, the biggest increases in funding came in FY 2016 and FY 2017, following Congressional passage of the Consolidated Appropriations Act 2016 (P.L. 114-113) and the Consolidated Appropriations Act, 2017 (P.L. 115-31). The FY 2016 appropriations directed an unprecedented additional \$350 million toward AD/ADRD research, with an additional \$400 million provided for this research in FY 2017; increasing overall NIH funding from Congress for AD/ADRD research by \$912 million from FY 2012 to FY 2017. In FY 2017 alone, NIH estimates spending \$1.4 billion on AD/ADRD research. This enormous infusion of resources enabled the launch and expansion of research programs and invigorated investigator-initiated research, further accelerating progress towards the Plan's ultimate research goal: finding effective interventions to treat or prevent AD/ADRD by 2025. [See <https://www.congress.gov/115/bills/hr244/BILLS-115hr244enr.pdf>.]

NIH was already poised to integrate the extraordinary new funds into its research portfolio. In July 2015, NIH released the first of what is now an annual professional judgment budget for Congress -- and the American people -- estimating the costs of accomplishing the research goals of the National Plan to Address Alzheimer's Disease. This report is known as a "bypass budget" because of its direct transmission to the President and subsequently to Congress without modification through the normal federal budget process. The most recent estimate, submitted in July 2017, outlines funding needs for the most promising research approaches for FY 2019. [See <https://www.nia.nih.gov/about/sustaining-momentum-nih-takes-aim-alzheimers-disease-related-dementias>.]

# Advancing the Empirical Evidence, while Contributing to Theory



National Institute on Aging



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## Childhood Socioeconomic Status and Later Life Evidence From the Wisconsin Longitudinal Study

Emily A. Green and Sara M. Mo

**Abstract**  
**Objectives:** This study examined childhood socioeconomic status (SES) as a predictor of later life cognitive function. **Methods:** We used data from the Wisconsin Longitudinal Study to examine associations between childhood SES and later life cognitive function. **Results:** Globally, higher childhood SES predicted better language/executive function in older adulthood. **Discussion:** Findings suggest that higher childhood SES is associated with better cognitive function in later life. We found no association between childhood SES and later life cognitive function when accounting for parental income and education. We found no association between childhood SES and later life cognitive function when accounting for parental income and education.

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Journal of Aging and Health  
1-27  
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DOI: 10.1177/0898264318783489



Social Science & Medicine  
Volume 212, September 2018, Pages 219-226



Childhood socioeconomic status and genetic risk for poorer cognition in later life

Sara M. Moorman <sup>1</sup>, Kyle Carr <sup>2</sup>, Emily A. Greenfield <sup>1</sup>

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<https://doi.org/10.1016/j.socscimed.2018.07.025>

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### Highlights

- Higher childhood SES predicted better language/executive function in older adulthood.
- APOE ε4 carrier status was unrelated to language/executive function.
- For memory, APOE ε4 carriers had differential susceptibility to childhood SES.
- Differential susceptibility dissipated with age.

### Abstract

The ε4 allele of the APOE gene is associated with poorer cognition in later life. This study aimed to advance understanding of how environments potentially moderate this genetic risk by focusing on childhood socioeconomic status (SES). Previous research across diverse national contexts has found that older adults from higher-SES families in childhood demonstrate better cognitive functioning than their lower-SES counterparts. Nevertheless,

GE

# WLS Sample

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*IMAGE  
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# A Unique Data Source

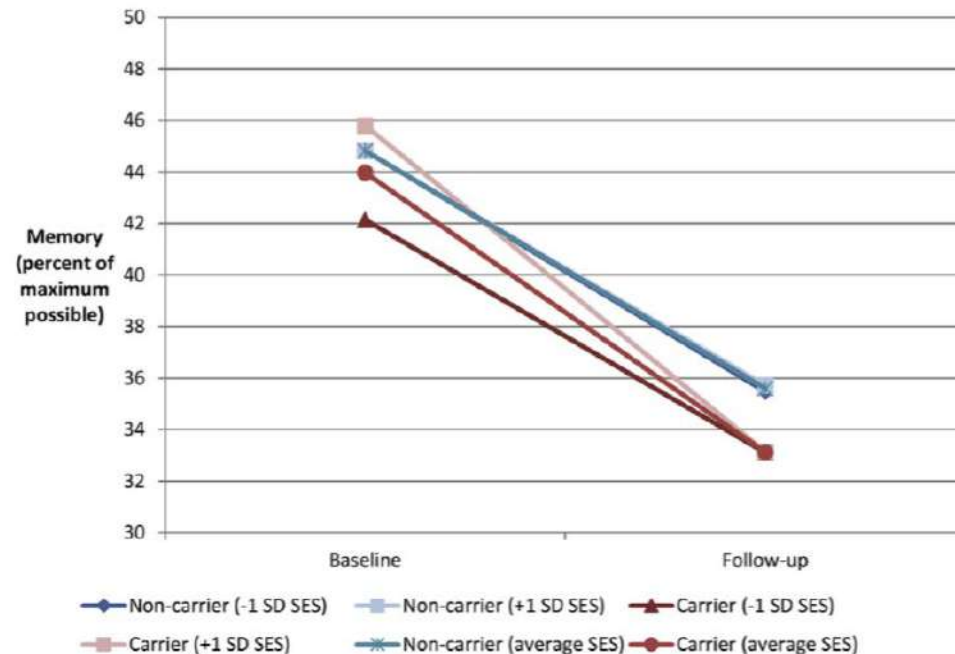
- The Measures
  - Neurocognitive assessments
    - Age 65 and 72
    - Memory and language/executive functioning
  - Prospective measures from adolescence
  - Careful attention to status attainment of parents and the participant
  - Genetic data
- The Sample
  - White, high school graduates from Wisconsin
  - Yet still diverse in important ways (e.g., rural versus urban)

# Summary of Findings (So Far)

- SES associated with baseline levels of cognition at age 65, not so much with change
- Larger associations for language/executive functioning than memory
- Associations involving parental education larger and more robust than parents' occupational status and income
- Post-secondary educational attainment and adolescent IQ account for much of the association between parental SES and later life cognition

# Summary of Findings (So Far)

- Evidence for differential susceptibility to APOE-4, specifically:
  - For memory
  - At age 65



**Fig. 2.** Gene-by-environment interaction of APOE  $\epsilon$ 4 carrier status and childhood socioeconomic status over a seven-year period.

# Implications

- *For research:* Consistent evidence that childhood matters.
- *For theory:* Constellations of risk and protective factors stemming from childhood.
- *For society:* Forging greater connections across policy on children's health and healthy aging.

# Next Steps

- Latent transition analyses to model more subtle changes between ages 65 to 72
- School quality as another aspect of childhood inequality
- Propensity score analysis concerning long-term implications of post-secondary education

# Childhood Inequality and Brain Aging among African American Adults

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## *Funders*

*Rutgers University –Newark, Chancellor's Seed Grant & Provost's Research Grant  
New Jersey Department of Health, Office of Minority and Multicultural Health  
Department of Health and Human Services, Office of Minority and Multicultural Health*

## **African-American Brain Health Initiative: A University- Community Partnership**



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# Thank You!

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*Grant funding: NIA-R01AG057491-02S1*