

# Strong associations between young people's sustained exposure to economic hardship and worse cognitive function

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Poverty and perceived hardship over decades among relatively young people in the U.S. are strongly associated with worse cognitive function and may be important contributors to premature aging among disadvantaged populations, report investigators in the *American Journal of Preventive Medicine*.

Rising [income inequality](#) in the U.S. means that four out of five Americans will live near poverty at least once in their lives, according to a recent Associated Press survey. Previous research has shown that exposure to poor socioeconomic conditions during childhood, adulthood, or cumulatively, is associated with cognitive deficits. However, most of these studies involved older adults and so there is little data on whether economic adversity influences cognitive health much earlier in a person's life.

"Income is dynamic and individuals are likely to experience income changes and mobility especially between young adulthood and midlife," explained lead investigator Adina Zeki Al Hazzouri, PhD, of the Division of Epidemiology, Department of Public Health Sciences at the University of Miami. "Monitoring changes in income and financial difficulty over an extended period of time and how these influence cognitive health is of great public health interest."

Dr. Zeki Al Hazzouri and her colleagues examined the effects of

sustained poverty and perceived financial difficulty on cognitive function in midlife using income data for about 3,400 adults who took part in the ongoing Coronary Artery Risk Development in Young Adults (CARDIA) [prospective cohort study](#). The CARDIA study included black and white males and females 18 to 30 years of age at the start of the study in 1985-86.

Income data were collected from study participants six times between 1985 and 2010. Sustained poverty was defined as the percentage of time the participants' household income was less than 200% of the federal poverty level. Participants were divided into four groups: never in poverty; less than 1/3 of the time; from 1/3 to nearly 100% of the time; or always in poverty. The annual income cut-offs for 200% of the federal poverty level for a four-person household were \$26,718 in 1990, \$28,670 in 1992, \$31,138 in 1995, \$35,206 in 2000, \$39,942 in 2005, and \$44,630 in 2010.

In 2010, at a mean age of 50 years, participants underwent three tests that are widely used and considered reliable to detect cognitive aging. The Rey Auditory–Verbal Learning Test measures verbal memory and assesses the ability to memorize and retrieve words. The Digit Symbol Substitution Test is a subtest of the Wechsler Adult Intelligence Scale and measures performance on speed domains. The interference score on the Stroop test (executive skills) measures the additional amount of processing needed to respond to one stimulus while suppressing another.

The study found strong and graded associations between greater exposure to economic hardship and worse cognitive function, processing speed in particular, leading investigators to conclude that poverty and perceived hardship may be important contributors to cognitive aging. Individuals with all-time poverty performed significantly worse than individuals never in poverty. Similar results were observed in persons with perceived [financial difficulty](#).

"Maintaining cognitive abilities is a key component of health," commented Dr. Zeki Al Hazzouri. "Findings among this relatively young cohort place economic hardship as being on the pathway to cognitive aging and as an important contributor to premature aging among economically disadvantaged populations. It is important to monitor how trends in income and other social and economic parameters influence health outcomes."

**More information:** "Sustained Economic Hardship and Cognitive Function: The Coronary Artery Risk Development in Young Adults Study," *American Journal of Preventive Medicine*. DOI: [dx.doi.org/10.1016/j.amepre.2016.08.009](https://doi.org/10.1016/j.amepre.2016.08.009)

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