

# Use It or Lose It! How Age Affects Cognitive Skills

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Conventional wisdom tells us cognitive skills continue developing until people reach their early 30s and then beginning a long fall. However, that conclusion does not come from following individuals as they age. Instead, it comes from comparing the math and reading skills of individuals of different ages at a single point in time.

The problem is that people of various ages have different educational experiences, different jobs and different circumstances, affecting how they develop and retain their skills.

In [new research](#), my colleagues and I found that skills typically rise until the 40s, after which reading skills gently fall and math skills more steeply. Even here, however, the story is not so simple. These averages mask the fact that any decline is closely tied to how much the skills are used.

Simply put, people who read and do math on a regular basis hold on to those skills at least well into their 60s.

Economists are interested in understanding this because reading and math skills are closely related to economic outcomes. More highly skilled individuals tend to earn more, and countries with more skilled populations grow faster. Here is the big issue: Most developed countries of the world have aging populations. Does this then imply worse economic outcomes as we go forward?

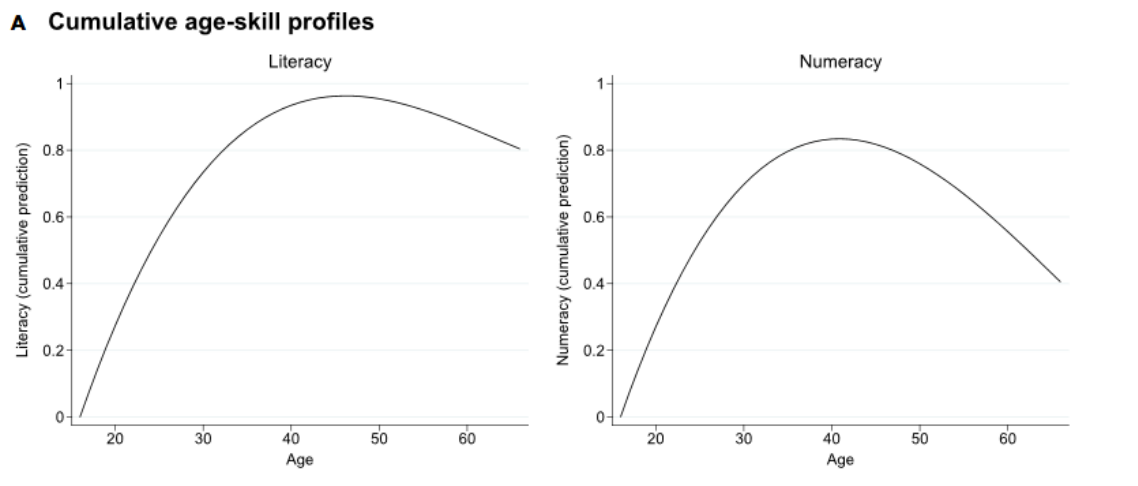
The research challenge in answering this question has been a lack of appropriate data. For the most part, existing data on age and skills do not come from observing a representative sample of people as they age. Instead, they come from comparing the skills of different people of different ages, say one at 30 and one at 40, and assuming that after aging for 10 years, the 30-year-old will look like the 40-year-old.

But these two people grew up in different circumstances, with differing quality schooling and other factors that might affect their skills. Thus, any effects of aging are mixed up with other societal factors.

We overcome this problem by using unique German data that follow a representative sample of 3,263 adults over a three- to four-year period. At the initial survey and again at the later survey, the individuals are given the same reading and math test. Thus, it is possible to observe directly the impact of age on skills.

What we found was that skills, on average, continue to increase into the 40s, and they never dip below the levels the individuals enjoyed in their 20s.

Figure 1. Longitudinal age-skill profiles



Perhaps the more important finding is that even this later decline is not inevitable. These average patterns hide the dramatic differences in aging between those who use literacy and numeracy skills consistently at home or work and those who do not. The survey data asked about the frequency of doing separate items such as “calculating prices, costs, or budgets” for math or “reading letters, memos, or e-mails” for reading.

Those with above-average usage *never* showed declining skills at least until age 65, when our data ended. Those who weren’t using math or reading skills much peaked in their early 30s.

Interestingly, based on assumed high-skill usage, some previous analyses followed the skill patterns for white-collar and highly educated workers. When we look at these factors, we find the same answers: Among professionals or highly educated individuals, those who use the skills never show declines with age, but those who do not use the skills do, in fact, show declines with age. Women show a sharper decline in numeracy skills as they grow older than men, perhaps based on educational background or career choices.

While our results, in principle, offer some consolation for countries with aging populations, they also highlight the importance of policy attention toward not only the accumulation of skills in schools, but also their retention through using those skills and pursuing lifelong learning. Ideas of fostering expanded learning opportunities obviously go far beyond simple age-skill patterns and are perhaps even more strongly motivated by such larger societal changes as the broad introduction of various forms of artificial intelligence. Unfortunately, however, while the idea of lifelong learning has been frequently discussed in various policy contexts, little has been done to make it a reality.

Hanushek, Eric A., Lavinia Kinne, Frauke Witthöft, Ludger Woessmann (2025). Age and Cognitive Skills: Use It or Lose It. *Science Advances* 11 (10).

**Figure 2:** Age-skill profiles by skill usage

