

Technology

Our ability to think in a random way peaks at 25 then declines

By Timothy Revell

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Choices, choices
Adrian Brown/Bloomberg via Getty

It’s surprisingly difficult to come up with a truly random sequence of numbers or items. Doing so requires cognitive skills such as memory and attention, as well as a sense of complexity.

“Our brains are wired to find patterns even where there are none – for example, when looking at clouds or stars in the sky,” says [Hector Zenil](#) at the Karolinska Institute in Stockholm, Sweden, and the LABORES Research Lab in Paris, France.

Zenil and his colleagues have now found that our ability to think up random sequences peaks when we reach 25 before declining with age. This mirrors the evolution and decline of our cognitive abilities, suggesting that monitoring this skill could give an insight into these changes over time.

They asked more than 3400 people between the ages of 4 and 91 to complete an online assessment that included five tasks designed to measure their ability to generate random sequences. These included creating a hypothetical list of the results of flipping a coin 12 times and guessing which card would come next in a shuffled pack of cards.

To measure how random people’s answers were, the researchers used a concept called “algorithmic randomness”. The idea is that if a sequence is truly random, it should be difficult to create an algorithm or computer program that can generate it. Statistics software provided an estimate of how complex this would be for each response.

Rise and fall

The ability to generate randomness was found to steadily increase between the ages of 4 and 25. It then gradually declined until the age of around 60, when it began dropping faster. This follows a similar pattern to that of cognitive ability overall.

Age was the only factor that could reliably predict someone’s ability to create randomness, says Zenil. “Neither gender, language spoken, beliefs nor education level had any impact,” he says.

“This is the first time that we can see how randomness changes across the whole age range,” says [Martin Fischer](#) at the University of Potsdam in Germany.

If the results are further validated, it could be useful to add a random-generation task to cognitive tests used to monitor people with neurodegenerative disease, he says.

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