

Can You Make Your Child Smarter?

What parents wouldn't want to give their children the ability to get good grades and excel at work?

Those benefits are linked in research to a high IQ. Dozens of recent studies shed new light on the extent to which parents can—and cannot—help their children score higher on that popular and widely used measure of intelligence.

The history of brain-training programs for small children is littered with failures. Remember marketers' claims in the 1990s, later discredited, that playing Baby Einstein videos for infants would make them smarter? (The Baby Einstein brand lives on, selling other baby products and toys.) Here's an assessment of other pursuits often promoted as ways to improve your child's intelligence:

Learning a Musical Instrument

The notion that becoming a musician makes you smarter has long been popular. Learning to play an instrument has been linked in several studies to higher intelligence.

After controlling for genetic factors and shared home environment, however, a 2015 study of 10,500 twins couldn't replicate the finding.

Instead, researchers found people with high IQs are more likely to take up a musical instrument and stick to it.

Still, learning an instrument may have a beneficial placebo effect, exciting and motivating children to work hard. Also, music training may hone self-control, including focused attention and memorization.

Learning Chess

Chess fans love to proclaim the game's brain-building power, and numerous studies have found links between chess and broader problem-solving ability.

However, while a 2016 review of 24 studies found that children who play chess score higher in math, the research had some methodological flaws, says Giovanni Sala, the study's lead author and a researcher at Osaka University in Japan. Two later studies he cowrote found chess training had no significant impact on math skills.

Chess students may do better in school because of a placebo effect. "Most pupils are enthusiastic about chess. This enthusiasm may make the pupils more motivated about school," says a follow-up study co-written by Dr. Sala. It's also possible that children might benefit if coaches teach them to apply chess skills to math.

Enriching the Environment

Researchers have been battling for decades over whether a person's IQ is fixed for life or can increase through effort. One area of agreement is that while intelligence is determined mainly by genetic factors, the environment shapes how those genetic predispositions play out. This is especially true during the first few years of life, when the brain is most malleable.

A stimulating home environment is pivotal, says Richard E. Nisbett, a professor emeritus of psychology at the University of Michigan. Engaging children in lively

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conversations with challenging vocabulary can help. This is often most evident at the dinner table. "There's a verbal tennis game going on. The parent asks a question, the child answers, the parent makes a comment, the child asks a question," says Dr. Nisbett, author of "Intelligence and How to Get It."

Another powerful factor is interactive reading with children under 4, inviting them to participate and helping them elaborate on their ideas. Such activity is linked to IQ gains of more than six points, according to a 2013 research analysis. (Typical IQs range from 85 to 115, with 100 as the mean.)

Working Memory Training

Carefully designed video-training programs show promise in improving children's working memory, or the capacity to hold information in mind for short periods of time. Several recent studies found evidence that working- memory training may improve children's math or reading skills or their fluid intelligence: the ability to reason in novel situations.

Kindergartners who had working- memory training showed improvements in number skills, according to a 2017 study of 81 children in the *Journal of Numerical Cognition*.

The training was delivered via a tablet videogame. While viewing a series of identical characters in various colors, the children were asked to signal whether each image was upside down or right-side up. Afterward they were prompted to recall the sequence of colors of the characters and click on the same-colored characters in order.

"I do think there is value in training working memory in children," says Susanne Jaeggi, an associate professor of education and cognitive sciences at the University of California, Irvine, and a co-author of several studies on the topic.

Playing card and board games like Set, Blink or Mastermind may have similar effects. Free apps targeting working memory and other skills are described at the University of California, Riverside's Brain Game Center.

Staying in School

This might seem like a no-brainer. Wouldn't staying in school obviously make you smarter?

A huge new study offers a more conclusive answer than past research. Students gain about one to five additional IQ points for every year they remain in school, according to the analysis of 42 data sets with a total of 600,000 people published in June in *Psychological Science*. The studies were based largely on natural experiments, in which students received more or less schooling due to factors that had nothing to do with them, such as government changes in minimum schooling requirements.

The research also lends insight into why many apps and training programs aimed at raising IQ fail to produce lasting effects, says Elliot Tucker-Drob, an associate professor of psychology at the University of Texas at Austin, and coauthor of the study. Raising IQ may require the kind of sustained involvement that comes with attending school, with all the practice and challenges it entails. "It's not like you just go in for an hour of treatment a week. It's a real lifestyle change," he says.



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