

Little evidence that executive function interventions boost student achievement

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Despite growing enthusiasm among educators and scholars about the potential of school-based executive function interventions to significantly increase student achievement, a federally funded meta-analysis of 25 years' worth of research finds no conclusive evidence that developing students' executive function skills leads to better academic performance, according to a new study published today in *Review of Educational Research*, a peer-reviewed journal of the American Educational Research Association.

The meta-analysis, by researchers Robin Jacob of the University of Michigan and Julia Parkinson of the American Institutes for Research, analyzed 67 studies published over the past 25 years on the link between executive function and [achievement](#). The authors critically assessed whether improvements in executive function skills—the skills related to thoughtful planning, use of memory and attention, and ability to control impulses and resist distractions—lead to increases in reading and math achievement, as measured by [standardized test scores](#), among school-age children from preschool through high school. More than half of the studies identified by the authors were published after 2010, reflecting the rapid increase in interest in the topic in recent years.

While the authors found that previous research indicated a strong correlation between executive function and achievement, they found "surprisingly little evidence" that the two are causally related.

"There's a lot of evidence that executive function and achievement are

highly correlated with one another, but there is not yet a resounding body of evidence that indicates that if you changed executive functioning skills by intervening in schools, that it would then lead to an improvement in achievement in children," said Jacob. "Although investing in executive function interventions has strong intuitive appeal, we should be wary of investing in these often expensive programs before we have a strong research base behind them."

"Studies that explore the link between executive function and achievement abound, but what is striking about the body of research is how few attempts have been made to conduct rigorous analyses that would support a causal relationship," said Jacob.

The authors note that few studies have controlled for characteristics such as parental education, socioeconomic status, or IQ, although these characteristics have been found to be associated with the development of executive function. They found that even fewer studies have attempted randomized trials to rigorously assess the impact of interventions.

"Although the link between the two may well be causal, the link needs to be clearly established before programs designed to improve executive function in school-age children are taken to scale," said Jacob.

The meta-analysis provided several findings on the correlation between executive function and academic function:

- The correlation is highly consistent whether measured at a single point in time or as a predictor of future achievement.
- The correlation is approximately the same for different age groups—three-to-five year olds, six-to-11 year olds, and 12-to-18 year olds.
- The correlation is about the same for achievement in both reading and math, countering the common assumption that

executive function is more closely associated with success in math.

- The correlation is consistent across subcomponents of [executive function](#) (inhibition, attention control, attention shifting, and working memory).

Provided by American Educational Research Association

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