

# Childhood aggression linked to deficits in executive function

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A new study finds that deficits in executive function—a measure of cognitive skills that allow a person to achieve goals by controlling their behavior - predicts later aggressive behavior. The study, published in open-access journal *Frontiers in Behavioral Neuroscience*, shows that primary school children with lower executive function were more likely to show physical, relational and reactive aggression in later years, but not proactive aggression. The increased aggression - which was observed in both boys and girls - may be partly due to an increased tendency for anger in these children. The findings suggest that helping children to increase their executive function could reduce their aggression.

Aggression during childhood can create a variety of challenges for [children](#) and their parents, siblings and classmates. Understanding the basis for aggression—and how it develops over childhood—could help researchers to identify ways to reduce [aggressive behavior](#).

Executive function includes skills for adapting to complex situations and planning, including exerting self-control in challenging situations. Previous studies have shown that antisocial behavior is related to lower [executive function](#), and it is unsurprising that improving executive function could help to reduce aggression. However, few studies have examined the link between childhood executive function and aggression over time. Similarly, researchers do not yet understand the relationships between executive function, specific types of aggression and other contributing factors, such as how easily someone becomes angry.

In this new study, researchers at the University of Potsdam in Germany investigated the relationship between childhood executive function and different types of aggression, to see if deficits in executive function could predict aggressive behavior in later years.

The research team assessed German primary school children aged between 6 and 11 years old at three time points: the start of the study, around 1 year later and around 3 years later. The children completed behavioral tasks to reveal different aspects of their executive function, including memory, planning abilities and self-restraint.

The researchers also asked the children's teachers to record their tendency for different types of aggression. These included [physical aggression](#), [relational aggression](#) (where a child might socially exclude someone or threaten to end a friendship), reactive aggression (where a child reacts aggressively to provocation) and proactive aggression (where a child is aggressive in "cold blood" without being provoked). Finally, the children's parents completed a survey detailing how easily the children tended to get angry.

"We found that deficits in executive function affected later physical and relational aggression," said Helena Rohlf, the lead author on the study.

"The more deficits children showed at the start of the study, the higher their aggression one and three years later."

Rohlf and her colleagues also found that an increased tendency for anger in children with reduced executive function may partly explain their increased aggression in later years.

Furthermore, deficits in executive function were related to increased reactive aggression over time, but not proactive aggression. "This ties in with the idea of proactive aggression as 'cold-blooded', planned aggression," says Rohlf. "Executive function allows children to behave in a planned and deliberate fashion, which is characteristic of proactive aggression."

The research team also found that executive function had similar effects on aggression in girls and boys. "We found that although aggressive

behavior was more common among boys, the links between executive function, anger, and aggression seem to be similar for girls and boys," said Rohlf.

The results suggest that training programs that help children to increase their [executive function](#), and manage their anger, could reduce their aggression. The researchers plan to conduct further work to see if their results also apply to children with serious levels of [aggression](#).

**More information:** Helena L. Rohlf et al, Longitudinal Links between Executive Function, Anger, and Aggression in Middle Childhood, *Frontiers in Behavioral Neuroscience* (2018). DOI: [10.3389/fnbeh.2018.00027](https://doi.org/10.3389/fnbeh.2018.00027)

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