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Aggressive boys tend to develop into physically stronger teens

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Boys who show aggressive tendencies develop greater physical strength as teenagers than boys who are not aggressive, according to new research published in *Psychological Science*, a journal of the Association for Psychological Science.

"This work was motivated by a long-standing controversy over the relationship between physical development and personality," says psychological scientist Joshua Isen of the University of Minnesota, Minneapolis. "The physiques of boys and girls increasingly diverge during adolescence, leading to a profound sex difference in physical strength, and there's also an observable sex difference in personality traits like physical aggression and risk taking."

Research has suggested a link between male upper-body strength and aggressive tendencies, but the mechanisms that account for the link are not well understood.

"Very little is known about how this association unfolds developmentally," explains Isen. "Our study is unique because we used a prospective longitudinal design to examine whether male-typical behavioral tendencies are related to pubertal change in physical strength."

The researchers examined data from two large samples of twins collected as part of the Minnesota Twin Family Study. The twins began participating in the study at age 11 and researchers followed up with

them every 3 years.

Isen and colleagues were specifically interested in looking at the children's levels of aggression and their physical strength at ages 11, 14, and 17. Aggressive-antisocial tendencies were measured using a combination of teacher and self-report ratings, while strength was measured using hand-grip strength, which is highly correlated with other measures of muscular strength. To gauge hand-grip strength, the children were instructed to squeeze a dynamometer as hard as they could in both their left and right hands.

The data revealed an interesting trend: Boys who showed high levels of aggression and those who showed low levels of aggression were equally strong at age 11, but their strength seemed to diverge over time. Specifically, more aggressive boys showed greater gains in physical strength during adolescence in comparison to their less aggressive peers.

And this trend could not be attributed to participants' weight or height, which the researchers had accounted for in their analyses.

As expected, the data showed no relationship between aggressive-antisocial tendencies and development of physical strength among girls.

The researchers note that there are a couple possible mechanisms that could explain the findings. For example, it's possible that muscular strength and aggressive-antisocial traits are both mediated by changing hormone levels from childhood through adolescence. Or it could be that more aggressive boys engage in activities that facilitate greater development of strength.

Either way, the researchers believe that the developmental relationship between aggressive traits and physical strength is likely to have an evolutionary basis:

"The pubertal changes responsible for males' superior strength were likely shaped by inter-male competition for mates," says Isen, which would explain why competitive personality traits correlate with physical strength among males only. "Our findings indicate that other aggression-related characteristics—including deceit, risk taking, and lack of empathy—predict future development of strength in males."

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