

Researchers investigate aggression among kindergartners

September 27 2012

Not all aggressive children are aggressive for the same reasons, according to Penn State researchers, who found that some kindergartners who are aggressive show low verbal abilities while others are more easily physiologically aroused. The findings suggest that different types of treatments may be needed to help kids with different underlying causes for problem behavior.

"Aggressive responses to being frustrated are a normal part of early childhood, but [children](#) are increasingly expected to manage their emotions and control their behavior when they enter school," said Lisa Gatzke-Kopp, assistant professor of human development and family studies. "Kids who don't do this well, who hit their classmates when they are frustrated or cause other types of disturbances in the classroom, are at especially high risk for long-term consequences including delinquency, violence, dropping out of school, abusing substances and even suicide. Research tells us that the earlier we can intervene, the better the chances of getting these children back on track."

Gatzke-Kopp and her colleagues, who include Mark Greenberg, professor of human development and family studies and of psychology, asked each of the kindergarten teachers in all 10 of the elementary schools in Pennsylvania's Harrisburg School District to rate the aggressive behaviors of their students on a six-point scale with items such as "gets in many fights" and "cruelty, bullying or meanness to others." Using these data, the team recruited a group of high-risk children (207 children) and a group of low-risk children (132 children)

to undergo a range of neurobiological measures aimed at understanding how aggressive children experience and manage emotions differently than their non-aggressive [classmates](#).

The team assessed all of the children's cognitive and [academic skills](#) using standardized tests that identified the children's developmental level of vocabulary, [spatial reasoning](#) and memory. In addition, the team asked teachers to provide ratings of each child's behaviors, including their levels of aggression, disobedience and sadness, as well as their social skills and level of self-control in the classroom.

The researchers also assessed the children's brain functioning using a mobile research laboratory they brought to the schools. Within the mobile lab, the team measured the children's heart rate and skin conductance activity during tasks designed to elicit emotional responses, including showing the children short video clips of a cartoon character in a variety of situations depicting fear, sadness, happiness and anger. The researchers wanted to understand how emotional and physical arousal to different types of emotions differed between children who engage in aggressive behavior and children who don't engage in aggressive behavior, as well as how different children who engage in aggressive behavior react.

According to Gatzke-Kopp, the assessments enabled the researchers to understand how cognitive and emotional processing may contribute to the development of aggressive tendencies. Specifically, the team found that 90 percent of the aggressive kids in the study could be characterized as either low in verbal ability or more easily physiologically aroused. The results appeared in a recent issue of *Development and Psychopathology*.

"What we may be seeing is that there are at least two different routes through which a child may act aggressively," Gatzke-Kopp said.

"Because these are very different processes, these children may need

different approaches to changing their behavior."

The first group of kids was characterized by lower verbal ability, lower levels of cognitive functioning and fewer executive function skills.

According to Gatzke-Kopp, children need verbal skills to understand the feelings of others and guidance from adults, and to express feelings without hitting. They also need adequate cognitive and executive-function abilities to manipulate information and to think of alternatives to hitting and fighting.

"This group of kids may be functioning at a cognitive level that is more akin to a preschooler than a kindergartner," Gatzke-Kopp said. "They have a harder time extracting what other people are feeling. They don't have a nuanced sense of emotions; everything is either happy or sad to them. So they might not be as good at recognizing how their behavior is making another child feel. They may literally have a hard time 'using their words,' so hitting becomes an easier solution when they are frustrated."

The second group of kids had good verbal and cognitive functioning, but they were more physiologically aroused. They were more emotionally reactive, and tended to have more stressors in their lives.

"These children may be able to tell you that if somebody pushed them on the playground they would go get a teacher, but the push happens and they kind of lose it and it doesn't matter what they should do, they just act on impulse," Greenberg said. "One possibility is that the threshold for managing frustration is quite low for these kids. So what we might consider a minor annoyance to them is a major threat. When they are calm they function very well, but when they lose control of their emotions, they can't control their behavior."

In the future, the team plans to examine how these different types of children respond to an intervention delivered over the second half of kindergarten and the first half of first grade.

Provided by Pennsylvania State University

Citation: Researchers investigate aggression among kindergartners (2012, September 27)
retrieved 23 April 2024 from
<https://medicalxpress.com/news/2012-09-aggression-kindergartners.html>

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