

## Saliva Test May Reveal Effects of Bullying

Middle school students who have been long-time victims of bullies or watched as others were bullied may show tell-tale signs of the abuse—in their mouths, according to a new study. Researchers from Penn State University (PSU) found that a saliva test may detect levels of cortisol, a hormone responsible for the body's reaction to threats or danger (also known as the fight or flight response). Levels of cortisol in children's saliva may serve as biological markers for the trauma experienced when children are chronically bullied, according to the researchers.

"A lot of kids suffer in silence," lead researcher JoLynn V. Carney said in a press release. "When you hear of school shootings, or students who commit suicide as reaction to chronic peer abuse, those are kids who are not coping with the abuse by seeking appropriate support. They keep their anger and frustration within and fantasize either how they are going to escape the abuse through suicide or how they are going to get revenge on their abusers."

The study tested 94 children between the ages of 9 and 14. Each filled out a questionnaire outlining his or her experiences with bullying—as a victim or observer—and asking about other kinds of anxiety and trauma. The saliva samples were taken at the beginning of school and again before lunch time.

Researchers noted that normal cortisol levels are highest in the early morning and decline as the day progresses. But when a person senses a threat or stress, cortisol levels rise. Prolonged exposure to the threat can eventually cause physical, emotional or social health damage. In addition, the researchers said, continued long-term stress such as that experienced from bullying may lead to diminished cortisol reactions -- or a kind of numb, desensitized reaction. Researcher found that bullying was indirectly linked to this hypocortisol reaction.

"Lunchtime is one of those less supervised periods when kids are more likely to be bullied," study co-author Richard Hazler, said in a press release. "One of the things we are trying to measure is not the reaction immediately following a bullying event, but instead the anticipatory anxiety that takes place with the approach of situations where bullying is more common occurs."

Anxiety may cause such symptoms as racing pulse, sweating, dry mouth, tremors and stomach upset. Children who are anxious may worry about situations before they even occur. They may worry about potential problems at school or when engaged in activities. Severe anxiety can interfere with a child's ability to live a productive life.

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He added: "Even kids who are not bullied suffer from such anticipatory stress because they anticipate watching their friends getting bullied and worry that they might be next."

The researchers concluded that "while exposure to a one-time or very rare bullying episode might cause higher cortisol levels, exposure to bullying on a chronic basis would be associated with hypocortisol levels."

Results of the study were presented at the recent American Counseling Association Convention in Detroit.

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