

# Researchers find connection between heart rate and peer victimization

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Penn State Scranton assistant professors of psychology Karin Machluf and P. Douglas Sellers II, along with their colleague, Christopher Aults from King's College in Wilkes-Barre, have found in a study that heart

rate reactivity is a biological moderator between peer victimization (bullying) and internalizing problems (anxiety/depression) in adolescent girls.

The researchers' paper, titled "Adolescent Girls' Biological Sensitivity to Context: Heart Rate Reactivity Moderates the Relationship Between Peer Victimization and Internalizing Problems," will be published in the journal *Evolutionary Psychological Science*.

Essentially, the team found that [peer victimization](#) leads to internalizing problems in some girls, but not others. Girls whose heart rates are highly reactive to stress are negatively impacted by peer victimization and develop internalizing problems (anxiety/depression), but girls whose heart rates are less reactive do not have those negative outcomes from peer victimization.

What the team found was that [adolescent girls](#) with less reactive heart rates are "buffered" from the negative effect of being victimized.

"There seems to be a biological difference in the way these girls respond to environmental stressors that protects them from the negative impact of this stress," Sellers said. "The theoretical umbrella under which this falls is called Biological Sensitivity to Context."

The study subjects were 44 [girls](#), and 38 boys, with an overall average age of 12.08 years. Reactivity is defined as a change in the baseline [heart rate](#) to a stressor.

"We measured resting heart rate, then introduced a laboratory stressor (random loud blast of white noise), and then measured how much heart rate changes in response to that stressor, so that it's a measure of how reactive their heart rate is to stress. Basically, an indicator of stress reactivity," Sellers explained.

Currently, there are a few different theories about how differences in reactivity occur.

"The one we are supporting (Biological Sensitivity to Context) states that young [children](#)'s stress response systems 'tune' themselves using the early environment interacting with genetic predisposition," Sellers stated. "So, it's both the environment and genetics. Children who end up being highly reactive children respond more to later [environmental stressors](#), for better and for worse—meaning high reactivity can be bad under negative stress, but advantageous under positive stressors."

The team found that low reactive children are more consistent and are less impacted by later environment, whether that environment is positive or negative.

"A nice analogy is orchids vs. dandelions," Sellers said. "Orchids are finicky, and highly reactive to the environment. Under poor conditions they fail easily, but under supportive conditions they thrive. These are the highly reactive children.

"Dandelions are much more consistent, they have similar outcomes regardless of conditions. This makes them resilient to negative stress, but less able to take advantage of positive environments. These are the low reactive children," said Sellers.

The [heart](#) rate reactivity is "pretty much involuntary and tuned by an interaction between genetics and early environment," according to Sellers.

Although children can certainly be taught strategies for how to deal with [stress](#), this work highlights that those interventions are more perhaps valuable for some children (reactive children in negative environments) than others.

**More information:** Christopher D. Aults et al. Adolescent Girls' Biological Sensitivity to Context: Heart Rate Reactivity Moderates the Relationship Between Peer Victimization and Internalizing Problems, *Evolutionary Psychological Science* (2018). [DOI: 10.1007/s40806-018-0176-2](https://doi.org/10.1007/s40806-018-0176-2)

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