

Hormones may usher abused girls into early adulthood

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During the sort of tense situation that makes palms sweat and voices quaver, children and young adults are typically awash in cortisol, a stress hormone that sounds an alarm and prepares the body for fight-or-flight responses to danger.

In young girls who have been abused, however, the reaction may be very much the opposite. A stressful situation is more likely to trigger the release of oxytocin, a hormone sometimes called the "cuddle chemical."

"Surprisingly, girls who had experienced physical abuse didn't show a cortisol response to stress at all," says Leslie Seltzer, a postdoctoral researcher at the University of Wisconsin-Madison. "Instead, they have a spike of oxytocin during stress."

Seltzer and colleagues in psychology professor Seth Pollak's lab in UW-Madison's Waisman Center put a group of 8- to 11-year-old boys and girls on the spot with an impromptu speech and series of [math problems](#), performed for a panel of strangers. Half the kids—both boys and girls—had a history of physical abuse at the hands of adults earlier in their lives.

Oxytocin levels in the abused girls nearly tripled from their baseline—already three times the non-abused girls' levels—while their cortisol registered no increase, according to results published today (July 19, 2013) in the journal *Child Development*. Among the abused boys and children without abuse experience, the stress elicited the expected

cortisol rush and no oxytocin response.

"That is counter-intuitive. Oxytocin is a hormone most people produce when they're having warm and fuzzy feelings," says Seltzer, whose work is funded by the National Institute of Mental Health. "It's associated with trust, feelings of security, and attachment—not the sort of things you would connect with stress."

That doesn't necessarily make the oxytocin boost experienced by abused girls an illogical response to stress.

"The question is: Are we looking at dysfunction?" Seltzer says. "It may instead be an [adaptive response](#). Millions of years of evolution have gone into shaping developmental outcomes, depending on early experience."

For starters, although short bursts of cortisol can protect us by heightening senses and speeding reactions to trouble, repeated exposure to powerful doses of cortisol can cause long-term health problems such as hypertension, weight gain and muscle and bone weakness.

Given the lack of comfort and protection in these girls' early family lives, oxytocin's knack for strengthening personal relationships—be they romantic, parental or even business partnerships—may be useful to them.

"The peak in oxytocin may be helping to motivate these girls to form new relationships," Seltzer says.

Unfortunately, those new relationships may not always be more stable than the girls' abusive ones.

"For example, release of [oxytocin](#) in a stressful or threatening situation or in the context of an inappropriate sexual partner or peer may lead to

trouble for these girls," Pollak says. "Indeed, abused girls are at heightened risk for early puberty and initiation of sexual behavior, teen pregnancy, and selection of aggressive, violent partners."

The way repeated abuse alters the hormone systems [girls](#) use to cope with stress provides a new window into why these individuals have social difficulties across their lives. According to Seltzer and Pollak, that may help researchers and caregivers develop new treatments to prevent those problems.

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