

Tough times make for more impulsive pre-teens

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Authored by PhD student Niki Kamkar and Psychology professor J. Bruce Morton, pictured here, a recent Western study showed teens who experienced more challenging times in their lives tend to become more impulsive in their decision-making later in life. Credit: Adela Talbot

The loss of a grandparent. Marital discord at home. Trouble with peers.

When pre-teens are forced to deal with adverse life events such as these they tend to become more impulsive in their decision-making later in life. And while that could help motivate kids to work harder for rewards in some areas, it could also make risky behaviours seem more appealing, according to Western researchers.

Authored by PhD student Niki Kamkar and Psychology professor J. Bruce Morton, the study, Ventral striatal activity links adversity and [reward](#) processing in [children](#), was published recently in the journal *Developmental Cognitive Neuroscience*.

"We found pre-teens who had experienced more challenging times had a heightened sensitivity to rewards in a part of the brain called the ventral striatum," Kamkar said of an area of the brain that routinely lights up when people receive small rewards. "Interestingly, these same pre-teens were more motivated by small instant incentives, than larger incentives they had to wait for.

"In light of this, we really want to know whether these early [life](#) experiences have a lasting influence on the function of the brain," said Morton, given that impulsivity can be an early warning sign of later mental-health problems.

For their study, the researchers had children between the ages of 10-12 play incentive-based games while their brain activity was monitored. The parents of these children were asked to report on the frequency and intensity of events in their children's lives that would be considered 'adverse.'

Participants were 'typically developing' children without any serious trauma or violence in their past. That type of adversity included the loss of a grandparent, loss of a pet, changing schools or marital conflict in the home, among others. While not "enjoyable" for children, these types of

experiences are not outside the normal range for pre-teens growing up in London, Morton explained.

According to the study, children who were exposed to adversity early in development were more impulsive in the way they made decisions in the game. Morton and Kamkar showed the link between exposure to adverse life events and changes in learning, specifically the children's sensitivity to small rewards.

"You might imagine you have an opportunity to have a small, immediate reward. But, alternatively, you may opt to have a larger reward and one you have to wait for. So, for example, let's say you can finish high school and start working for \$15 an hour, or you can continue school for a few more years, putting off that immediate steady income, later taking a job at \$40 an hour," Morton said.

"These kinds of decisions are endemic to everyday life. If you are exposed to adverse events early in life, you tend to make these decisions more impulsively; you opt to have the smaller, more immediate reward in lieu of a larger reward you have to wait for."

The areas that process rewards were more easily activated as a function of exposure to adversity.

"When individuals are exposed to adverse life events early in development, that exposure is associated with changes in their psychology that relates to reward processing," Morton explained. "There is a change in the way the brain is functioning. It helps to explain the link between adversity exposure and changes in learning."

While the results of the study are data rich, they don't provide insight into the long-term outcomes for these children. In order to know definitively how these children will end up, Morton would need to follow

them long term.

He also warned against casting the findings in terms of 'good results' versus 'bad results.'

"We want to step away from what's 'good' or 'bad' and just talk about the pattern in the data," he said. "We don't know what is good or bad for children. It really depends on the type of environment the children are growing up in, available social supports, and other aspects of the personality of the child. We didn't measure that in the study to know whether these variations in their psychology and brain function will be advantageous or disadvantageous in the long run," he said.

What he hopes will come from these findings is for parents to be aware that when children face adversity in their lives "these events do matter and we should do our best, as parents, to be available to provide support to them, so they negotiate these challenges in a healthy and constructive way," he said.

Provided by University of Western Ontario

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