

## BREAKING THE CYCLE OF VIOLENCE

**Study by Avshalom Caspi, Joseph McClay, Terrie E. Moffitt, Jonathan Mill, Judy Martin, Ian W. Craig, Alan Taylor, and Richie Poulton**

Maltreated children are at risk for becoming antisocial adults who act aggressively or commit crimes - but not all go on to experience these problems. Researchers have long pondered the reasons behind this divergence of outcomes. Some suggest that the earlier the abuse takes place, the more likely it is that children will become antisocial adults. But this explanation only goes so far in explaining why some children seem to be affected by abuse while others are not.

In recent years, scientists have begun examining genetics as another factor contributing to these differences. In particular, they have focussed on a gene that produces monoamine oxidase A (MAOA), an enzyme that produces nervous system hormones. When scientists studied transgenic mice in which this gene had been deleted, they found that

the mice behaved much more aggressively. Therefore, the question then became: Could the MAOA gene influence aggressive behaviour in people?



photo: Marie-Claude Saint-Laurent

An international team of researchers in New Zealand designed a study to measure the effects of the MAOA gene on children raised in envi-

ronments where they were likely abused. They selected a large group of men who had been part of a study since their birth in Dunedin, New Zealand. The researchers tested each of the men to determine whether they registered high or low activity levels for the MAOA gene. Then they looked for antisocial behaviour, using four criteria: diagnosis of conduct disorder during adolescence, conviction for a violent crime, tendency towards violent behaviour, and signs of an antisocial personality.

In all four areas, men who had been maltreated but who had the genotype for high MAOA activity were far less likely to show antisocial

behaviour as adults. In contrast, while maltreated men without the genotype for high MAOA activity made up only 12% of the group studied, they accounted for 44% of the group's convictions for violent crimes. In other words, in adults, a gene that generated higher levels of MAOA seemed to provide protection or a buffer against the potential negative effects of maltreatment experienced in childhood.

The study's findings, while still preliminary, may help researchers to better identify maltreated children at greater risk for antisocial or criminal behaviour. The study also suggests that by discovering ways to increase MAOA activity in children at risk, researchers might be able to reduce problem behaviours in adulthood. **L.W.**

Ref.: Caspi A, McClay J, Moffitt TE, Mill J, Martin J, Craig IW, Taylor A, Poulton R, "Role of Genotype in the Cycle of Violence in Maltreated Children" *Science* 2002;297(8); 851-854. 🦋

## LANGUAGE DELAYS AND PHYSICAL AGGRESSION

**Study by Ginette Dionne, Richard E. Tremblay, Michel Boivin, David Laplante, and Daniel Pérusse**

"Try to put it into words," an adult urges a toddler who is hitting, kicking, and punching her in frustration. The child may want to express himself. But for many young children, expressing their feelings may not be so easy. For more than 60 years, research has demonstrated that there is a strong link between antisocial behaviour and poor language performance in children, adolescents, and adults. However, it remains to be seen why such a correlation exists.

Some researchers have suggested that language development and disruptive behaviour may be influenced by the same factors (such as genetics or family environment) and thus emerge at the same time. Others wonder whether children with poor lan-

guage skills are aggressive and disruptive because they are frustrated with their limited ability to communicate. Still others think that perhaps language development is limited by disruptive behaviour since children may be too busy acting out to focus on acquiring new verbal skills.

Faced with these conflicting theories, a group of researchers decided to examine aggression and language development in a group of 19-month-old twins who are part of the *Quebec's Newborn Twin Study*. Using a specially designed checklist, parents were asked to rate each twin's tendency to use physical aggression. They were then asked to provide details about each twin's spoken vocabulary. Results showed that the association between physical aggression and language skill was present by 19 months of age,

albeit less strongly than in older children. The data also revealed a complex interaction of factors that may be critical to helping children to avoid life-long problems with aggression.

Through specific statistical analyses for twin data, the researchers determined that language skills and aggression were each influenced by genetic or environmental factors. However, physical aggression was more influenced by genetic factors, while environmental factors had more impact on language skills. There was some indication that language delays increased the chances a 19-month-old would use physical aggression, but longitudinal data will be needed to confirm the direction of the effect.

These findings suggest that young children with early signs of language problems should also be

screened for higher rates of disruptive behaviours and given appropriate services if necessary. In addition, the study showed that higher rates of aggression can be identified in very young children, not just school-aged children. In other words, while aggression may be developmentally appropriate for toddlers, some resort to aggression much more than others and may need extra help in learning more socially appropriate behaviour. By helping these children improve verbal as well as social skills, more serious problems with aggression may be averted. **L.W.**

Ref.: Dionne G, Tremblay RE, Boivin M, Laplante D, Pérusse D, "Physical aggression and expressive vocabulary in 19-month-old twins" *Developmental Psychology* 2003;39(2); 261-273. 🦋