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LearningNetwork Brief 02

Exposure to Domestic Violence and its Effect on Children's Brain Development and Functioning

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Exposure to Domestic Violence and its Effect on Children's Brain Development and Functioning

Since the early 1990s, there has been a dramatic growth in our understanding of the harm posed to children exposed to domestic violence (DV). Research has indicated that exposure to DV can negatively impact a child's physical, emotional, behavioural, cognitive, and social development. Within the past 15 years, researchers are becoming more aware of the negative impact of exposure to DV on children's brain development and functioning. For instance, research has indicated that exposure to DV can suppress a child's IQ, lead to premature aging, and influence the functioning of the brain's emotional systems in ways that can increase vulnerability to psychopathology.

A study conducted with 5-year old twins examined the impact of exposure to domestic violence (DV) on IQ, while controlling for child maltreatment and emotional and/or behavioural problems (Koenen et al., 2003). The use of a twin study helped to isolate the impact of the environment (versus genetic factors) on children's IQ. Exposure to DV was assessed by asking the children's mothers about 12 acts of physical violence including nine items from the Conflict Tactics Scale and three other items that describe specific physical abusive behaviours. The IQs of the children were individually tested, when the children were 5-years of age, using a short form of the Wechsler Preschool and Primary Scale of Intelligence-Revised. Results indicated that the more severe the exposure to DV, the greater the suppression of IQ. Specifically, children exposed to mild forms of DV had an average suppression of less than 1 IQ point, children exposed to moderate forms of DV had an average suppression of almost 5 IQ points, and children exposed to severe forms of DV had an average suppression of more than 8 IQ points. These findings indicate and concerning association between exposure to DV and delays in children's neurocognitive development. Specifically, exposure to DV was found to be associated with children's delayed intellectual development, possibly due to the high levels of stress experienced by the children. In fact, these findings suggest that exposure to moderate and severe DV has more of a harmful effect on children's IQ than lead exposure which is associated with a suppression of 2 to 3 IQ points. It is uncertain if the effects of exposure on IQ are long-lasting; however, children starting school with an IQ disadvantage can increase the risk for poor outcomes such as poor academic performance and adjustment difficulties across the life span. Interventions that help reduce the rates of exposure to DV for children may help children's cognitive development and prevent negative consequences associated with cognitive delays or disadvantages.

A longitudinal twin study examined the impact of exposure to violence on children's DNA (Shalev et al., 2012). Researchers recruited 236 children from a birth register of twins born in England and Wales in 1994-1995. The children were 5-years old when they joined the study. DNA samples were taken from each child when they were 5- and 10-years old. The children's mothers were interviewed when the children were 5-, 7-, and 10-years old about their child(ren)'s exposure to DV, bullying and physical maltreatment by an adult allowing the researchers to determine the type of violence exposure for each child, including whether or not the child was exposed to two or more types of violence. The study controlled for sex, socioeconomic deprivation and body mass index. The researchers were looking for telomere erosion, which is the erosion of the protective cap at the end of our DNA chromosomes. Telomere erosion occurs with age and leads to age-related diseases. Results indicated that children exposed to two or more types of violence had significantly accelerated telomere erosion from 5- to 10-years of age compared to children exposed to one type of violence or children who were not exposed to any violence. The findings from this study indicate that stress, such as a cumulative exposure to violence, can accelerate telomere

erosion in children which leads to premature aging. These findings suggest that it is important to include telomere erosion as a stress marker in research that examines the effects of violence exposure on children.

One study found that exposure to family violence (i.e., domestic violence and child maltreatment) was associated with heightened neural activity in children's brains similar to that of soldiers exposed to violent combat situations (McCrory et al., 2011). This is the first study to use a functional magnetic resonance imaging (fMRI) brain scan to determine the impact of violence exposure on children's neurological functioning. The neurological responses of 20 children (average age of 12-years) who had been exposed to both child maltreatment (i.e., neglect, sexual abuse, physical abuse and emotional abuse) and domestic violence were compared to 23 children (average age of 12-years) who had not been exposed to violence. While the children were in the fMRI, they were shown pictures of male and female faces with either sad, calm or angry expressions. The researchers watched for heightened activity in particular areas of the brain in response to these pictures. Areas of the brain associated with threat detection (i.e., the anterior insula and amygdala) were activated only with exposed children who viewed pictures of angry faces, implying that, similar to soldiers, children exposed to violence may have adapted to be hypervigilant of potential danger in their surroundings. Furthermore, these particular brain areas have been associated with anxiety and may explain why children exposed to domestic violence are at an increased risk of developing anxiety disorders in adulthood.

To read more about these studies, you can access them through your local library or online databases (e.g., PsycINFO; ProQuest; PubMed).

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