

New evidence links exclusive breastfeeding, early play / stimulation to children's later success

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A child being assessed for executive functioning skills. Credit: School Transition and Readiness Project, Department of Paediatrics and Child Health, Aga Khan University

A pair of new studies further strengthen scientific understanding of the links between what a child experiences in the first years of life and later childhood behaviour and abilities.

Funded by the Government of Canada through Grand Challenges Canada, researchers working in South Africa and Pakistan report their findings in papers launched today.

In the first study, an international team led by Dr Ruth M. Bland of the Royal Hospital for Sick Children and Institute of Health and Wellbeing, University of Glasgow, assessed over 1,500 children in South Africa, 900 of whom had been involved in an early infant feeding study.

They found longer durations of exclusive breastfeeding strongly associated with fewer [conduct disorders](#) at ages 7 to 11 years. Children exclusively breastfed for the recommended six months, compared with those exclusively breastfed for less than one month, were approximately half (56 percent) as likely to have conduct disorders at primary school age.

Other highlighted findings, published in *PLOS Medicine*, included:

- Important determinants of a child's cognitive development: attending creche (preschool) and mother's IQ
- Children who attended creche for at least one year were 74 percent more likely to have higher executive function (which enables us to plan, focus attention, remember instructions, and juggle multiple tasks successfully. The brain needs this skill set to filter distractions, prioritize tasks, set and achieve goals, and control impulses. Executive function, therefore, influences educational and social success.)
- Children stimulated at home, such as through play, were one third (36 percent) more likely to have higher executive function

scores

- There was weaker evidence that, for boys, exclusive breastfeeding for more than one month improved cognitive development.

The study also examined a number of current life factors that might influence children's development, finding that children were two-and-a-half times more likely to exhibit emotional-behavioural problems if their mothers had a current mental health problem or severe parenting stress.

"The duration of exclusive breastfeeding of an infant has greater importance than previously realized in several areas of development," said lead author Dr Tamsen J. Rochat of the Human Science Research Council, Durban, South Africa.

"For example, childhood onset conduct disorders can lead to aggressive or disruptive behaviours, which interfere with learning and peer relationships, in turn leading to low self-esteem and further behavioural problems. Conduct disorders that start in childhood and persist into the teen years are associated with an increase in antisocial (and potentially violent or criminal) behaviours, poor long-term mental health and low academic achievement in later life."

"Evidence from studies in high-income countries suggests that the economic cost of conduct disorders is enormous," added Dr Bland. For example, a publication from the United Kingdom cited in the paper estimates the annual cost of crime attributable to people who had a conduct disorder in childhood at US\$117 billion.

The study was also one of the first to assess the impact of HIV exposure on the development of primary school-age children in Africa. Previous studies suggested that children, although themselves HIV-negative, were disadvantaged if they were born to HIV-positive mothers, particularly in

the areas of emotional and behavioural development. This study found that HIV-negative children born to HIV-positive mothers performed as well as those born to HIV-negative mothers.

Play and communication—"responsive stimulation"—pays dividends for impoverished rural children in Pakistan

The second paper, published by *The Lancet Global Health* and led by Dr Aisha K. Yousafzai of Aga Khan University, Karachi, followed up a cohort of impoverished children in rural Pakistan whose parents had been guided on strengthening nutritional care and "responsive stimulation" used to the end of age 2.

In the responsive stimulation intervention, caregivers were coached to observe and respond to their child's cues during play and communication activities, improving the quality of interactions.

The intervention, adapted from the UNICEF and the World Health Organization's 'Care for Child Development' approach (which is readily available online), included using everyday household items or homemade toys to stimulate children's cognitive, language, motor and affective (emotional/feeling) skills.

At age 4, children who received the responsive stimulation intervention were, to varying degrees, more likely to have:

- Higher IQ
- Better pre-academic skills (in sizes and comparisons, and shapes)
- Better executive functioning
- More pro-social behaviour.

The follow-up study also found parents were better caregivers.

The research involved 1,302 four-year-olds and their mothers from the original study, which had likewise shown that responsive stimulation "significantly benefitted children's cognitive, language and motor development at two years." The investigators intend to follow this cohort throughout their schooling.

"The abilities fostered by stimulation are important for readiness and a successful transition to preschool," said Dr Yousafzai. "The competencies assessed in this study have been shown to predict school engagement and longer-term academic attainment."

"Other studies have shown that the early success of children clearly links to their productivity and income potential later in life and, at a large scale, impacts the economic well-being of societies."

The inclusion of stimulation intervention in health programs is important to support healthy development. It is hoped more research will follow that will provide insights on how to optimize integrated packages of health, growth and development.

The newly published research from South Africa and Pakistan closely follows the release of another Grand Challenges Canada study, conducted by Harvard University, showing that one-third of 3- or 4-year-olds in low- and middle-income countries don't reach expected developmental milestones.

Grand Challenges Canada funded the studies as part of its contribution to the growing international "Saving Brains" partnership, which convenes for a conference in Toronto June 21-22, focused on the results from 11 follow-up studies, including the two publications launched today.

"One in three children in 'developing' countries are in fact failing to develop to their full potential. These studies show how parents can help

develop smart, social kids who make good decisions: breastfeed babies and play with [children](#)," said Dr Peter A. Singer, Chief Executive Officer of Grand Challenges Canada.

Provided by Grand Challenges Canada

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