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Poverty, development and the brain

Children in poverty have worse cognitive, socio-behavioral and health outcomes than their more affluent peers. Poverty affects the brain in 4 main ways: Language and reading, memory, Executive Functions (EF) and socio-emotional processing. Numerous studies have demonstrated differences in brain structure and function between children from high and low socio-economic status. Income and total hippocampal gray matter, which are important for learning and memory, have been shown to be correlated, as well as frontal and prefrontal regions which affect emotion and stress. Poor cognitive and academic performance among children in poverty has been shown to be mediated by a small hippocampus and frontal and temporal lobes, with the decrease in the latter 2 areas explaining as much as 15-20% of the achievement deficits. The relationship between poverty and the brain has been shown to be logarithmic and not linear. Income related, most strongly to brain structure among the most disadvantaged children with the effect seen as early as 6-9 months of age. Children's EF skills have been shown to be robustly predicted by chronic exposure to poverty and the associated environmental hazards. In adults, EF skills (which start developing in childhood) are core capabilities that are important for managing life, work and effective parenting. Bridging the achievement gap between children of low socio-economic status and their more affluent peers requires co-ordinated public policy measures. This is a huge challenge, but addressing it is necessary to protect these children from the long-term effects of poverty. This talk will also summarize the effects of various intervention programs.

Biography

Lourdes Mary Daniel has been a Pediatrician in Singapore and a full-time Neonatologist. She is currently working as the Head of the Department of Child Development in KK Women's and Children's Hospital. She has received her Child Development training at the Kennedy Krieger Institute in Johns Hopkins Hospital, Boston Children's Hospital and the Harvard Graduate School of Education in USA.

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