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Early childhood development: Laying the foundations of human capital

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Outline of presentation

- Sustainable Development Goals (SDGs) - focus on ECD
- Intersectoral approach in ECD policy and practice – beyond ECEC
- Research on child development and influences on outcomes
- Brain development and life course
- Impact of adversity
- Impact of ECD on life course
- Economic case for investing in ECD – ‘best investment a country can make.’
- Conclusion: We need to close the gap between what we know and what we do



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ECD is central to reaching SDGs

Target 4.2

‘By 2030 countries should ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.’

ECD is key to achieving most of the 17 goals, especially:

- Poverty
- Hunger
- Good health and wellbeing
- Education
- Gender
- Clean water and sanitation
- Inequality



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ECD needs multisectoral interventions

ECD care should be provided as integrated, multisectoral, evidence-based interventions

- Education – quality early learning opportunities
- Nutrition – to support growth and health
- Health – immunization and early detection of problems
- Child protection – for violence prevention and family support
- Social protection – financial security, capacity to access services



This is the rationale for the Nurturing Care Framework – WHO, UNICEF, World Bank



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Brains are shaped by genes and experiences





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The neuroscience of brain development

- Brain architecture and skills are built in a hierarchical ‘bottom-up’ sequence
- Foundations important - higher level circuits are built on lower level circuits
- Brain is changed by experiences - the early years of life can have significant impact life course and on long term outcomes
- Research clear about characteristics of environment that impact outcomes
 - parenting, family functioning, schools, communities
- Plasticity of the brain decreases over time and brain circuits stabilize, so it is much harder to alter later
- It is biologically and economically far more efficient to get things right the first time – the scientific case for prevention and early intervention

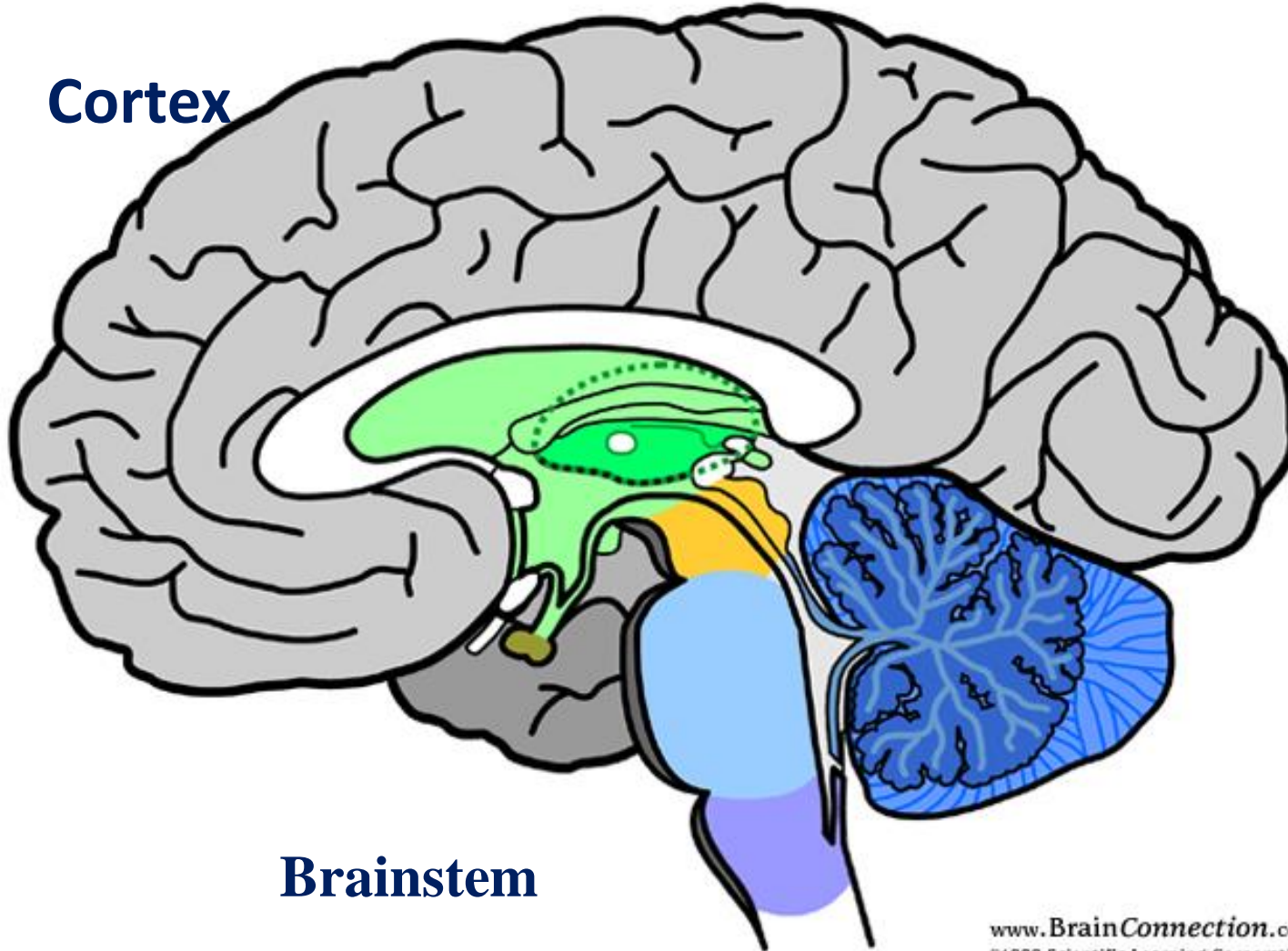


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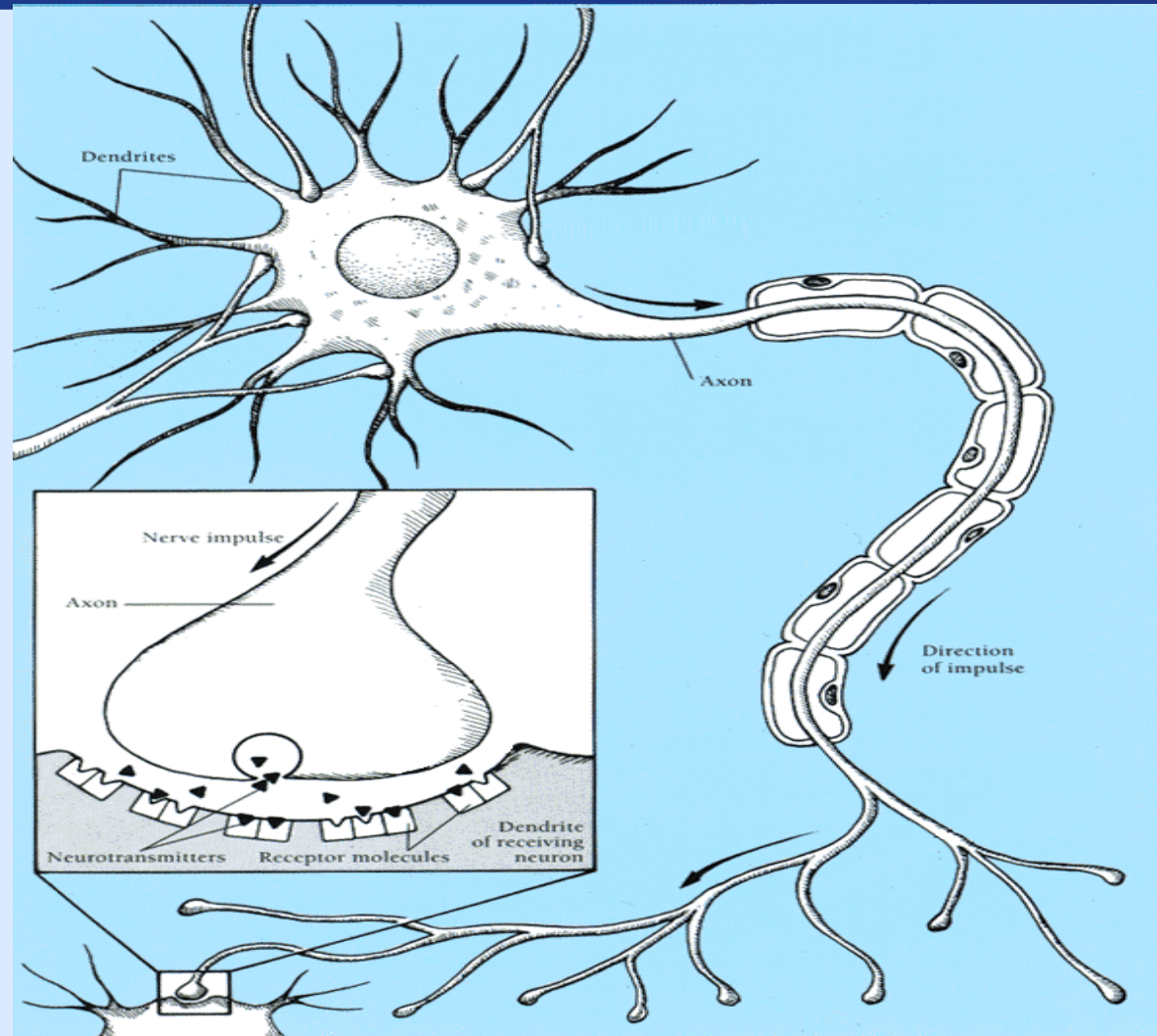
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Cortex



Brainstem

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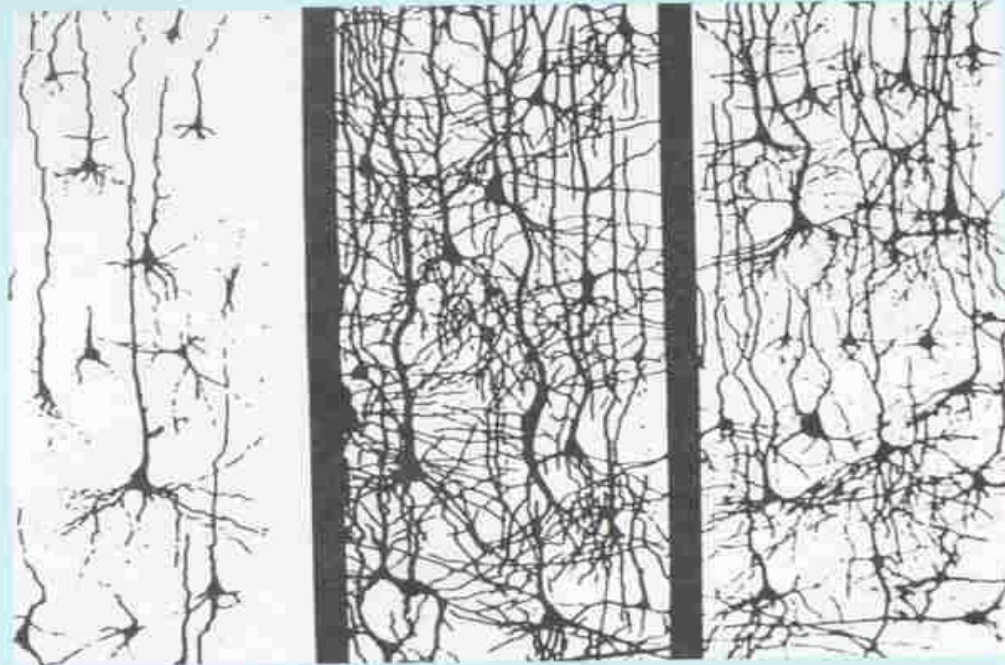


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At Birth

6 Years Old

14 Years Old



SYNAPTIC DENSITY: Synapses are created with astonishing speed in the first three years of life. For the rest of the first decade, children's brains have twice as many synapses as adults' brains.

Drawings supplied by H.T. Chugani.



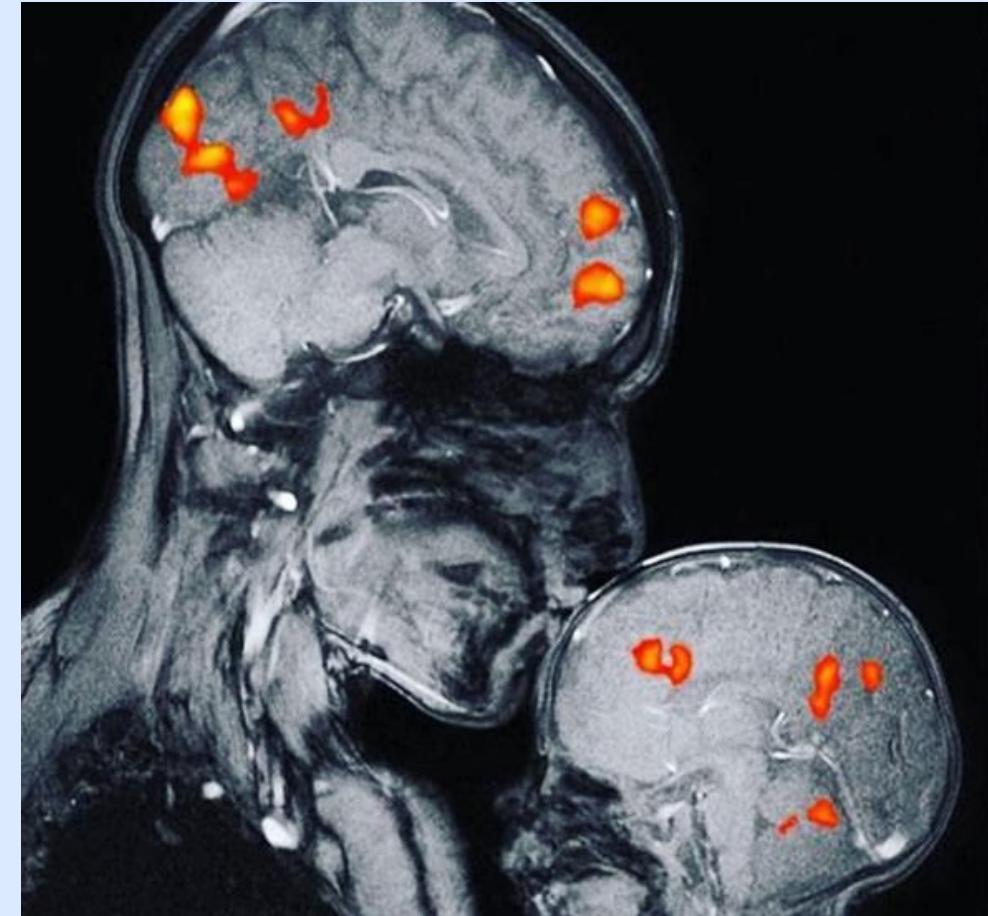
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Relationships influence brain development

- In high and middle income countries the single most important determinant in the child's environment is the **quality of the child's relationships with parents and caregivers**
- **Nurturing and responsive relationships** build healthy brain architecture that provides a strong foundation for behaviour, learning, and health
- When protective relationships are not provided, levels of stress hormones increase - this impairs cell growth, interferes with formation of healthy neural circuits, and disrupts brain architecture
- Dysfunctional relationships major risk factor for mental health problems





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Nurturing care, responsive parenting, stimulating environment





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Adversity affects the developing brain

- child abuse – physical, emotional, sexual
- child neglect – physical or emotional
- harsh or over-involved or dysfunctional parenting
- domestic violence
- serious physical illness
- parent mental illness
- parent substance misuse
- poverty

All more common in low SES groups



Biology of adversity

- Begins in utero
- Adaptation to environment
- Short term advantages – responds to immediate threat - but long term consequences
- Leads to changes in DNA (methylation) - ‘the biological embedding of environmental events (*Hertzmann*)
- Affects the development of biological systems (immune; cardiovascular; metabolic regulatory) with long term consequences



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The impact of adversity and social inequality

- Psychosocial factors impact on health because of association with high levels of stress
- Major impact in early years - affects developing brain and establishment of neural circuits, including executive functioning and self-regulation
- Chronic stress affects the body's physiological systems - including the cardiovascular and immune systems - increasing vulnerability to wide range of diseases and health conditions
- 'Double jeopardy' - have the least access to supports such as consistent health care, quality childcare and preschool, good schools, and family supports



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Levels of environmental stress and its impact on the developing brain

- 'Normal' or 'positive' stress
- 'Tolerable' or transient stress
- 'Toxic' or persistent stress



Effects of toxic stress

- Alters child's neurobiology – undermines health, social competence, and ability to succeed in school and life
- Living in an environment of scarcity (poverty) and violence changes child's neurobiology – resets body's physiological, endocrine and immune systems
- For example - being hypervigilant is adaptive in environment, of abuse but harder to control emotions, focus on tasks, and form healthy relationships as child gets older
- Disadvantages in later situations - school and work - where they must concentrate and cooperate to do well (executive functioning)



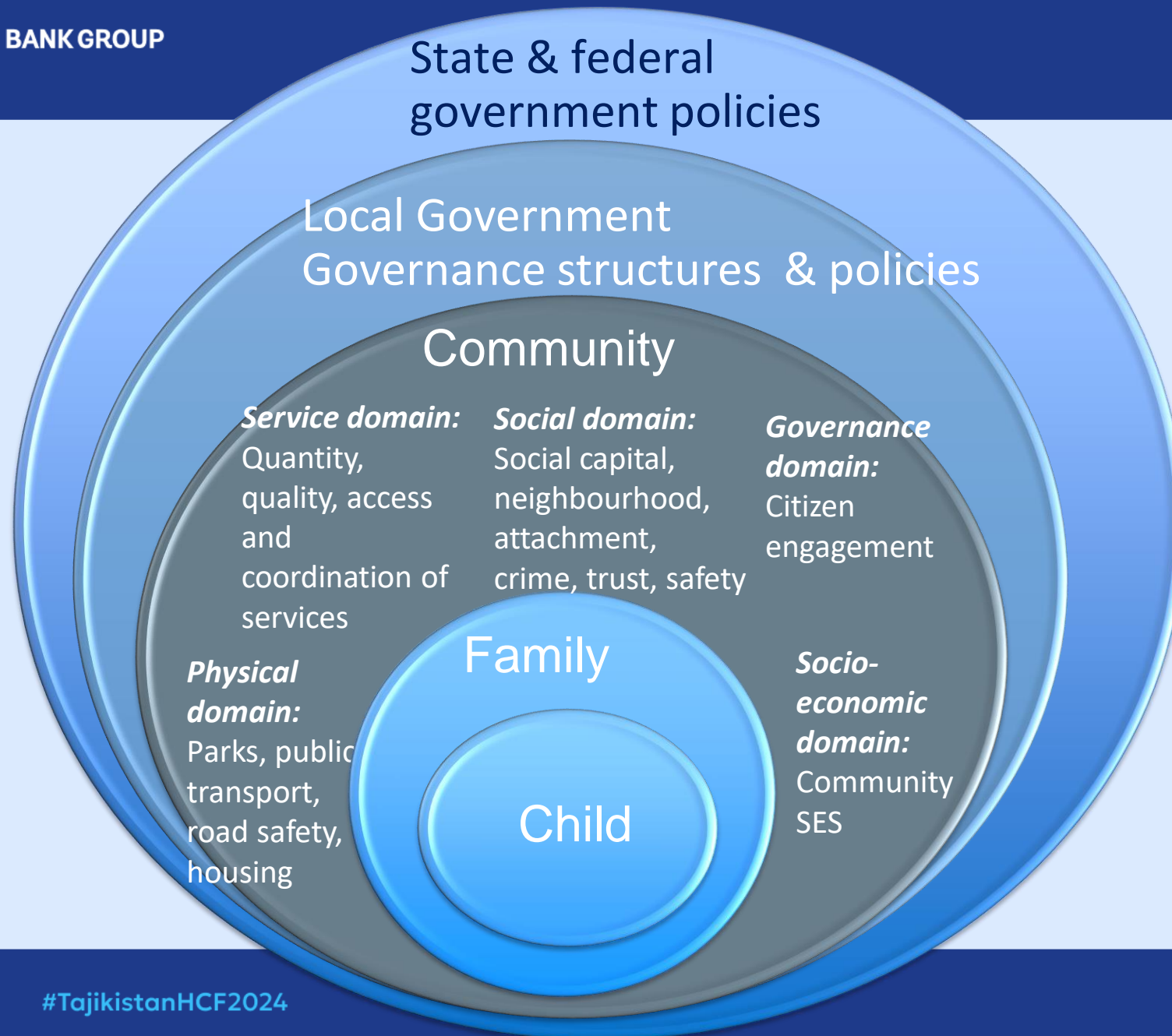
Risk and protective factors

- Human development is shaped by the ongoing interplay among sources of risk (vulnerability) and sources of protection (resilience)
- Exposure to adversity does not inevitably lead to poor outcomes, but does significantly increase the risk
- Children exposed to risk factors at an early age are more likely to experience problems in later life
- The earlier in life risk factors occur and the longer they are sustained the greater the risk of poor outcomes



Risk factors in the child's environment

- Parents and family: include low parental education, parental mental illness, social isolation, poverty and its associations - poor housing and poor access to services
- Community: include quality of and access to services - child care and early education, schooling, support for parents, extent and quality of intervention services
- Plus biological risk factors – prematurity, disability, developmental delay, FAS, difficult temperament, Autism, etc.





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Long term effects of stressful environments in early childhood

- Increasingly robust body of research suggesting that many problems in adult life have their origins in pathways that begin in early childhood
- Studies both retrospective and prospective



Adult problems with roots in early childhood

- Mental health problems
- Family violence and anti-social behaviour
- Crime
- Poor literacy
- Chronic unemployment and welfare dependency
- Substance abuse
- Obesity
- Cardiovascular disease
- Diabetes



Poverty

- Increased biological and environmental risk
- Begins in the antenatal period
- Clear differences in development in all domains – language, vocabulary, social-emotional function, emergent literacy
- Disparities widen as child gets older
- Trajectory gets harder to change over time
- Very strong case for early intervention

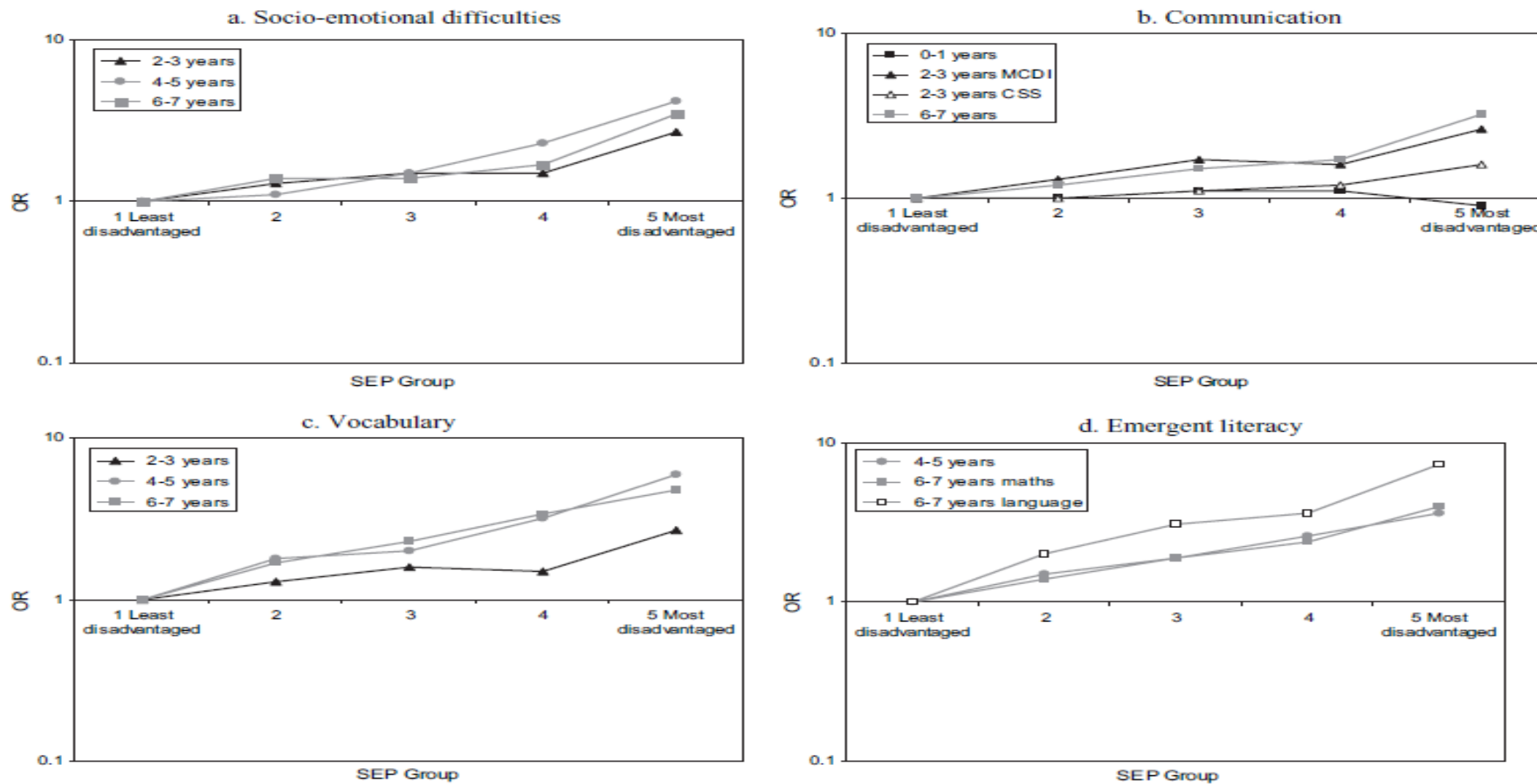


Figure 1 ORs (presented on a log scale) by socioeconomic position quintile for socio-emotional difficulties, and poor communication, vocabulary and emergent literacy skills.



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School entry – the Australian Early Development Census (AEDC)

The AEDC measures a child's development in 5 areas:

- physical health and well-being
- social competence
- emotional maturity
- language and cognitive development
- communication skills and general knowledge

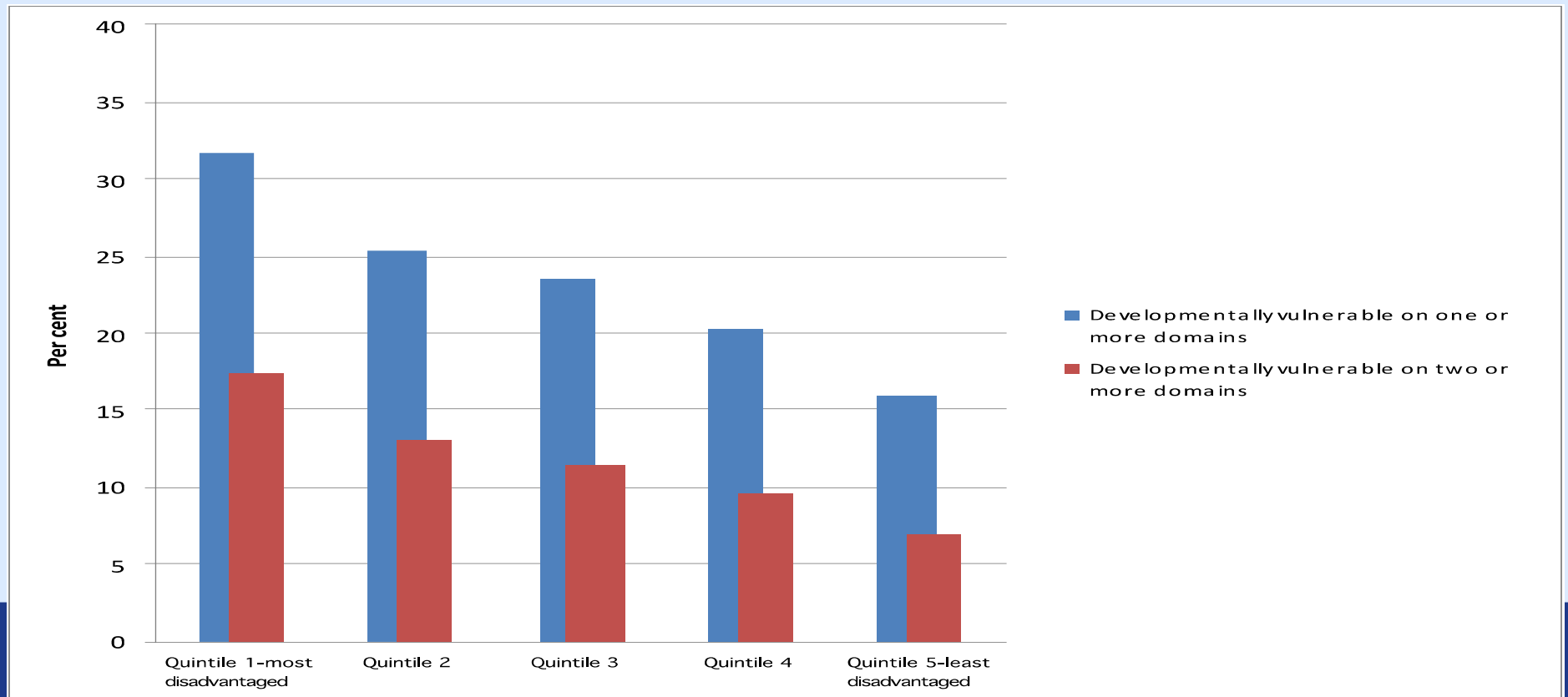


Key findings

Percentage of children **developmentally vulnerable (DV)**

	DV \geq 1 domains (%)	DV \geq 2 domains (%)
Australia	23.3	11.7

Results by SES status

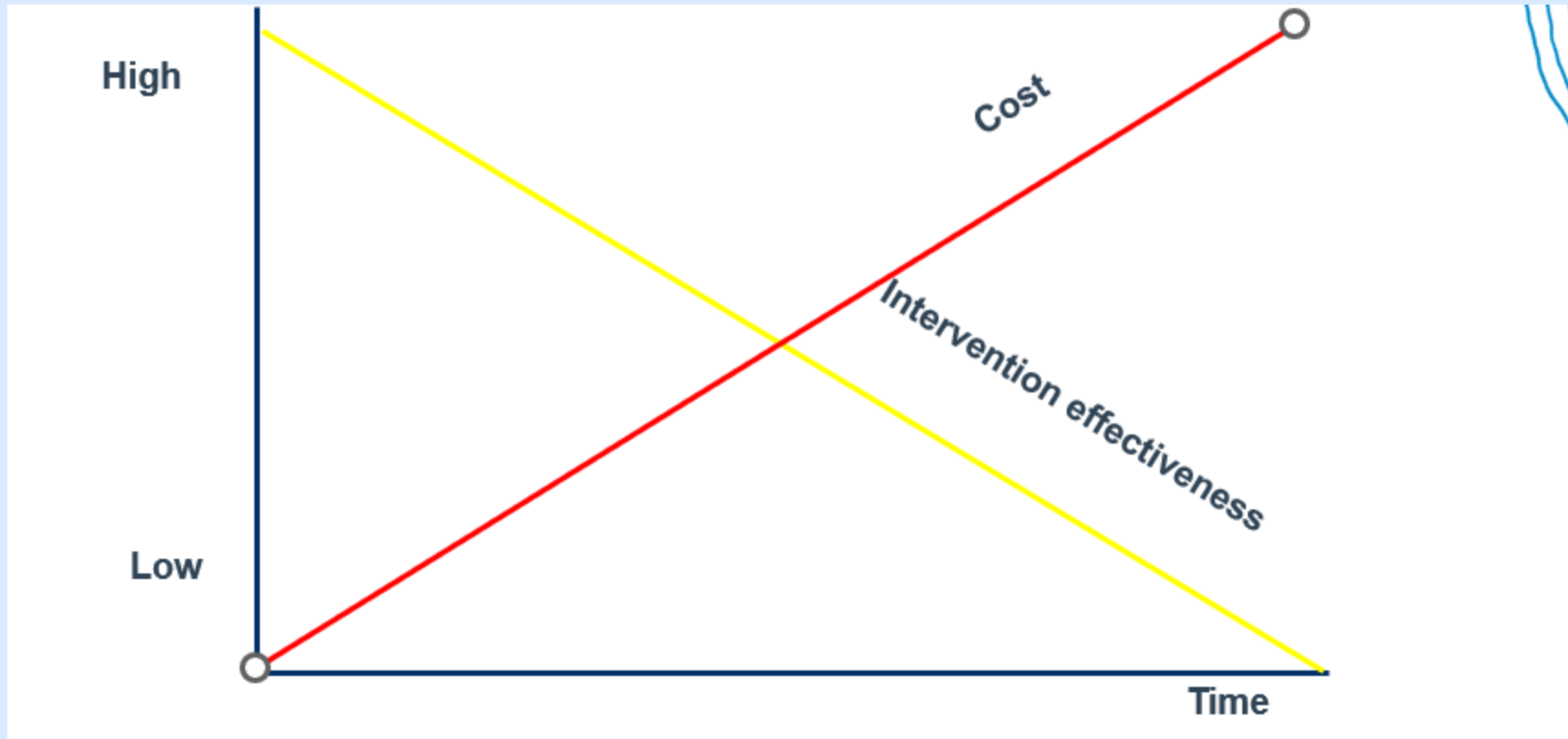




Importance of skills in the modern economy

- ‘ A large body of research...shows that skill begets skill; that learning begets learning. The earlier the seed is planted and watered, the faster and larger it grows. Environments that do not stimulate the young ...place children at an early disadvantage’ .
- ‘Once a child falls behind, he or she is likely to remain behind. Impoverished early environments are powerful predictors of adult failure on a number of social and economic dimensions.

(James Heckman, 2006)



Intervention effects and costs of social-emotional and mental health problems over time - *after Bricker*



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Long term benefits of ECD interventions

- Improved health and wellbeing
- Increased lifespan
- Improved literacy
- Increased adult wage earning
- Decreased mental health problems
- Decreased violence and criminality
- Improved growth in next generation
- Improved human capital



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The economic argument

- The best investment in economic development that government and the private sector can make is in the healthy development of children...
- Society should adopt the perspective of '*child-development-as-economic-development.*'
- 'In our view, the economic case for *why* we should invest in early childhood development is closed.'

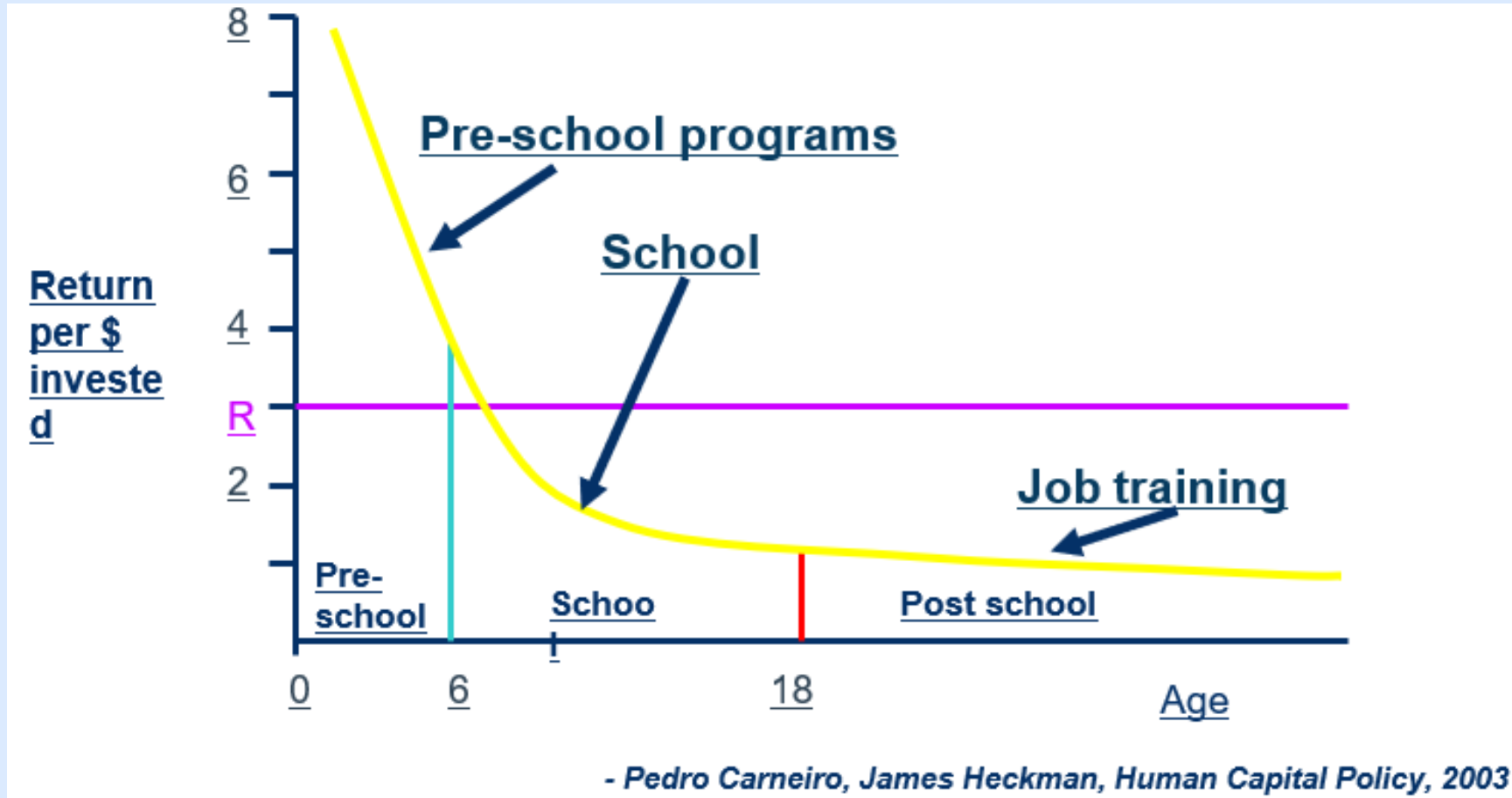
Arthur J. Rolnick

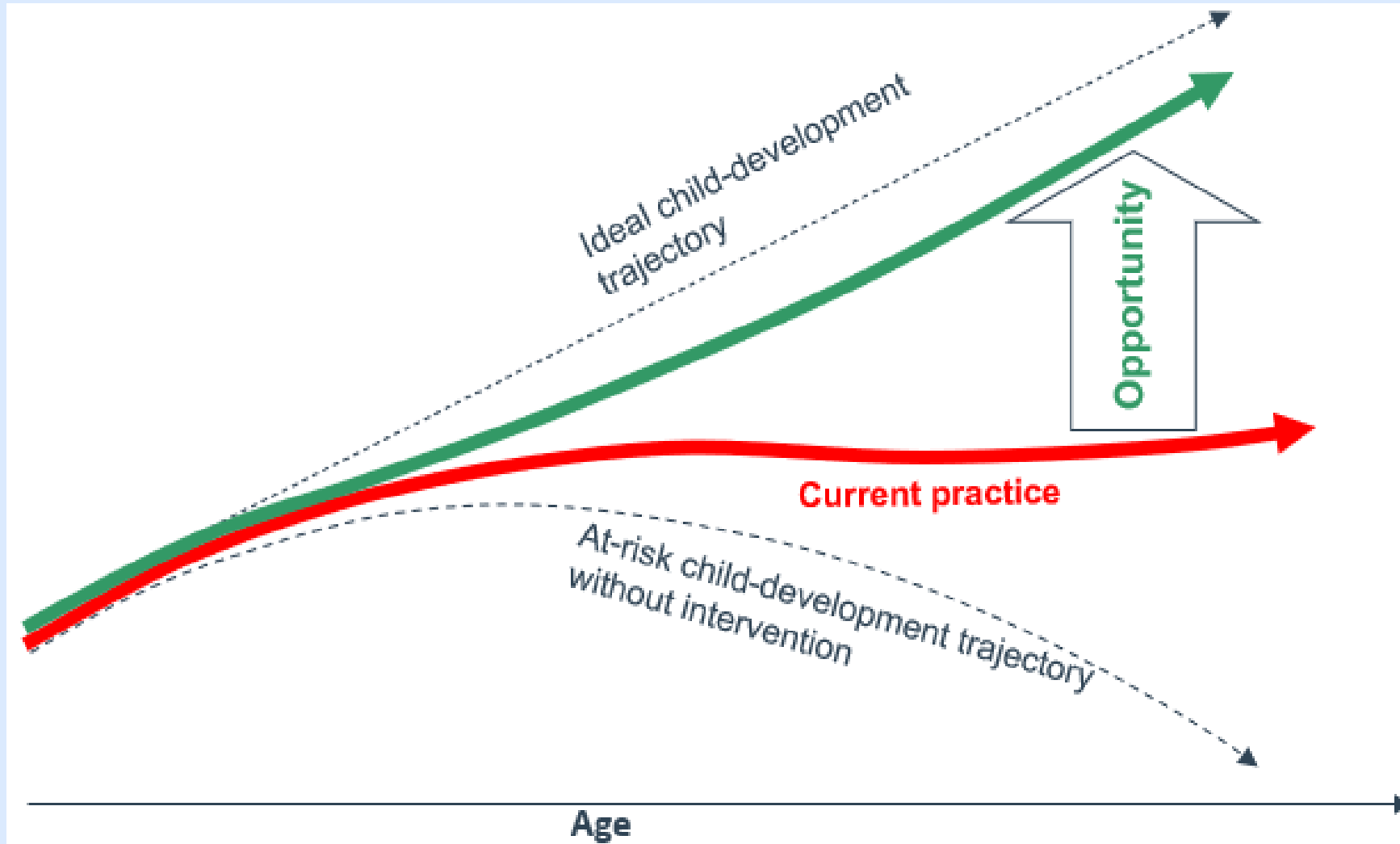
Senior Vice President and Director of Research

Federal Reserve Bank of Minneapolis



Rates of return to human development investment across all ages







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Thank you

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