

Improving holistic child ~~development through the Health~~ Sector: A synergistic approach

29 Oct 2009

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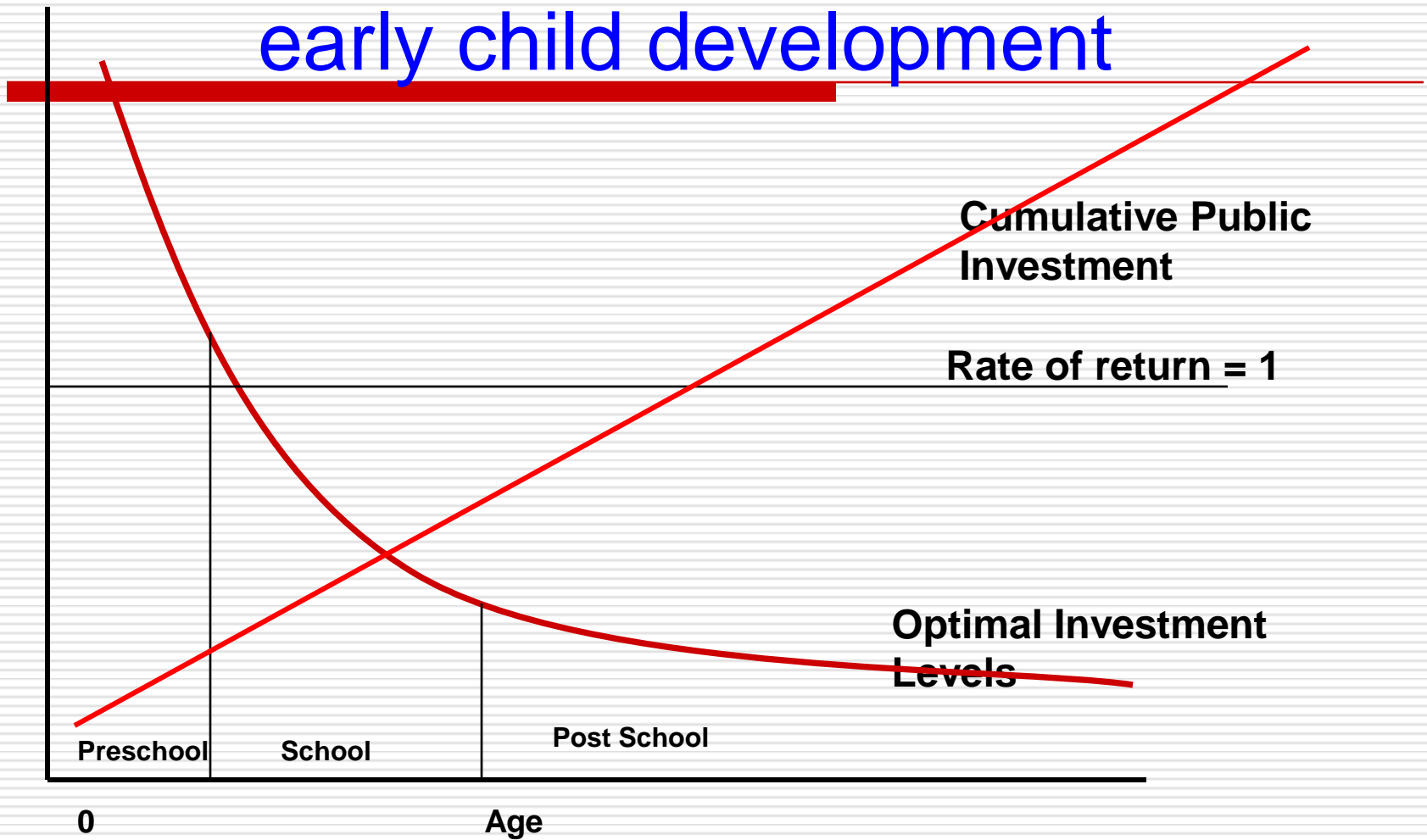
What is child development?

- ❑ **Gradual emergence** of capabilities in thinking, language, communication, gross and fine movement, sensation and perception, and social and emotional development - occurs as a function of experiences and biological development
 - ❑ **Most rapid** in the first 3 years of a child's life
 - ❑ **Most vulnerable** period to biological and social risks
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Why invest in ECD?

- ❑ Child rights – especially excluded and socially marginalized
 - ❑ 200 million children worldwide are not developing their full potential
 - ❑ Interventions in this age are more likely to be effective than later
 - ❑ Earlier interventions have higher benefit to cost ratio
-

Summary of benefits of investment in early child development



Source: Heckman & Carneiro Human Social Policy, 2003, Voices for America and the Child and Family Policy Center. Early Learning Left out An Examination of Public Investment in Education and Development by Child Age, 2004

What does the science tell us about brain development?

- Synaptic connections in the brain develop in first two years
 - Depend on adequate nutrition
 - Programmed to have experiences
 - Can be negatively affected by toxic stress
-

Stemless



1 month old



4 months old



6 months old



Experience affects different aspects of brain development at different times in life

Hearing and seeing: first 3-4 months

~~Understanding language: 6 months-2 yrs~~

Thinking and problem solving – 7 months to 10 yrs

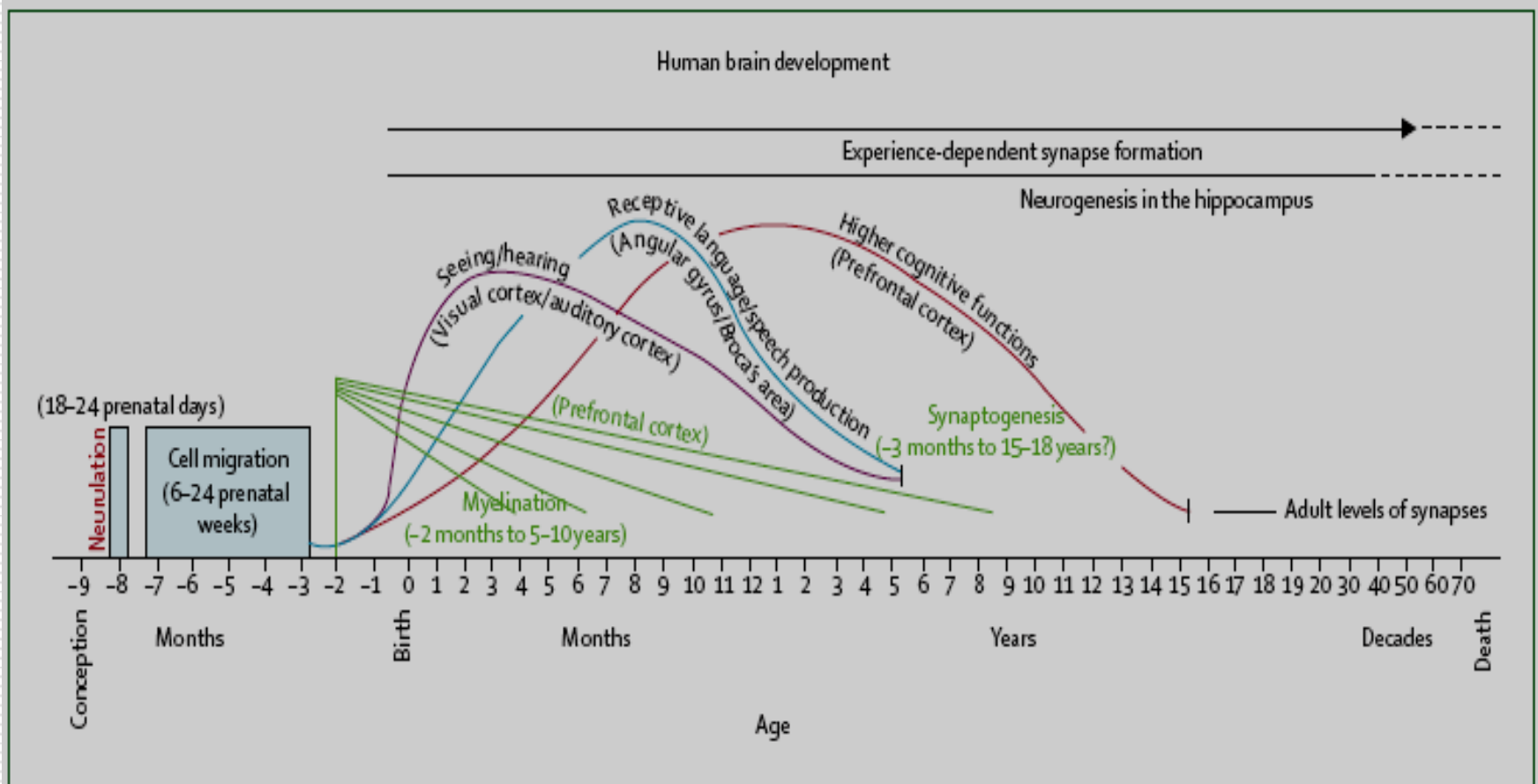


Figure 1: Human brain development

Reproduced with permission of authors and American Psychological Association⁷ (Thompson RA, Nelson CA. Developmental science and the media: early brain

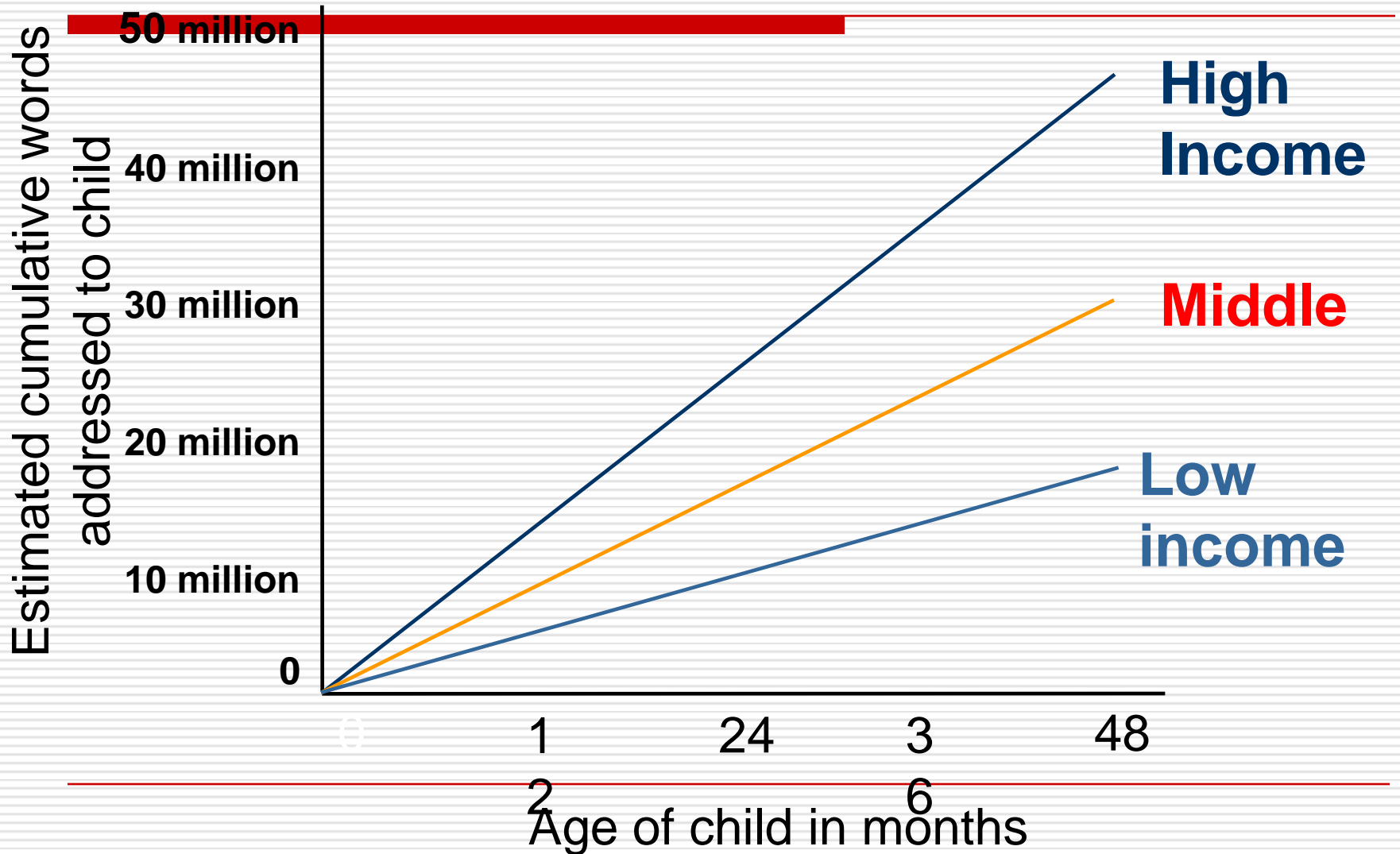
What affects a child's development?

- Analysis of risk factors 2007 Lancet Series
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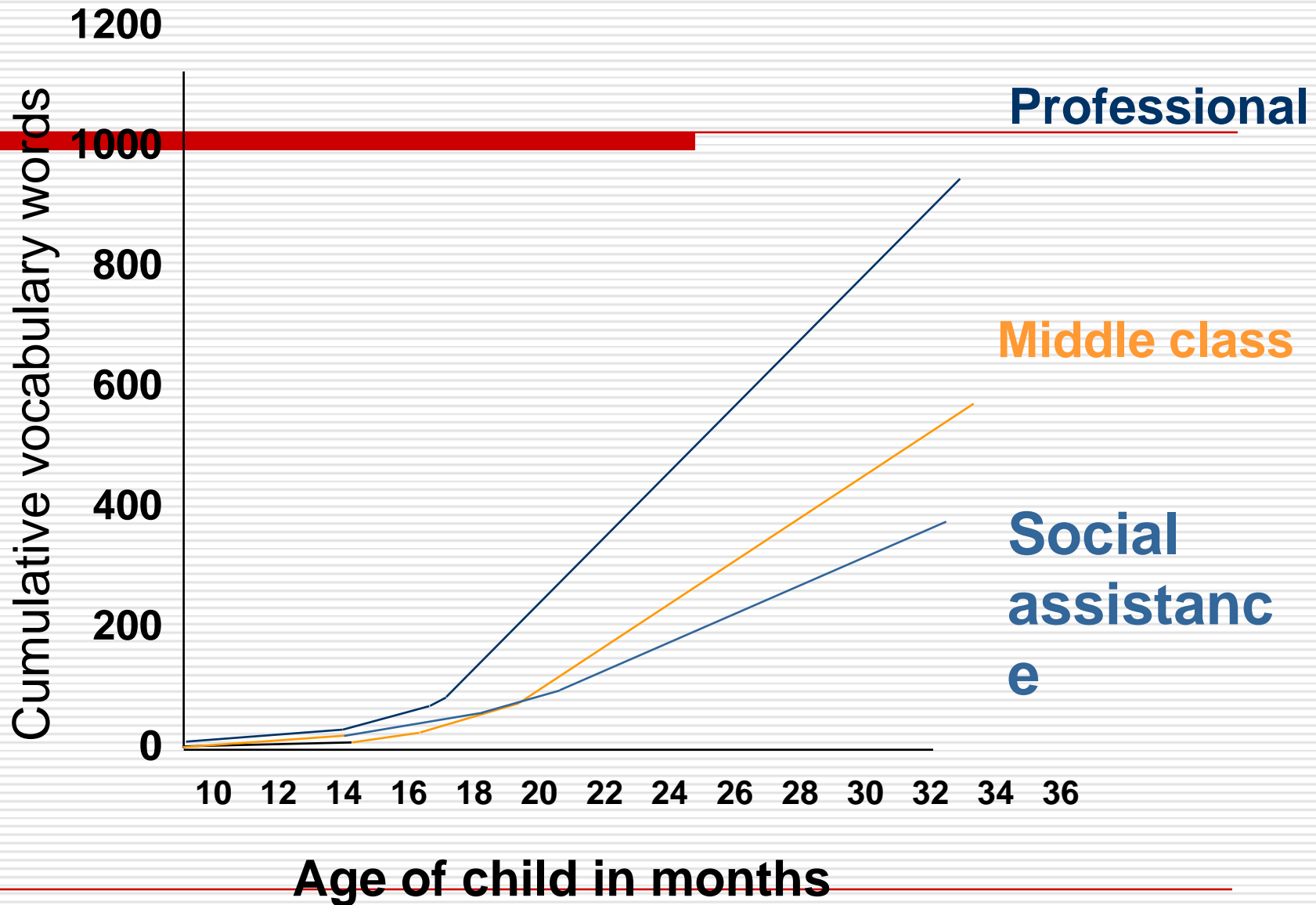
Risks for poor development

- Poor Nutrition
 - Chronic undernutrition leading to stunting
 - Iodine deficiency
 - Iron deficiency
 - Lack of Breastfeeding
 - Lack of Stimulation – responsive interactions with caregiver
-

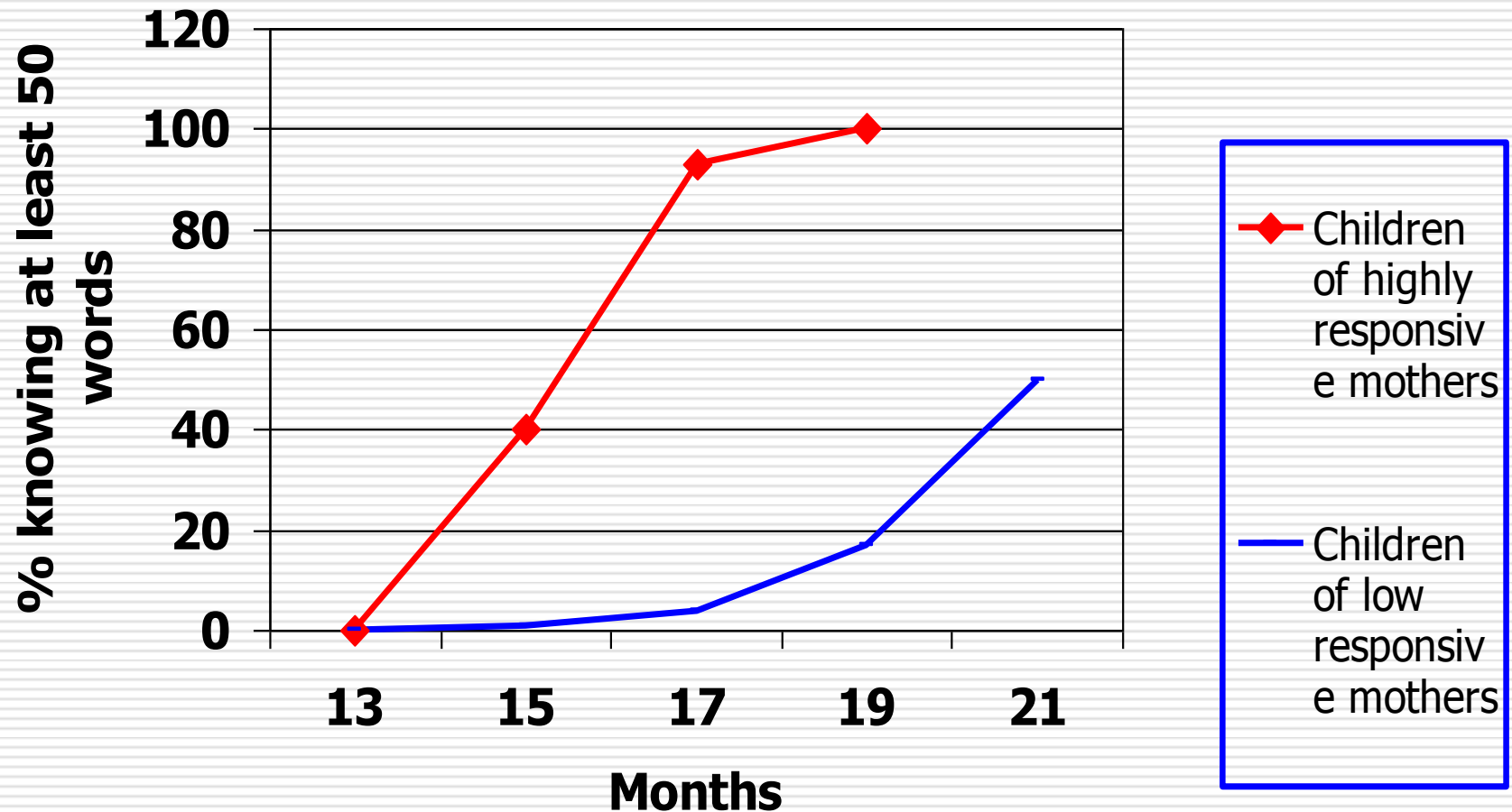
Importance of early experience: Estimated cumulative differences in language experience by 4 years of age – affects reading comprehension



Number of words in child's vocabulary



Responsiveness to child language affects language development



Children need stimulation –
not this



But this



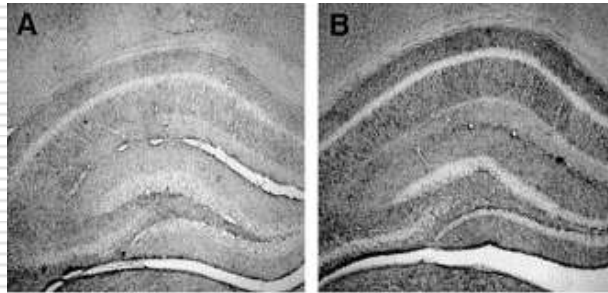
Or this



We need interventions that combine health, nutrition and child development

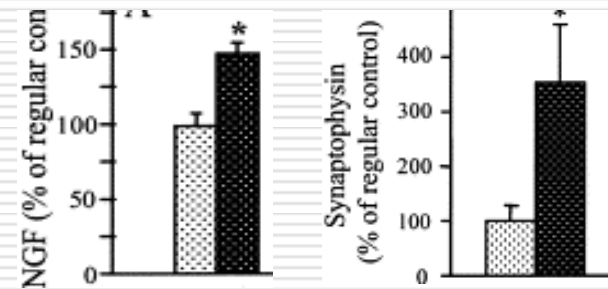
- Evidence shows that there is a positive effect of both nutrition and stimulation on the child's development.
 - When there is not a program to improve development as well as nutrition we are losing a very important opportunity for boys and girls
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Environmental Enrichment Enhances Synaptogenesis in Hippocampus and Cortex.

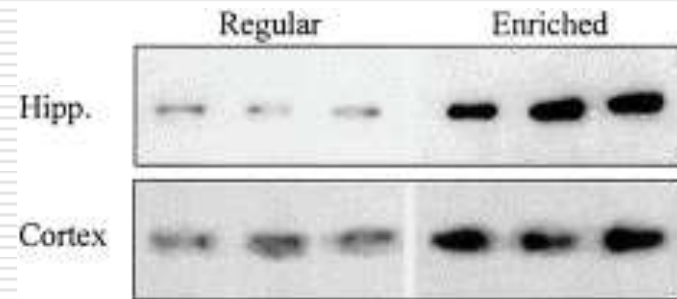
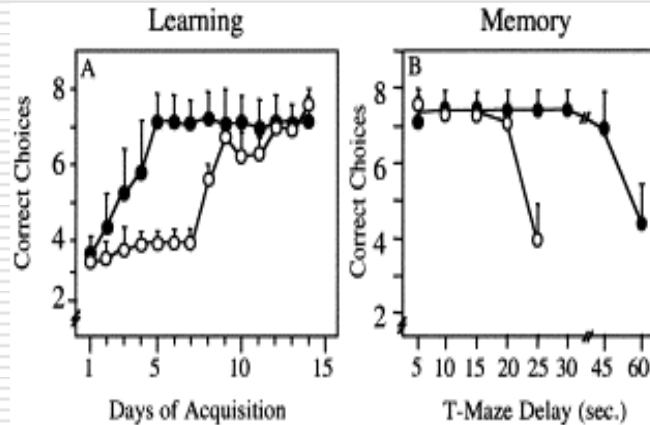


Control

Enriched



Light bar: control, dark bar: enriched environment



synaptophysin

What are the advantages of combining programs?

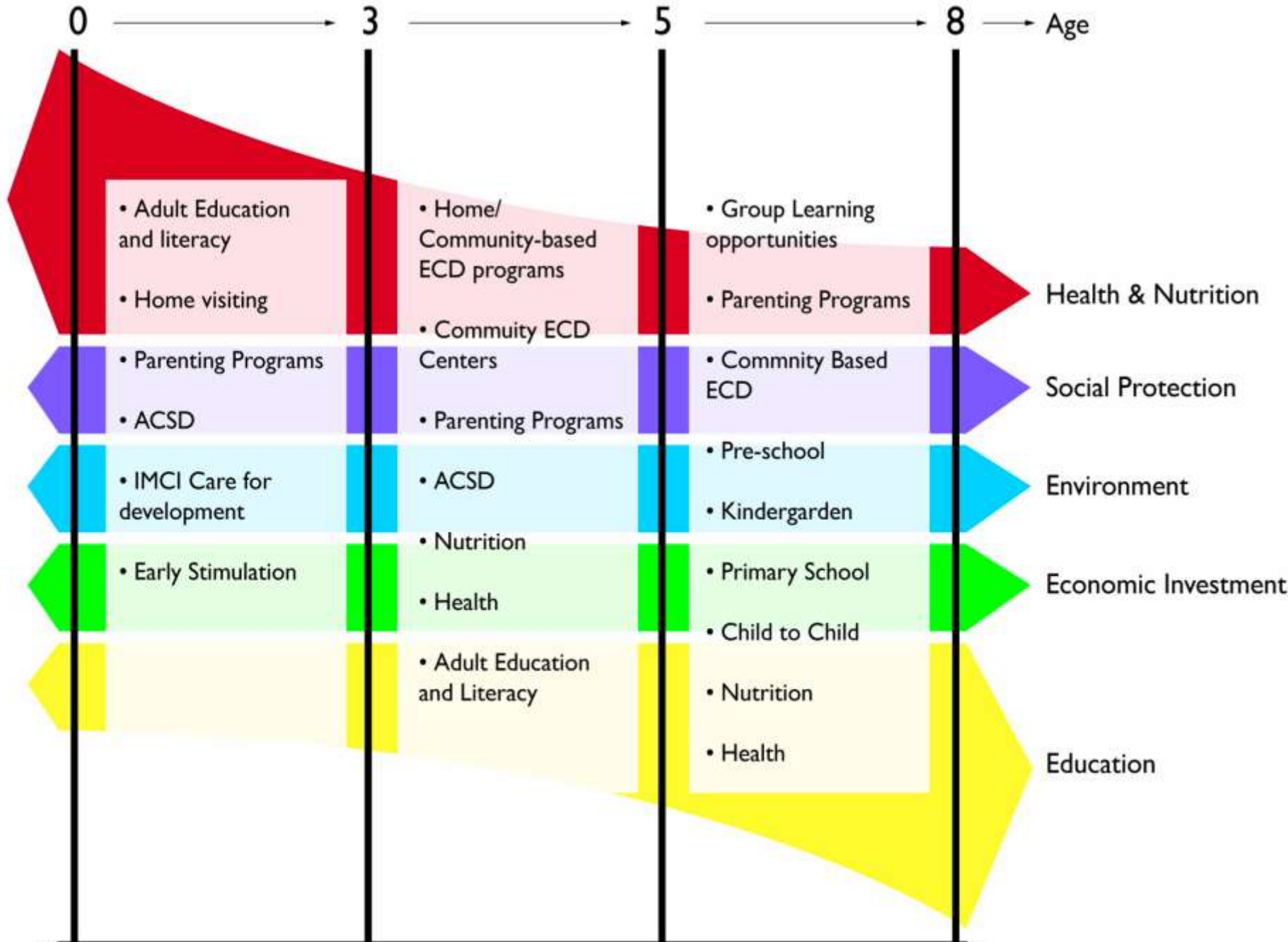
- Both poor cognitive development and nutrition lead to lower school attainment and lower adult productivity
 - Quality of child and caregiver interaction is critical for child's growth and development
 - A well nourished and mentally healthy caregiver (mother) provides better care
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Role of the Health Sector

- ❑ Reaches children in the critical earliest years
 - ❑ Health is a state of well-being
 - ❑ Intergenerational transfer – educated mothers have children who survive more.
 - ❑ New Mandate by WHO Commission on Social Determinants of Health 2008
-

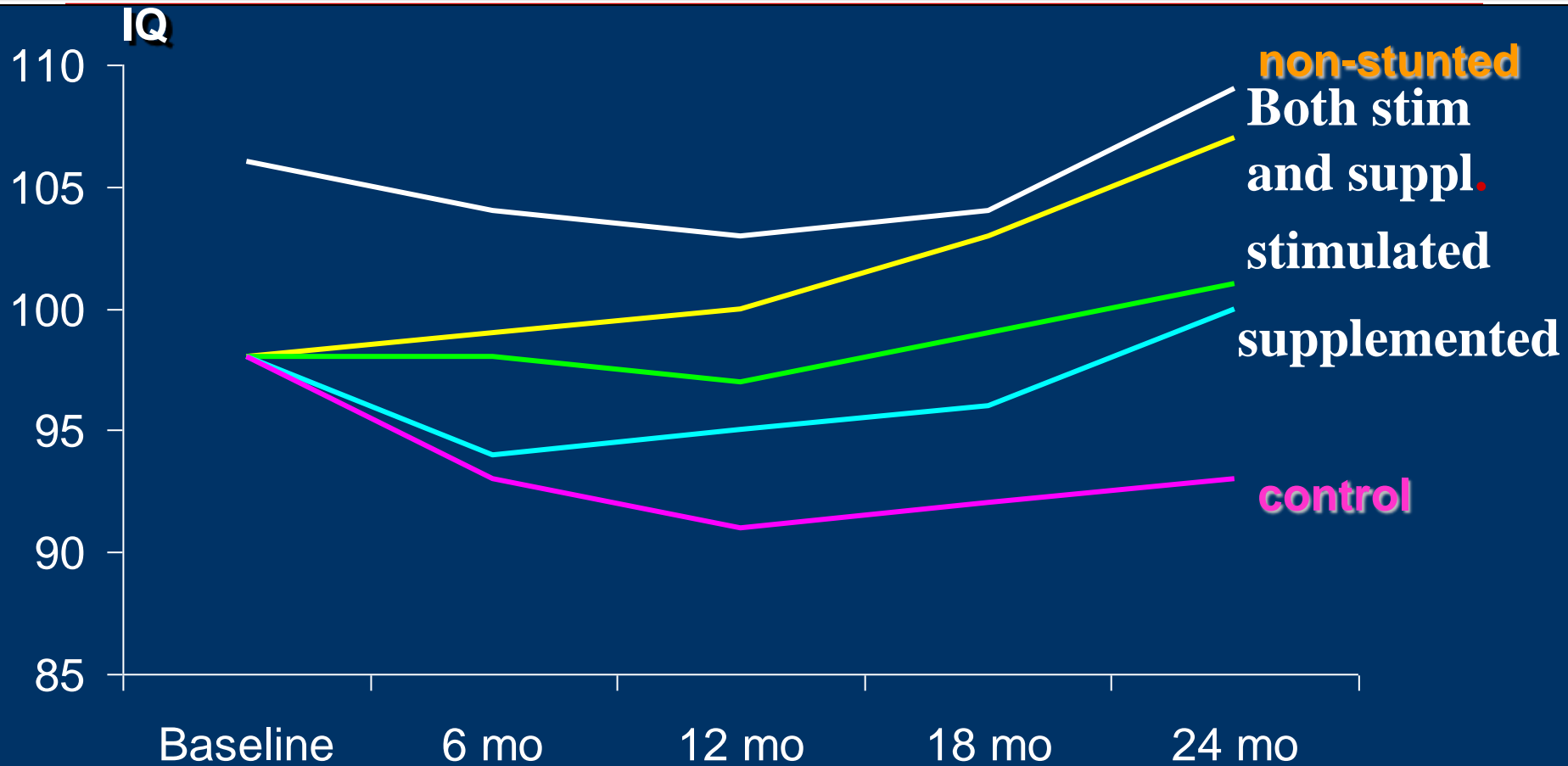
WHO concludes:

- “Experiences in early childhood and in early and later education, lay critical foundations for the entire life course”
 - “A more comprehensive approach to early life is needed, building on existing child survival programmes and extending interventions in early life to include social/ emotional and language/cognitive development.”
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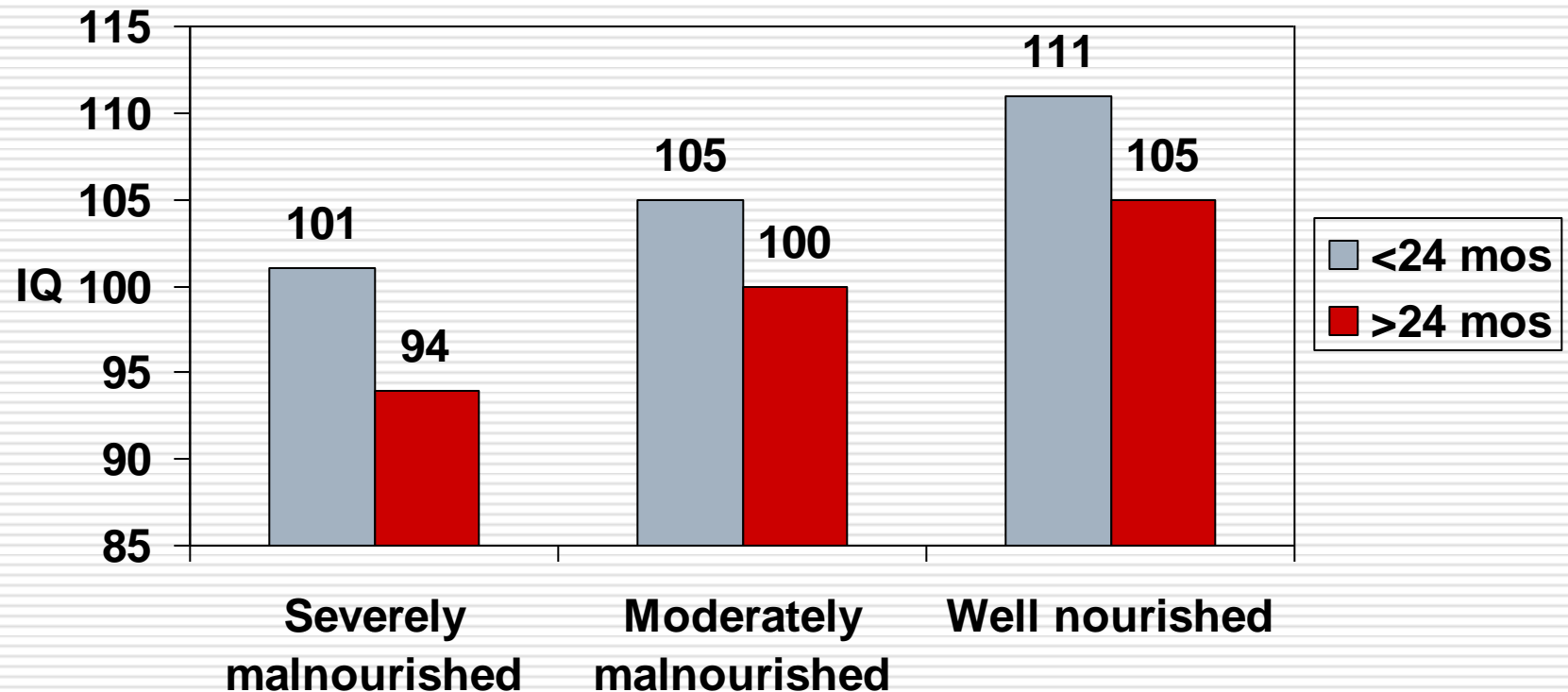
National Development Policies

Intervention in Jamaica: both stimulation and food help stunted children develop cognitive skills



Grantham-McGregor et al, 1991

Effects of combined improved nutrition and environment



Adapted from Winick et al 1975, 1977

IQ scores among female Korean orphans vary by history of malnutrition and age of adoption, favoring better nutrition and younger age of adoption.



Program Goals

- Improve pregnancy outcomes
- Improve child health and development
- Improve parents' economic self-sufficiency

Key Program Components

- First-time, at-risk mothers
- Registered nurses
- Intensive services (intensity, duration)
- Focus on behavior
- Program fidelity

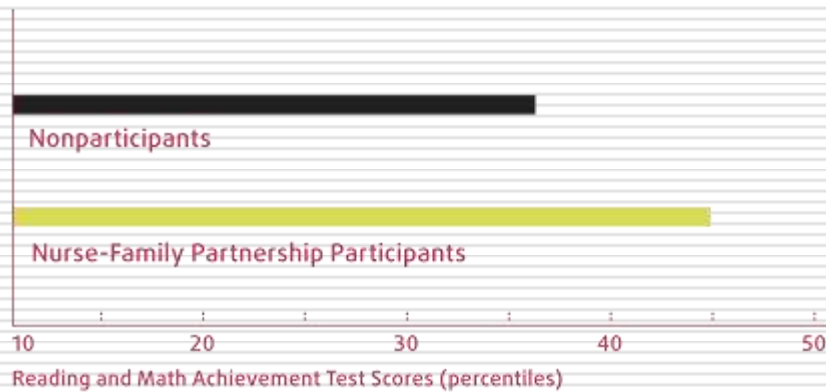
Why Nurses?

- Knowledge, judgment and skills
 - High level of trust, low stigma
 - Credibility and perceived authority
 - Nursing theory and practice at core of original model
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Academic Achievement

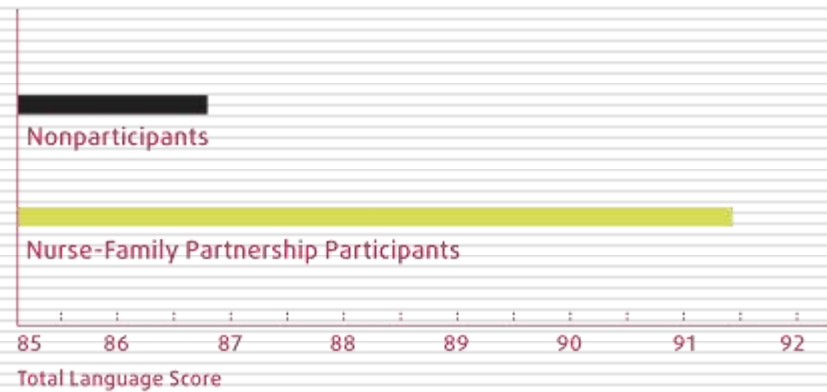
Grades 1-3, Age 9 – Memphis
(Born to low-resource mothers)



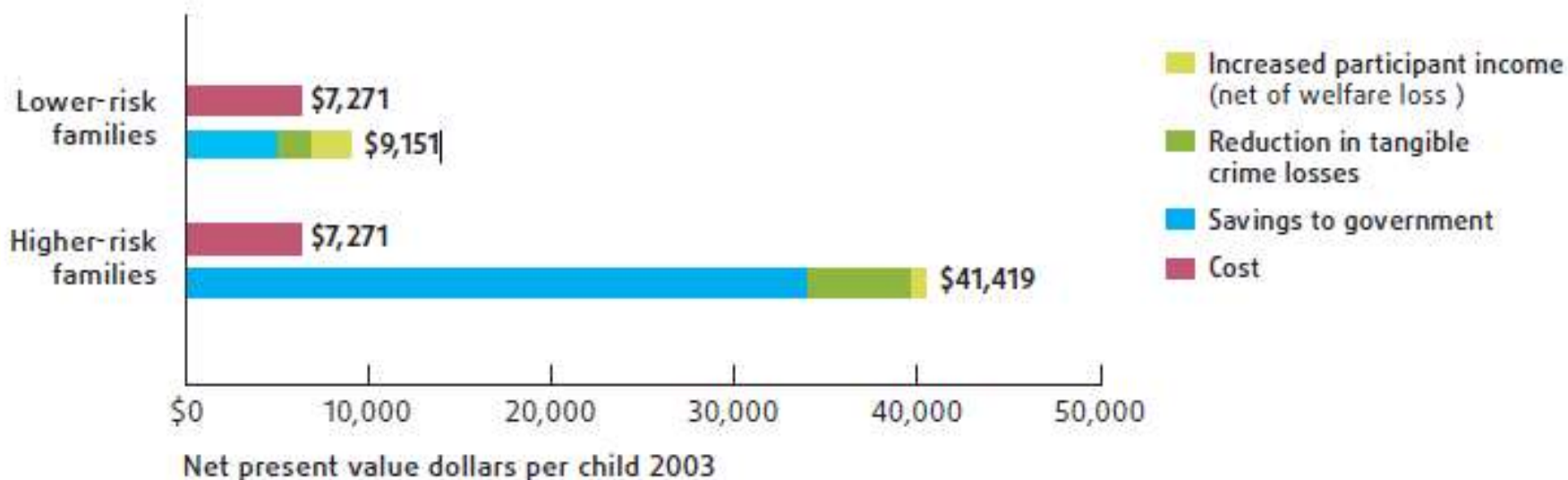
Source: Reproduced with permission from *Pediatrics*, Vol. 120, e838, Copyright © 2007 by the AAP.

Preschool Language Scale

Age 4 – Denver
(Born to low-resource mothers)



Source: Reproduced with permission from *Pediatrics*, Vol. 114, 1565, Copyright © 2004 by the AAP.



Source: 2005 RAND Corporation Study

What can we conclude?

- ❑ Strong links between quality of the environment and both growth and development
 - ❑ Health sector should aim to improve both growth and development
 - ❑ Preventative as well as therapeutic interventions are needed
-

Models to put into practice through Health Sector: An example

- Care for Child Development
 - Module of IMCI
 - Introduced in Kyrgyzstan from 2004
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Intervention models

UNICEF/WHO Care for Child Development Module













Age up to 6 months: Talk to your child and get a conversation going with sounds or gestures



Mother's Card with care for development messages

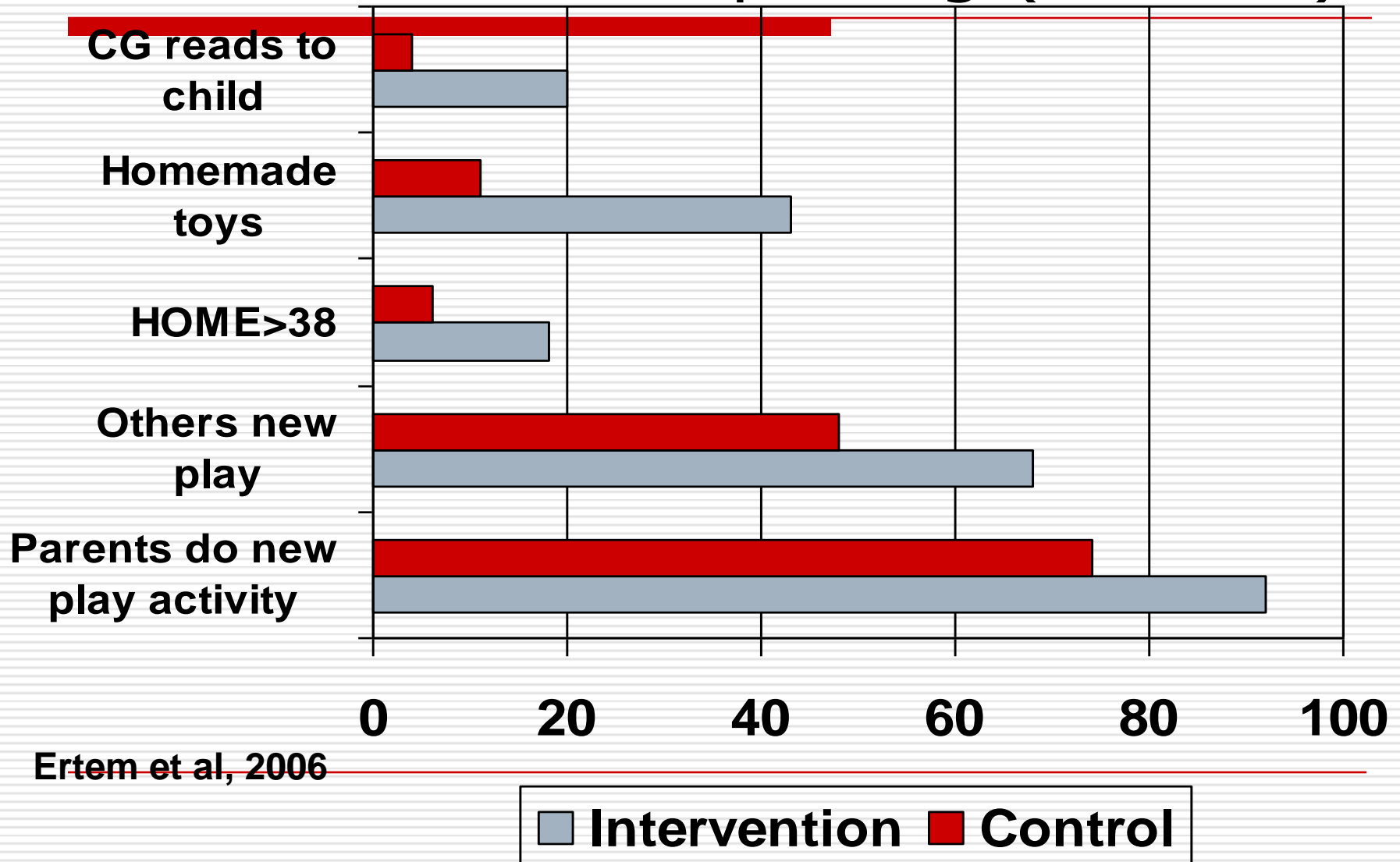
► Recommendations for Feeding During Sickness and Health and for Care for Development

<p>Up to 4 Months of Age</p>  <ul style="list-style-type: none"> • Breastfeed as often as the child wants, day and night, at least 8 times in 24 hours. • Breastfeed when the child shows signs of hunger: beginning to fuss, sucking fingers, or moving the lips. • Do not give other foods or fluids. 	<p>4 Months up to 6 Months</p>  <ul style="list-style-type: none"> • Breastfeed as often as the child wants, day and night, at least 8 times in 24 hours. • Only if the child: <ul style="list-style-type: none"> - shows interest in semisolid foods, or - appears hungry after breastfeeding, or - is not gaining weight adequately, Add complementary foods (listed under 6 months up to 12 months). <p>Give these foods 1 or 2 times per day after breastfeeding.</p> • Continue to feed when the child shows signs of hunger; do not wait for the child to cry. 	<p>6 Months up to 12 Months</p>  <ul style="list-style-type: none"> • Breastfeed as often as the child wants. • Give adequate servings of: Porridge with added oil, peanut butter or ground peanuts, margarine, mashed banana, and chicken, beans, full cream milk, fruit and vegetables, spinach, mashed avocado or family food. <p>The child should eat at least 3 times per day. (If not breastfed, should eat at least 5 times daily.)</p> • Give finger foods in small chewable pieces. Let the child try to feed self, but provide active help. 	<p>12 Months up to 2 Years</p>  <ul style="list-style-type: none"> • Breastfeed as often as the child wants. • Give adequate servings of: Porridge with added oil, peanut butter or ground peanuts, margarine, chicken, beans, full cream milk, fruit and vegetables, mashed avocado or banana, canned fish or family food. <p>The child should eat at least 5 times per day.</p> • Continue to actively help the child to eat. 	<p>2 Years and Older</p>  <ul style="list-style-type: none"> • Give family foods at 3 meals each day. Also, twice daily, give nutritious food between meals, such as bread with peanut butter or marmite, fresh fruit or full cream milk. • Offer a variety of foods. If a new food is refused, offer "tastes" several times. Show that you like the food.
<p>► <i>Play:</i> Provide ways for the child to see, hear, feel, and move.</p>  <p>► <i>Communicate:</i> Look into your child's eyes and smile at him or her. When you are breastfeeding is a good time.</p>	<p>► <i>Play:</i> Have large colourful things for your child to reach for, and new things to see.</p>  <p>► <i>Communicate:</i> Talk to and respond to your child. Get a conversation going with sounds or gestures.</p>	<p>► <i>Play:</i> Actively play with your child. Give your child clean, safe household things to handle, bang and drop.</p>  <p>► <i>Communicate:</i> Respond to your child's sounds and interests. Tell the child the names of things and people.</p>	<p>► <i>Play:</i> Give your child things to stack up, and to put into containers and take out.</p>  <p>► <i>Communicate:</i> Ask your child simple questions. Respond to your child's attempts to talk. Play games like "bye-bye" and "peek-a-boo".</p>	<p>► <i>Play:</i> Help your child count, name, and compare things. Make simple toys for your child.</p>  <p>► <i>Communicate:</i> Encourage your child to talk. Answer your child's questions. Teach your child stories, songs and games.</p>

Feeding Recommendations for a Child Who Has PERSISTENT DIARRHOEA

- If still breastfeeding, give more frequent, longer breastfeeds, day and night.
- If taking other milk:
 - replace with increased breastfeeding OR
 - replace with fermented milk products, such as amasi (maas) or yoghurt OR
 - replace half the milk with nutrient-rich semisolid food.
- For other foods, follow feeding recommendations for the child's age.

Evaluation of Care for Development in Turkey: % of Intervention and Control families reporting (N= 194)



Care for Development in rural China (Jin et al., 2007)

- Randomized Control Trial of Care for Development
 - 50 intervention and 50 control
 - Children < 24 months
- Measured effects on child development and parent attitudes
- Intervention: 2 sessions in home over a 6 month period delivered by a counselor

Shanghai Children's Medical Center Inst.
For Med Research, Melbourne, Australia

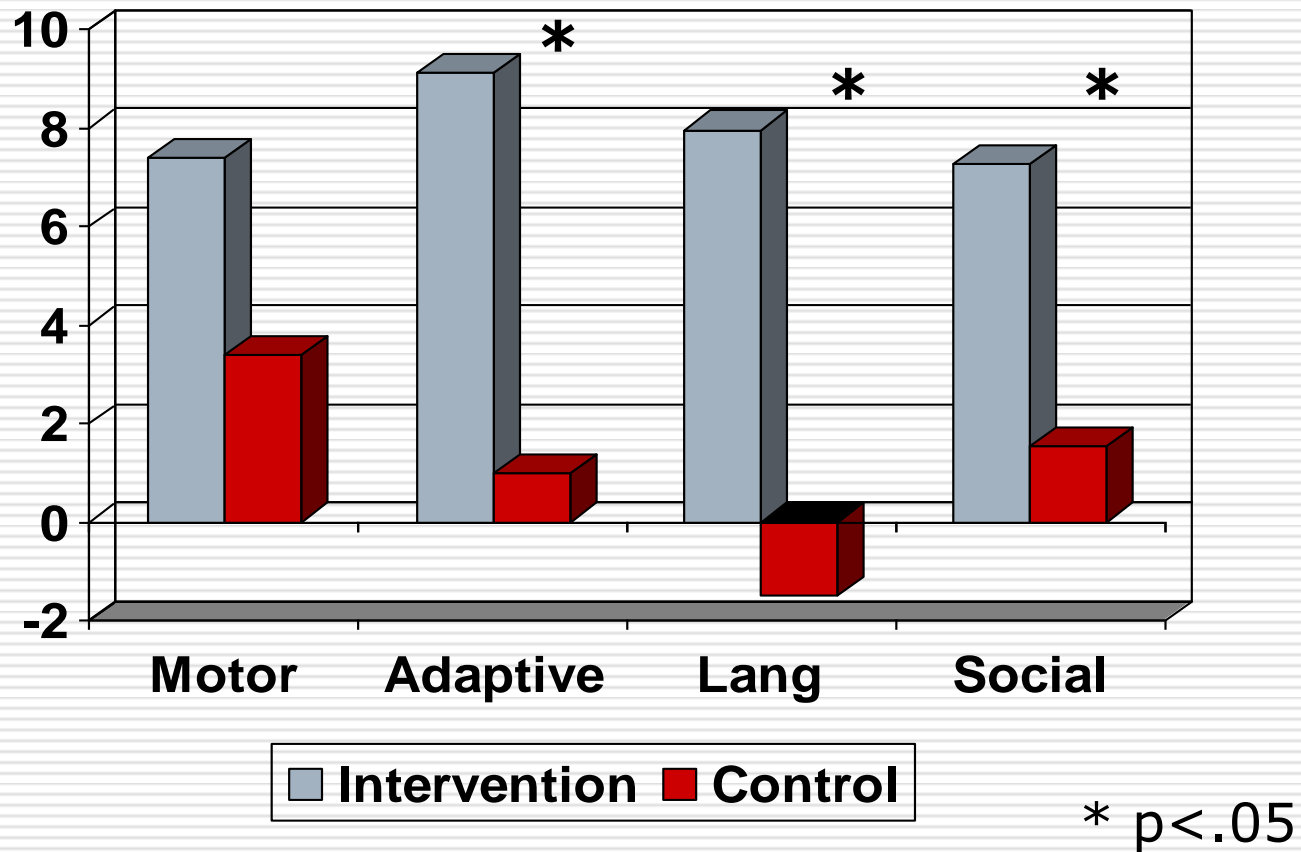
Characteristics of the intervention

- ❑ Used IMCI counseling: Ask and Listen, Praise, Give Advice, Check Understanding
 - ❑ Used problem list and did problem-solving with caregiver to be sure that she could do activities – e.g., time, materials
 - ❑ Used practice and demonstration
 - ❑ Gave Counseling Card to mother
 - ❑ 30-60 minutes per session
-

Results of the trial

- ❑ No baseline differences (age = 10 mos)
 - ❑ Average intervention child increased by 8.7 Development Quotient points
 - ❑ 96% of Intervention mothers understood recommendations vs 2% control
 - ❑ 91% Intervention mothers found recommendations “easy to implement vs. 67% control
-

Changes in DQ units from pretest to posttest



Review of IMCI/ECD in Kyrgyzstan

- ❑ New version of Care for Child Development launched in July
 - ❑ To discover how effective your implementation was
 - ❑ To inform other countries as they roll out new version
 - ❑ To improve Care for Development in
Central Asia – 3 countries
-

Health Sector strategies for ECD in the region

- Kazakhstan: IMCI; Policy on Healthy Baby Rooms; combine with GMP, immunization
 - Tajikistan: IMCI; Community Health Promoters run group sessions (12 topics)
 - ECD One of top 3 topics (HIV, water and sanitation, and ECD - 924 in 6 mo)
 - TV programs; advocate for limited bishek
 - Turkmenistan: ECD/IMCI plus developmental monitoring in 10 districts;
 - Airline funds H, N, and ECD information
 - Working on comprehensive National Plan of Action for health, nutrition and ECD
-

Gulazak and ECD – a good match

- Kyrgyzstan is the first to link home iron fortification and ECD messages
 - Information for medical workers
 - Information for parents
 - Give family a book for child when they pick up their sprinkles

 - WHY put together?
-

Iron supplementation increases activity and exploration – and child development

- ❑ Mexico – iron deficiency associated with reduced activity and exploration 4-12 mos (Aburto et al., 2009)
 - ❑ Bangladesh – 6 months supplement with iron and zinc led to increased:
 - Engagement with learning
 - Exploration
 - Arousal and positive emotion
 - Fearlessness (Black et al., 2004)
 - ❑ Indonesia – iron and energy supplement reduced time child spent being carried (Walka et al., 2000)
-

An example of linking iron and ECD: Dr.M. Zeitlin, Senegal

- 1. The Positive Deviance approach to parent education
 - Positive Deviance (PD) investigation
 - 2 week workshop for mothers and children
- 2. Previously identified problems and PD solutions:
 - Anemia, malnutrition and learning
 - School readiness

TO COMBAT ANEMIA: Mothers cooked nutritious traditional recipes together and fed them to their anemic children. Supplemental iron and deworming speeded the children's recovery



ANEMIA ILLUSTRATIONS FROM THE WORKSHOPS

*Lack of oxygen to the brain prevents anemic children from concentrating on their environment
(before rehabilitation)*



*Non-anemic children concentrate
and learn actively
(after rehabilitation)*



BEFORE IRON SYRUP OR TABLETS
children with hb ~ 9 gm/dl were passive and apathetic

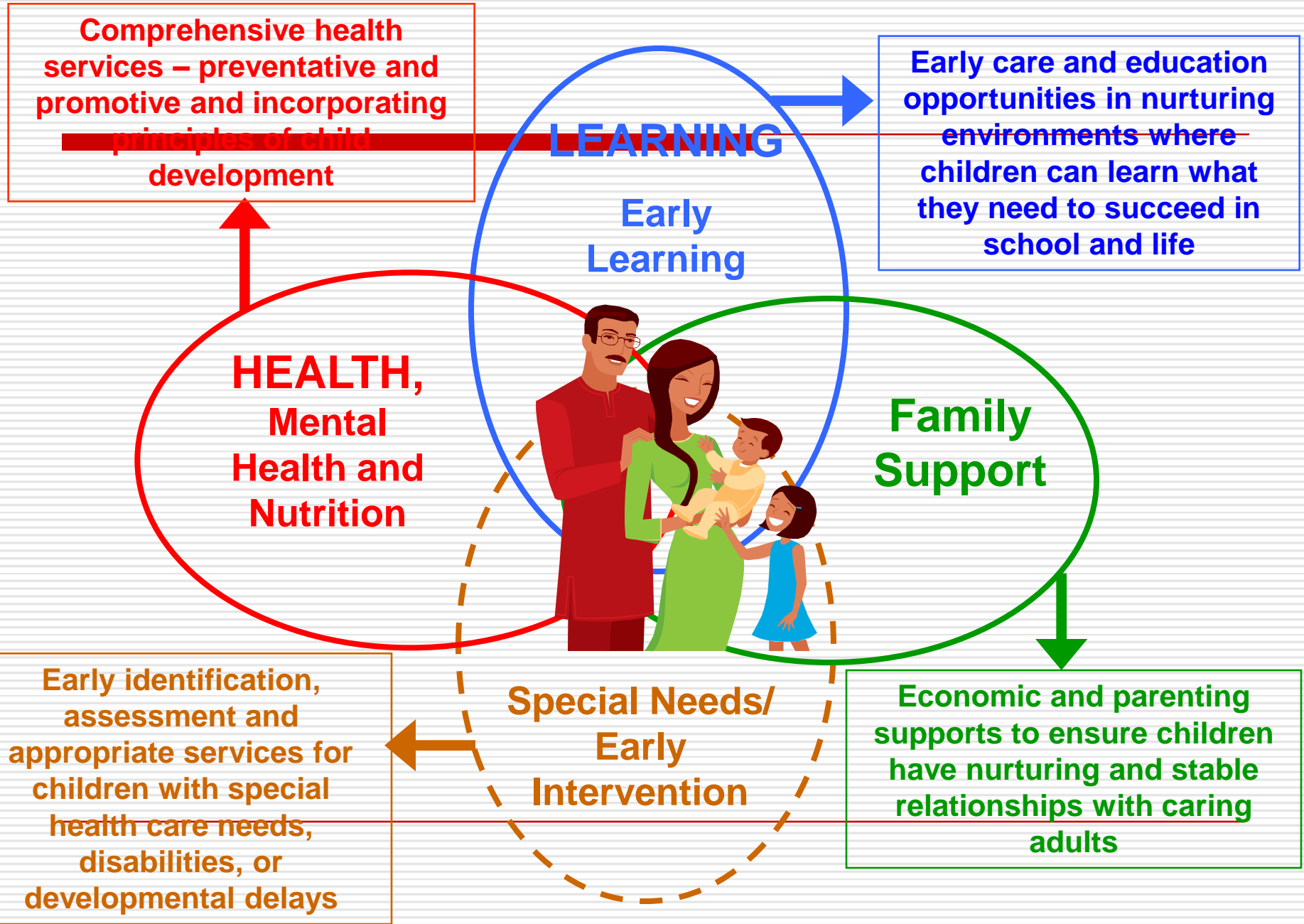


RECOVERING CHILDREN AT END OF PROGRAM

danced and raced around the school compound (Yoff – Dakar)



An Holistic Approach to ECD is the Best



The question is:

What can Kyrgyzstan gain by linking nutrition and health interventions with child development?

**What can children gain?
Can we afford the loss?**

