



Washington State Department of
Early Learning

The Young Child As a Scientist

*Washington State Academy of Sciences Annual
Meeting September 16, 2010*

Bette Hyde, Ph.D.

Director, Washington State Department of Early Learning





- ◆ The science of early learning
- ◆ The young child as a scientist
- ◆ Next steps





- ◆ “Science”—A branch of knowledge or study dealing with a body of facts or truths systematically arranged and showing the operation of general laws”
 - Social sciences
 - Physical sciences





Social science research: Psychoeducational

- ◆ Data show that investing in early learning works:
 - Longitudinal studies show long-term positive benefits for kids and families.
 - HighScope Perry Preschool Study
 - Carolina Abecedarian Project
 - Chicago Child-Parent Center Program
 - National Head Start Demonstration Project
 - Early Childhood Longitudinal Study-Kindergarten Cohort
 - Benefits include:
 - Increased reading and math skills
 - Social competence
 - Staying in school
 - College attendance
 - Full-time employment in adulthood



Social science research: Economic

◆ There are economic advantages to schools and to society

- Schools save money
 - Increased enrollments
 - Public goodwill/support for levies and bonds
 - Costs avoided for remedial programs
- Society saves money
 - Less incarceration
 - Less welfare
 - More taxpaying citizens





Social science research: Economic

- ◆ For each student who starts school ready to learn, a school district saves \$3,000 per student per year in special education and other remedial work.

(League of Education Voters 2007 Citizens' Report Card on Washington State Education)

- ◆ Economists maintain that high-quality preK pays for itself over 6 years for targeted children and over 9 years for universal programs

(Lynch, 2007)



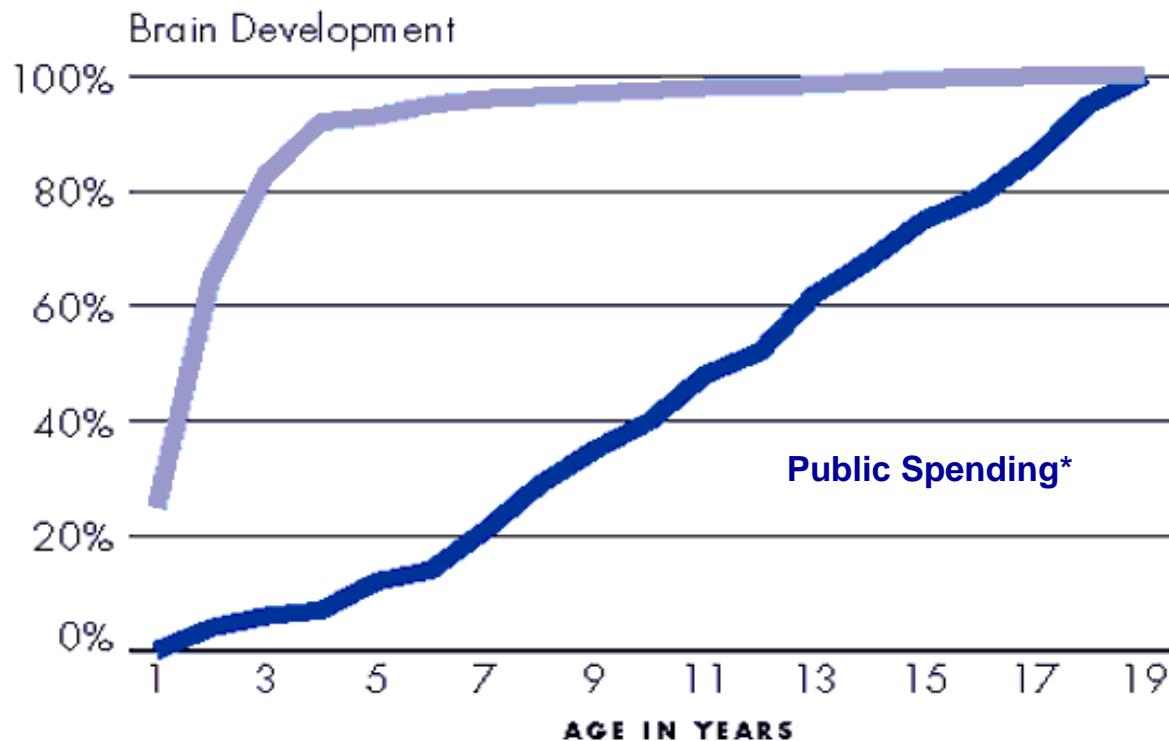


Early childhood education: A good investment

BENEFITS		MAIN SOURCE OF BENEFITS
Increased high school graduation:	\$9,966	Increased earnings
Reduced K12 grade repetition:	\$206	Lower K12 costs
Reduced K12 special education:	\$135	Lower K12 costs
Reduced crime:	\$5,068	Lower CJS and victim \$
Reduced child abuse/neglect:	\$1,919	Lower CWS and victim \$
Reduced alcohol/drug abuse:	\$278	Increased earnings
Offset child care costs:	\$1,897	Lower child care costs
TOTAL BENEFITS PER YOUTH: \$19,469		
COST PER YOUTH: \$7,709		
BENEFITS PER DOLLAR OF COST: \$2.53 (8 TO 10% ROI)		



Physical science research: Neurological sculpting

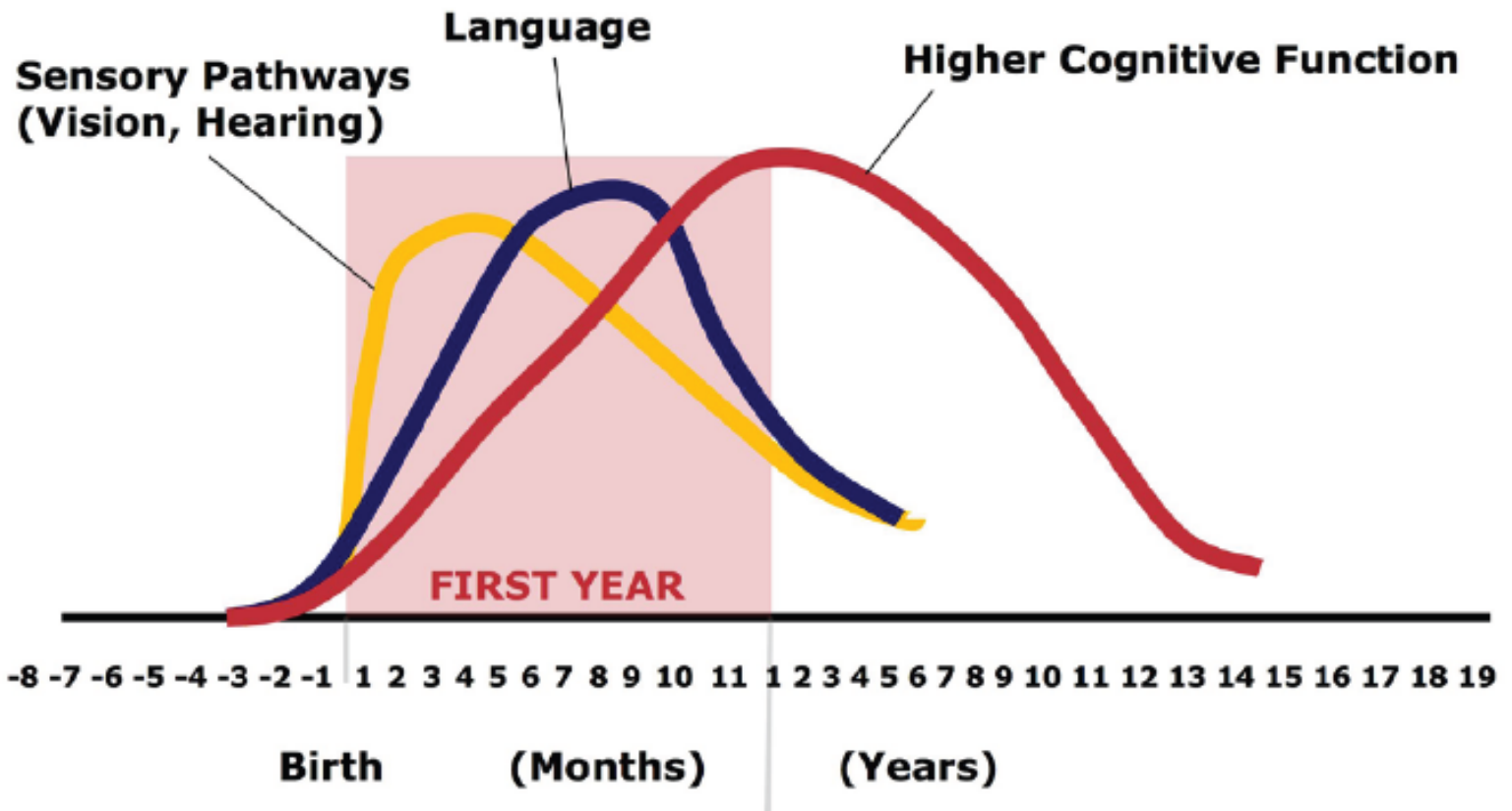


* Portion of total public investment in children being spent during indicated year in children's lives.



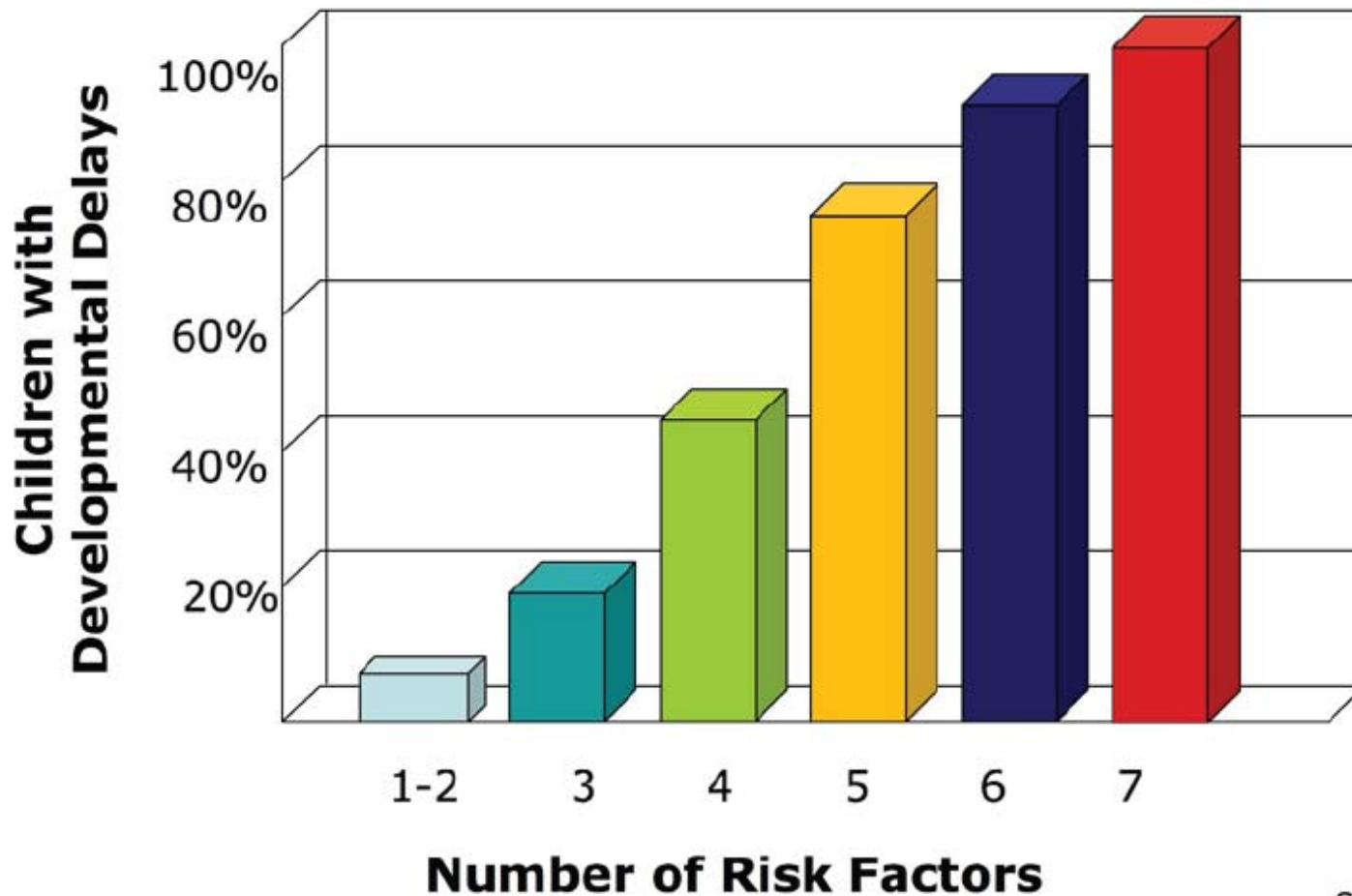
Human Brain Development

Neural Connections for Different Functions Develop Sequentially



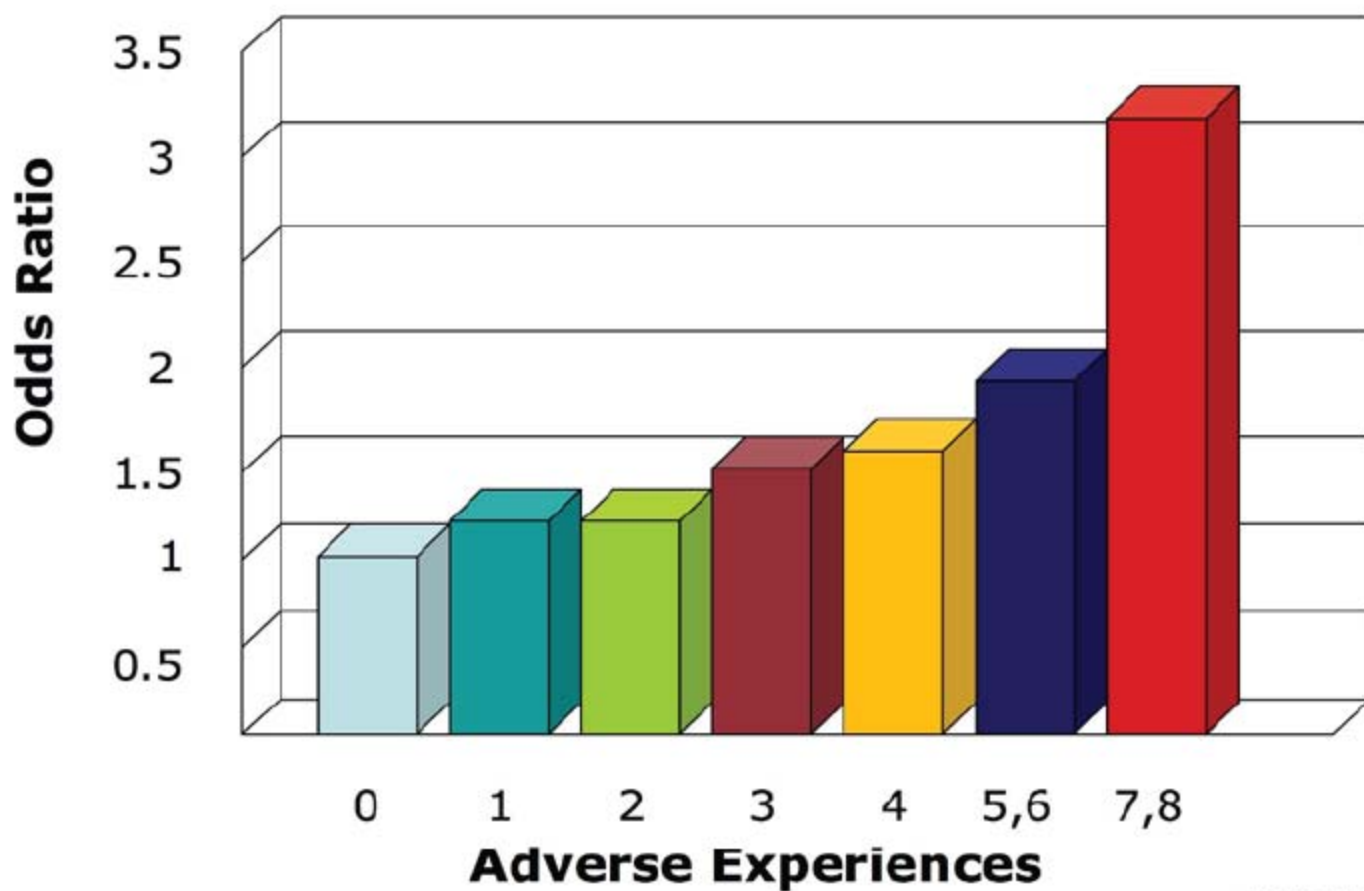


Significant Adversity Impairs Development in the First Three Years





Risk Factors for Adult Heart Disease are Embedded in Adverse Childhood Experiences





Social science research: Toxic stress

- ◆ Longitudinal study on impacts of high-quality child care programs
- ◆ 1,364 children in 10 cities from birth to 15
- ◆ Link between child care quality and:
 - Scores on cognitive/academic tests as a teen
 - Behavior problems as a teen



The young child as a scientist

- ◆ “Scientist”: An expert in science
- ◆ “Scientific method”: A method of research in which a problem is identified, relevant data are gathered, a hypothesis is formulated and the hypothesis is empirically tested





The young child as a scientist, cont'd

- ◆ From birth on, children function as scientists
- ◆ Exploring and learning about her world





Child development theorists: Jean Piaget

- ◆ Master of naturalistic observation
- ◆ Hypothesis: Child explores and tries to discover regularity/”systems” in his world

Theory component	Example
Regularity	Crib mobile
Cause and effect	Bottle toss
Object constancy	Balloon
Conservation	Water jugs
Schema	Morality



Child development theorists: Behaviorism

◆ Imitation/modeling (Bandura)

- “To teach means to show”
- I-LABS
- Imitate behavior and nuances

◆ Reinforcement (Skinner)

- Positive reinforcement (praise, smile)
- Negative reinforcement (temper tantrums work!)



Child development theorists: Psychoanalysis/Freud

- ◆ From oral stage on, child needs to experience trust so she can continue to reach out and grow
- ◆ Later, anal stage on, child continues to assert power (and see what happens) and actively intrude into their world (and see what happens)



Nature/nurture interaction

- ◆ Shapes/allows/delineates child's "scientific" ventures
- ◆ Baby cries at the very frequency most irritating to mother
- ◆ 2000 days from birth to kindergarten: Every day counts!
- ◆ Few interactions are neutral





Washington State Early Learning Plan

- ◆ Developed by DEL, OSPI, Thrive by Five Washington and many partners
- ◆ Input from more than 1,000 individuals
- ◆ Children prenatal to 3rd grade and their families and caregivers
- ◆ www.del.wa.gov/plan





So that we can...

- ◆ Use/apply the growing science of early learning to each young, aspiring “scientist” in our state

In Washington, we work together so that all children start life with a solid foundation for success, based on strong families and a world-class early learning system for all children prenatal through third grade. Accessible, accountable, and developmentally and culturally appropriate, our system partners with families to ensure that every child is healthy, capable and confident in school and in life.