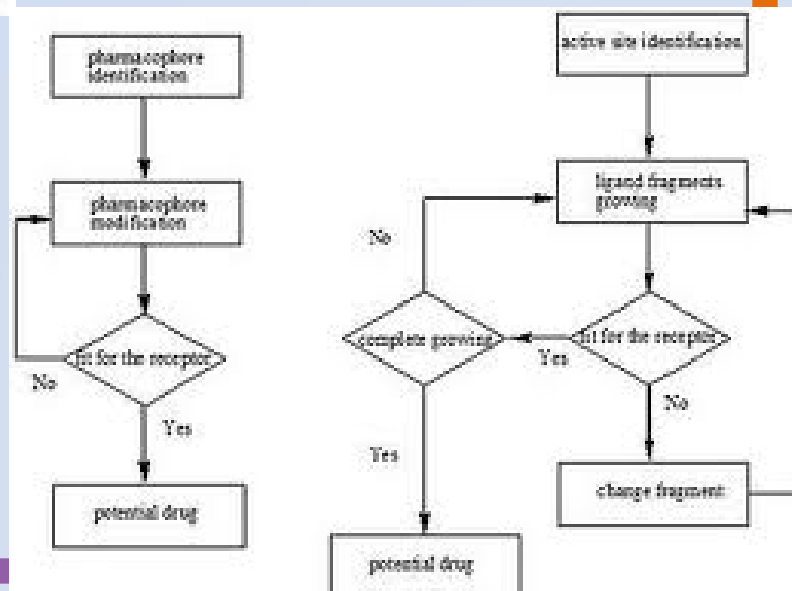


Neurotransmitter	Receptor	Affinity (nM)	Ref
Ach	M1	3.4	63
	M2	370	55
	M3	4200	22
	M4	5600	22
	M5	800	22
5HT	5HT _{2C}	27 nM	48
DA	D1	40 nM (high-aff)	89
	D2	10 nM (high-aff)	84
	D3	0.62 nM (high-aff)	33



THE SCIENCE OF EARLY LEARNING

NOREEN WOMACK, MD, FAAP
IDAHO CHAPTER CHILD CARE CONTACT
AMERICAN ACADEMY OF PEDIATRICS
EDUCATION COMMITTEE
FEBRUARY 10, 2016





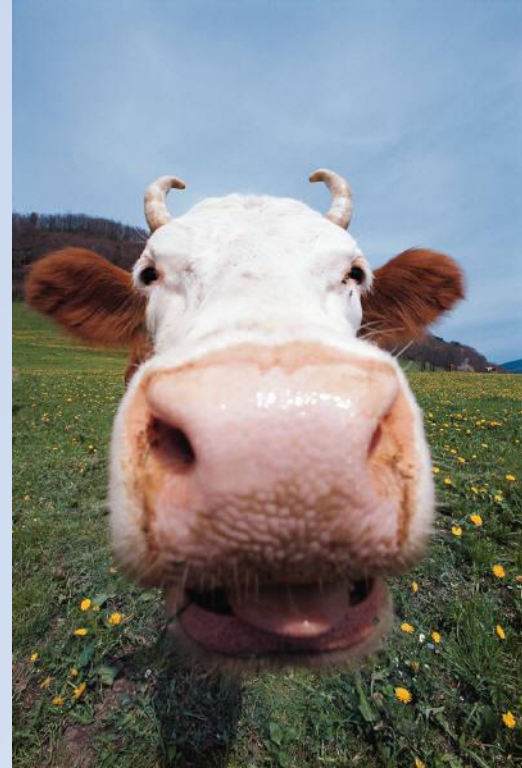
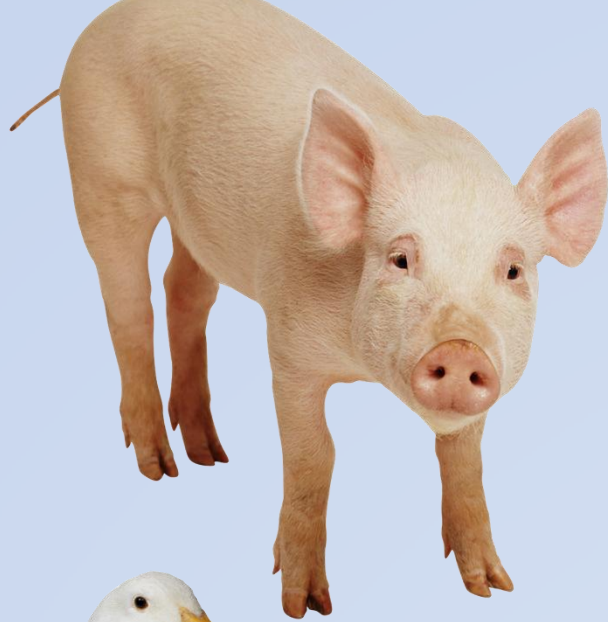


8/3/2003



Early Brain and
Development

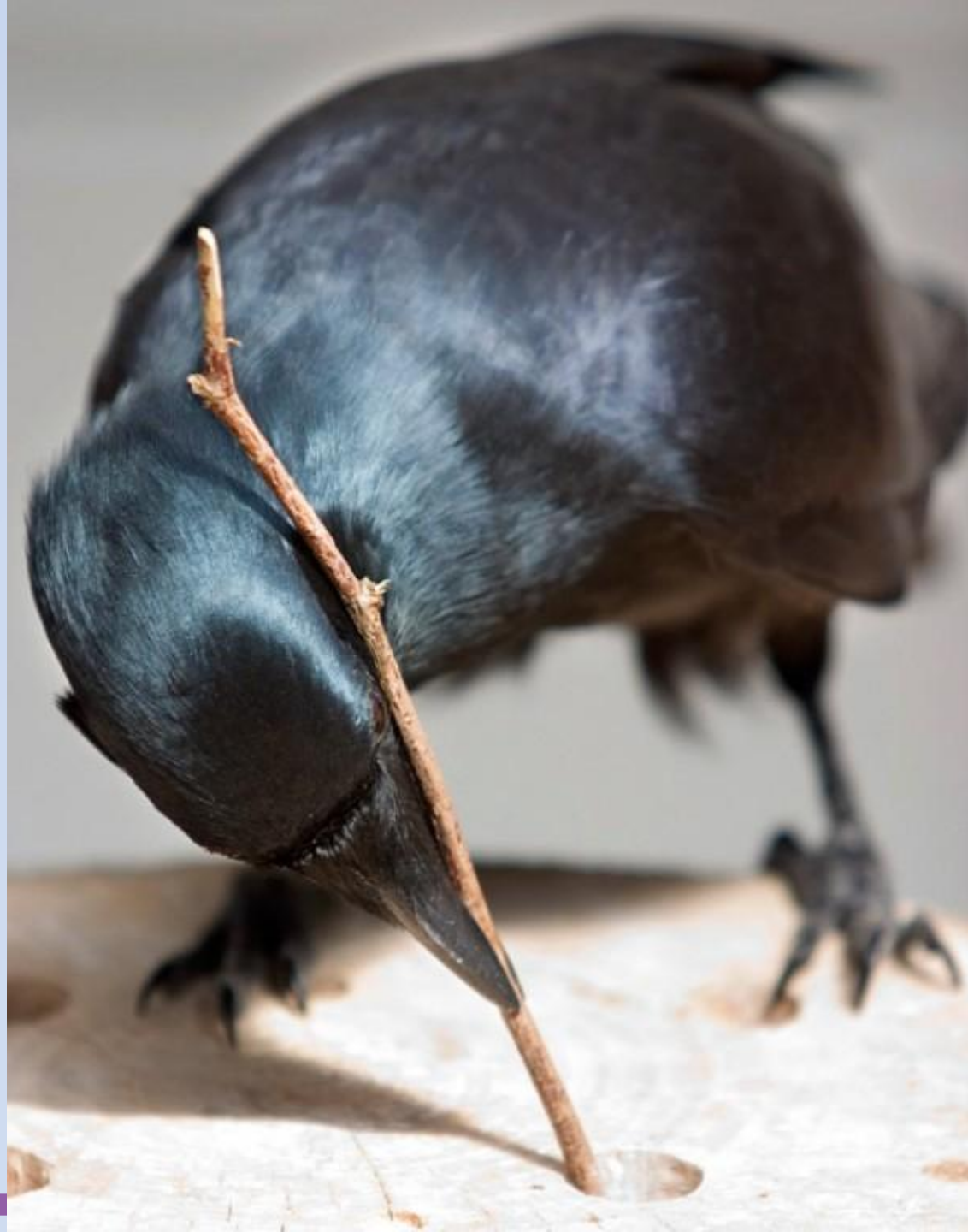
BRAINS, FORGING EXPERIENCE



The Parable of the Crow and the Chicken



The New Caledonian Crow
Science Magazine,
2010





Early Brain and Child Development

BUILDING BRAINS, FORGING FUTURES

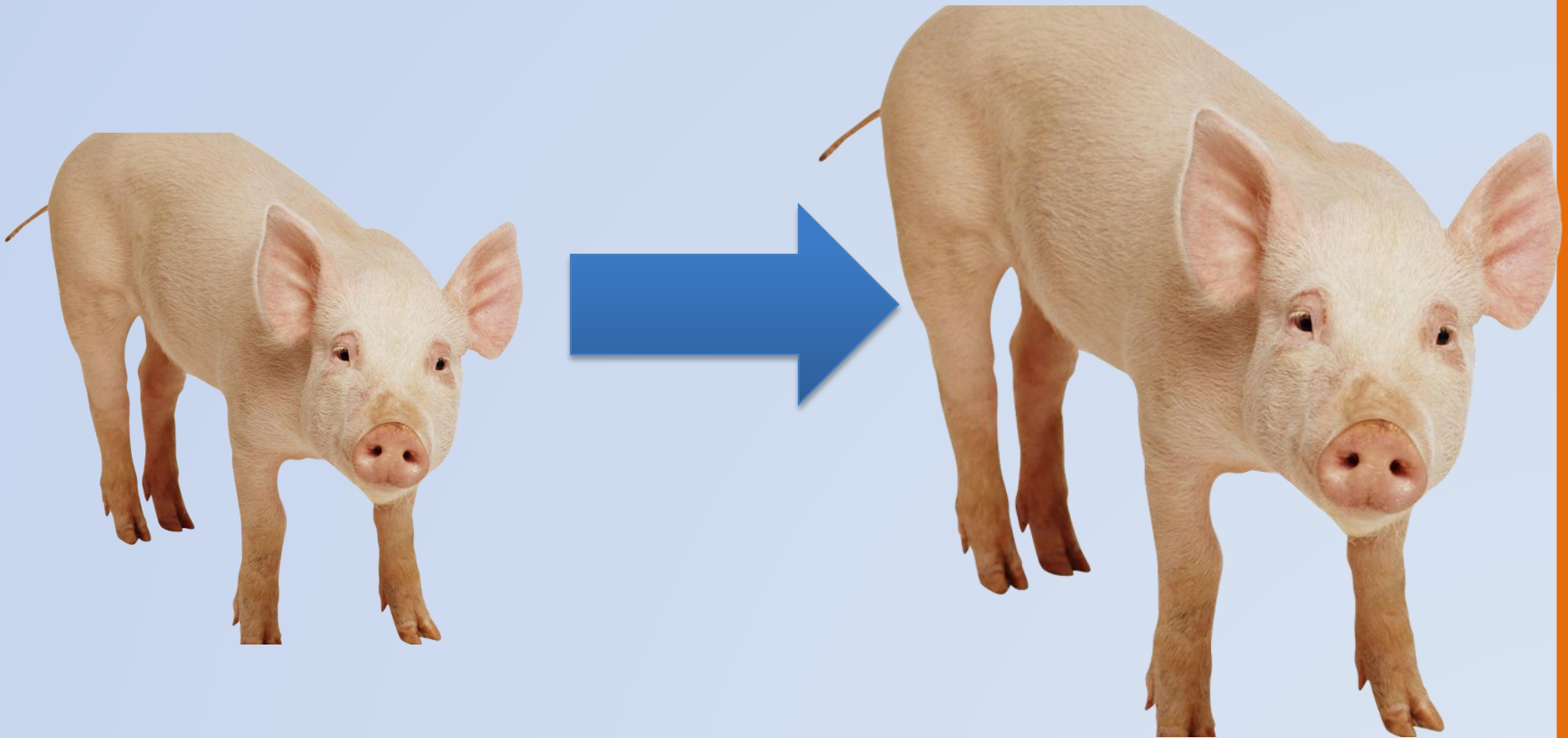
A Program of the American Academy of Pediatrics

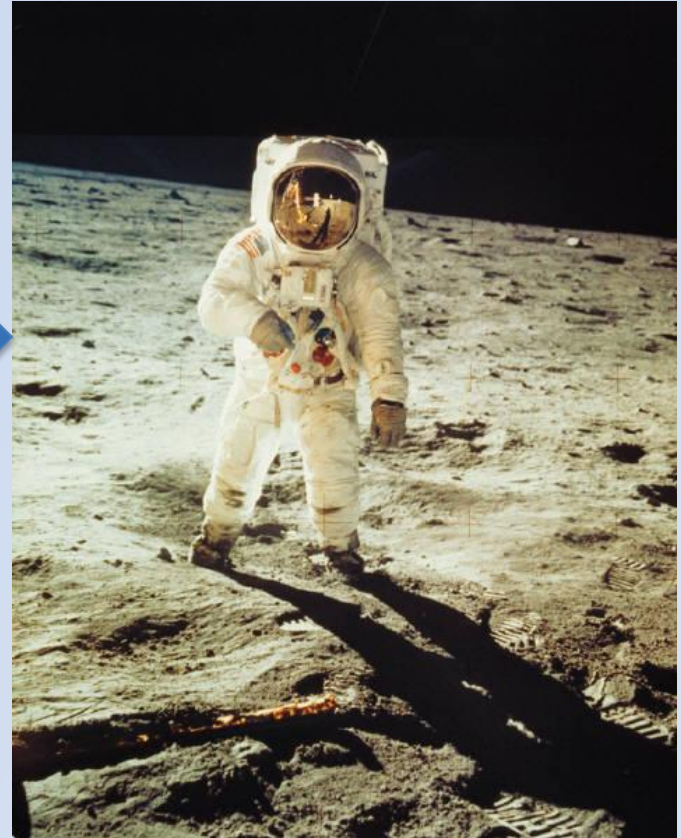


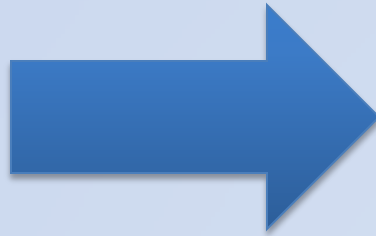
American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™









Take Home Points

- Childhood is for learning
- The critical period for learning is the first 1,000 days (first three years)

-American Academy of Pediatrics

CENTER ON THE DEVELOPING CHILD - HARVARD

- [http://developingchild.harvard.edu/resources/multimedia/videos/three core concepts/brain architecture/](http://developingchild.harvard.edu/resources/multimedia/videos/three_core_concepts/brain_architecture/)



MEG: Magnetoencephalogram

Dr. Patricia Kuhl



700 New Neural Connections Every Second

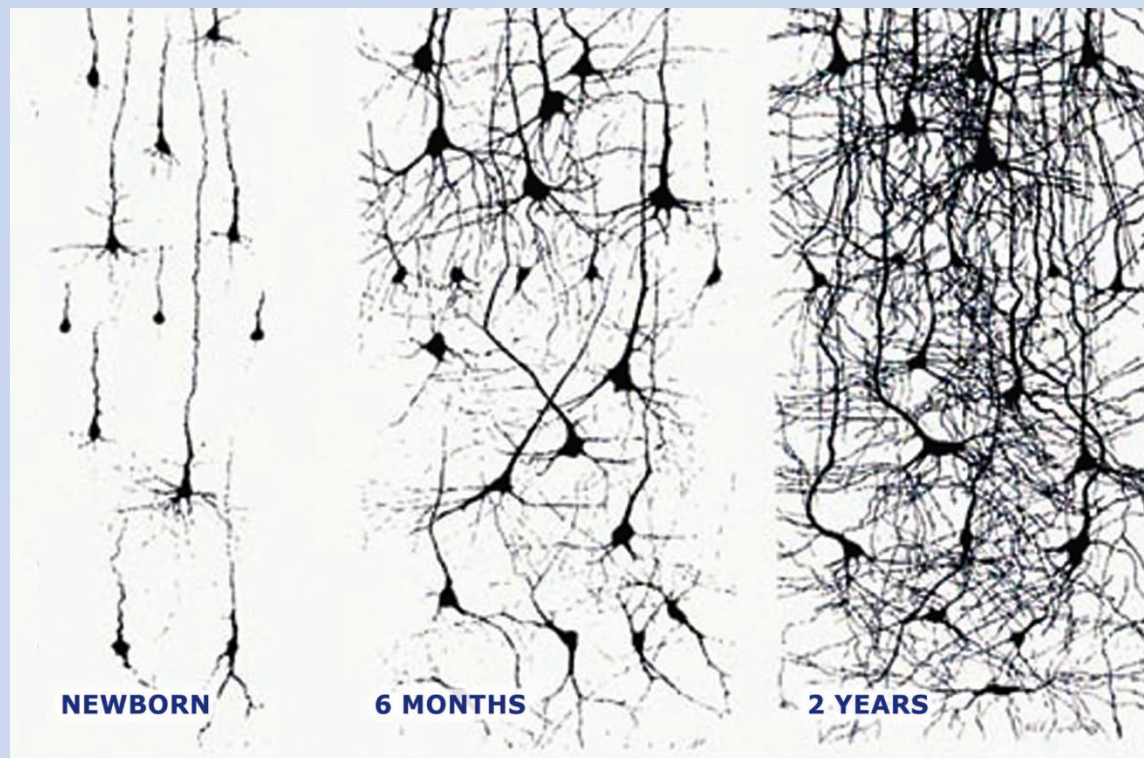
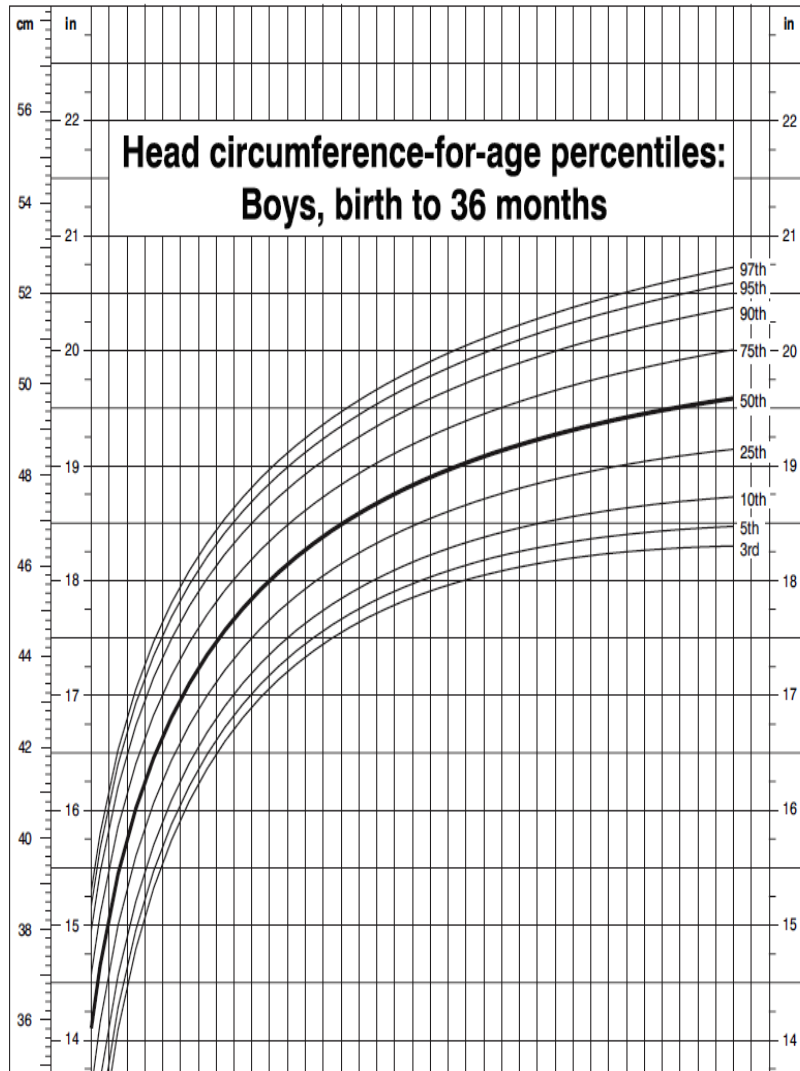
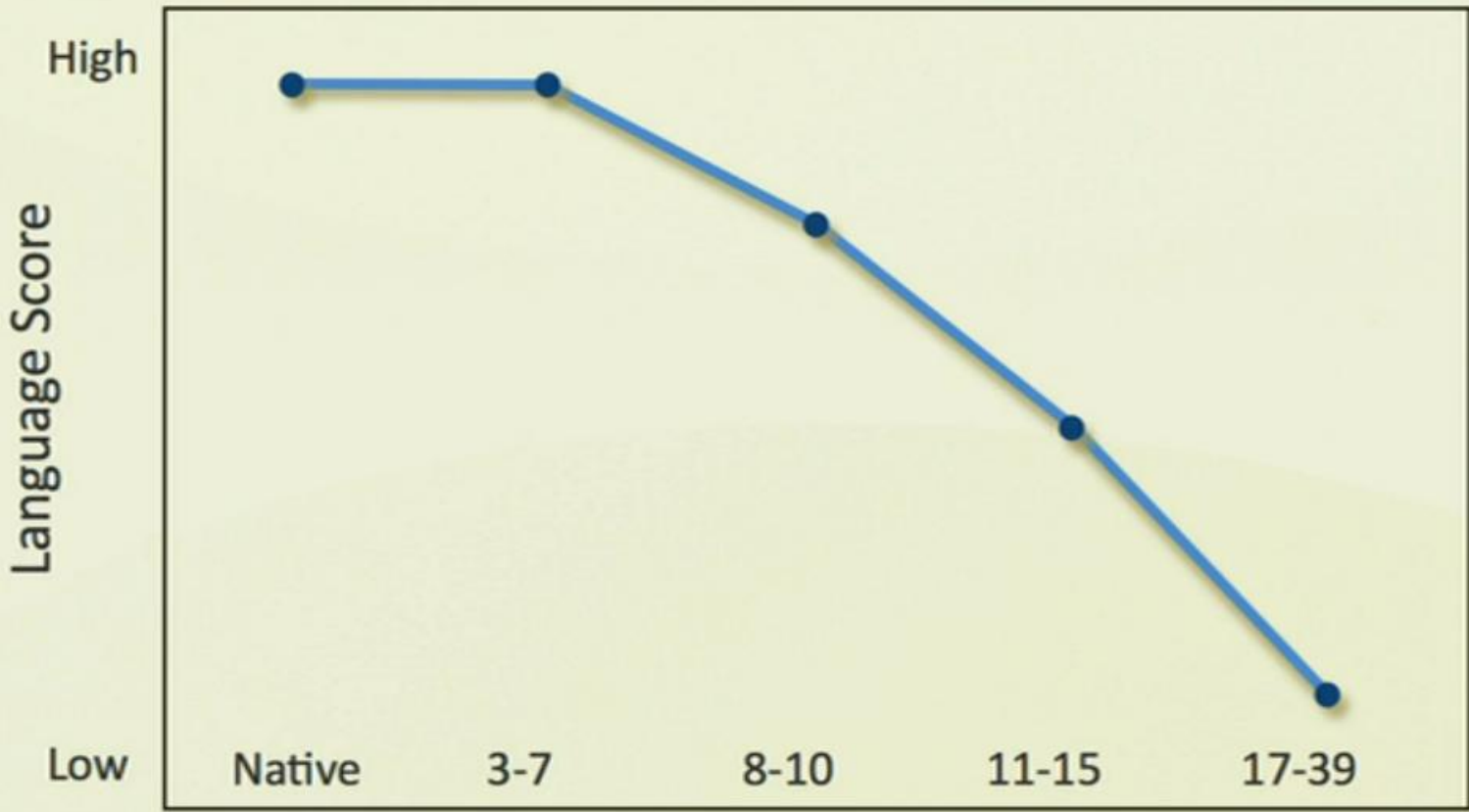


Image source: Conel, J.L. The postnatal development of the human cerebral cortex. Cambridge, Mass: Harvard University Press, 1959

CDC Growth Charts: United States



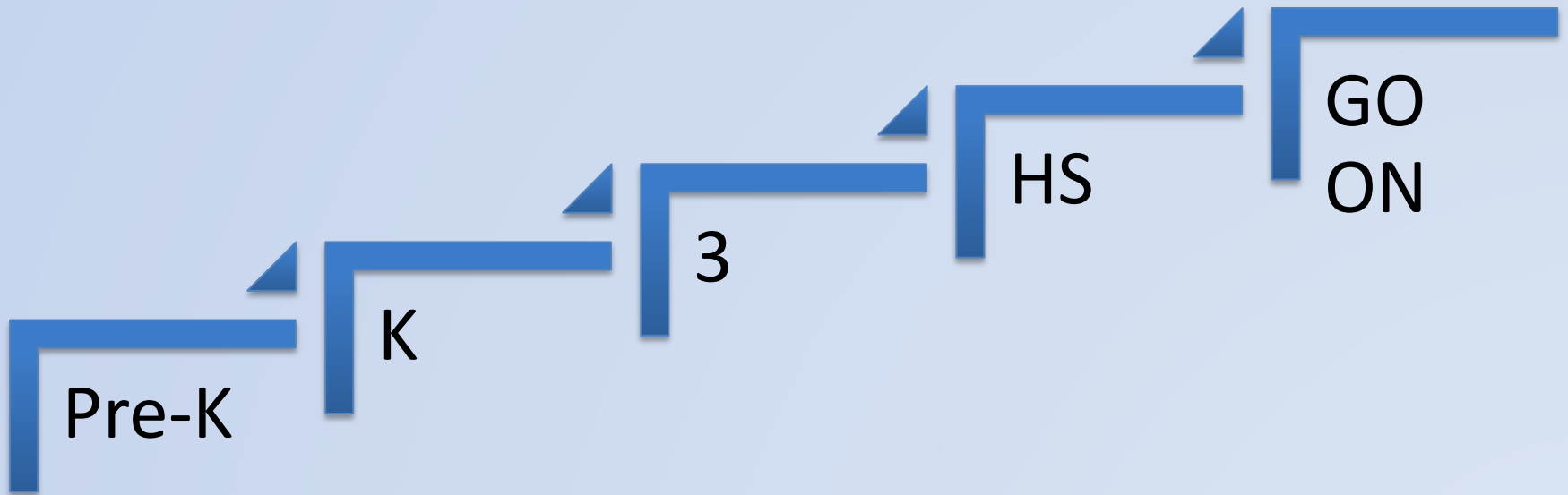
Language Exhibits a 'Critical Period'



2 out of 3 women in the US send their infants to out of home care when they return to work



Continuum of Education





WHY IS LEARNING IN THE FIRST 1,000 DAYS IMPORTANT?

- Several states forecast needed prison growth based on third grade reading scores. Children who read by the third grade seldom are ever involved with the criminal justice system
- 1 out of 223 developed countries in per capita prisoners (71% of those are HS dropouts)





WHY IS LEARNING IN THE FIRST 1,000 DAYS IMPORTANT?

- The deficit in the early development and education of our youngest children affects all other deficits
- Nation of 10 million unemployed, we have 4 million jobs that can't be filled by Americans because they lack the...
- China committing to **THREE** years of pre-K by 2020



Return on Investment

