

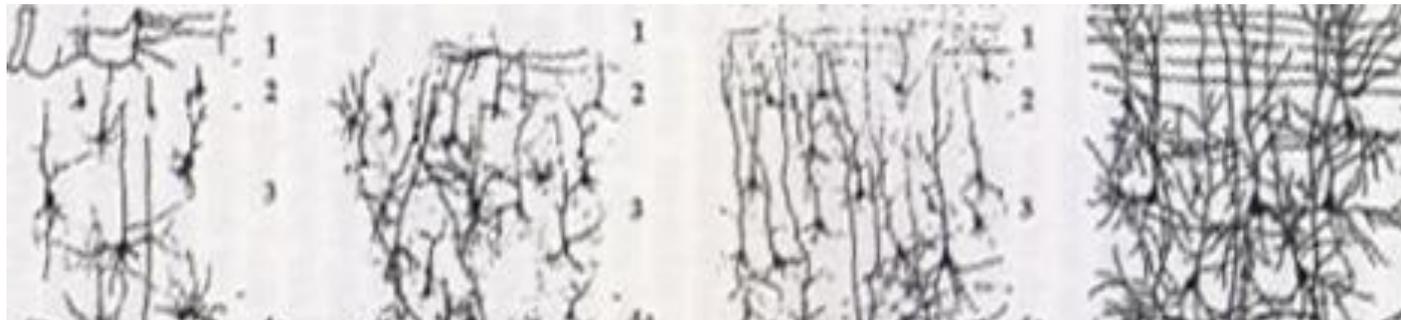
# The First 1000 Days: The Science of Early Childhood Development



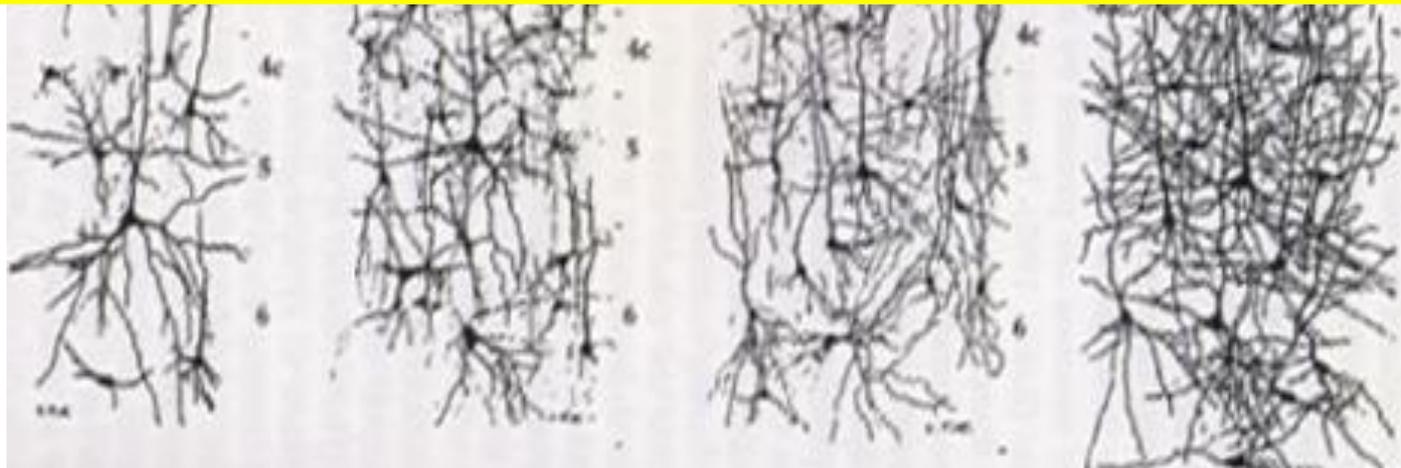
# Begin at the Beginning



# Babies Gain Knowledge at a Staggering Rate



*700 New Connections Every Second*



*newborn*

*1 month*

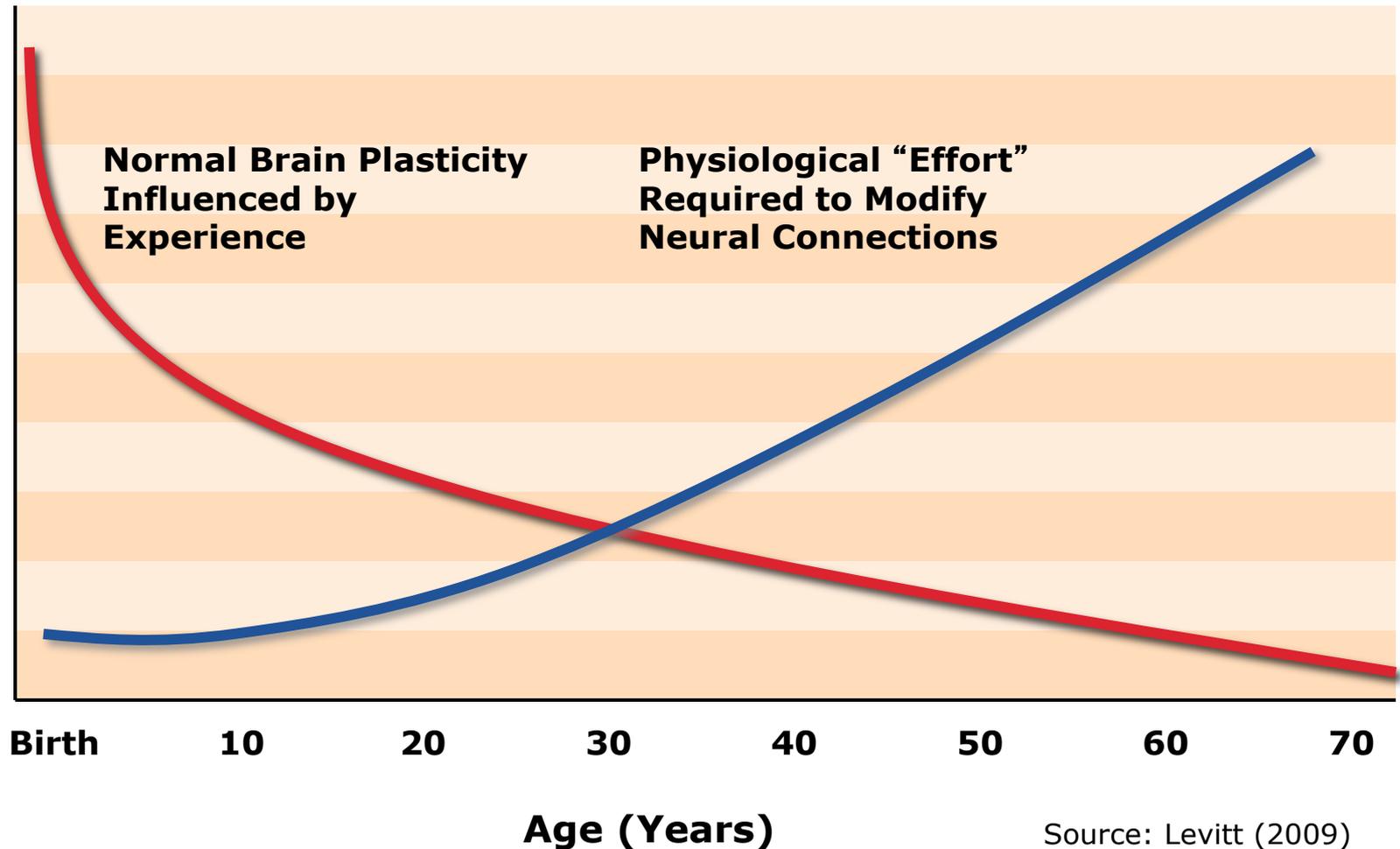
*3 months*

*6 months*

# Neural Connections



# Ability to Change Brains Decreases With Time While Costs to Change Behavior Increases



Healthy brain  
connections  
*depend* on  
healthy human  
connections and  
positive early  
learning  
experiences



## Nature

- ***Genetically “pre-programmed” cell production and migration***
- ***Inherited conditions can influence this process***

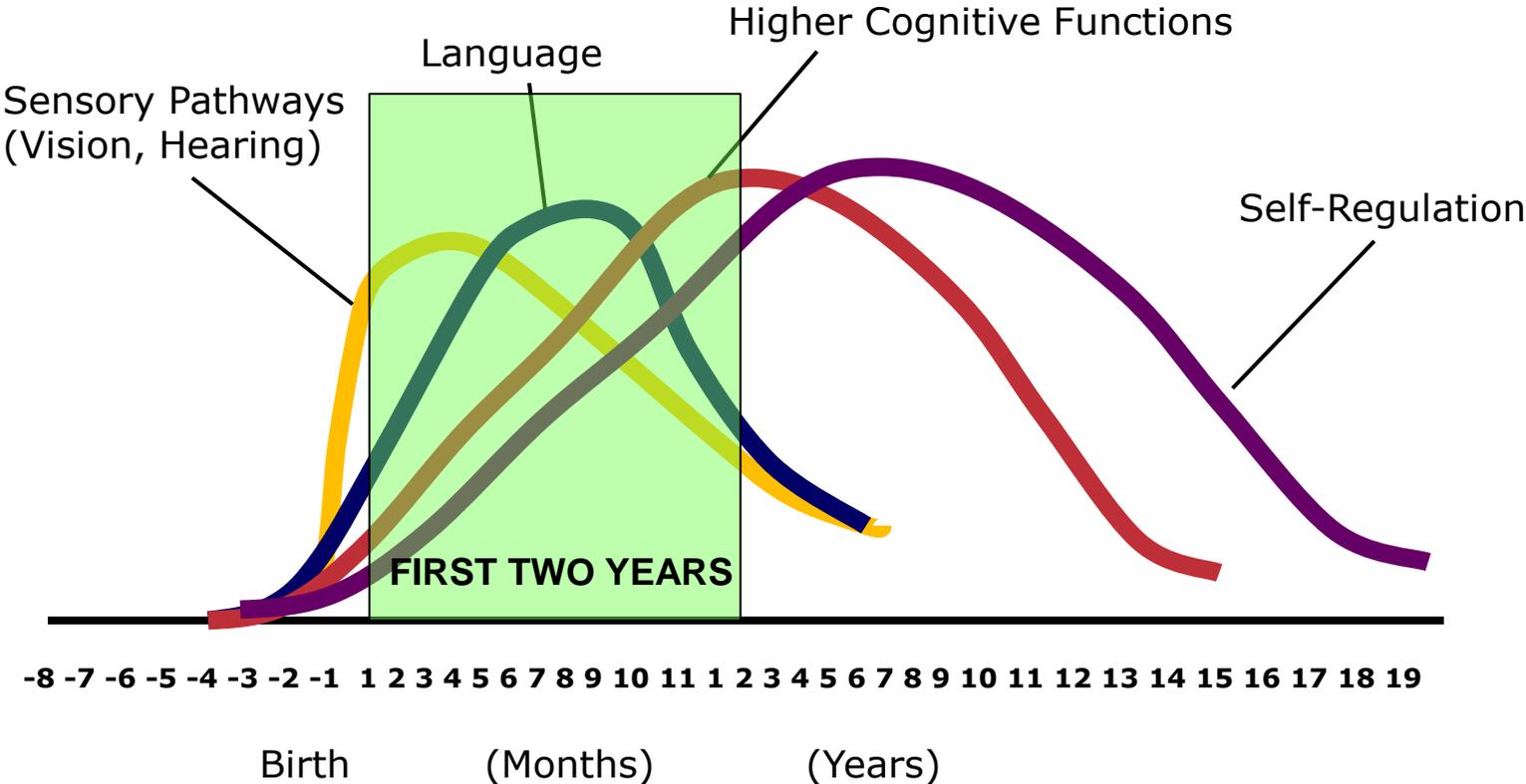


## Nurture

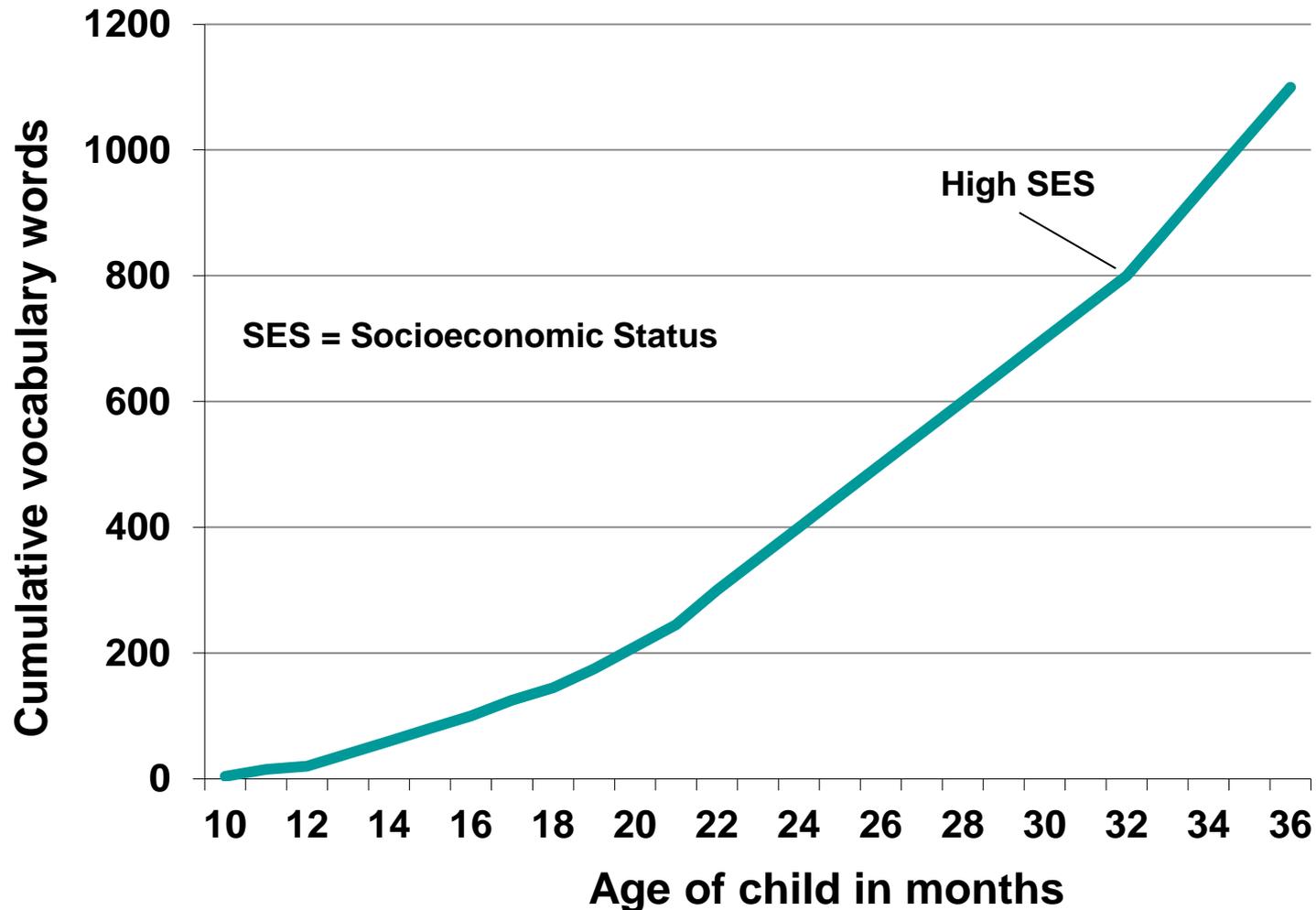
- ***Experience shapes brain development***
- ***Experience influences the expression of genetic information***



# Learning Takes Place At Key Time Periods

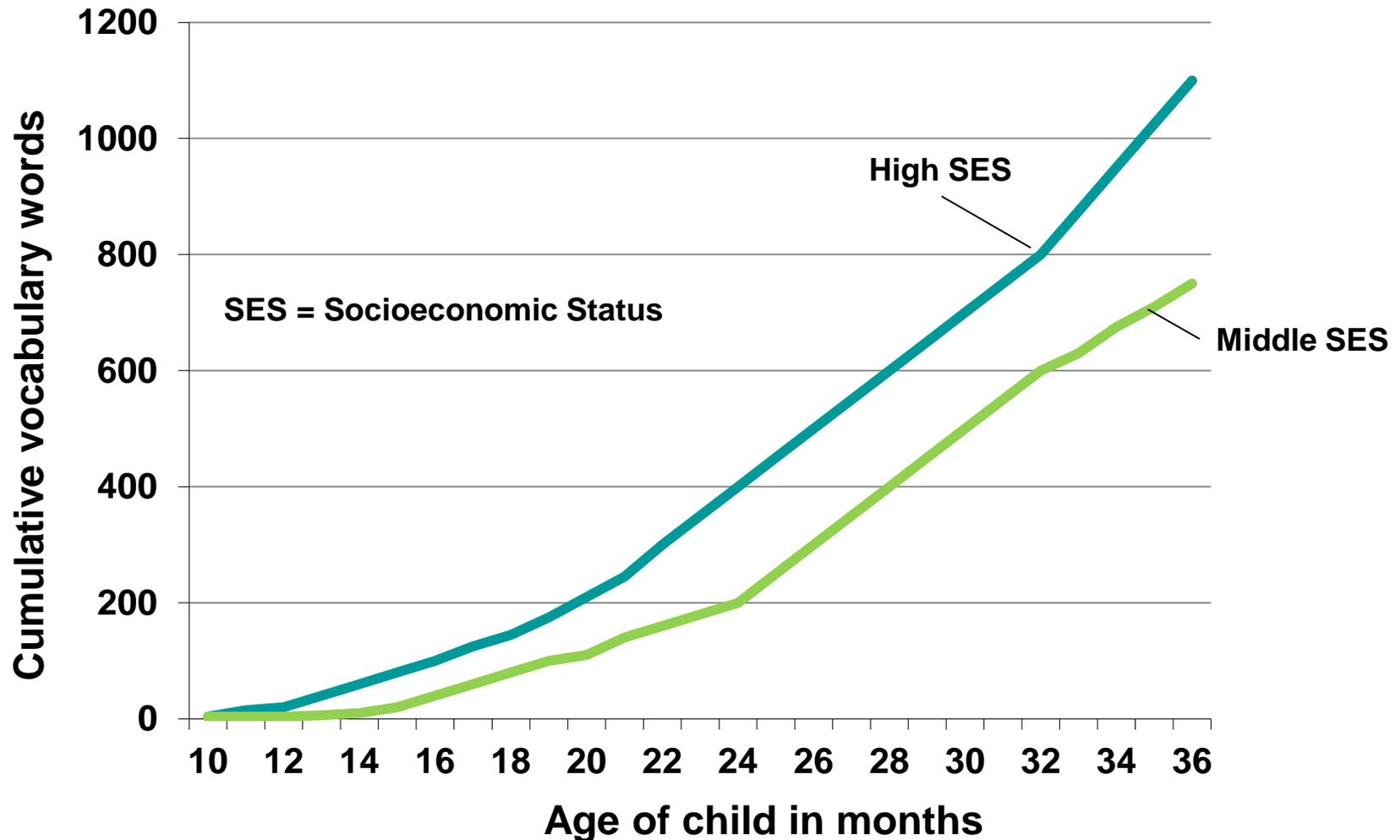


# The Language Gap Begins Early



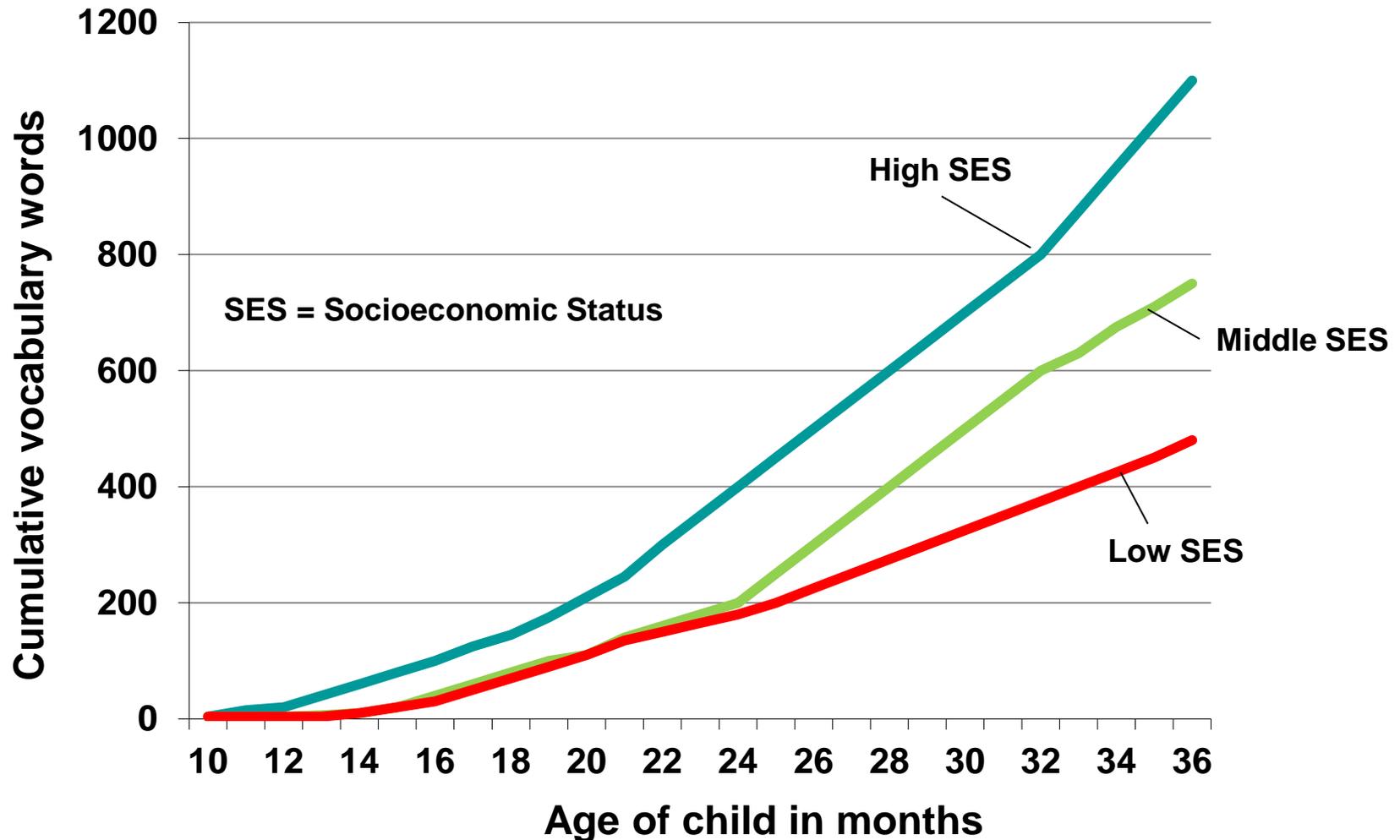
Source: Adapted from Betty Hart and Todd R. Risley, *Meaningful Differences in the Everyday Experience of Young American Children* (Baltimore, MD: Paul H. Brookes, 1995).

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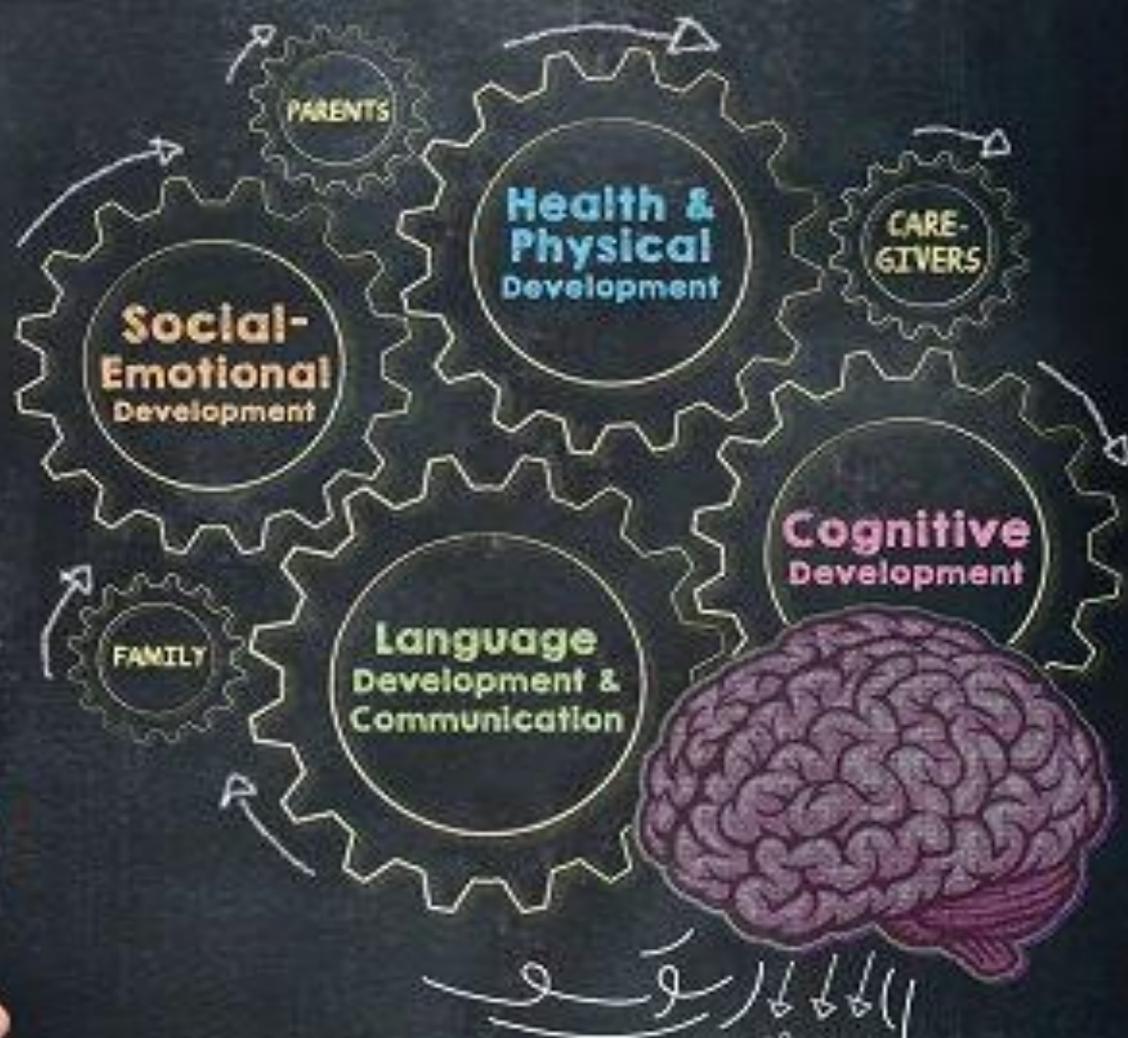


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# BEYOND the WORD GAP

Language + Learning Develop  
in the Context of Early Relationships

[www.BeyondtheWordGap.org](http://www.BeyondtheWordGap.org)



drink, head, baby, use, fish, chair, help, run, back, done  
ate, girl, dear, brother, chicken, ride, every, hold, better, boy  
about, give, duck, name, going, daddy, new, apple, three, bear  
yellow, found, before, hurt, eight, mommy, sad  
after, round, four, hand, nose, make, cold



ZERO  
TO  
THREE

# “Non-Cognitive” Skills Critical for Learning

- Self-confidence as a learner
- Curiosity and motivation
- Self-regulation of attention, behavior, thinking
- Persistence
- Awareness of ability
- Empathy, happiness, hopefulness and resiliency





**Imagine this is your brain...**

# Babies Need Attention and Connection



# Biological Embedding of Early Experience: Enrichment & Protection



Stable and supportive relationships, language-rich environments, and mutually responsive (“serve and return”) interactions with adults build a strong foundation for early learning and a lifetime of physical and mental health.....

.....but excessive or prolonged activation of stress response systems (i.e., “toxic stress”) can lead to long-term disruptions in brain architecture, immune status, metabolic systems, cardiovascular function, and gene expression.

# Impacts of Adverse Child Experiences

- **The higher number of ACEs, the greater the likelihood of:**
  - Severe and persistent emotional problems
  - Health risk behaviors
  - Serious social problems
  - Adult disease and disability
  - High health, behavioral health, correctional and social service costs
  - Poor life expectancy



# Policy Implications of Early Childhood Science

## Health:

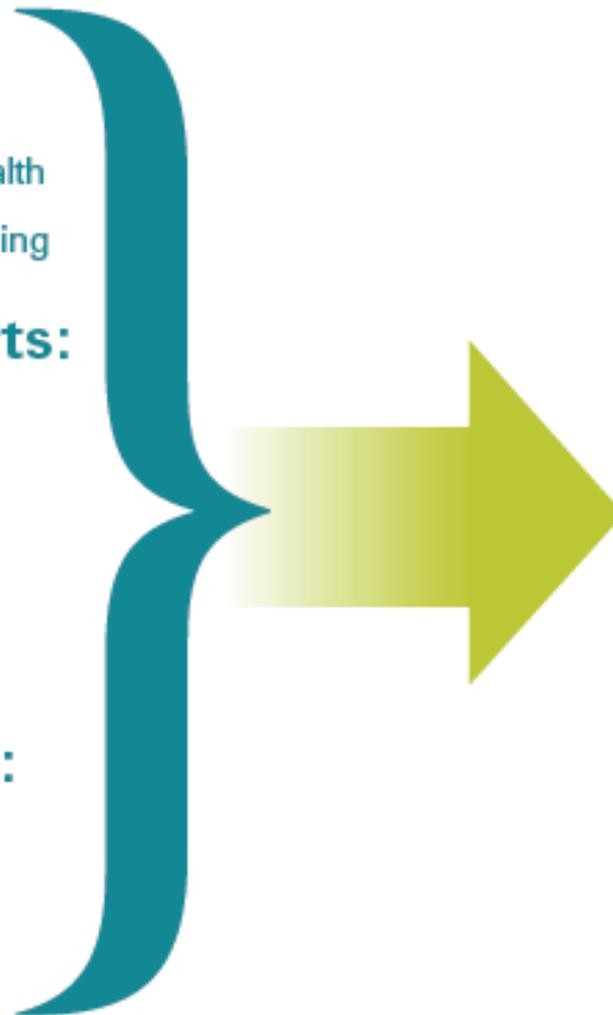
- Physical Health
- Social & Emotional Health
- Developmental Screening

## Family Supports:

- Basic Needs
- Parent Education
- Home Visiting
- Child Welfare
- Paid Family Leave

## Early Learning:

- Child Care
- Early Head Start
- Early Intervention



**Good  
Health**

**Strong  
Families**

**Positive  
Early Learning  
Experiences**

# The Foundations of School Readiness

# What is School Readiness?



**School readiness** refers to “children possessing the **skills**, **knowledge**, and **attitudes** necessary for **success** in school and later learning in life.”

# The Foundation of School Readiness

Four **core** areas of development related to school **readiness**:

1. Self-Confidence
2. Self-Control
3. Language and Literacy
4. Thinking Skills



Children need to feel safe and secure to develop **self-confidence**.



When you comfort a baby, respond to her cries and needs, talk and play with her, she knows that she is **loved** and is **valued**. This is the foundation **of self-confidence**.

# Self-Confidence

While kindergarten teachers are concerned about cognitive ability they report greater concern for children who lack motivation and **self-confidence** in the classroom setting (Thompson, 2002).

Childhood low **self-confidence** is linked to externalizing behaviors later in life, such as aggression, antisocial behavior, and delinquency (Donnelan et al., 2005).



**Self-control** refers to a person's ability to contain and manage their own behaviors.



The foundation for this area is **just beginning to develop** for infants and toddlers, who depend on their caregivers for co-regulation.

# Self-Control

- ❑ Pre-kindergarteners have 3 times the expulsion rate of Kindergarteners through 12<sup>th</sup> graders, largely due to **self-regulation** challenges (Gilliam, 2005).
- ❑ Children's early **self-control** of attention and inhibition are positively linked to school achievement (Valiente, Lemery-Chalfant, & Castro, 2007).
- ❑ Preschooler's inhibitory **self-control**, is related to their math abilities in kindergarten (Blair & Razza, 2007).
- ❑ 3-year-olds' observed **self-regulation** is negatively correlated with externalizing problems at 3 and 4 years (Eiden, Edwards, & Leonard 2007).

Early **language** and **literacy** skills are learned best through everyday moments.



Children learn language when you talk to them and they communicate back to you through **sounds, facial expressions, and gestures.**

The ability to process information requires cognitive tools referred to as **thinking skills**.



Babies learn about **cause and effect** when they shake a rattle and hear a sound. They learn about **size and shape** by stacking **blocks**, mouthing them, and trying to fit them into the **correctly-shaped** holes.

**Thinking skills** are critical for mastering more complex **reading** and **mathematic** concepts in the future.

(Duncan, et al., 2007)

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