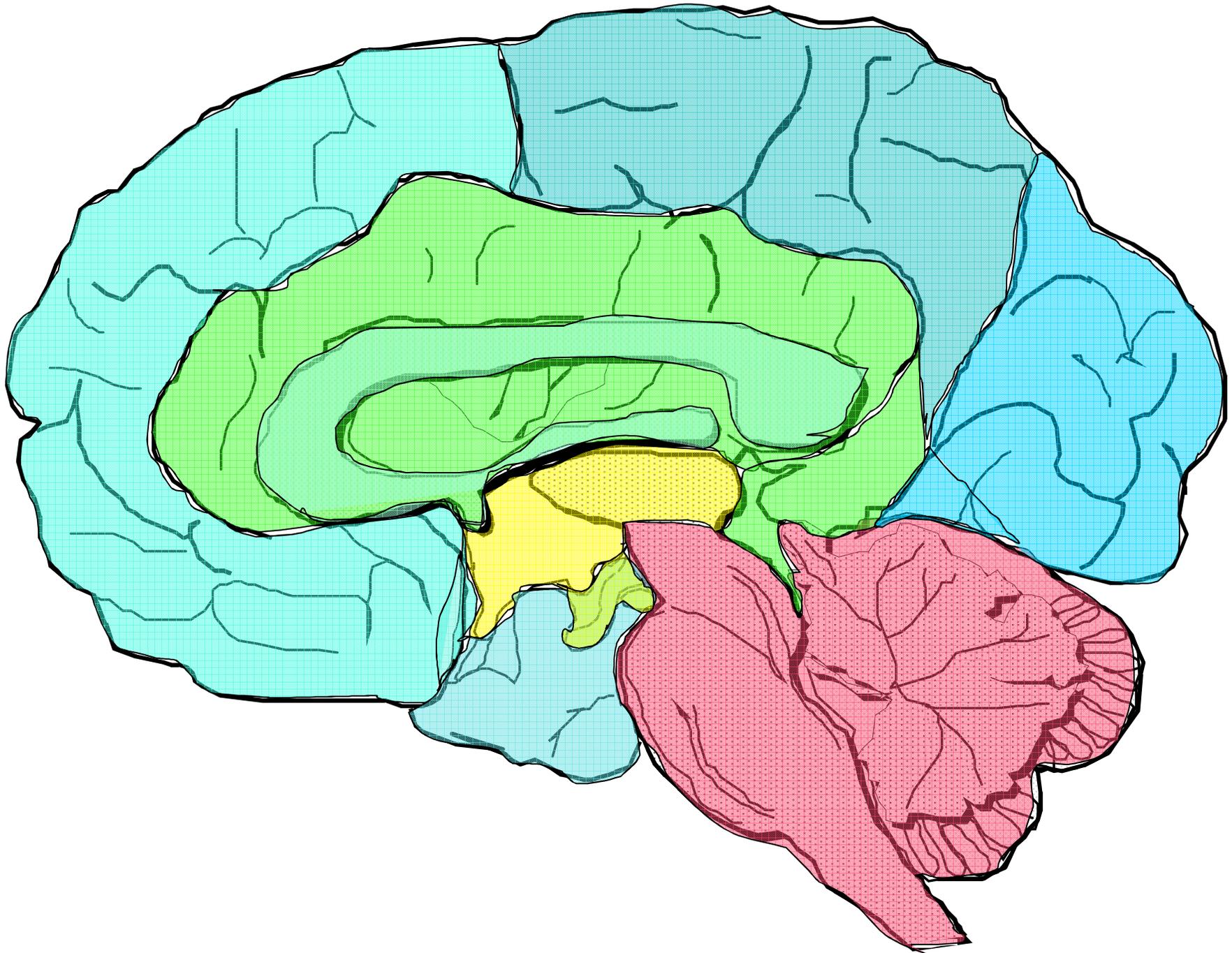
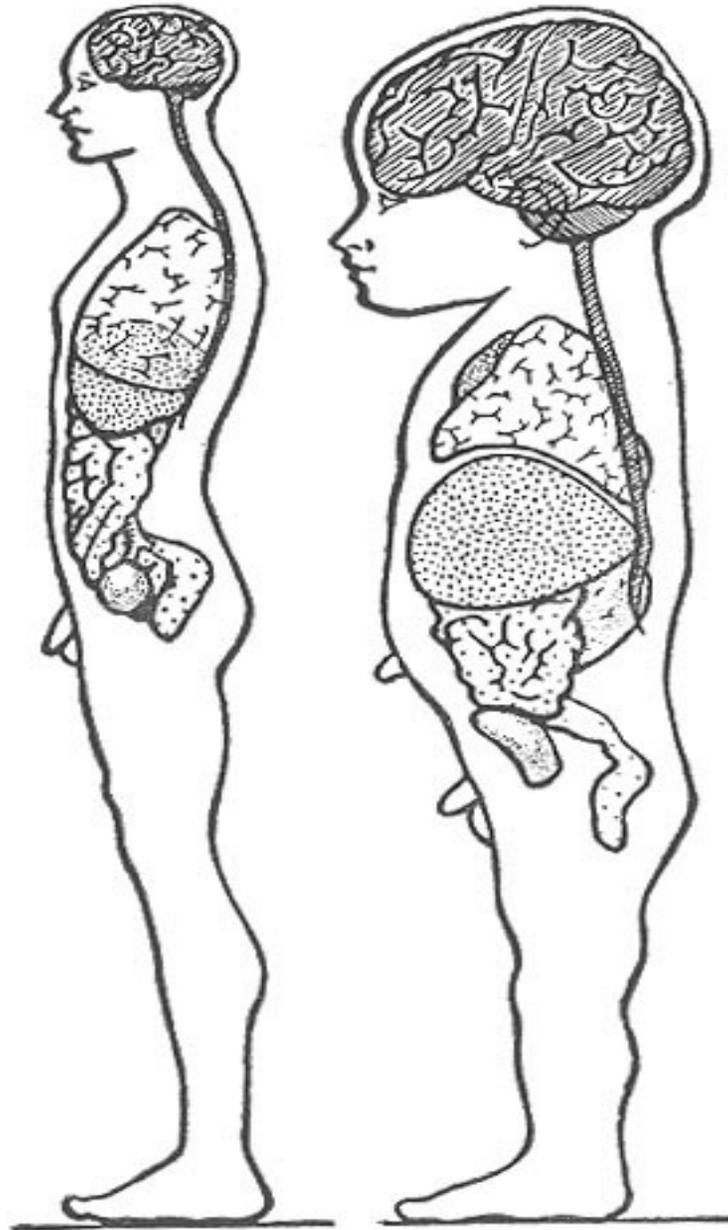


***Parent  
Education  
Session***

***Early Brain Development***

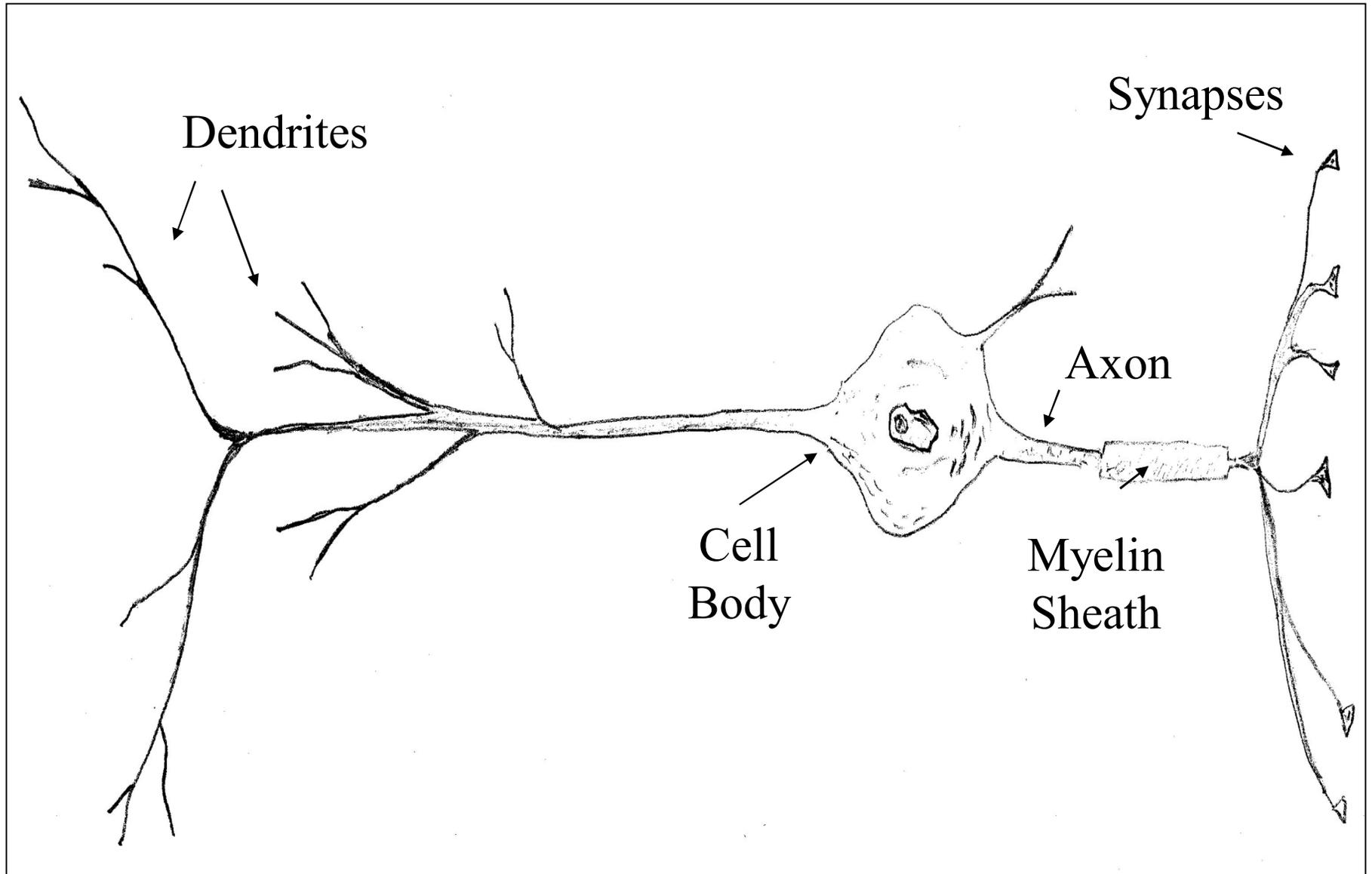


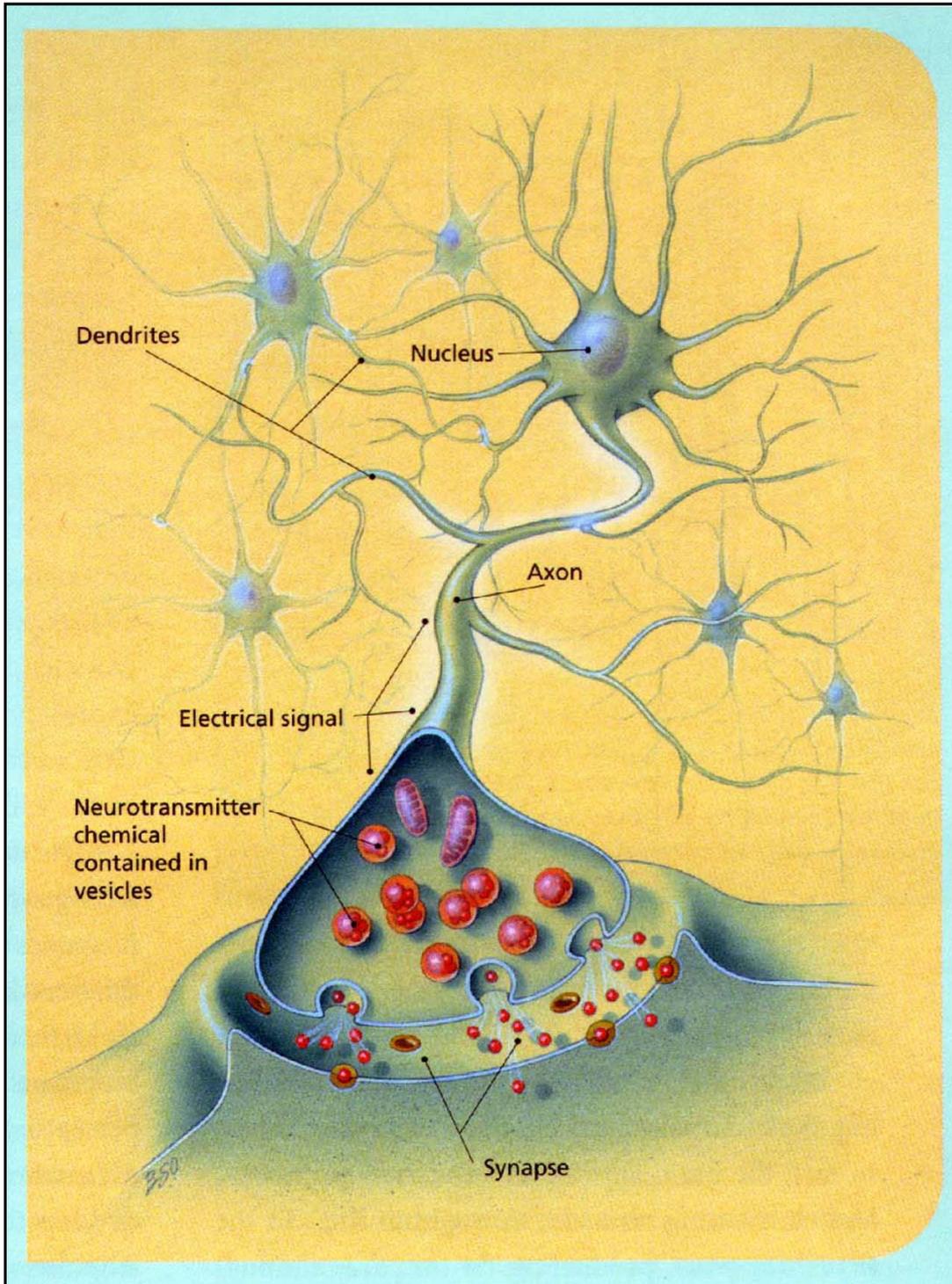
# Relative Brain Size: Newborn



*All rights reserved  
2004 Bruce D. Perry,*

# *The Neuron*





# How the Brain Communicates

- Electrical signal carried down the ***axon***
- ***Neurotransmitters*** released across ***synaptic gap***

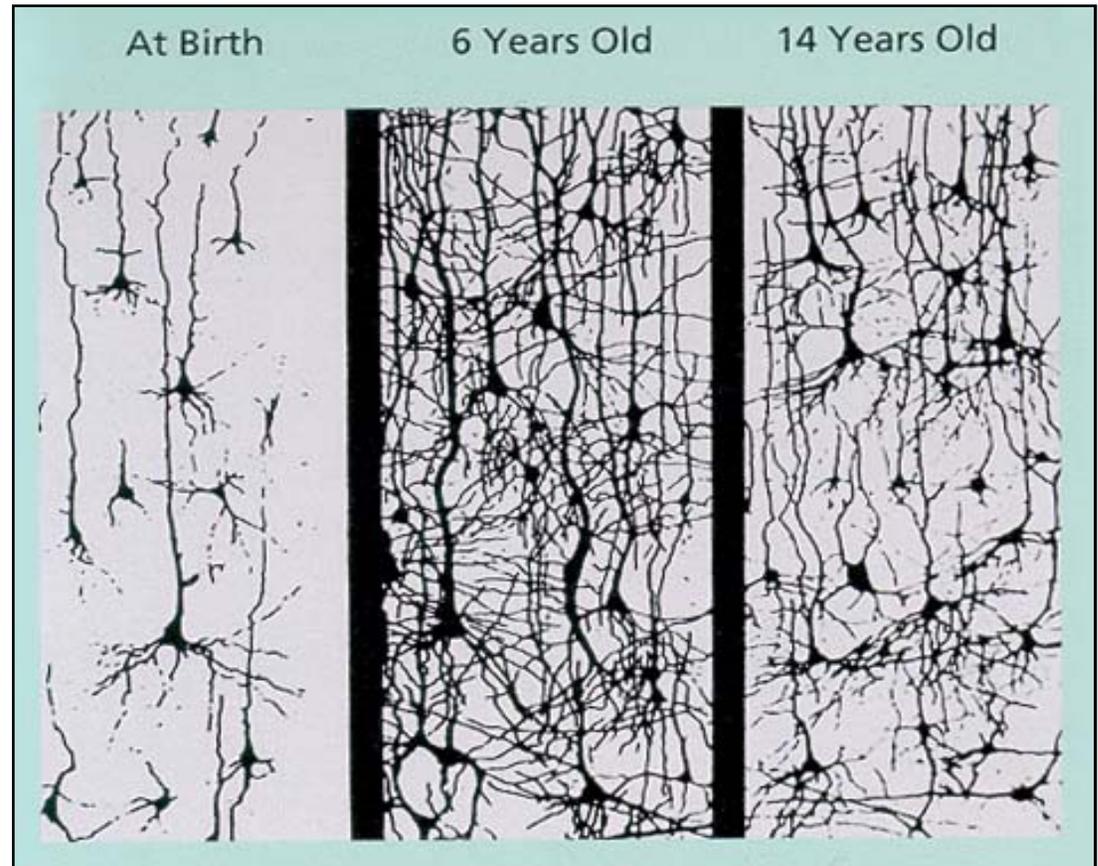
Image from *Rethinking the Brain*, by Rima Shore, 1997, Families and Work Institute, [www.familiesandwork.org](http://www.familiesandwork.org)

- Received by

# Synapse Development

## Synapses:

- 50 trillion at birth
- 1000 trillion at 1 year
- Pruned in adolescence
- 500 trillion at 20 years

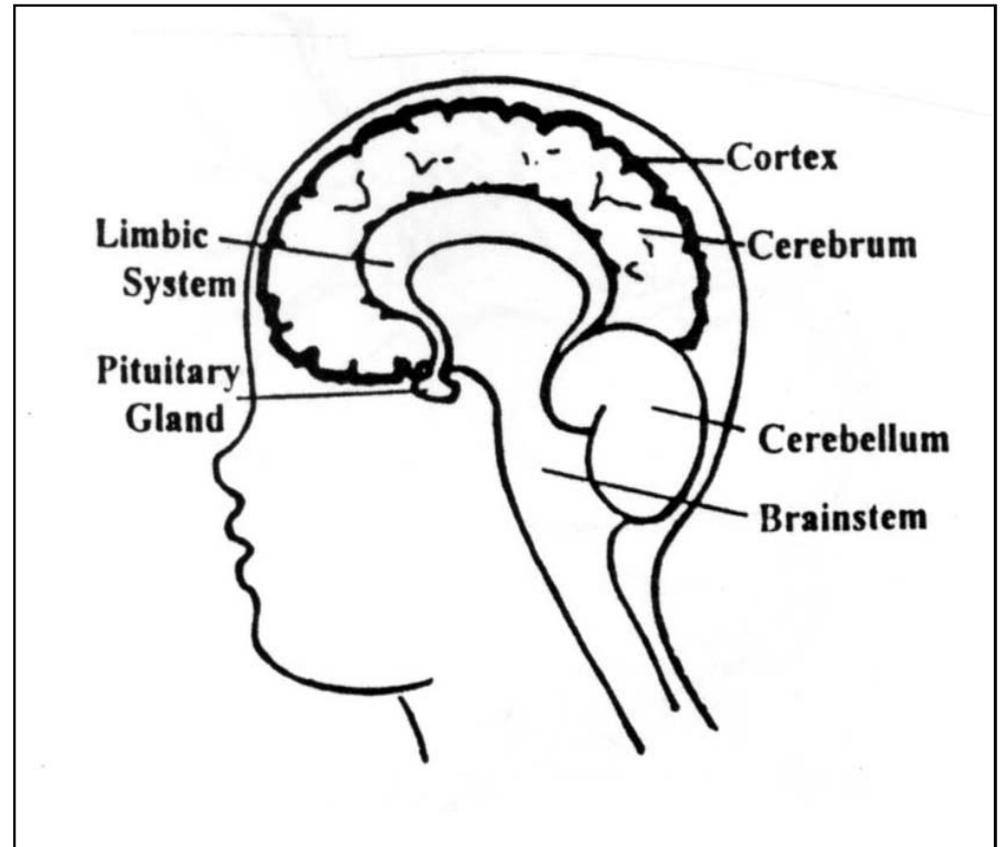


Synapses are created at an astonishing speed in the first three years of life. Until they are about 10 years old, children's brains have twice as many synapses as adults' brains.

# The Brain's Development

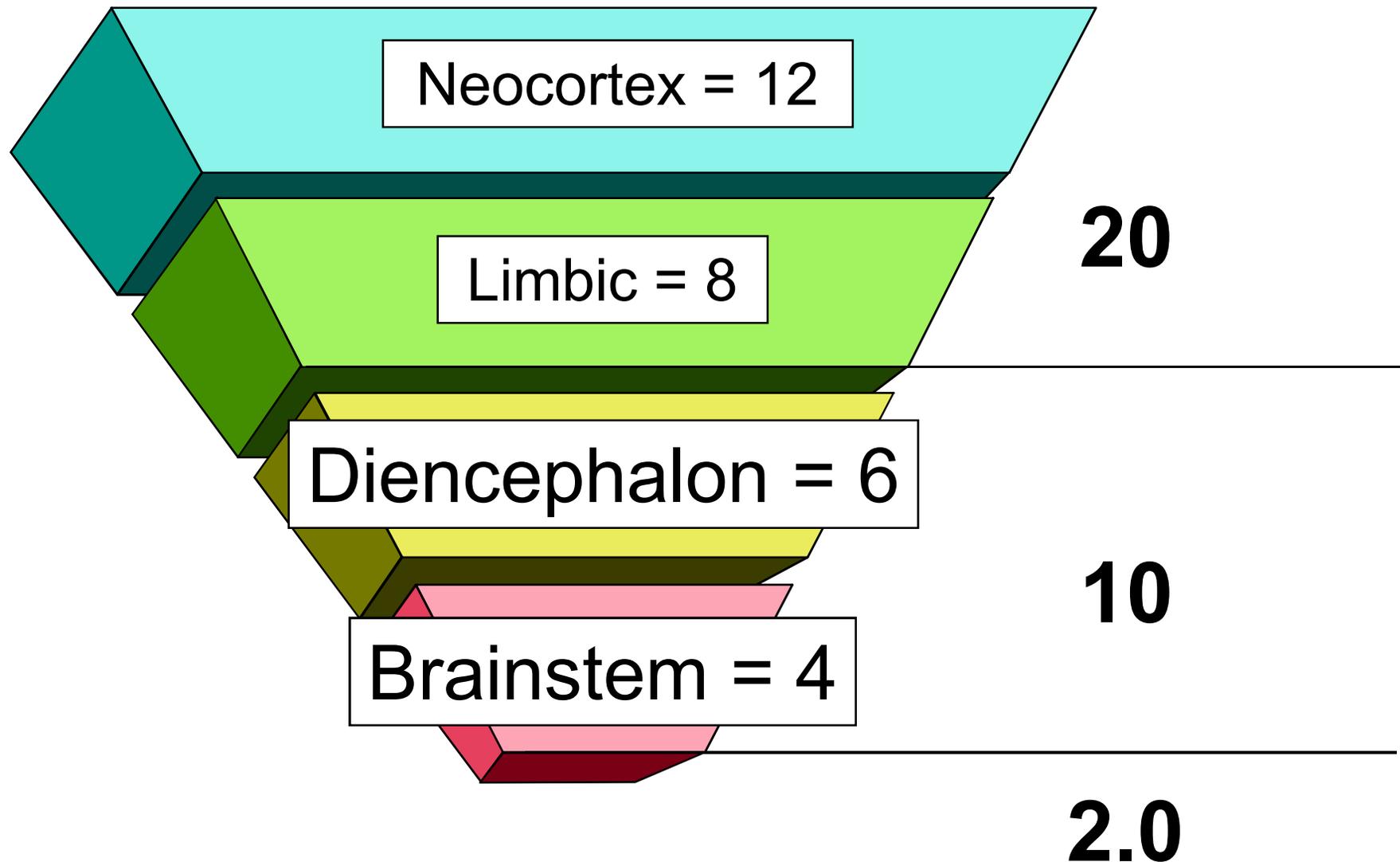
## Brain develops from the brainstem up:

- **Brainstem** – Survival
- **Cerebellum** – Automatic movements & balance
- **Pituitary Gland** – Hormone regulation
- **Limbic System** – Emotions and long-term memories
- **Cerebrum** – Control and integration of motor, sensory, and higher mental functions
- **Cortex** – Reason, logic

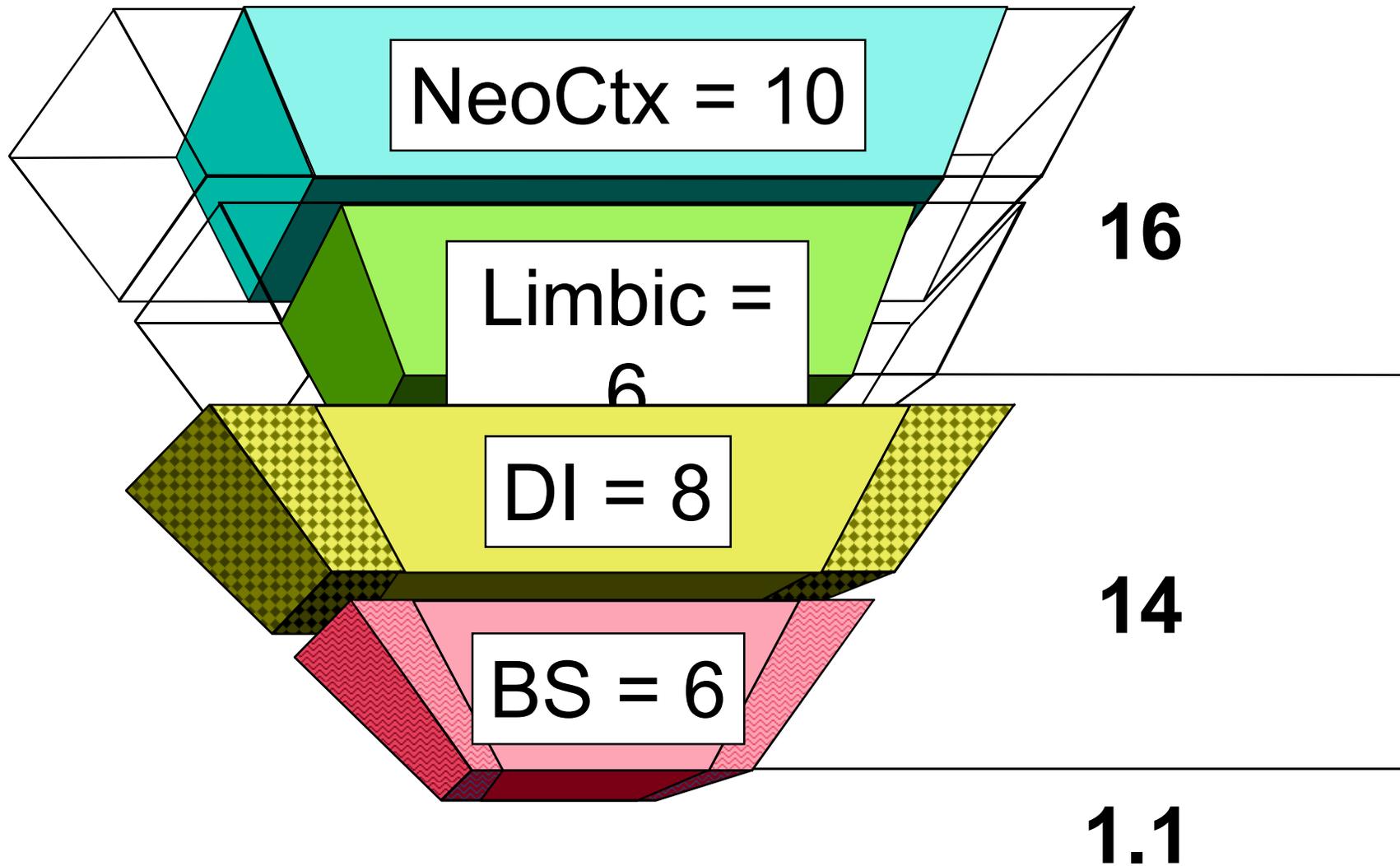


Drawing by Wanda Silverman

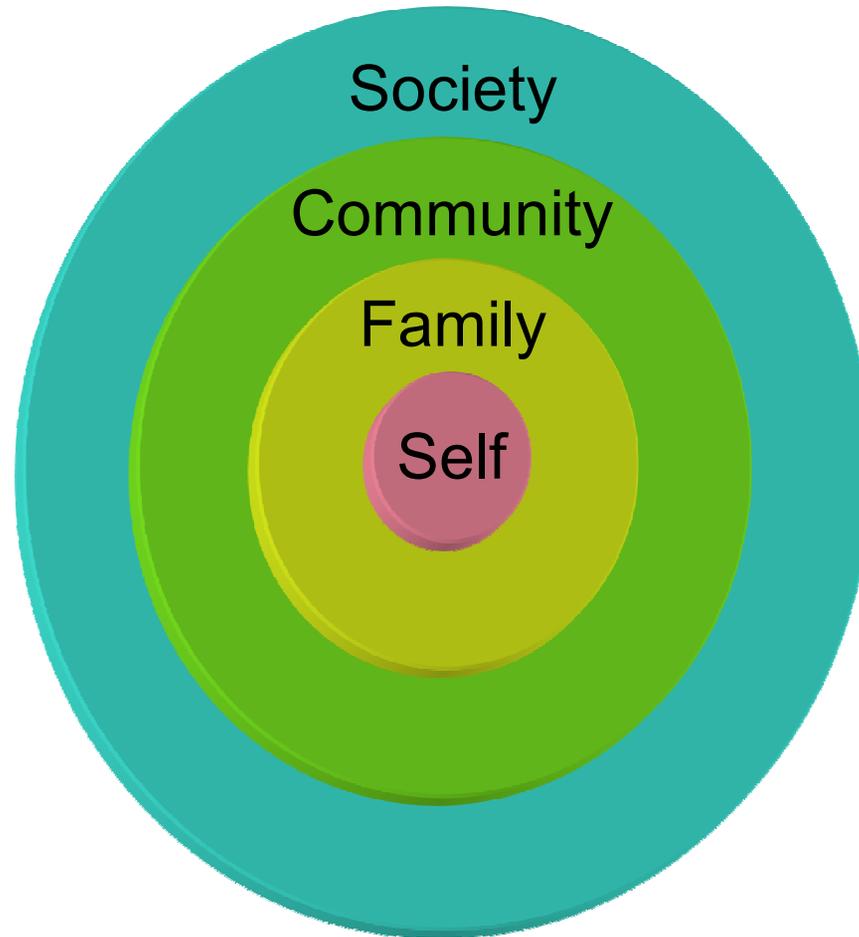
# *Optimal Developmental Experience*



# *Neglect and Trauma* *Malignant Combination*



# *HOPE*



# Healthy Brain Development

Secure Attachment

Responsive Care

Loving Touch

Safe and Healthy Environment

Good Nutrition

Talk and Listen

Sing and Read

Play

