

# Pruning

## CORE CONCEPTS IN THE SCIENCE OF EARLY CHILDHOOD DEVELOPMENT

Experience Shapes Brain Architecture by Over-Production of Connections Followed by Pruning



2

*Neural proliferation and pruning is a normal, healthy part of brain development: connections that are not used are pruned away.*

The basic architecture of the brain is constructed through an ongoing process that begins before birth and continues into adulthood. During the first few years of life, 700 new synapses (neural connections) are formed every second. After a period of rapid proliferation, connections are reduced through a process called pruning, so that brain circuits can become more efficient. Early experiences affect the nature and quality of the brain's developing architecture by determining which circuits are reinforced and which are pruned through lack of use. Some people refer to this as "use it or lose it." *Graphic Source: Chugani, H.T. Synaptic Density. [Drawing]. In R. Shore, Rethinking the Brain: New Insights into Early Development (p. 20). New York: Families and Work Institute, 1997.*

## How do executive skills develop?



Through a process called *myelination*. Myelin acts as insulation, increasing the speed with which nerve impulses are transmitted. The faster the impulse, the better the skill.