

Brain Development



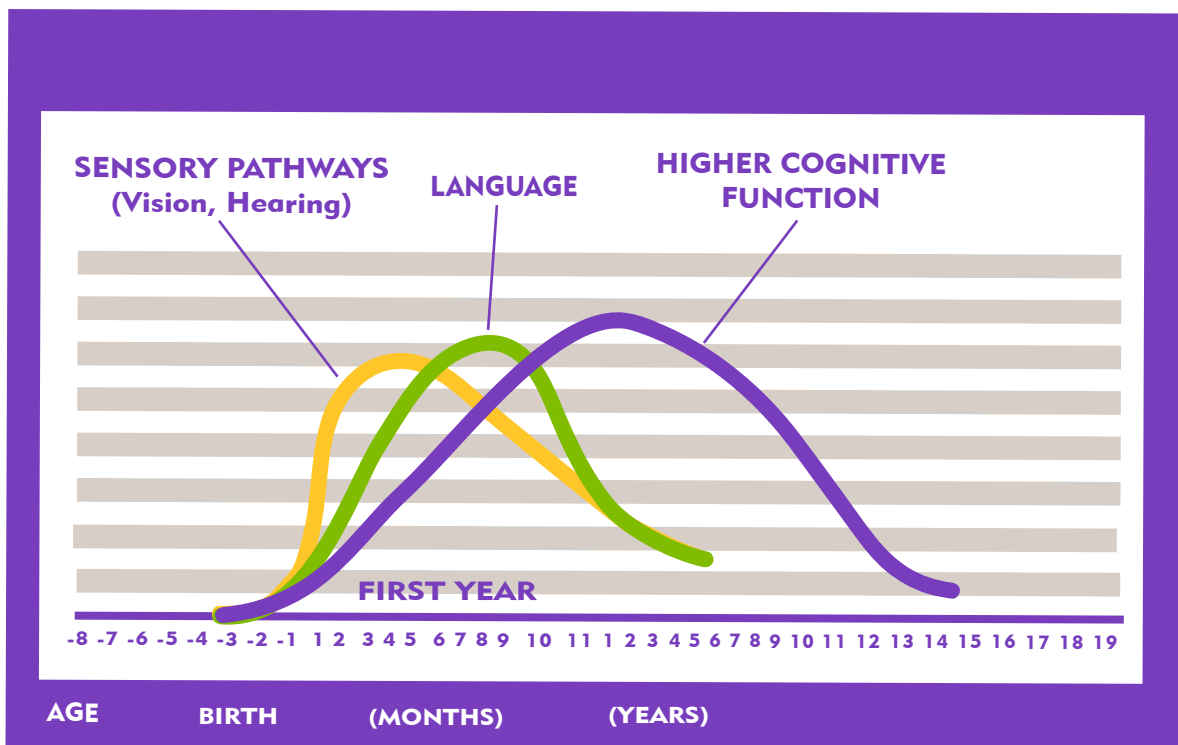
The Science Behind What We Do!

Decades of research from the fields of neuroscience, molecular biology, genomics and child development provide amazing evidence into how children learn and grow. The five insights below are important components of the educational philosophy of Funnydaffer. While our lessons may look like high-octane FUN, there's science – and a whole lot of benefit – behind what we do!

Brain Development

1. 85% TO 90% OF A PERSON'S BRAIN IS WIRED IN THE FIRST 5 YEARS OF LIFE

The brain is built through an ongoing process that begins before birth and continues into adulthood. The early years, however, are most important as 700 new neural connections are formed every second through the interactive influences of genes and a child's experiences. Simple brain circuits develop first, such as sensory pathways for basic vision and hearing, followed by more complex circuits for language and higher cognitive functions. "Serve and return" interactions with adults, or what developmental researchers call contingent reciprocity, are particularly powerful brain stimulators. This process creates a foundation that determines a child's lifelong ability to learn, to relate to others, to be productive in the workplace, and to be fully engaged citizens. The greatest opportunity for us to be a positive force in the lives of others falls within this small window.¹

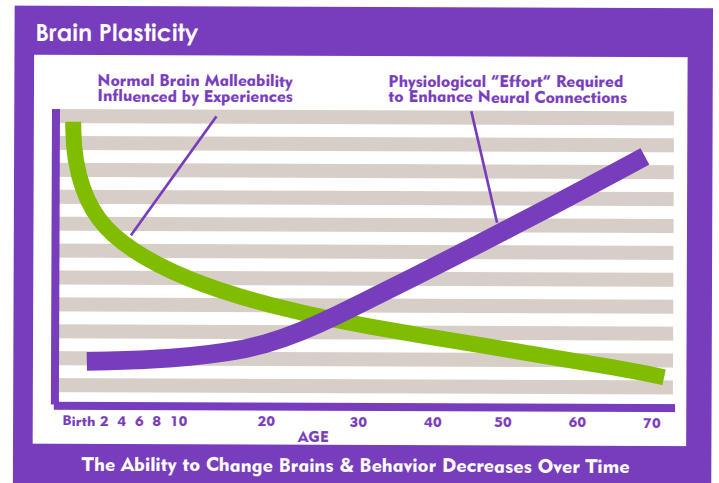
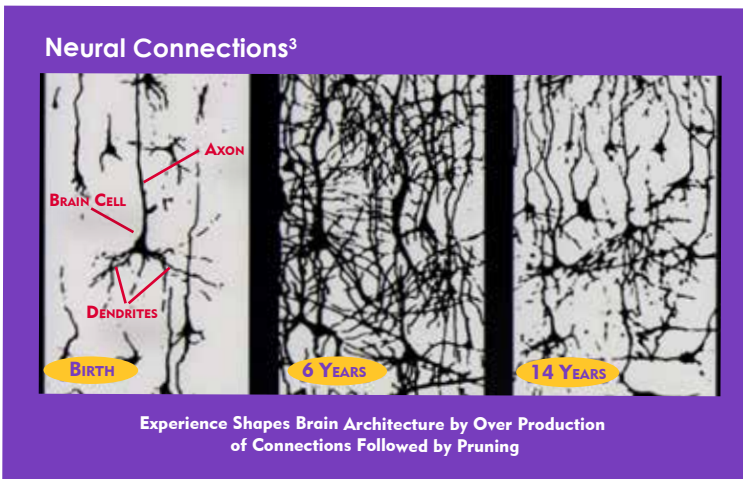


2. EXPERIENCES WIRE THE BRAIN – THE MORE THE BETTER!

An infant has roughly 100 billion brain cells, called neurons, at birth. Every brain cell has an axon which is an output fiber that sends messages to other neurons. Each neuron also has many input fibers called dendrites that are short, hair-like fibers that receive messages from other neurons. As a child grows and experiences the world, the number of brain cells remains fairly stable, but the cells grow in size as dendrites branch out forming dendrite trees that connect to as many as 15,000 other neurons. These connections are called synapses, and the intricate network they create is often referred to as the brain's wiring or circuitry. Creating and reinforcing these vast neural connections are the key tasks of early brain development – and they are inextricably triggered by life experiences.²

Amazingly, a toddler's brain has twice as many neural connections as the brain of a mature adult, and these connections are more flexible, or plastic, than an adult's which makes learning that second language much easier as a child. Over time, if an established neural connection is not used repeatedly, or often enough, it is eliminated through a process called pruning. This "use it or lose it" process confirms the crucial influence of early life experiences. While pruning is a normal, healthy part of brain development that makes the brain circuits we use more efficient, it also makes it much more difficult to relearn concepts later in life.¹

Simply put, it's easier and more effective to influence a child's developing brain over an adult's because the ability to change a brain's wiring decreases over time. So now we know why we can't teach an old dog new tricks! The result is that children who are exposed to positive, diverse life experiences tend to complete more years of school, have higher paying jobs, make healthier lifestyle choices, and live longer, healthier lives. As Albert Einstein said, "Learning is experience. Everything else is just information."



3. COGNITIVE GROWTH IS DEPENDENT ON EMOTIONAL HEALTH & SOCIAL SKILLS

According to the Center on the Developing Child at Harvard University, a child's cognitive intelligence cannot be separated from his social and emotional health. Together, these three capacities are inextricably intertwined in the brain and will impact a child's behavior, health, and ability to learn for a lifetime. You cannot target one domain without affecting the others. Emotional well-being and social competence are the bricks and mortar that comprise the foundation for emerging cognitive abilities. Developing a healthy balance in the early years is a prerequisite for success in school, the workplace and the community. All future learning is dependent on this important foundation. Relationships are critical in this process, as a child's social and emotional health is highly impacted by relationships with family members, adult caregivers and teachers who play incredibly important roles in the lives of young children.¹

4. CREATIVITY IS 3 TIMES MORE IMPORTANT THAN INTELLIGENCE FOR LIFETIME SUCCESS

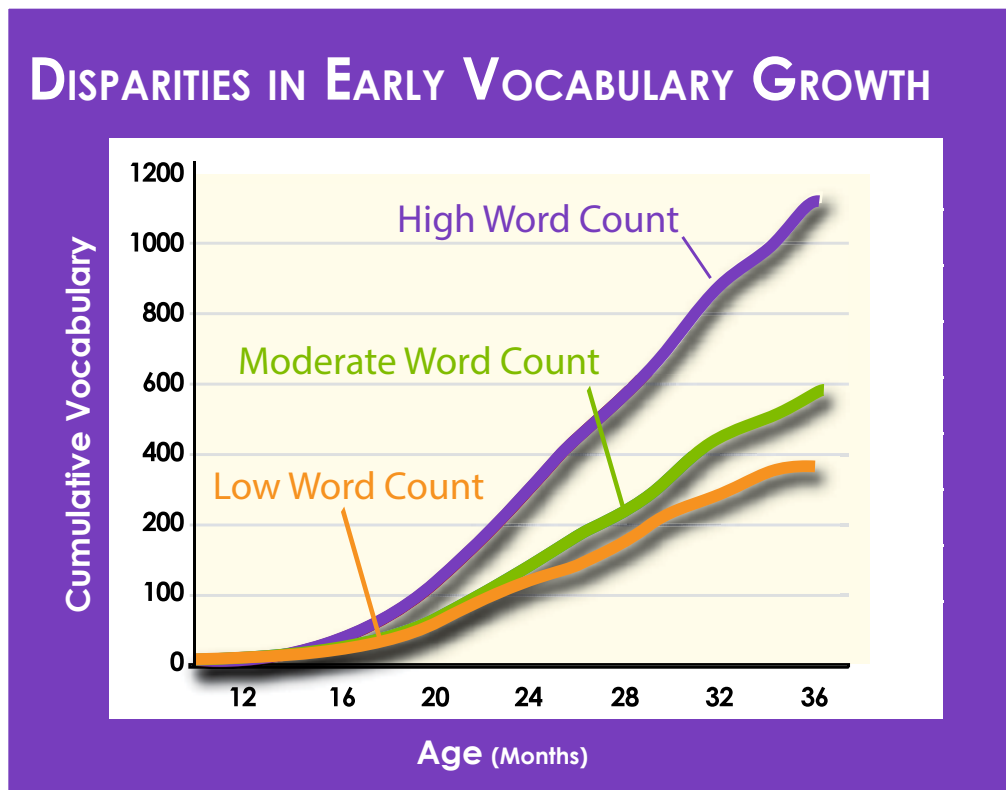
In 1958, Professor E. Paul Torrance studied a group of nearly 400 Minneapolis children who completed a series of creativity tests. Creativity was defined as the “production of something original and useful” and involved divergent thinking (generating many unique ideas) and convergent thinking (combining those ideas into the best result). Due to the nature of creativity, there was never one right answer on the test. For the past 50 years, scholars have been tracking the children – “recording every patent earned, every business founded, every research paper published, and every grant awarded. They tallied the books, dances, radio shows, art exhibitions, software programs, advertising campaigns, hardware innovations, music compositions, public policies (written or implemented), leadership positions, invited lectures, and buildings designed. “The children who performed highest on Torrance’s creativity index grew up to be “entrepreneurs, inventors, college presidents, authors, doctors, diplomats, and software developers.” The conclusion: childhood creativity is more than three times stronger than childhood IQ in predicting lifetime creative accomplishment.⁴

Like intelligence tests, Torrance’s creativity test has been taken by millions worldwide in 50 languages with one crucial difference. IQ scores have consistently increased by 10 points each generation – a phenomenon called the Flynn effect. Enriched environments are making kids smarter. With CQ, a reverse trend exists. American creativity scores are falling and the scores of children from Kindergarten through sixth grade are in the greatest decline. But creativity is essential for future success and happiness. According to an IBM survey of more than 1,500 CEO’s from 60 countries and 33 industries worldwide, chief executives identified creativity as the number one leadership competency of the future.⁴ Providing innovative solutions to our world’s challenges will touch every profession as our children enter the workforce. We must prepare them for success. We must solve this creativity crisis.



5. ACADEMIC ACHIEVEMENT GAPS DEVELOP WELL BEFORE KINDERGARTEN

Language development is a key component of Kindergarten readiness and Kindergarten readiness is a key predictor of lifetime academic success. Differences in the size of a child's vocabulary first appear at 18 months of age. This disparity is directly linked to a child's exposure to language in the early years. By age 3, children who are immersed in a language-rich environment tend to develop vocabularies 2 to 3 times larger than children who are raised in language-poor environments. The amount and variety of words that a child is exposed to in the early years matter. Language-rich homes tend to correlate with high parental education and income, while language-poor homes tend to correlate with low parental education and income. Children from language-poor homes will enter school behind their peers unless they are engaged in a language-rich early childhood environment early in life. Research also tells us that if a child begins school behind their peers, they tend to remain behind throughout their academic careers.⁵



Sources

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