

INSIDE THE BRAIN

Revolutionary Discoveries of How the Mind Works

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- **The science behind how the human brain is built is growing exponentially. The Society for Neuroscience was formed in 1969 with 500 members. Today its membership is close to 30,000.**
- **For parents who instinctively do such things as talk to their children from birth and read to them shortly thereafter, the new scientific findings explain why what they are doing works to raise IQs.**
- **Making a baby smile, coo, or grasp a finger may be fun, but it is much more than just play. There is serious brain construction going on.**
- **An infant's brain thrives on feedback from the environment. It wires itself into a thinking and emotional organ from the things it experiences – the sounds, sights, touches, smells, and tastes that come its way, and the important give-and-take interaction with others.**
- **Genes and the environment work in tandem. The genes provide the building blocks, and the environment acts like an on-the-job foreman, providing instructions for final construction.**
- **It's just phenomenal how much experience determines how brains get put together. If you fail to learn the proper fundamentals at an early age, then you are in big trouble. You can't suddenly learn to learn when you haven't first laid down the basic brain wiring . . . that's why early education is so important, why Head Start is so important.**
- **What the brain can do depends on whether or not you use it; it is the ultimate use-it-or-lose-it machine. The brain is now seen**

as a super-sponge that is most absorbent from birth to about age twelve. It is during this period, especially the first three years that the foundations for thinking, language, vision, attitudes, aptitudes, and other characteristics are laid down. Then the windows close and much of the fundamental architecture of the brain is completed.

- Faced with the new evidence about how the brain develops and functions, many scientists are concluding that society is wasting a tremendous amount of brain power of it's young, and creating a lot of unnecessary problems – including crime, aggression, and depression – later in life.
- We are underinvested in our children; we spend seven times more per capita on the elderly than we do on children. Now that we have better concepts of the plasticity of the brain, it is obvious we are wasting a tremendous resource.
- The most important thing is to realize that the brain is growing and changing all the time. It feeds on stimulation and it is never too late to feed it.
- Language development is a key; without exposure to spoken words, cells that allow the brain to construct meaningful sentences do not develop properly.
- There is a very important time in a child's life, beginning at birth, when he/she should be living in an enriched environment – visual, auditory, language, etc. – because that lays the foundation for development later in life.
- During human fetal development, brain cells are created and assigned general jobs. After birth, a second wave of structural changes occurs as an enormous number of connections, called synapses, are made between brain cells. Between birth and about 8 months of age, the number of connections skyrockets

from about 50 trillion to 1,000 trillion. Connections not reinforced by what the baby is experiencing in its world – voices, sights, smells, touch – shrink and perish.

- One of the simplest ways to raise intelligence is to talk. Parents or caregivers who talk a lot to infants during their first three years of life not only help them build better vocabularies, they also help them do something far more significant – raise their IQ level.
- The long-term Hart/Risley study of Kansas City families produced some remarkable findings. Children in white collar families heard 2,100 words per hour on an average day, compared to 1,200 words per hour in the average working class family, and 600 per hour in the average welfare family.
- Further, white collar parents gave children positive feedback more than thirty times per hour, twice as often as working class parents and five times as often as welfare parents.
- Finally, children in welfare families heard negative remarks twice as often as positive ones.
- The intellectual differences had occurred by age three, long before the children had entered into a formal educational setting. Everything was happening at home. The bottom line is that it's really the **AMOUNT OF INTERACTION BETWEEN PARENTS AND CHILDREN THAT MAKES THE DIFFERENCE.**
- The ultimate message is **DON'T WAIT – YOU DON'T GET ANOTHER WINDOW OF OPPORTUNITY LIKE THAT** (first three years).
- Children who are raised in impoverished conditions are at high risk for having impoverished brains. 42% of families start out with one, two, or three strikes against them.

- **Strike one is the LACK OF EDUCATION: the mother has not finished high school by the time she has her first baby.**
- **Strike two is LACK OF COMMITMENT: the mother and father are unmarried when they had their first child together.**
- **Strike three is LACK OF MATURITY: the woman is under twenty when she gives birth the first time. ONE NEW FAMILY IN NINE HAS ALL THREE STRIKES AGAINST THEM!**
- **A recent intervention study with impoverished inner-city children in the first year of their lives demonstrated the importance of an enriched environment (learning, good nutrition, toys, playmates, etc.) to their social-emotional development.**
- **The study's bottom line was that there was clear and strong evidence that if we begin early intervention, in the first year of life, one can prevent a substantial amount of mental retardation and developmental disabilities.**
- **The quality of the environment and the kind of experiences children may have affect brain structure and functioning so profoundly that they may not be correctable after age five.**
- **Seventy-five percent of all imprisoned males in America have poor school records and low IQs.**
- **Child care must be upgraded nationally to provide the best kind of learning environment for children when their parents are unable to do so.**
- **In both the child care and home environment, the key factor is the AMOUNT OF LANGUAGE DIRECTED AT THE CHILD.**
- **The higher the quality of child care in the first three years of a child's life, the greater his or her language abilities at 15, 24, and 36 months; the better the child's performance on the Bayley**

Scales of Infant Development at age two; and the more readiness for school the child showed at age three.

- **New research findings show that lack of sufficient food during childhood, even on a relatively mild basis, is far more serious than previously thought.**
- **Undernourished children are fatigued and uninterested in their social environment. The ranks of school dropouts are filled with undernourished children.**
- **What we are all beginning to conclude is that the bad environments that more and more children are being exposed to are creating an epidemic of violence. Environmental events are really causing molecular changes in the brain that make people more impulsive.**
- **If we don't invest in the early rearing environment of our children, we're going to be paying the bills for the rest of their lifetimes. The bills will be for mental disorders and physical diseases, and putting many of these children in jail.**
- **Scientists who have been examining the biology of behavior have discovered a surprising finding: alcohol, the oldest and most prevalent cause of addiction, is by far the most prolific activator and deactivator of brain centers. Nothing comes close. Not cocaine, heroin, or nicotine. Mothers beware!**
- **One out of four hospital patients has an illness brought on by drinking. 60% of all violent acts, whether murders, child abuse, family abuse, assaults, or felonies are associated with alcohol.**
- **One out of every 800-1,500 infants born in this country has fetal alcohol syndrome (FAS). Children exposed to only "moderate" levels of alcohol were born significantly smaller and had IQs that were 3-4 points below average. UNLIKE FETAL BRAINS, ADULT BRAINS CAN RECOVER.**