**The Dynamics of Intelligence**

***With respect to changes in intelligence, research indicates that:***

* Before age 3, except for extremely impaired children, casual observations and intelligence tests *predict* future aptitudes minimally; but by age 3, performances on intelligence tests begin to predict adolescent and adult scores
* By age 7, intelligence tests have become more stable and there is an increase in score stability as the child gets older.

The two extremes at either end of the normal curve for intelligence are the *challenged* and the *gifted.*

**Mental retardation** is a condition of limited mental ability as indicated by an intelligence score of below 70. To be deemed so, a child must have the low IQ score as well must show difficulty in adapting to the normal demands of everyday life. It varies frommild to profound with onlyone percent of population meeting both criteria and with males outnumbering females by 50 percent. One cause of mental retardation is **Down syndrome**, a physical disorder caused by an extra chromosome in ones genetic makeup.

The term **Gifted**refers to those childrenwith an IQ of above 135. There is much debate however as to whether or not such children should be given any greater opportunities than any other child. It is certainly known that just as many "non-gifted" children will be academically successful and become leaders in their fields and live satisfying lives. It is agreed upon that children have different gifts and that they may not be in any way related to IQ score.

**Creativity**is defined as the ability to produce novel and valuable ideas. It was discovered that a certain level of aptitude is necessary but not sufficient for creativity and that people with high IQ scores tend to do well on creativity tests.

***Genetic and Environmental Influences on Intelligence***

**With respect to the nature of intelligence, research indicates that:**

* IQ scores of identical twins are virtually the same as if one person took the test twice whereas IQ scores of fraternal twins are less similar. (Proof of genetic influence).
* Intelligence scores of adopted children are more similar to their biological parents than their adopted parents. (Proof of genetic influence).
* There is evidence of environmental influence on intelligence. Fraternal twins who are treated more alike tend to have more similar scores than when compared to scores of other siblings.

**Heritability** is a term used to describe the *proportion of variation*among individuals that we can attribute to genes, or in other words, the extent to which the *differences* among people are attributed to genes (and not environmental factors). Heritability of trait may vary, depending on the range of populations and the environments studied. With respect to the heritability of intelligence, as environments become more equal (similar), it becomes more important to look at heredity as a source of these differences in intelligence.

Psychologist J. McVicker Hunt tested the benefits of *responsive care* giving (positive environment). He trained caregivers to play vocal games, with infants in which first they imitated the babies babbling, then led the babies in vocal follow-the-leader and finally began to teach them sounds from Persian language. The result was that all 11 infants could name more than 50 objects and body parts by 22 months. Hunts experiment shows the importance of environment on childrens intelligence.

***Other research findings:***

* Racial groups differ in *average* scores on intelligence tests. The difference not mostly based on genetics unlike individual performance differences because heritability within groups would not eliminate the possibility of strong environmental impact on the group differences. For example: IQ performances of todays better-fed and better-educated population exceeds those from 1930s population by the same amount as average white today exceed average African American population.
* Girls are better spellers and are equal or surpass the average boy in math scores but boys tend to score higher in mathematical problem solving
* Some people are better emotional detectors than others and research shows that in general, women are better at it than men.

*Evolutionary psychologists* David Geary and Irwin Silverman suggest that males tend to be stronger in skills that their ancestral fathers needed to survive such as tracking prey and navigating their way home whereas females tend to have superior memory skills passed on by their ancestral mothers (who were responsible for food gathering and therefore locating edible plants for example).

Some researchers speculate that it may have been  through evolution that the ancestral mother learned to read the emotions of her infant child and that this may have been further fueled by cultural tendencies to encourage empathic skills (what we call "maternal instinct").