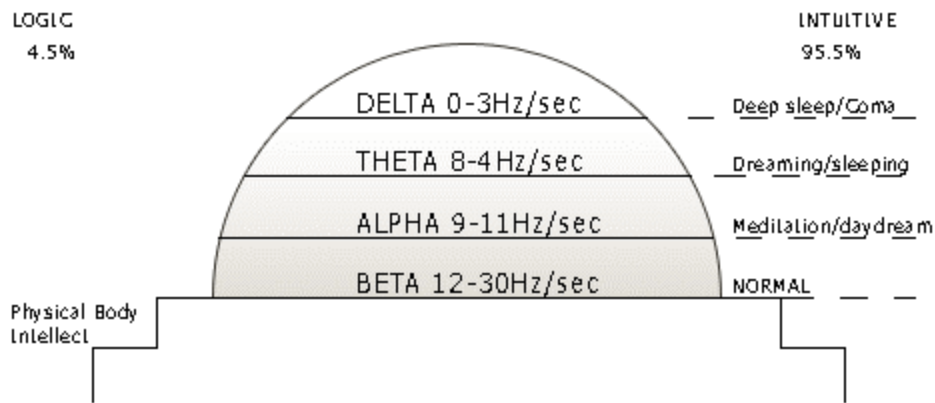


THE BRAINWAVES



It is well known that the brain is an electrochemical organ; researchers have speculated that a fully functioning brain can generate as much as 10 watts of electrical power. If you had enough scalps hooked up you might be able to light a flashlight bulb.

Even though this electrical power is very limited, it does occur in very specific ways that are characteristic of the human brain. Electrical activity emanating from the brain is displayed in the form of brainwaves. There are four categories of these brainwaves, ranging from the most activity to the least activity. When the brain is aroused and actively engaged in mental activities, it generates beta waves. These beta waves are of relatively low amplitude, and are the fastest of the four different brainwaves. The frequency of beta waves ranges from 12 to 30 Hz per second. The frequency of 1 hertz (Hz) means that there is one cycle per second. Beta waves are characteristics of an engaged mind, or a normal state of consciousness.

The next brainwave category in order of frequency is alpha. Where beta represented arousal, alpha represents non-arousal. Alpha brainwaves are slower, and higher in amplitude. Their frequency ranges from 9 to 11 Hz per second. This is the state of meditation, or daydreaming where ESP (extra sensory perception) can occur.

The next state, theta brainwaves, are typically of even greater amplitude and slower frequency. This frequency range is normally between 4 and 8 cycles a second. A person who has taken time off from a task and begins to daydream is often in a theta brainwave state. This is the state of sleep where dreams occur.

The final brainwave state is delta. Here the brainwaves are of the greatest amplitude and slowest frequency. They typically center around a range of 0 to 3 Hz per second. This is the state of deep dreamless sleep. Someone in a coma would be down to the lowest frequency.

When we go to bed and read for a few minutes before attempting sleep, we are likely to be in low beta. When we put the book down, turn off the lights and close our eyes, our brainwaves will descend from beta, to alpha, to theta and finally, when we fall asleep, to delta.

It is a well-known fact that humans dream in 90-minute cycles. When the delta brainwave frequencies increase into the frequency of theta brainwaves, active dreaming takes place and often becomes more experiential to the person. Typically, when this occurs there is rapid eye movement, which is characteristic of active dreaming. This is called REM, and is a well-known phenomenon.

In summary, there are four brainwave states that range from the high amplitude, low frequency delta to the low amplitude, high frequency beta. These brainwave states range from deep dreamless sleep to high arousal. The same four brainwave states are common to the human species. Men, women and children of all ages experience the same characteristic brainwaves. They are consistent across cultures and country boundaries.

Research has shown that although one brainwave state may predominate at any given time, depending on the activity level of the individual, the remaining three brain states are present in the mix of brainwaves at all times. In other words, while somebody is in an aroused state and exhibiting a beta brainwave pattern, there also exists in that person's brain a component of alpha, theta and delta, even though these may be present only at the trace level.

