

ALPHABETICAL BRAIN™ VOCABULARY HUMANIST FAMILY BRAIN STUDY

LIST OF TEN FUNDAMENTAL BRAIN FACTS ABOUT HUMAN CONSCIOUSNESS May 2, 2016

Curiosity is the primary motivation you need to get started. Just ask yourself: **"How does my brain work?"** and **"What is the purpose and function of my consciousness?"**

To take advantage of the memory boosting power of sensory immersion, you can write down a few statements on paper or in the cloud or in a text file to document the amount of brain knowledge you possess at the moment and how you feel about its impact in your life.

FUNDAMENTAL SCIENTIFIC HUMANISTIC ASSUMPTIONS ABOUT YOUR BRAIN

One of the main assumptions that emerges from brain science research is that you can freely choose to keep your brain fit and your imagination growing into old age --- if you know how your brain functions.

Your sense of self (self-identity and personality) is caused by the physical structure of your brain and body, which is now known as your connectome.

The new scientific word connectome is the name that describes all of the biochemical currents or signals in your brain and nervous system at the nano-microscopic molecular quantum level of existence.

The word connectome describes in far more useful detail what used to be known as your "brain and nervous system." What was missing was an understanding of how your brain and nervous system are connected at the nano-microscopic level.

With the new scientific linguistic structure that best describes the functions of human brains and minds, it is clear that brains are the result of millions of years of natural evolutionary processes and that minds are the result of much more recent cultural developments, particularly the emergence of human alphabets and

languages during the past 5,200 years of human history.

In addition, the new vision of your sense of self (self-awareness) is grounded in the new understanding of human evolutionary developments. This leap in scientific understanding makes possible a new understanding of your potential to change your behavior because of your brain's neuroplasticity whenever it is necessary for you to make changes in your life, either to survive or to increase your pleasure or decrease your pain.

Since you are a biologically driven human being with your priceless consciousness, there is no need anymore to believe in the traditional delusional Cartesian mind/body dualism (separation).

The new brain science assumption about human nature is that you have a "self" but not a "soul" unless you define the word soul as meaning that you are breathing and can dance around and have positive feelings about your life!

Since the word soul carries deeply emotional abstract primitive cultural metaphorical connotations about the belief in the alleged continuation of the life of an individual after death, the timing of children's exposure to religious and spiritual beliefs needs to be analyzed by responsible parents and teachers in terms of the newly emerging fundamental truths being discovered about the functions of human brains by modern science.

With respect to education, it is now clear that the minds of young children between the ages of three and ten are extremely vulnerable to erroneous mythical abstractions forced upon them before their prefrontal cortices are developed enough to control the strong emotions excited by the limbic systems of children.

Many modern cultures educate their children as though traditional mythical stories are real historic events (facts) rather than merely being arbitrary customs: just metaphors and analogies and not objective facts.

The most important point is that the old traditional customary folk and fairy tales do not teach children how their brains really work according to scientific evidence. In contrast, this website provides humanist parents and individuals with a rational and logical basis for discussing secular humanistic values and the need for

self-actualization, which involves self-esteem (self-acceptance) and self-transcendence (love and empathy)

This website emphasizes the importance of widening global social circles of collaboration to create meaning out of life based on the brain vocabulary and the existence of the mind's mental force. The mental force involves the brain's prefrontal cortex.

The PFC region of the human brain is normally not completely developed until between the ages of 25 and 30 in our Western culture where childhood is delayed.

Nevertheless, in order to be happy and healthy, everyone must take care of their own brains in more sophisticated ways than ever before in human history.

Also it is assumed that the best way to learn about brain functions is to adopt a humanistic philosophy by starting to ask more open-ended questions about the complex functions of your brain, if you do not already.

If you do, you will be pursuing healthy pleasures and non-violent ways of achieving enlightenment and solving personal and social problems.

This means that your brain study can begin with a commitment to look at the empirical objective evidence for each of the 15 brain ideas with robust curiosity.

Then you will be able to integrate the new brain vocabulary into your own personal knowledge base and use humanistic mindfulness skills and thought experiments to create new ways for you to keep open to new ideas and habits.

The humanistic way of thinking offers you a courageous assertive way to protect yourself from unwittingly letting past learned subconscious (hidden) prejudicial attitudes (memories) confuse your approach to solving current ethical and moral issues.

Your challenge is to correct any mistaken opinions that you may have learned in the past about the nature of reality and to understand how your brain and culture interact now to produce your sense of self (self-identity and personality).

When you clarify your awareness of the following ten brain facts, in the context of the new scientific perspective about your brain, your thoughts will be able to control your feelings in both normal or abnormal (calm or adverse) situations.

In short, with the new objective scientific language about human consciousness, based upon the factual knowledge about evolution, your mind's cognitive mental force can control your feelings using your humanistic goals and values to provide direction and meaning for your life.

FIRST FUNDAMENTAL BRAIN FACT:

[1] Human consciousness is caused by the global connectivity of all of the neuronal pathways and signaling processes in your body.

Approximately 900 trillion synapses attach your 100 billion neurons to each other and to all of your internal organs, glands, and muscles.

The cell bodies of neurons start action potential spikes, which flow from neuron to neuron through the trillions of synaptic clefts (gaps between neurons), to connect your brain and nervous system in a vast biochemical web.

The vesicles of your synapses release sodium or potassium ions depending upon the electrochemical potential across the gaps at the synapse terminals.

The synapse terminals typically attach to your muscles, internal organs, and many of your glands.

SECOND FUNDAMENTAL BRAIN FACT:

[2] The physical structure of your cerebrum is the intellectual resource center of your life. It is the newest region of your brain to have evolved during the last few hundred thousand years.

It contains four lobes (regions), which include your frontal, temporal, parietal, and occipital lobes.

They consist of eight sections, since your brain is divided into two cerebral hemispheres, commonly referred to as the Left Brain and

the Right Brain, which typically have unique and predictable separate functions.

And distinct skin-like membranes separate the eight sections of the brain, with numerous neuronal pathways connecting them all for continuous dynamic interactive connectivity.

THIRD FUNDAMENTAL BRAIN FACT:

[3] The physical structure of your prefrontal cortex (PFC) is the executive decision-maker of your life.

Your PFC is located in the two frontal lobes at the front of your cerebrum just behind your forehead with neuronal connections to four other major areas of your brain.

The notable major areas include activators associated with your conscious willpower in your cerebrum and your feelings in your limbic system and your unconscious behavior in your cerebellum and brainstem complex.

FOURTH FUNDAMENTAL BRAIN FACT:

[4] The essential components of your self-awareness are two small clumps of neurons, which are the central control hubs of your prefrontal cortex.

These two small functional modules are each the size of a penny and are located high in the forward part of your two frontal lobes.

They are located above your eyes about one inch behind your forehead in both the left and the right cerebral hemispheres on the insides of both of your prefrontal cortices of your divided cerebrum.

FIFTH FUNDAMENTAL BRAIN FACT:

[5] Your ability to think and make decisions depends upon having healthy neuronal pathways inside your anterior cingulate gyrus.

This means that your neurons and your glial cells must be healthy in order for biochemical (electro-chemical) signals to be conducted rapidly and efficiently through the sides of your two cingulate

pathways, located on each side of your left and right cerebral hemispheres (divided brain).

Your glial cells coat the axons of most of your neurons with a white fatty substance known as myeline sheaths, that nourish, insulate, and protect neurons from toxic chemicals.

The myelination process allows action potential spikes (biochemical currents or impulses) to move more quickly than they would without the protective coating.

Your glial cells are called white matter in contrast to your neurons that are called gray matter because of their colors when exposed.

SIXTH FUNDAMENTAL BRAIN FACT:

[6] The memory consolidation system in your long-term memory is activated by four triggers in the specialized long-term memory circuits located in your hippocampus.

The physical structure of your hippocampus, contains your semantic, episodic, autobiographic, and procedural memory (muscle memory) circuit activators.

The four triggers have the vital evolutionary role of keeping you alive. Their location on the two sides of your hippocampus (one in each hemisphere) are both nestled safely at the bottom of your limbic system in the most protected part of your brain.

(Note: It is the connection from your PFC to your hippocampus that is vulnerable to being obstructed or destroyed that can cause the disabling and fatal Alzheimer's disease.)

Therefore, it is imperative that you understand how important your long-term memory resources are for you to have an enduring self-identity and socially acceptable personality.

**YOUR CONSCIOUSNESS DEPENDS
UPON HAVING A HEALTHY
CONNECTION BETWEEN YOUR
PREFRONTAL CORTEX (PFC)
AND YOUR HIPPOCAMPUS**

Your working memory directs all of your conscious executive brain functions, since it is wired to control the functions of the other major parts of your brain. Those physical structures include your cerebrum, limbic system, and brainstem-cerebellum complex, which is the oldest (reptilian) part of your continuously evolving brain.

SEVENTH FUNDAMENTAL BRAIN FACT:

[7] Your brain's neuroplasticity (plasticity) gives you the ability to control your body and also to learn new words to expand your long-term memory resources of facts and ideas about the meaning of life --- every day.

For your brain to control your body's movements, your prefrontal cortex had to unconsciously learn how to connect to and control all of the neuronal pathways in your sensory cortex and your motor cortex through many hundreds of thousands of experiences as you learned essential habits of living from the time you were a toddler.

At each of the predictable developmental stages of the physical growth of your body, your brain's parts were also growing in their mental connectivity through predictable developmental stages.

The two parts of your brain that are able to create new neuron cells daily are your olfactory glands (smell organs) and your hippocampus (long-term memory).

These two particular examples of neuroplasticity are known as neurogenesis, since new neuron brain cells are created in these brain tissue areas throughout life since the new neurons are essential for the sensory functions of your olfactory glands and the memory function of your hippocampus.

EIGHTH FUNDAMENTAL BRAIN FACT:

[8] For you to be aware of yourself, your prefrontal cortex must be connected to the language module in your left temporal lobe and also to your hippocampus at the bottom of your limbic system and your amygdala at the front of your limbic system.

THESE BRAIN AREAS ARE ACTIVATED WHEN YOU ARE SELF-AWARE

For you to be conscious of yourself as a passionate and conscientious human being with the freedom to choose your own thoughts and actions, your prefrontal cortex must also be connected to your reticular activating formation that is located in your brainstem.

And, simultaneously, your PFC must be connected to the two triggers of the two vital unconscious brain functions that regulate your breathing (lungs) and your heartbeat (heart) located in your cerebellum to ensure that freshly oxygenated blood is flowing into your brain at all times.

NINTH FUNDAMENTAL BRAIN FACT:

[9] The source of your thoughts, which is your cerebral cortex, can control the source of your feelings, which is your limbic system --- if you learn the new brain knowledge and educate yourself to have the confidence necessary to develop such self-control.

This supreme brain fact is derived from the new knowledge about the flexibility of your working memory caused by the vast global connectivity of all of the neuronal pathways in your brain and nervous system (connectome).

This is a revolutionary and transformative idea since it means that you are totally in charge of your own thoughts and feelings and actions, whether you give yourself credit for this phenomenal personal brainpower or not.

This idea about the true functioning of your brain has been verified with scientific certainty by experimentation during the past few years after hundreds of thousands of fMRI brain scans have proven the existence of a vastly complicated biochemical communication system in your brain and nervous system.

By measuring the blood flow and the sugar levels inside the brain with the most powerful new block spectrum optical fluorescent microscopes, the communication system of the brain is finally being revealed to be activated by its own biological parts, including its own mental thinking processes.

To repeat for clarification, the source of your thoughts is the biochemical activity in your cerebral cortex, and the source of your feelings is the biochemical activity in your limbic system, assuming that all of the other systems of your brain and body are functioning normally.

To summarize for even more clarity, your cognitive resources are a function of your cerebrum while your ability to make decisions is a function of your prefrontal cortex in collaboration with the feelings, which are stored in your long-term memory circuits in your limbic system.

TENTH FUNDAMENTAL BRAIN FACT:

[10] When the neurons in the pathways of the anterior cingulate gyrus get entangled and obstructed, neuronal signaling from the prefrontal cortex to the hippocampus gets blocked and can cause Alzheimer's disease or the many other dementias.

Alzheimer's disease can be caused by tumors or the buildup of amyloid plaque caused by toxic proteins or cellular debris such as prions that can make holes in human brains.

When the cingulate pathways, which connect the prefrontal cortex to the long-term memory circuits, are interrupted due to tumors or traumatic brain injuries, such as concussions from sports injuries or bomb blasts, there is usually permanent damage to a person's mind, which can compromise a person's self-identity and personality.

Destruction of the neuronal signaling between the prefrontal cortex and the hippocampus causes the dramatic loss of self-awareness or the loss of the sense of time or the loss of facial recognition skills or the loss of all three essential survival functions even though some awareness of nonpersonal routine situations may not be affected.

Sadly, that is why most Alzheimer's patients cannot recognize the faces of their spouses or friends or remember what they were doing or where they were just a few minutes before.

The documentary film on CNN Sunday night (June 28, 2015) honoring the great guitar player and singer, Glen Campbell, depicted the terrible impact Alzheimer's can have on a person and

their whole family and social network.

In addition, a brain research study published in the July 2015 issue of the neuroscience journal, *The Neuron*, reported that the loss of memory can also be caused by biochemical imbalances in the medial temporal lobe, which can destroy the protein bridges connecting memories to each other.

Therefore, any disruptions of neuronal signaling along the cingulate pathways or in the medial temporal lobe can damage the operation of both the brain's working memory and its long-term memory consolidation system.

To restate this alarming fact, Alzheimer's disease and the other dementias are usually caused by damaged cingulate pathways that cannot relay ionic current back and forth efficiently.

This means that the biochemical signals or impulses of information from the brain's executive control mechanism in the prefrontal cortex cannot reach the brain's long-term memory consolidation system in the hippocampus. Likewise, old memories cannot get to the conscious level of working memory resources in the prefrontal cortex.

With no cure in sight for Alzheimer's disease, it is essential that you become aware of the specific scientific ways that you can avoid or delay the onset of permanent brain damage due to the many kinds of dementias and traumatic brain disorders and injuries.

Brain disorders are often caused by interruptions in the neuronal signaling processes inside neuronal pathways.

Because of the new brain facts and ideas revealed by modern brain research, the causes of brain disorders and diseases, such as strokes, brain tumors, and traumatic brain injuries, including concussions, are better understood now than in the past.

RELEVANCE OF THE TEN BRAIN SCIENCE FACTS

Since there are many promising options available for optimizing your brain health, it is important that you use critical thinking and reading skill-sets based upon your own unique life circumstances

and the best scientific evidence available.

If you want to have a healthy brain, it is crucial for you to eat, sleep, exercise, and relax enough at all ages, since good blood circulation is required for good brain health.

**LIST OF 10 FUNDAMENTAL BRAIN FACTS
THAT CAN TRANSFORM YOUR RELATIONSHIP
WITH YOURSELF AND THE COSMOS**

SELF-QUIZ PART 1: To review these ten fundamental brain facts, you can use the following list of ten declarative statements followed by ten questions related to each statement. However, to consolidate the ten brain facts in your long-term memory system, you can printout the specially designed pdf forms at the Humanist Family Brain Survey for multi-sensory immersion style learning. The link is at the end of this file and also on the website index.

[1] Consciousness is caused by the global connectivity of all of your neuronal pathways and all your neuronal signaling processes.

[2] The physical structure of your cerebrum, which is the largest and newest region of your brain to have evolved, is the intellectual control center of your life.

[3] The physical structure of your prefrontal cortex, which is located at the forward part of your frontal lobe, is the decision-maker of your life.

[4] The essential functional components of your sense of self are two small clusters of neurons that are the central control hubs of your prefrontal cortex behind your forehead.

[5] Your ability to think and make decisions depends upon having healthy neuronal pathways inside your anterior cingulate gyrus consisting of neurons and glial cells.

[6] The four triggers of your long-term memory resources, which are located in the physical structure of your hippocampus, are your semantic, episodic, autobiographic, and procedural (or muscle) memory circuits.

[7] Your brain's neuroplasticity gives you the ability to learn new

words and to expand your neuronal database of facts and ideas about the meaning of life every day.

[8] For you to be aware of your self, your prefrontal cortex must be connected to your language module in your left temporal lobe, and your hippocampus, which is located at the bottom of your limbic system.

[9] The source of your thoughts, which is your cerebral cortex, can control the source of your feelings, which is your limbic system, with the proper brain knowledge.

[10] When the neurons in the pathways of the anterior cingulate gyrus get entangled and obstructed, neuronal signaling from the prefrontal cortex to the hippocampus can get blocked and cause Alzheimer's disease or other dementias.

LIST OF 10 FUNDAMENTAL QUESTIONS TO ACTIVATE YOUR LONG-TERM MEMORY

SELF-QUIZ PART 2: To reinforce long-term memory consolidation, answer the following ten questions about the ten fundamental brain facts and think about them over and over until they are easy to recall with your working memory and so they will strengthen your mental force:

(1) What neuronal pathways can get entangled and obstructed and cause Alzheimer's disease or other dementias by blocking neuronal signaling from the prefrontal cortex and other parts of the cerebrum?

(2) What brain structure can control your feelings if you know the proper brain knowledge?

(3) For you to be aware of yourself and able to think, your prefrontal cortex must be connected to what communication module in your left temporal lobe?

(4) What process gives you the ability to learn new words and to expand your neuronal database of facts and ideas about the meaning of life?

(5) In what brain structure are the four triggers of your long-term

memory resources, which include your semantic, episodic, autobiographic, and procedural (or muscle) memory circuits?

(6) What is inside your anterior cingulate gyrus that connects your prefrontal cortex and hippocampus to make possible your ability to think and make decisions?

(7) What are the functional components of your sense of self that are the central control hubs of your prefrontal cortex behind your forehead?

(8) What brain structure, located in the forward part of your frontal lobe, is the executive decision-maker of your life?

(9) What is the brain structure that is the largest and the newest to have evolved to become the intellectual control center of your life?

(10) What is caused by the global connectivity of all of your neuronal pathways and all of your neuronal signaling processes?

These ten fundamental brain facts can become a solid intellectual foundation for organizing your mental force (cognitive grit) needed to master the complete sequence of the 15 brain ideas on the 15 brain flash cards and the brain vocabulary in the **Humanist Family Brain Survey** skill-sets.

In addition, there will be more details and references to the 10 brain facts and 15 brain ideas on that you can purchase at the **Alphabetical Brain™ Vocabulary App** very soon.