

<sup>1</sup>The newsletter title has been changed from **Aphasia Insights to Plasticity Insights** to encompass brain function and plasticity as the foundation of all learning as well as recovery.

October 2023  
Volume 5, Issue 19  
October 3, 2023

“At bottom, this principle rests upon the fact of habit, when *habit* is interpreted biologically. The basic characteristic of habit is that every experience enacted and undergone modifies the one who acts and undergoes, while this modification affects, whether we wish it or not, the quality of subsequent experiences. For it is a somewhat different person who enters into them.”

**John Dewey**  
**Experience & Education (1938).**  
Touchstone, Rockefeller Center, New York. Kappa Delta Pi Lecture Series, pp. 35.

Aphasia Nation, Inc. is committed to educating the wider public about stroke and aphasia and the “*Aim High for Aphasia!*” international Aphasia Awareness campaign.

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# Plasticity Insights!<sup>1</sup>

## William James: *The Principles of Psychology*, Plasticity, and MBE Science.

By Tom Broussard, Ph.D.

This is the next in a series of articles about the science and scientists behind the brain, stroke, aphasia, plasticity, learning, recovery, and education.

**William James (January 11, 1842 – August 26, 1910)** was an American philosopher, psychologist, and the first educator to offer a [psychology](#) course in the United States. He spent almost all of his academic career at Harvard and was considered the “Father of American psychology” ([Wikipedia](#)).

Born into a wealthy family, James was the son of the [Swedenborgian theologian Henry James Sr.](#) and the brother of the prominent novelist [Henry James](#) and the sister of the diarist [Alice James](#). James trained as a physician but never practiced medicine; instead pursued his interests in psychology and philosophy ([Wikipedia](#)).

Along with [Charles Sanders Peirce](#), James established the philosophical school known as [pragmatism](#), and is cited as one of the founders of

[functional psychology](#). A survey published in [American Psychologist](#) (1991) ranked James's reputation in second place, after [Wilhelm Wundt](#), who is widely regarded as the founder of [experimental psychology](#) ([Wikipedia](#)).

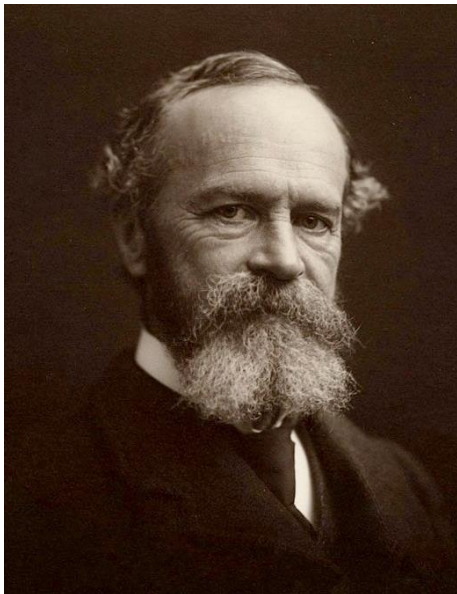
James wrote voluminously throughout his life but his [magnum opus](#) was [The Principles of Psychology \(1890\)](#) as “the Science of Mental Life” to include the operation and processes of the brain. The book required two volumes with over “fourteen hundred

continuous pages from [t]his pen” (James, 1890). It took twelve years to complete with several chapters which were published earlier in articles in the “Mind, the Journal of Speculative Philosophy, the Popular Science Monthly, and Scribner’s Magazine” (James, 1890). The book came as a result of James’

Psychology

experiments and classes that started in 1875.

In the [Principles of Psychology](#), James coined the word, [plasticity](#) as he described it “[in the wide sense of the word, means the possession of a structure weak enough to yield to an influence, but strong enough not to yield all at once.](#)” It is cited for the first time in Volume One, Chapter IV, entitled *Habit*, page 105, (James, 1890).



**William James**  
**(1842 – 1910)**

While attempting to explain people's behavior, James described humans as "[bundles of habits](#)" quite different from wild animals which act based on instincts. As James said, "The habits to which there is an innate tendency are called instincts; some of those due to education would by most persons be called acts of reason" and "the moment one tries to define what habit is, one is led to the fundamental properties of [brain] matter" (James, 1890).

James realized that habit, the brain, and learning are highly linked and wrote that "education is for behavior, and habits are the stuff of which behavior consists" (James, 1910). James' approach to learning provides the groundwork to the new Mind, Brain Education (MBE) Science that combines education, cognitive neuroscience, and educational psychology to become neuroeducation.

Among the concepts of [MBE Science](#) include:

-The "***brain is highly plastic***" such that people can learn throughout their lifetime including people who have recovered from brain injury such as TBI, stroke and aphasia (Tokuhamu-Espinosa, 2011). As James stated that "*the phenomena of habit in living beings are due to plasticity of the organic materials of which their bodies are composed*" (James, 1890).

-The "***brain is changed by experience***" (Tokuhamu-Espinosa, 2011). As James had said, "the brain, is the part whose experiences are directly concerned...that *no mental modification ever occurs which is not accompanied or followed by a bodily change*" (James, 1890). In a similar manner, [Donald Hebb](#) noted that, "any two cells or systems of cells that are repeatedly active at the same time will tend to become 'associated' so that activity in one facilitates activity in the other" that became Hebb's concept

that [cells that fire together, wire together](#) (Hebb, 1949).

-The "***brain connects new information to old***" (Tokuhamu-Espinosa, 2011). As James had said "...the art of remembering is the art of thinking...our conscious effort should not be so much to impress and retain it as to connect it with something else already there. The connecting is the thinking; and, if we attend clearly to the connection, the connected thing will certainly be likely to remain within recall" (James, 1910).

Plasticity converts thought and cognitive activities into new brain matter and is the foundation of all learning. It is beyond time for everyone in the public at large and especially the educational community about the brain, the organ of learning, as the greatest thing "in all education is to make our nervous system our ally instead of our enemy" ([Mewasingh, 2008](#)).



William James, Cambridge Cemetery, Cambridge, MA (Broussard, 2016)

James' retired from Harvard in 1907 with persistent cardiac pain. It worsened in 1909 and he sailed to Europe in early 1910 for treatment, and although unsuccessful, returned home on August 18, 1910. His heart failed days later at his home in [Chocorua, New Hampshire](#) and was buried in the family plot in Cambridge Cemetery, [Cambridge, Massachusetts](#) ([Wikipedia](#)).

Signed: *The Johnny Appleseed of Aphasia Awareness*

The author is a three-time stroke survivor and has aphasia as a result of the strokes. His language skills continue to improve.

He is Founder and President, Aphasia Nation, Inc., a non-profit organization whose mission is educating the wider public, national and international, about aphasia and plasticity, the foundation of all learning.

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3. James, William. Talks to Teachers on Psychology; and to Students on Some of Life's Ideals. Dossier Press, New York, 2015 (1910).
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5. Mewasingh, L. D. (2008). 'The great thing in all education is to make our nervous system our ally instead of our enemy'—William James. Developmental Neurorehabilitation, 11(4), 246–251.
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