

Biopsychosocial perspectives of learning



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Abstract

Human-beings are ever learning throughout their lifetime. Many processes go into the formation of the material in which they learn. There are many aspects in learning from biological to psychological factors as well as social and environmental factors. Some learning is inherited genetically for survival while other forms of learning are through psychological cognitive processes while other types of learning can be accidental or incidental. Human-beings also tend to learn from the environment in which they inhabit as well as through social interactions. When an individual chooses to understand how the fundamentals of the learning process works the biopsychosocial model is best for explaining these reasons.

When most people think about learning they think about student- teacher roles and educational classroom setting. Many people do not realize all that goes into an individual's ability to learn behind the scenes. It's what is going on inside of the individual which is unseen that makes human learning a unique extraordinary process. From genetics to mental functions of the brain and social influences an individual is equipped with the necessary genetic make-up, mindset and settings to be an ever learning product of their environment. There are various theories of psychology which suggest what an individual learns, when an individual learns, where an individual learns, why an individual learns and how an individual learns. These theories in themselves show the unique ability of the human thinking, reasoning, perspective and learning processes in which the human brain is capable of.

Biological Factors

Biological factors such as genetics suggest that brain chemistry, brain structure, and genetic abnormalities are responsible for human behavior. Effects of how an individual learns begin before he/she is even born. While still in the womb the fetus is still forming to develop as is the foundation being set for the child's learning ability. For example there are many different types of intelligence in which a child will inherit from their parents. This inheritance of biological genes from the parent will set the foundation for the child's personality, temperament, intellectual potential and cognitive abilities among other traits. An evolutionist will argue learning is biologically inherited for survival of the species.

Recent years and technology has shed light on the genetic makeup and some of the genes which are responsible for being involved in an individual's ability of learning. One such example of a genetic inheritance is the dopaminergic genes in which human genetic polymorphism (DRD2-TAQIA), a neurotransmitter modulates dopamine D2 receptor density. Probabilistic learning, task, behavioral and computational results stem from this dopaminergic neurotransmission. Researchers have been able to pinpoint both positive and negative learning outcomes which can be predicted in genes associated with Polymorphisms striatal dopamine function (Hutchison et al., 2011).

It has long been argued if learning stems from nature or nurture. Nature is involved through genetic imprinting in which an evolutionist would explain mammal behavior in which a mammal would mimic the parent's behavior by

autoshaping of an experience such as with avoidance and acceptance behaviors. Human-beings however differ as they learn through biologically predisposed associations. For example scientists have tied fear to the basolateral nucleus of amygdala (BLA) region of the brain. A behaviorist would argue that conditioned stimuli (CSs) when associated with unconditioned stimuli (UCs) would cause the undesired outcome association of fear. The same can be assumed that any stimulus could be associated with another stimulus with equal ease such as in the case of learning. However, scientific evidence of biologically predisposed associations needs to be taken into consideration of the adaptive function of selective associations such as within the learning process. Researchers suggest amygdala neurons have specific microcircuits and cell signaling dynamics which ensure that associations provide significant survival benefits which activate neurons in a convergent fashion and generate prompt learning (Chung et al., 2011). This would explain a more complex theory opposed to simple conditioned stimuli (CSs) and unconditioned stimuli (UCs) associations.

Psychological Factors

There are many theories on the psychology of learning from Behaviorism, Cognitive theory, Humanistic perspective, Social learning perspective and Instructional theories. Since Cognitive theory is the most widely accepted theory this approach will be utilized. Cognitive psychologist look at four general principles of the human learning process which consist of an assumption of a limited capacity of one's ability to learn, a control mechanism that is required to regulate one's learning, a two-way flow of

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information between the learner and the material being learned and being genetically prepared to process and organize information in specific ways. These psychological principles set the foundation of an individual's ability to learn.

Since the mental system has limits on how much information can be processed the encoding, transformation, processing, storage, retrieval and utilization of information of the mental system must be overseen by a control mechanism to regulate processing power of a newly learned task. The mental system is also responsible for information gathered and stored in memory and distinctively separates the information by what information is real and what information is imagination or fantasy as well as inductive and deductive reasoning (Huitt, 2013).

Other learning theories suggest the conceptual framework in which human-beings interpret what they learn and observe. For example Behaviorism focuses purely on observational learning whereas Cognitive theory explains the brains processes of brain-based learning goes beyond observations and associations. Constructivism on the other hand focuses on the learner's process of learning through creativity and individual constructed ideas or concepts. One way of looking at learning would be to combine all three of these theories into one. A theory of learning which comes close to doing so is the Transformative learning theory in which human-beings are believed to revise and reinterpret meaning. Since interpreting and meaning varies among individuals in the way they see their worlds, Transformative learning theory focuses on cognitive processes in which human-beings may reject emotions, associations and concepts which are not compatible with their own

personal values (Taylor, 2001). However, just like with any other theory there are limits and critics of Transformative learning theory.

Social Factors

As mentioned earlier the long time debate of whether nature or nurture was responsible for learning, nurture indeed does play part just as nature does in the human learning process. Social, cultural and environmental factors influence an individual's learning in many ways such as with interactions, perspectives and content of the new material being introduced. It is believed nurture is responsible for many mental functions such as memory, attention and the capacity to make associations for individuals to make sense of their surrounding environments. Natural mental functions such as the ones mentioned above can be acquired through the process of incidental learning. Incidental learning is the process in which new material was learned in which no learning was ever intended. Children for example are easily susceptible to incidental learning due to natural mental functioning (Kristinsdóttir, 2008).

Other social factors that contribute to an individual's learning process can be environmental such as the individual's socioeconomic status as well as sociodemographics. An indicator of an individual's ability of learning and education level is largely associated with the individual's environmental setting. Stimulating environmental settings has been shown to significantly promote learning. Research has shown experiences a child experiences at home will influence and transfer to the classroom. Sociodemographics of children of lower socioeconomic status tend to have poor transitioning into the educational system. One reason for the poor transitioning from home to

school of these children may be due to socioeconomic disparities among families which largely effects family and school relationships which results in inconsistencies of childhood learning (Crosnoe et al., 2010).

Conclusion

Human-beings are unique and complex in the way they learn when compared to other species as they are consciously aware of themselves. All factors of biological, psychological and sociological aspects have an impact on how an individual will learn. From early childhood to late adulthood and beyond, one thing for certain is human-beings are constantly learning. Human-beings learn from one another, their environment, technology and natural instincts. Whether it is due to hereditary genes, psychological mental processes or social interactions, human-beings have the ability to learn, interpret and decide what they choose to or not to learn. Human-beings also have the unique ability of perceptiveness of what they learn. In result an individual's perspective can alter or change another individual's perspective of the way new material is learned, obtained or altered.

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