

Stress and the neuroendocrine response

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Neurotransmitters are endogenous chemical compounds that allow transmission of signals from one neuron across synapses. They communicate information throughout the brain and the body. They are also found at endings of the axon where they stimulate muscle fibers. They are produced by some glands in the body such as the adrenal gland. Dopamine is the neurotransmitter mentioned in the article that works as an inhibitory neurotransmitter. Too much stress causes changes in the hippocampal cell function. The cells in the hippocampal region die with chronic stress. Prolonged stress tends to impair the learning and memory ability of individuals, which is as a result of reduction or loss of the hippocampal volume. Chronic stress also impacts on the level of dopamine released, which blunts an individual's capacity for pleasure, and increases anxiety facilitating poor decision making [Ama93].

Short-term stress in this article is described as stimulation. Transient and moderate stress that leave individuals feeling good. The effect of short-term stress on the brain is the increased activity of the cells in the hippocampus, the region responsible for learning and memory. Another effect of the stimulation has increased the release of dopamine, the neurotransmitter central to pleasure, hence the feel good effect.

The hippocampus is a small region of the brain that is associated with learning, memory, and spatial navigation. It is placed in the middle of the temporal lobe just below the cortical surface. It is structured into two halves, lying on the right and left sides of the brain and has a curved shape. The hippocampus is associated with the formation of long-term memories and three-dimensional space navigation. The impairment of the region can cause

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memory loss. Hippocampal neurogenesis shows that production of new cells in the brain follows a procedure. During which, newborn cells have acquiesced to regulatory factors which influence cell proliferation, maturation, and survival. Situational and dispositional factors have the ability to control neurogenesis and impact on the hippocampal reliant learning and memory [Fre96].

Short-term stress is considered a stimulant to the hippocampal region, and the body responds instantly to the effect by releasing dopamine. Long-term stress, however, causes different effects on the brain, as it damages the hippocampal cells, by making them more vulnerable. The hippocampus is the point in the brain that differentiates the two.

Hippocampus

The brain is the central organ in the body and especially to stress and its adaptation. This is because it recognizes any possible threat and it determines the response of the body, effects of the risk can be fighting, anxiety, or vigilance. The brain also regulates behaviors that damage a person's health such as, smoking or bad eating habits. Regulation of hormones and their balance occurs in the brain and, therefore, affecting multiple body processes. Stress alters the functions of the brain, like hormonal control, which in turn interferes with the structure of neurons[Sap12].

Chronic stress, for instance, increases anxiety while decreasing recollection and cognitive brain flexibility. These alterations in the neuronal course can, however, be reversed in a normal functional brain. The social environment has a way of affecting an individual through the brain. Physical, behavioral, and mental disorders are some of the adverse effects of stress on a
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developing brain. Chronic stressors mentioned in the article are years of job insecurities and money worries [Sap12].

Consistency and the quality of parental care are necessary for successful mental and social development. Development of a young brain is dependent on stable maternal care. Genetic factors influence the outcome of good or bad maternal care. Individuals with less reactive alleles, better known as high-risk alleles can adapt quickly in stressful and comfortable environments.

References

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Fre96: , (Freund & Buzsaki, 1996),

Sap12: , (Sapolsky, 2012),

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