A Neural Perspective on the Role of Affective States on Individuals’ Selection of Foods  

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Abstract

This research makes an attempt to provide a better explanation of past findings which have often associated consumption of unhealthy foods with individuals’ state of sadness, and of healthy foods to their feelings of happiness. Also, this research draws on existing literature on the roles of various parts of the human brain, in particular, the frontal cortex to explain the role of additional information in influencing individuals’ subsequent choice.

Proposition 1: individuals in state of sadness are expected to make food choices that are high in sugar and/or fat to increase the level of dopamine released in their brain and change their affective state.

Proposition 2: individuals in state of happiness are expected to make food choices that are low in sugar and/or fat (healthy), since they do not demand change in their current state because of the already desirable level of dopamine released in their brains.

Methodology

INFORMATION PROCESSING

Self-control showed greater task performance than nontask group in the dorsolateral prefrontal cortex (PFC) on trials where self-control was exercised. 

Prefrontal Cortex and Dopamine

One effect of dopamine is to modulate the responsivity of PFC units to their input, allowing dopamine to gate inputs to PFC. Another effect of dopamine is to modulate the strength of the connection between these inputs and the dopamine neurons themselves, allowing the dopamine system to discover what information should trigger this gate, and thereby update the contents of active memory in PFC appropriately. 

Dopamine and Frontal Lobe

Dopamine is one of the catecholamine neurotransmitters, and the implicated dopaminergic cell groups project forward from the head of the midbrain to several forebrain.

Need for Change in Sad Individuals

It is not consistent with a common tendency among consumers to buy gifts for themselves when they are feeling depressed. Bruyneel et al (2005) found subjects induced with sad emotions were more interested in paying lottery tickets.

Dopamine and its Rewarding Role

Dopamine is a neurotransmitter commonly associated with the reward system of the brain, providing feelings of enjoyment and reinforcement.

Fat and Sugar, Dopamine’s Reinforcements

The dopamine system and its forebrain targets are part of the motivational system that regulates responses to many reinforcers. 

Fats and sugars could affect central reward systems. The ingestion of fats and sugar-palatable foods has been shown to cause an increase in dopamine release. 

Managerial Implication

Recent trends in public policy, particularly in Canada, have greatly reduced sugar consumption and/or fat consumption, as well as tobacco. The implications of this trend on individuals’ buy behavior should be public health concerns. 

Proposition 3a: Individuals in state of sadness are expected to make less conscious decisions regarding their food choices, as the result of low level of dopamine released in their brain which serves as the primary neurotransmitter in the Prefrontal Cortex.

Proposition 3b: Individuals in state of sadness are expected to demonstrate more change in food selection behavior from unhealthy choices to healthy ones when nutritional information is provided because of change in the level of consciousness in their selection.

Literature Review

Sadness

There are different kinds of negative emotions, and decision making can be different in each affect. 

Dopamine and Reward

Dopamine is a neurotransmitter that regulates responsiveness to many reinforcers.

References:


