Phobia and Phobic Memories: An Old Issue with a New Concept

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Abstract
This article is a short report on phobias and the recent study, which shows that phobias act as the memories in the brain, which can inherit from one generation to another generation to transfer experiences in the newly generation.

Phobia: An Overview
Phobia is a Greek word originated from Phobos, which means fear. A phobia is an irrational fear of a specific object, activity or situation that results in a compelling desire to avoid the dreaded object, activity or situation (1). Fear is sometimes a normal entity for example fear at a sudden sight on snake or wild animal etc. However, the fear in case of phobia is quite irrational. Even the person who is suffering from phobia of any kind understands that their phobia is irrational, but still they are not able to control their irrational fear at the sight of the object of their fear. Many phobias are developed by peoples during their childhood, however certain individuals develop different sort of phobias during their adult stage.

Phobia of every kind almost limit the productive life of an individual life up to a great extent. Even just imagining in their mind the object of fear arose an anxiety in phobic patients. However when they are actually exposed to the object of fear, the excessive fear and terror is automatic and overwhelming. The phobias are prevalent in the general population. The prevalence of different phobias varies from population to population or from country to country, which may be based on various environmental factors.

Phobia Types
The types of phobia are generally; social phobia or social anxiety disorder, specific phobia and agoraphobia. Some phobias are more prevalent when compared with others. The persons having social anxiety disorder generally fear from being at the public places, they are not able to eat or drink at public places. They are fearful of being seen by public while eating or drinking etc. which arose an extreme anxiety in them. Social phobia affects about 15 million American adults (2). Women and men are equally likely to develop the disorder (3). The life time prevalence of social phobia from national comorbidity survey was 13.3% (4).

The other types of phobias are specific phobics, in which the peoples fear from specific objects or specific situations. The peoples of this phobia generally fear from specific animals such as spider, cat, dogs, insects, blood, injection, etc. such types of phobias are also very distressed for the patients and limit their life up to great extent. Specific phobias affect an estimated 19.2 million adult Americans (2) and are twice as common in women as men (3). Our own study shows the high Blood injury Injection phobia prevalence of 17.78% in the general population (5). The life time prevalence of specific phobia was found to be 11.3% from national comorbidity survey in US (3).

Agoraphobia is the third type of phobia in which the persons fear from spaces or situations where they fear being alone and having no chance of escape. Peo-
ples with this phobia may avoid passing on through bridges, busy streets or in crowded stores. This phobia is so distressed with some peoples that they could not leave from home without accompanied by friend or family member. The lifetime prevalence estimates of agoraphobia are 6.7% from national comorbidity survey in US (2).

The experience of phobias is so dreadful, that every phobic patient renders to avoid the contact with their object of fear. Doing this can actually furnish them to lose many things during their life. For example, the patient of blood or injury phobia can avoid visiting hospital, even for more complicated health related problems, because he has the preoccupation of blood and injury related things in his mind, which are often present in hospitals. The patient having claustrophobia (phobia of closed spaces) can even turn down the lucrative job offer, as if his job office is being situated at a height, which needs an elevator to reach there. The patient having fear of eating in public because of social phobia avoids eating irrespective of how much hunger the person feels.

Phobias: An Earlier Understanding

Rachman in 1978 proposed that these phobias are mostly developed by three ways; classical conditioning, vicarious acquisition and informational/instructional acquisition (6). Vicarious fear acquisition is to develop fear learning by means of watching others reacting fearfully, for example learning of a child to fear any animal by watching their parent fearing the same animal. They proposed that fears and phobias are primarily due to learning experiences in the environment. That the young ones when they see the parents fearing any object, they learn it and later same type of phobias and fears are developed in them. This view dominated the understanding about phobias for much of the time until very recently there seems to be a major shift and the rise of new concept.

Phobias: A New Concept

It was a great challenge to understand the reality of phobias and how they inherit from parents to offsprings. However the recent research sheds light into new understanding about the mechanism of phobias development. The recent research shows that phobic memories can be passed down to later generations through genetic switches that allow offsprings to inherit the experiences from their ancestors (7). In this study, the scientists train the mice to fear the smell of cherry blossom and then allow to bred. They found the subsequent generations have developed the same type of fear and the offspring showed fearful response to the odor of the cherry blossom compared to a neutral odor. This study also helps in understanding that the experiences can be passed to subsequent generations as memories even before conception.

This recent break through research shows how phobias, which have limited the life of millions of people, can be transferred from generation to generation. It also supports the view that humans can pass onto subsequent generations certain useful traits through memories. Such inheritance of memories can help in increasing survival chances, by making the life better through experiences, which can be in the form of methyl epimarks on the DNA. On the basis of inheritance of such traits from one to next generation, it is presumed that such changes and passing of memories and experiences can have shaped the course of large communities in the past. The inhabitants of the past would preferably have lived in large groups rather than individuals, which have played a role in inheriting these traits in large communities. Such changes must have acted as cumulative memories or experiences, which well have helped the later generations to benefit from the environment during their early stages. These types of inheritance of characters through memories may have helped the young ones when they have not conscious experiences about their environment. It is also pretended that earlier cumulative experiences in the societies might have transferred phobic memories to the further generations (8).

The recent study published in nature neuroscience (7) shows that the inheritance occurs through chemical changes in DNA or the epigenetic methylation changes. As epigenetic alterations are reversible, the challenging task in this area of research is now to find and work out how the reversal of such phobic memories can be possible. Any advancement in this area of research can give respite to millions of peoples suffering from phobia around the world.

Having phobic experiences through the process of DNA methylation, there is little hope as because it can be reversed. The central question however is how the researchers approach that question. As attempting to target the reversing of DNA methylation could also
bear a potential risk. Research moves like reversing the epigenetic alteration like DNA methyl epimarks can also be a risky process as argued by Wani and Ara (9). However it is hoped that the future research in this area can make progress and figure out the possible solutions for the treatment of phobias and help millions of peoples around the world to live a normal and productive life.

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