

Visual Circuit for Facial Recognition: Neural Structural Connectivity Analysis for Prosopagnosia

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Abstract

Background: Prosopagnosia, also called face blindness, is a cognitive disorder of face perception in which the ability to recognize familiar faces, including one's own face (self-recognition), is impaired, while other aspects of visual processing (e.g., object discrimination) and intellectual functioning (e.g., decision making) remain intact. The term prosopagnosia comes from the Greek word for "face" and "lack of knowledge". The term originally referred to a condition following acute brain damage (acquired prosopagnosia), but a congenital or developmental form of the disorder also exists, which may affect up to 2.5% of the United States population.

Objective: To aware the society about prosopagnosia, depending upon the degree of impairment, the inability to recognize faces previously known, while still remaining the ability to correctly identifying other objects from the surroundings. This dysfunction can affect face recognition of family members or even their own face and voice. Prosopagnosia is not related to memory dysfunction, memory loss, impaired vision, or learning disabilities. This review explains the clinical neuropsychological studies that have indicated the recognition of a person's identity and recognition of facial expression are processed by different cortical and subcortical areas of the brain. The fusiform gyrus, especially the right fusiform gyrus, plays an important role in the recognition of identity. The superior temporal sulcus, amygdala, and medial frontal cortex play important role in facial expression recognition. Both facial expression recognition and facial-recognition are highly intellectual processes that involve several region of the brain.

Method: We searched from various articles related to prosopagnosia on google scholar and PubMed and consumed the information in our objective.

Result: Prosopagnosia is a cognitive disorder of face perception in which the ability to recognize familiar faces, including one's own face (self-recognition), is impaired, while other aspects of visual processing (e.g., object discrimination) and intellectual functioning (e.g., decision making) remain intact.

Conclusion: In this article, we are concluding that, the prosopagnosia is a rare neurological disorder found in human. However, the condition has a much greater impact on daily functioning. Some people avoid social interaction, experience problems with interpersonal relationships or damage to their career and even report episodes of depression. In extreme case, people with prosopagnosia develop social anxiety disorder, characterized by fear and avoidance of social situations that may cause embarrassment.

Keywords: Cognitive disorder, Face blindness, depression, anxiety disorder, social disability.