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The Role of the Thalamus's Magnocellular and Parvocellular Cells in Dyslexia and Other Learning Disabilities

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Dyslexia and other learning disabilities can be neurologically explained by dysfunction of magnocellular and parvocellular cells in the Lateral Geniculate Nucleus (LGN) of the thalamus. The LGN is located on the dorsolateral aspect of the thalamus and resembles an asymmetric cone, the rounded apex of which is oriented laterally. The LGN consists of three types of layers which are different in size: Magnocellular layers with large-sized cells, Parvocellular layers with medium-sized cells and koniocellular layers with small-sized cells. The total numbers of magnocellular and parvocellular layers are six ones. The current study seeks to examine the relationship between the role of these Thalamus's cells and in the causation of dyslexia and other learning disabilities using the brain imaging techniques such as: Positron Emission Tomography (PET) and Magnetic Resonance Image- Tesla-3- (MRI) of a sample of individuals with dyslexia and severe reading difficulties. This sample will be chosen from Omani children who are attending Irlen's clinic and those who are enrolled in resource rooms in elementary (basic) schools in the Sultanate of Oman. Collected data will be analyzed according to some inferential statistics methods.

Keywords: Dyslexia, Learning Disabilities, Magnocellular Cells, Magnetic Resonance Image- Tesla-3- (MRI), Parvocellular cells, Positron Emission Tomography (PET), Thalamus

Biography:

Bakkar S. Bakkar had received the degree of Bachelor in counseling and mental health from the University of Jordan – Amman-Jordan-in 1991 and the degree of Master in counseling from the University of Jordan – Amman-Jordan-in 1994 and the degree of Doctor of Philosophy (Ph.D.) in counseling from University of Jordan – Amman-Jordan-in 2006. He worked as a full-time lecturer at the department of educational psychology and college of Queen Rania of childhood at the Hashemite University – Jordan, from 1999-2008. He has been working as an associate professor of counseling and psychology at the department of psychology at Sultan Qaboos University from 2008 until now. His great scholarly interest mainly focuses on Psychoneurology, Neuroscience, Biological and physiological psychology, Counseling and psychotherapy, Neuro-cognitive psychology, Abnormal psychology and Clinical psychology, Neuro-Psychiatry and psychotherapy.