INTRODUCTION TO NEUROLINGUITICS AND LINGUISTIC APHASIOLOGY

Abstract

Neuroscience is the scientific study involving the nervous system in terms of its function and related disorders, documented by neuroscientists. Neurolinguistic is considered as a smaller part of cognitive neuroscience where the neurolinguist studies the role of brain in the representation and utilization of language acquisition, and process of language development throughout human life.

There are several different views and theories from various researchers and Neurolinguists regarding the relationship between brain and language as well as how the brain is affected by diseases impacting language disorders are the concomitant of brain damage. Hence, aphasiology and linguistic aphasiology are taken into consideration as the dominant branches of neurolinguistics.

Keywords: aphasia, acquired language disorder, brain damage agrammatism, anomia.

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I. INTRODUCTION

1. **What is Neuroscience and Neurolinguistics:** The scientific study and documentation of the nervous system (i.e., central, and peripheral nervous system), its functions and disorders, give rise to neuroscience. Neurolinguistic is a smaller branch of a larger domain, that is neuroscience.

   Neuroscience is considered as a multidisciplinary science which prioritise on understanding the origin and developing properties of brain cells or neurons, glia and neural circuits by combining cellular, functional, evolutionary, computational, molecular and medical aspects of the nervous system. [1]

   Neuroscientists have broadly categorized neuroscience into various disciplines based on the research areas and subjects of their studies, amongst which cognitive neuroscience is well versed with neurolinguistic and psycholinguistic.

   Neurolinguistics is a branch of cognitive neuroscience, along with different fields such as systemic, movement, sensory, cellular and others. The flowchart representing the branches of neuroscience in figure 1.1.

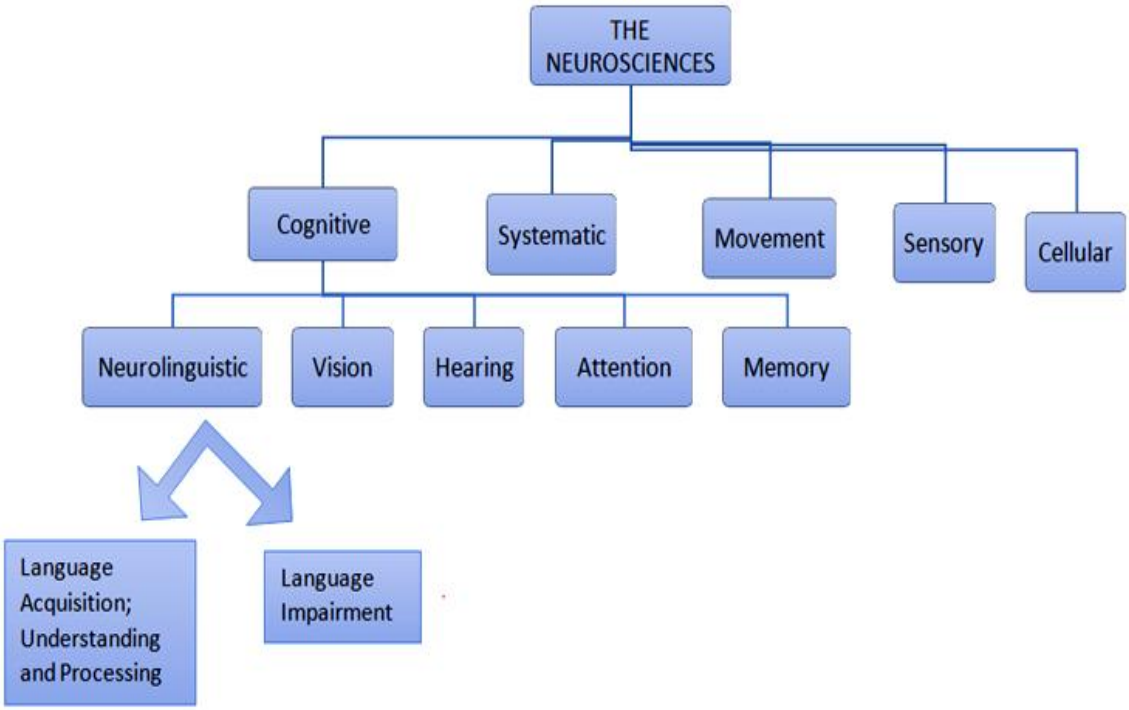

Figure 1

2. **Other Explanations of Neurolinguistic includes:** Neurolinguistics apprehends the role of brain in the representation and utilization of language; acquisition, and process of language development throughout human life as well as how the brain is affected by diseases impacting language disorders and whether and how it can be compared to analogous processes in non-human species.

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Neurolinguistics is the investigation of how various areas in brain represent the language: that is, which parts and areas of human brain act as the storehouse to store the knowledge of the language (or languages) used for comprehension and expression via speaking, reading, and writing. It also emphasises on what happens in brains after acquiring the knowledge and using it in day to day lives.

Neurolinguistics studies the relationship between language and communication with respect to countenance of brain function, in a way of explanation, it tries to analyse and review that how the brain is responsible for comprehension and expression of language and communication. Hence, it is also considered as a combination of theories of neuroscience (i.e., structure and function of brain) and linguistic (structure and function of language).

In neurolinguistics, other than neuroscience and linguistic, psychology is considered to be one of the pivots disciplinary sources. Psycholinguistic portrays the indispensable steps of language processing enjoined for understanding and verbal expressing of words and sentences as well as disordered speech, language, and reading. It prioritises more learning followed by languages. Both neurolinguistics and psycholinguistics are deeply entwined, however neurolinguistics more emphasises on studies of the brain structure and functions.

3. **What are acknowledged by Neurolinguists:** There are evidence which addresses the main question of interest for neurolinguistics in very far back in history.

In 1960s, Chomsky's influence boosted the psycholinguistics and linguistics to establish the "Neurolinguistics" in the field.

A neurolinguist can acknowledge various important questions related to language and human brain via various neurolinguistic theories and studies. The list can grow out of answers to questions such as:

- How languages form in human brain or mind?
- Why does human communication system is elaborative and unique from other living beings?
- Is it true that human brain uses the similar pattern of neural computation and processing for language as for other cognitive systems, such as music, painting or mathematical problem solving?
- Where are the words or lexicons are stored in the human brain, that one has learned or acquired? Which brain areas are responsible for understanding and expressing the language?
- In case of bilinguals or multilinguals, how one switches between two languages and keep them from interfering with each other?
- How and why, a human brain varies in case of bilingualism or multilingualism and mono/single language users?
- Whether the left hemisphere of the human brain is always dominant and considered as the language side?
- Before expressing verbally, reading, or writing; how a word appears in the human mind, although sometimes, it does not come at all.

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- How artificial intelligence and computer is responsible for synthesizing the language development, processing, and its disorder?
- In order to test the models and hypotheses explaining language processing, what type of experiments can be carried out?

4. **Relationship of Neurolinguistic with Brain, Language and Neurological Language Disorders:** Neurolinguistic deals with the relationship between brain and language holding several views and theories from different researchers.

The neurolinguistic theory, commonly concerns research with the research and studies investigating the correlation allying by brain damage and its effects on language and overall communication system.

For instance, after stroke or any other brain injury, if one loses the ability to talk or to read, how well can one re learn or acquire the lost ability to talk again and what will be the duration for achieving such? These questions are answered through linguistic aphasiology.

Linguistic aphasiology is the subjective matter of neurological language disorder. The study of acquired language disorders considered to be the answer of final set of questions that are central to neurolinguistics. Aphasias- are neurological language disorders caused by brain injury or effect of damage on the cortical and subcortical parts of language dominant area of the human brain, have been scientifically investigated by various neurologist and neurolinguists.

Study of neurological language disorders in consequences to brain injury is termed as aphasiology where as while analysing the impaired linguistic components in aphasics is considered as linguistic aphasiology.

Aphasiology and linguistic aphasiology were taken into consideration as the dominant branches of neurolinguistic which was into investigation before 19^{th} century and came into picture by two eminent neurologists, Paul Broca and Carl Wernicke via their postulated and models.

5. **Relation between Linguistic and Aphasiology:** Research on aphasia was one of the long-established custom of neurologists, however, the psychologists and philosophers had an inextricably interest in the same.

Studies and research related to establishment of concrete information and understanding the relationship between brain and normal speech and language, the term neurolinguistics was embellished, edited, and eventually adopted.

The term neurolinguistics was embellished, edited and eventually adopted after the studies and research had corroborated the establishment of concrete information and understanding of the brain, its relationship with normal speech and language development and its disorders.

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