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The Origin of The Age Factor; The Critical Period Hypothesis in First Language

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Introduction

A long discussion has been carried out for decades whether to ask age affects language acquisition. There are various studies to investigate the age issue both in the fields of first and second language acquisition. This paper aims to go back its origin where such age concepts derived from. The main focus will be an oft-cited theory of the Critical Period Hypothesis (CPH), which was proposed by Lenneberg in 1967. The process how he reached the theory is going to be explained referring to the research evidence of Lorenz (1958) and others such as neuropsychology.

The Critical Period Hypothesis

It was Lenneberg (1967) who proposed the Critical Period Hypothesis, suggesting that there is a period of time when language learning is more successful than at any other time in one's life. The notion derives from biological evidence which was proposed by Lorenz (1958), using the example of new born goslings becoming irreversibly attached to the first moving object they see after their hatching, which is normally a mother bird. However if the goslings are deliberately shown other objects such as an imitation of a mother bird or other movable objects, they will follow them instead. Lorenz (1958) reports this tendency in other species of animals such as fish, birds, insects and some mammals, and claims that there is a limited time period during which a particular activity of competency should be acquired, and once this time period is over, the organism will not allow the activity or competency to be acquired.

Based on neurophysiological evidence from studies of aphasia, Lenneberg cites the language development of aphasic children as evidence for a biologically based critical period for language acquisition between 'the ages of two and thirteen years'. The beginning of this innately predetermined period is limited by cerebral immaturity while its close is related to 'a loss of adaptability and inability for re-organisation in the brain...'. Lenneberg points out that, 'Similar infantile plasticity with eventual irreversible topographical representation in the brain has been demonstrated for many mammals' (Lenneberg, 1967: 179). His Critical Period Hypothesis is compatible with the 1960s version of the transformational-generative theory of language acquisition, which stresses the richness and uniqueness of an innate language faculty, distinct from other cognitive abilities and rapidly activated by children, who in a wide variety of environments and despite often inadequate samples of language performance to go on, soon acquire basic linguistic competence in their first language (Chomsky, 1965; McNeill, 1965).

Along similar lines to Penfield, (see the discussion in an earlier section) Lenneberg links the close of the critical period to the completion of cerebral lateralization of language function (ordinarily the left hemisphere), which takes place at puberty. Lateralization is determined mainly on the basis of differential recovery patterns from right and left hemisphere lesions at different ages. Up to the age of two, it is argued on the basis of evidence from studies of aphasia, that the two hemispheres are equipotential for language, but lateralization of language function develops progressively in childhood until it is complete at puberty.

He presents further evidence for his argument based on his observations of deaf children. He claims that whereas 'children deafened before completion of the second year do not have any facilitation in comparison with the congenitally deaf', those who lose their hearing after having been exposed (even for a short time) to the experience of language subsequent to this point 'can be trained much more easily in all the language arts' (Lenneberg, 1965, p.155). He interprets this as an indication that the critical period is to be seen as beginning at around the age of 2 years, seeing the end of the critical period as coming at the age of 13. It should be noted that he only considers the two-word stage as

a beginning of speech, and prior stages such as cooing, babbling and the one-word stage are disregarded. Most importantly, his argument gives the impression that a language is suddenly switched on around the age of 2 years.

Though Lenneberg was mainly concerned with primary language acquisition, he also made several claims about second language acquisition. Recognising that an adult is capable of learning to communicate in a foreign language, he argues that this does not upset the basic hypothesis of a critical period 'because we may assume that the cerebral organization for language learning as such has taken place during childhood, and since natural languages tend to resemble one another in many fundamental respects..., the matrix for language skills is present' (Lenneberg, 1967: 176). However, one implication of the Critical Period Hypothesis, deriving from biology, is that while acquisition of a behaviour outside the period in which it normally occurs is not impossible, it will proceed by a different route and will generally be less successful and less 'natural' (see discussion in Krashen, 1975). Thus Lenneberg claims that 'automatic acquisition from mere exposure' to an L2 'seems to disappear' after puberty and 'foreign languages have to be taught and learned through a conscious and laboured effort' (Lenneberg, 1967: 176). In addition, he observes that 'the incidence of "language-learning-blocks" rapidly increases after puberty' and that foreign accents cannot easily be overcome' (Lenneberg, 1967: 176). At age 11 to 14, 'foreign accents emerge', while from 'mid-teens to senior'...'acquisition of second languages becomes increasingly difficult' (Lenneberg, 1967: 248).

Lenneberg (1967) argues that this period was equated with that taken for the completion of lateralization of the language function to the left side of the brain. He refers to work on children and adults who had experienced brain injuries or operations to back up his Critical Period Hypothesis. He argues that those who had damage to the left hemisphere suffered few speech disorders and rapidly recovered if they were children but not adults.

Lenneberg's Critical Period Hypothesis provided a good starting point for researching the age factor. However the question still remains: when exactly is the critical period for a second language learning, or does it really exist?

At the end of this section the terms 'optimal period' and 'sensitive period' are mentioned briefly since these are alternative terms for the same or similar phenomena. Bialystok (1997) claims that 'optimal age is interpreted as evidence for a critical or sensitive period...' (Bialystok, 1997, 116). Patkowski (1994) uses the terms 'optimal' 'sensitive' and 'critical' interchangeably. *The Oxford English dictionary* (Allen, 1990) defines 'optimal' as 'set or most favourable, especially under a particular set of circumstances', 'sensitive' as 'very open to or acutely affected by external stimuli', 'critical' as 'decisive, crucial'. It seems that although the difference between 'optimal' and 'critical' is the most marked, 'sensitive' appears to fall on the side of 'critical' in its deterministic implications. Therefore in this paper the term 'critical period' is used in order to avoid any confusion.

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