

Major Models of First Language Acquisition

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Abstract – This study aims to investigate the theoretical underpinnings of First Language (L1) acquisition and the ideological differences laden in discourse in order to give a consciousness-raising about the power of L1 in changing one's view about the events, the people and the world around us. To this purpose, after providing a historical background of L1 acquisition, different views regarding the tenets of L1 acquisition are presented. In addition, a review of the related literature about major L1 acquisition scholars, their works and contributions to L1 are provided.

Keywords: First language acquisition, L1, theoretical perspectives

1. INTRODUCTION

Initial first language acquisition approaches, theories, and hypotheses that focused on how we acquire a first language were based on how we learned our first language. Three traditional approaches of behaviorism, nativist, and the cognitive-constructivism perspectives are discussed here.

2. BEHAVIORIST APPROACH

Behaviorists believe that language acquisition is mostly learned through imitation. A person first learns to comprehend a speech pattern by responding in a suitable manner and then, firstly, by that pattern being reinforced (rewarded) (Brown, 2000). According to Watson (1913, as cited in Brown, 2000), behavior could be explained in terms of observable acts that could be described by stimulus-response sequences. In this way, language is acquired according to the general laws of learning and is similar to any other learned behavior. The basis of this theory is the analyses of human behavior in terms of observable stimulus-response interaction and the association. Generally, "the behaviorist theory of stimulus-response learning, particularly as developed in the operant conditioning model of Skinner, considers all learning to be the establishment of habits as a result of reinforcement and reward" (Rivers, 1968, p. 73). Therefore, children acquire their first language habits by the use of varied babblings which are similar to the words uttered by a person around them. Because the children are rewarded for babblings and mutterings, more production of similar type into combination of syllables and words in the same conditions are reinforced. Thus, they continue producing sounds, clusters of sounds, and they merge the utterances by analogy and generalizations as time passes. Then, babblings and mutterings develop into socialized speech but gradually they are internalized as implicit speech, and thus many of their sentences get close to the adults.

According to Rivers (1968) in the process of trial-and-error, in which satisfactory utterances are reinforced by understanding and agreement, and inaccurate utterances are

rejected by the lack of reward, children progressively discover to make better discriminations until their production approximates the speech of the adults. Thus, behaviorist theory has the view that human learning is the same as animal learning in the process of habit formation. According to this view, an extremely complex learning task by being broken down into minute habits could be acquired (Hubbard & Thomson, 1983). In this view, language development is an issue of conditioning via practice, imitation, reinforcement, and habituation, which represent the paces of language acquisition. It should be noted that all theories of leaning in the school of behaviorism are associationistic, like Thorndike's, Guthrie's, Hull's, Skinner's, and the theory of the school of functionalism, traditional behaviorist language learning methods center on procedures that “use repetition to reinforce habit because only those patterns reinforced by the community of language users will persist” (Hadley, 2001, p. 56).

3. NATIVIST APPROACH

Noam Chomsky proposed a nativist theory, in which children are biologically programmed for language, just as they are for functions such as learning to walk. Their built-in ability enables them to become competent language users regardless of their learning environment. Chomsky referred to this innate knowledge or “little black box” as the Language Acquisition Device (LAD) (Brown, 2000, p. 24). The LAD contains the universal principles of all languages and helps to keep the child on track instead of confused by all the complex rules of the language. Language samples set off the LAD (Lightbown & Spada, 2006, p. 16). Chomsky states that all human beings have a biologically controlled LAD that allows children to develop, use, and understand language. This portends the idea of Universal Grammar (UG), which advocates that human beings are genetically equipped with the capability that allows them to acquire language (Brown, 2000).

LAD and UG are directly related to the Critical Period Hypothesis (CPH) that suggests there is a critical period for language learning before ‘fossilization’ or lower learning ability sets in. Krashen, Long and Scarcella (1979) essentially believed the same and suggested through their work that the earlier first language acquisition is begun, the better it is for the learner. Nativists believe children are actively generating and testing hypothetical grammars in their minds and, through inference and practice, children learn to use and understand a language. This is one of the major differences between behaviorist and nativist approaches since they believe humans have the cognitive ability to learn language and not just form patterns of recognition. In other words, the process of learning a language is completely different for nativists since they believe that language learning is more unconscious than conscious. For this reason nativist ideas have led many more psychological theories and hypothesis, both conscious and unconscious positions, on the nature of language and language learning. Generally, nativists believe that most important learning is developed inside the mind, realizing that learning can be improved or made worse by aspects of learning that occur in the environment outside the mind.

4. CONNECTIONIST APPROACH

Connectionists are opposed to the LAD hypothesis. They credit the environment and input more than the child’s innate ability, and assert that what is inherent is merely the capability to learn. By having a countless number of exposures to the target language, children eventually

amass a solid comprehension. Children develop strong neural connections from hearing the language in specific contexts repeatedly (Lightbown & Spada, 1999).

The key component of the connectionist approach is to develop computational simulations of key phenomena. It allows children to make explicit assumptions about the nature of the processes and representations of interest. Implementing these into a model then provides an explicit test of these assumptions, as well as a way to test hypotheses about them. In addition, the results of models provide new hypotheses that can be tested empirically in humans (Joanisse & McClelland, 2015).

Processing is carried out by a number of processing elements. These elements, called nodes or units, have a dynamics that is roughly analogous to simple neurons. Each node receives input (which may be excitatory or inhibitory) from some number of other nodes, responds to that input according to a simple activation function, and in turn excites or inhibits other nodes to which it is connected. Details vary across models, but most adhere to this general scheme. Figure 1 shows a connectionist network.

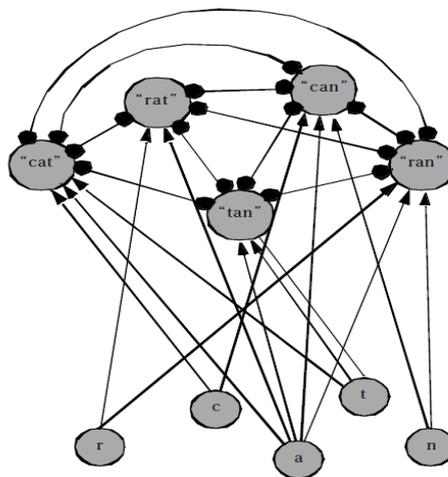


Figure 1: A Connectionist Network

Connectionist models include a number of simplifying assumptions that take away from actual brains in some important ways; specifically, they tend to contain many fewer processing units than what one finds in the brain. In addition, these models are made up of artificial neurons that represent rates of neural firing as static activation levels, which change in response to inputs from the environment and from other units. Finally, the learning mechanisms tend to be computationally simpler than those that we know govern actual learning in neurons. The purpose of these simplifying assumptions is to create models that capture the assumptions laid out above, while keeping the model sufficiently simple so as to be implemented within a computer program (Joanisse & McClelland, 2015).

5. CONSTRUCTIVIST APPROACH

New developments in the field of humanistic psychology and linguistic theory led to a totally different view of language acquisition. Constructivism, as a psychological theory, stems from the field of cognitive science, particularly the later work of Jean Piaget just prior to his death

in 1980, the socio-historical work of Lev Vygotsky and his followers, and the work of Jerome Bruner, Howard Gardner, and Nelson Goodman, among others who have studied the role of representation in learning. Constructivism is essentially a non-positivist theory and it stands on completely new ground, often in direct opposition to both behaviorism and maturationism. In this theory, cognitive development and deep understanding are the focus and the stages of maturation are known as constructions of active learner reorganization. First language learning is not viewed as a linear process; it is understood as complex and fundamentally nonlinear in nature.

In Vygotsky's social constructivism, imitation, as mere automatic, mindless copying of others' intellectual actions is rejected in favor of a definition of imitative activity as intentional, goal-directed, transformative behavior resulting in new development levels (Vygotsky, 1998). Rather than viewing imitation as mere automatic, mechanical copying or repetition of model behavior, social constructivism conceives imitation as transformative activity involving a learner's intelligent, intentional, and creative reproduction of someone else's mental operations (Vygotsky, 1998). Social constructivism proposes that humans attain the capacity to voluntarily control or regulate their memory, attention, perception, planning, learning, as they are brought to culturally specified and organized activities (Lantolf, 2005). In addition, social constructivism is in fact a theory of mind, which recognizes the essential role of social relationships and culturally constructed artifacts in shaping the unique way of humans' thinking; it is not the theory of social or cultural facets of humans' lives (Lantolf & Thorne, 2007). In this study, learners were engaged in social interaction with each other to improve their essay writing skill. They were asked to negotiate their thoughts and ideas in a social context where they were located with the other peers.

As it is stated above, the child's intelligence, intention, and creativity are the cornerstones of Vygotsky's social constructivism. Thus, by engaging children's intention and drawing their conscious attention to the process of imitation, it is hoped that learners begin to consciously imitate those steps which make a writer a successful and efficient one.

Larsen-Freeman and Long (1991) made the shift from focusing on external factors to internal ones. Researchers' attention was shifted from the teaching process to the learning process. The rise of cognitive views to learning introduced the concept of the learning as a constructive process in which the learner is an active participant not a passive receptacle (Schallert & Martin, 2003). In linguistics, Chomsky argued that humans are endowed with a language faculty that allows them to form the rules of the languages from the input to which they are exposed. Later on, humans use these new rules to comprehend and produce new utterances that they may have never heard before (Larsen-Freeman & Long, 1991). Chomsky's ideas were supported in child language acquisition where children were found to produce errors they would have never heard. Similar findings were observed in first language acquisition, which has led to a new perspective in researching first language acquisition.

These developments, in psychology and linguistics, led first language acquisition researchers to think of language learning as rule-formation instead of the behavioristic habit formation view. The new argument in first language acquisition was that learners' language proceeds in a systemic and rule governed manner. Thus, as we can see with the advent of new developments in other fields, first language acquisition research tries to adapt to better understand the internal nature of first language learning.

6. ORDER OF ACQUISITION STUDIES

First language acquisition investigations have implied that the systematic process of language acquisition is internally ordered (Wode, 1978; Sanz, 2005). The order of acquisition studies deal with the acquisition of target language features one after another in a relatively fixed and possibly universal order (Ellis, 2008). A large number of longitudinal studies were done in 1970s to discover the acquisition order of first and first language grammatical morphemes. The research in this tradition tried to establish definite continuum for the acquisition order of grammatical morphemes (Mansouri, 2008). These studies follow the empiricist as well as linguistic nativist theories of language. The sequence of first language development reflects the potentiality of learners' biological processing and neural development (Ellis & Laporte, 1997, as cited in Goldschneider & DeKeyser, 2005).

Before 1960s, the structuralists believed in the existence of a difference between the structural systems of first and first language. In their view, this difference was the source of problems in learning first language. Therefore, Contrastive Analysis Hypothesis was proposed to predict the potential problems of learners as a result of confliction between the first and first language (Richards & Rodgers, 2001). With the emergence of mentalists, the view toward first language acquisition was changed. Corder (1981) posed that it is natural one thinks about the same cognitive processes behind first and first language acquisition.

Brown (1973, as cited in Krashen, 1981) was the pioneer of researchers in investigating the order of language acquisition. As a first attempt he wanted to find out the general path for the acquisition of first language grammatical morphemes in three American children. He selected grammatical morphemes since they seemed to be more quantifiable. The study was divided into Stages I and II, based on Mean Length Utterance (MLU). MLU means how many morphemes are said per turn at talk. During Stage I, content words were most frequent words in the children's speech and very few function words were observed. Stage II focused on morphemes and determining their acquisition order. The obligatory context was used to measure whether a morpheme is acquired or not. Obligatory context is a kind of test item which the subject may pass it by providing the required morpheme or may fail it by providing no morpheme or one that is incorrect (Brown, 1973, as cited in Krashen, 1981). There were two scores regarding the obligatory: when the morpheme was correctly supplied one point was assigned, and when no morpheme or an incorrect morpheme was supplied zero point was given.

If a morpheme was present in 90% or more of its obligatory occasions in three consecutive data-collection sessions, then it would be considered that the morpheme is acquired. Then, the order in which the morphemes were acquired by each child was analyzed in a way that there are several variables that could affect the acquisition order such as; the frequency of morpheme in parent's speech, the child's age, the child's rate of morpheme acquisition, and the grammatical/semantic complexity of the morphemes themselves. He also found that the order in which each morpheme was acquired was significantly stable (see Figure 2). These findings were highly affected the studies first language acquisition. Brown (1973, as cited in Krashen, 1981) concluded that the morphemes were required in order of syntactic and semantic complexity.

English L1	Morpheme	Example	English L2
1	Progressive <i>-ing</i>	He is talking.	3
2	Plural <i>-s</i>	There are two cats.	4
3	Past irregular	We ate.	7
4	Possessive <i>-s</i>	The child's toy	8
5	Articles <i>a/the</i>	The cat/A sunny day	1
6	Past regular <i>-ed</i>	They talked.	6
7	Third person <i>-s</i>	He sings.	9
8	Copula <i>be</i>	He's tall.	2
9	Auxiliary <i>be</i>	She's singing.	5

Figure 2: The order of morpheme acquisition in first language (Brown, 1973)

A cross-sectional study by deVilliers and deVilliers (1973, as cited in Larsen Freeman, 1975) was done on 21 English-speaking children, and the results were highly correlated with those of Brown's (1973).

With regard to the above-mentioned approaches to first language acquisition, two important camps, i.e., innatist and developmental theories were identified. Statistical language learning is located between these two extremes with a tendency toward nativism. On the innatist end of the continuum, statistical language learning proponents persist that human mind has the potential, natural ability of detecting and acquiring computational and patterned data. Advocates of statistical language learning argue in favor of innately based statistical learning mechanisms. On the learning and developmental end of the first language acquisition continuum, statistical language learning believes that all human languages have statistical and computational features and that learners must be exposed to this input in order to observe those regularities and acquire them.

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