

Ambiguity in Foreign Language Acquisition and Role of Language Aptitude

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Abstract: The purpose of this article is to provide an overview of cognitive theories important for foreign language acquisition and to emphasize the role of language aptitude for foreign language comprehension. Language comprehension is a specific example of the perceptual processes, and the same principles that emerge in perception also play important role in language. Ambiguity resolution is a key component of language comprehension, and it is similar to ambiguity in perceptual processes. According to CANAL-FT cognitive theory of foreign language acquisition, one of the central abilities required for foreign language acquisition is the ability to cope with novelty and ambiguity. This ability will be explained as a part of the experiential aspect of intelligence, based on Sternberg's triarchic theory of human intelligence. Novel tasks or situations serve as good measures of intellectual ability and more intelligent individuals move from consciously learning in a novel situation to automating the new learning. Applied to classroom environment, this theory predicts that language aptitude is kind of information processing and developing expertise, rather than an entity fixed at birth. Language aptitude training should increase language performance and lead to ambiguity resolution.

Key Words: language acquisition, ambiguity resolution, CANAL-FT, triarchic theory, language aptitude training

Introduction

The purpose of this article is to provide an overview of cognitive theories important for foreign language acquisition and to emphasize the role of language aptitude for foreign language comprehension. Also, the purpose and importance of statistical language mechanisms will be considered through analysis of contemporary researches. Language comprehension is a specific example of the perceptual processes, and the same principles that emerge in perception also play important role in language.

Ambiguity resolution is a key component of language comprehension, and it is similar to ambiguity in perceptual processes. According to CANAL-FT cognitive theory of foreign language acquisition, one of the central abilities required for foreign language acquisition is the ability to cope with novelty and ambiguity. This ability will be explained as a part of the experiential aspect of intelligence, based on Sternberg's triarchic theory of human intelligence. Novel tasks or situations serve as good measures of intellectual ability and more intelligent individuals move from consciously learning in a novel situation to automating the new learning. Applied to classroom environment, this theory predicts that language aptitude is kind of information processing and developing expertise, rather than an entity fixed at birth. Language aptitude training should increase language performance and lead to ambiguity resolution.

The constrained statistical learning framework suggests that learning is central to language acquisition, and that the specific nature of language learning explains similarities across languages. The crucial point is that learning is constrained and learners are not open-minded, and calculate some statistics more readily than others. Human learning mechanisms, such as statistical mechanisms, may themselves have played a prominent role in shaping the structure of human languages.

Method of the Study

This study is designed in qualitative research approach in which literature review method has been chosen. The main reason why this method has been chosen is that the overview of contemporary theories should be provided as well as the results of recent researches on language acquisition. Moreover, this study does not

attempt to generalize the results but aims to obtain deeper understanding of cognitive theories of foreign language acquisition and its application to classroom environment.

Findings and Discussion

Language Comprehension as Perceptual Process

According to Galasso, acquisition is a sub-conscious process identical in all important ways to the process children use in acquiring their first language, while Learning is a conscious process that results in knowing about language (Galasso, 2002). The theories regarding second language acquisition are quite debatable, especially because of the distinction that has been drawn by Stephen Krashen in respect to the difference between second language *acquisition* and *learning* (Krashen, 1982). Thus, second language acquisition is the process by which children unconsciously acquire their native language, while learning stands for the “conscious knowledge of a second language, knowing the rules, being aware of them and being able to talk about them” (Krashen, 1982, 69).

First theory about second language learning states that the principles of the Universal Grammar count only during the critical period, after which other learning mechanisms, not specific to first language acquisition, operate in the process of second language learning (Krashen, 1982).

A second theory proposes that second language is acquired on the same universal innate principles that govern first language acquisition, which is why we may find the same stages of development, although the second language grammar is not completely acquired due to nonlinguistic factors that influence it (Krashen, 1982).

Language comprehension is a specific case of perceptual processes, since the similar stages that occur in perception also occur in language. Perceptual system resolves the ambiguities inherent in a two-dimensional representation by making assumption about the way objects in the world usually look (Willingham, 2007, 68). Top-down and bottom-up processes, present in perception, also play a certain role in language processing. Also, McGurk's effect, as well as categorical perceptions demonstrates connection between perceptual and language processing.

McGurk effect is showing that both visual and auditory information are used in phoneme perception, whilst categorical perception refers to the fact that people do not perceive slight variations in how phonemes are pronounced (Willingham, 2007, 507). Phonemes can vary along certain dimensions with no costs in their perceivability.

Given the close relationship between second language acquisition and other areas of inquiry, there are numerous approaches from which to examine second language data, each of which brings to the study of second language acquisition its own goals, its own data-collection methods, and its own analytic tools (Gass, 1994). Therefore, second language acquisition is truly an interdisciplinary field.

Ambiguity Resolution and CANAL-FT

Since psychologists have observed that people vary in their ability to learn foreign language, they have tried to formulate theories and design tests of foreign language learning abilities (Grigorenko et al, 2000). Tests can help psychologists and educators know to whom to devote what levels and what kinds of resources, be able to predict success in language learning instruction, and be able to compare actual achievement with the achievement one might expect on the basis of foreign language learning ability (Grigorenko et al, 2000).

There are several tests that are used to measure foreign language learning ability:

- Modern Language Aptitude Test (MLAT; Carroll & Sapon, 1958) – measures phonetic coding ability, grammatical sensitivity, memory, and inductive language learning;
- Pimsleur Language Aptitude Battery (PLAB, Pimsleur, 1966) – measures the ability to infer language structure from artificial language stimuli;
- Army Language Aptitude Test (ALAT, Horne, 1971) – predicts learner success, particularly in learning to speak and read Western Indo-European languages;
- Defense Language Aptitude Battery (DLAB, Petersen & Al-Haik, 1976) - measures the ability to infer language structure from artificial language stimuli;

- VORD (Parry & Child, 1990) – tests the ability to cope with grammar systems similar to that of Turkic languages.

These tests have been generally effective in predicting foreign language abilities and success. But, when foreign language aptitude and intelligence tests are used together as predictors of foreign language learning success, results always reveal significant correlations between the two kinds of tests (Gardner & Lambert, 1965; Weche, Edwards & Wells, 1982).

The hypothesis that intelligence and aptitude might play a different roles in foreign language learning has been investigated within longitudinal framework (Lett & O'Mara, 1990; Skehan, 1989). The Cognitive Ability for Novelty in Acquisition of Language Test represents the possible instantiation of a cognitive theory of foreign language acquisition that stresses the role of coping with novelty in such acquisition (Grigorenko et al, 2000).

The CANAL-F theory holds that one of the central abilities required for foreign language acquisition is the ability to cope with novelty and ambiguity which is a part of the experiential aspect of intelligence described by the triarchic theory of human intelligence (Sternberg, 1985, 1988, 1997).

Novelty and Ambiguity in Sternberg's Triarchic Theory of Intelligence

Sternberg's triarchic theory of intelligence includes three facets or subtheories: analytical (componential), creative (experiential) and practical (contextual) (Sternberg, 1985).

Creative or experiential dimension examines how people approach new and unfamiliar tasks. This is also insightful dimension to a person's intelligence. It can be further divided into two categories: novelty (how a person reacts with a first exposure to a new scenario), and automatization (how a person handles repeated tasks, or practice) (Sternberg, 1987).

In its application to foreign language learning, several knowledge acquisition processes specifying CANAL-F theory are Present:

- selective encoding – how to distinguish between more and less relevant information;
- accidental encoding – how to encode secondary or background information;
- selective comparison – how to determine the relevance of old information for current tasks;
- selective transfer – how to apply decoded or inferred rules to new contexts and tasks;
- selective combination – how to synthesize the disparate pieces of information that have been collected via selective and accidental encoding and modify the learner's existing schemata. (Grigorenko et al, 2000)

In foreign learning, the abovementioned five knowledge acquisition processes operate at four levels:

- the lexical level deals with one's learning, understanding and use of words;
- the morphological level deals with the words' structures and derivations;
- the semantic level deals with one's understanding and use of the meaning of the words;
- the syntactic level deals with one's learning, understanding and use of the grammatical principles. (Grigorenko et al, 2000)

These four levels of knowledge acquisition operates in two models of input and output: visual and oral mode. The former predominates in reading and writing, while the latter is involved in listening and speaking.

CANAL-F theory suggests that language aptitude is based on expertise in certain kinds of information processing that, like any other kind of expertise, can be developed (Sternberg, 1988). Therefore, language aptitude is a form of developing expertizes rather than an entity fixed at birth (Grigorenko et al, 2000). On the ground of that, language aptitude training should increase language performance and lead to ambiguity resolution.

Mechanisms of Statistical Language Learning

Can learning-oriented theories also account for the existence of language universals? The *constrained statistical learning framework* suggests that learning is central to language acquisition, and that the specific

nature of language learning explains similarities across languages. The crucial point is that learning is constrained and learners are not open-minded, and calculate some statistics more readily than others. Of particular interest are those constraints on learning that correspond to cross-linguistic similarities (Newport & Aslin, 2000). According to this framework, the similarities across languages are indeed nonaccidental, as suggested by the Chomskian framework, but they are not the result of innate linguistic knowledge. Instead, human languages have been shaped by human learning mechanisms (Saffran, 2003).

If human languages have been shaped by constraints on human learning mechanisms, it seems likely that these mechanisms and their constraints were not tailored solely for language acquisition. Instead, learning in nonlinguistic domains should be similarly constrained. Learning mechanisms not specifically designed for language learning might have shaped the structure of human languages. Results of Saffran's study suggests that human language learners possess powerful statistical learning capacities (Saffran 2003).

By investigating how infants weight statistical cues relative to other cues to word segmentation early in life scientists have found ways in which statistical learning may help infants to determine the relevance of the many cues inherent in language input, as well as to discover how infants in bilingual environments cope with multiple sets of statistics.

Researches disagree about when learning is best described as statistically based as opposed to rule based, and about whether learning can still be considered statistical when the input to learning is abstract (Saffran, 2002).

Although the answer to this question remains unknown, it is possible that a combination of inherent constraints on the types of patterns acquired by learners, and the use of output from one level of learning as input to the next, may help to explain why something so complex is mastered readily by the human mind (Saffran, 2003). Therefore, human learning mechanisms may themselves have played a prominent role in shaping the structure of human languages.

Conclusions and Recommendations

In this study, the clear overview of current cognitive theories as well as ability measures of foreign language ability was provided.

There is no clear distinction on which test is the most applicable, since it depends on the purpose of each research. The main contribution of this paper is that it provides an overview of contemporary ideas on foreign language learning mechanisms with regard to psychological methods.

Novelty resolution as one of the concepts of Sternberg's experiential facet plays a big role in foreign language acquisition. The main recommendations of this paper for further analysis include the impact of language aptitude on language acquisition and use of different learning methods, especially statistical language learning mechanisms.

According to Chomsky, children are able to learn the superficial grammar of a particular language because all intelligible languages are founded on a deep structure of grammatical rules that are universal and that correspond to an innate capacity of the human brain. Therefore, stages in the acquisition of a native language can be measured by the increasing complexity and originality of a child's utterances.

People learning a second language pass through some of the same stages, including overgeneralization, as do children learning their native language. But, people rarely become as fluent in a second language as in their native tongue.

Most traditional methods for second language acquisition involve some systematic approach to the analysis of grammar as well as to the memorization of vocabulary. The cognitive approach described in this paper emphasizes extemporaneous conversation, immersion, aptitude growth and development, intelligence and techniques intended to stimulate the environment in which most people acquire their native language as children.

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