LANGUAGE LEARNING - PHYSIOLOGICAL AND PSYCHOLOGICAL ASPECTS

DORINA TARNOVEANU

Universitatea de Vest, Timisoara, Romania

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Abstract: There are several stages in the linguistic development of a child; he will not merely reproduce the sentences he hears, but a personal production is often noticed. Children do not acquire the grammar of their native language through theoretical teaching; exposure to the speaking community will lead to the acquisition of the grammatical structures of their language. Little is known about how little children acquire the rules of their native language; yet, we may distinguish between physiological and psychological aspects.

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Language learning

We should make a difference between those learning (the term acquisition might be more appropriate) the mother tongue, that is their first language, the language that is learned unconsciously, in infancy, and a second or a third language, which will generally be taught by someone speaking that/ those language/s. It is true that in some contexts, a child may be exposed to two (or even more) languages at the same time, that is from the very beginning of his/ her acquisition of speech, and in such cases we may speak of a true bilingual.

We may distinguish certain stages in the acquisition of the first language, or the mother tongue:

- The exploration stage: it is the stage when the child does not necessarily 'speak', in the proper sense of the word; he exercises his limbs, but also his lungs, mouth, tongue, and lips to produce sounds.
- The imitative stage: as the child grows older (that is in his first year), his nervous system matures, and the sounds uttered by those around the child become important for the child, who realises that these sounds are not random sounds, and they somehow convey certain 'meanings'; the child begins to pay more attention to the speech sounds made by other people, there are cases in which the child, quite 'noisy' and 'feeling like talking' until then, may even become temporarily less vocal, as he concentrates on listening to others.
- The analogical stage: during the second year the child has developed a small vocabulary of words that symbolise people, things, actions, qualities, places, directions, etc., all very close to his/ her own environment or interests. It is very important that he now draws on his innate language ability to try to relate his ideas to one another.
- The stage of formal instruction: it is the stage when the child has already acquired his/ her first (and sometimes the second or the third) language, and now we are dealing with a theoretical type of instruction, based on pedagogical grounds, having certain purposes, which will be attained through specific means.

The infant learns the use and mastering of the language through reinforcement of his own behaviour by those around him, and not through imitation. It is clear for those observing a child that s/he/ has his/ her own linguistic productions, as a response of the external stimuli, and not only -if the child does want something in particular, s/he will find the resources to express it to the adults.

Which is more important is the fact that the usual response to words is to the conception of the things they stand for, and not for the things themselves. This means that a child of four or five (sometimes even earlier, or in other cases a little bit later, according to the very personal development of the child, which again depends on a number of factors which will not be described here), is aware of the arbitrariness of words, and they can explain why they are sad, or happy, or even that a black hole will help a certain astronaut get easier into another system!

Maybe more important than pronunciation is the way we arrange words into a certain/ given combination, according to our intention, that is according to what we want to convey to the listeners. This combination of words has to be meaningful, so that the receiver of our message can decode it, and that the meaning remains the same. All the speakers of a given language use, in most cases without ever being aware, a set of rules, or a code, that specifies how words may be arranged into the combination we have chosen, a meaningful one. This set of rules is what we call grammar.

No one has ever learnt the grammar of their native language consciously; no one has ever explained to a child whose first language is, say, French that the verbs of the second group add the group –iss between the root of the verb and the ending corresponding to certain persons: e.g. *-finir*: je finis, tu finis, il finit, nous fin*iss*ons, vous fin*iss*ez, ils fin*iss*ent; but the verb *connaître*, that belongs to the third group, has forms that might make one think of a verb of the second group: nous conna*iss*ons, vous conna*iss*ez, ils conna*iss*ent. And yet, no French speaker will conjugate (that is will use different forms in a given context) the verb *connaître* according to the rules of the verb *finir*.

Grammar is acquired by everyone, rapidly, without visible effort, in a uniform manner, merely by living in a community under minimal conditions of interaction, exposure and care. There is no need for explicit teaching or training (when the training takes place, it has only marginal effects on the final state achieved). Broadly speaking, individuals are not

distinguishable (under ordinary conditions) in their ability to acquire grammar. Individuals of a given community each acquire a rich and comprehensive cognitive structure that is essentially the same as the system acquired by the others. We may say that humans are specifically adapted to acquire grammar (the innateness hypothesis).

The study of language learning is concerned with the acquisition of specific cognitive structures. We sometimes speculate on the ways in which language and its use might be taught. Yet, for the most part, language is not really taught, it is rather learned by mere exposure to the data. No one has been ever taught the principle of the structure-dependence rules, or language specific properties (such as noun-phrase preposing), not to mention the meaning of words.

The study of how a system is learned cannot be identified with the study of how it is taught; on the same account, we cannot assume that what is learned has been taught.

Different kinds of issues may arise in the study of language. Among these, what kinds of cognitive structures are developed by humans on the basis of their experience, specifically, in the case of the acquisition of language. It has been said that humans are innately endowed with a system of intellectual organisation, which can be called "the initial state" of the mind (Chomsky,1986:12-13). The environment and the maturation process interact, and the mind passes through a sequence of states in which cognitive structures are represented.

In the case of language, it is obvious that rapid and extensive changes take place during an early period of life, and a "steady state" is achieved; only minor modifications will later come out. We may refer to this steady state as the "final state" of the mind, in which knowledge is somehow represented.

Physiological and psychological aspects of language learning

Science has made great progress in very many fields of human research. In his Introduction to Chomsky's Knowledge of Language Ruth Nanda Anshen speaks about a law of evolution by which we can explain the emergence of forms capable of activities which are completely new, such as the origin of life, the emergence of individual consciousness, and the appearance of language (Chomsky, 1986). This language is the basic expression of man's ability to transcend his environment and to make life a moral and spiritual triumph. And yet, very little is known about the learning and use of language by infants, be it the first language, the mother tongue, or a second language, learned not under the guidance of a teacher, but within a given linguistic community. How does the little child come to understand and to express his needs not in gestures, but in the spoken word? Why does this happen at a given age and not at another? In order to answer these questions there are different aspects to be taken into account -on the one side there are the physiological aspects, on the other, the psychological ones.

Physiological aspects. Because of the fact that the mother tongue is learned/ acquired at an age when the learner cannot 'say' anything about the way s/he succeeds in performing this, there are serious gaps in our information on this topic. Yet, it is known that each individual has three networks of nerve cells, integrated into a single neural fabric:

- the autonomic nervous system; this one controls the different organs: the stomach, the lungs, etc;
- the sensorimotor system - it enables the individual to perceive using the senses, and to have muscular movements at will;
- the third system involves language, memory, volition, imagination, and symbolism.

There are some twelve billion or more cells that make the three systems up, and they are formed some months before birth. The centre of the speech is located in an area in the cerebral cortex (Broca's area[1]). The integration between nerve cells take place a little more slowly in this area than in some others, and that is why what may truly be called language cannot appear in the child's behaviour until toward the end of the first year of life, or so.

Yet, the activity in the vocal-auditory regions begins at birth, persists, and is highly varied. At first, everything is but a kind of mass activity. The system does everything it is capable of doing, "as if the motor neurons were firing off indiscriminately" (Osgood and Sebeok, 1954, p.128).

At four weeks, the infant is able to pay attention to the sounds he hears. At twelve weeks, the infant becomes 'capable' of 'uttering' certain sounds; a personal hypothesis might be that together with the elevation of the glottis, and the maturation of the vocal cords the child is able to 'utter' different sounds that are not biological anymore, but they rather try to 'imitate', or to 'answer' the sounds they hear from the adults around them. Also, sounds become more precise and clear.

At four months s/he can babble, coo, chuckle, gurgle, laugh; these actions might be again a response to the adult's actions; another thing, maybe the most important, is that the child pays attention to the human voice, and to the movements of the mother's lips (I myself noticed these while breasting and feeding my three and a half -four month daughter). Later, the muscles of the mastication and those of speech are observed to mature together, and by the end of the first year it is obvious that most children will understand commands, words (nouns and adjectives), and in some cases they try to utter their own sentences, which are quite original, and never heard before.

Quine (1972) believes that the child learns most of his language by hearing the adults and emulating them. If learning a language is a matter of learning sentences, then the child must learn most of his/her sentences by hearing them, which is, obviously, untrue. I may exemplify again with my daughter, who, aged one at that time, uttered, in a very indignant tone, full of unpleasant surprise, *Calu' Ichi caca*. (She was speaking Romanian, *Ichi* was a neighbour, Vichi, who had a horse that was standing by a fence in front of a

[1] A region in the lower part of the left frontal lobe that has been associated with speech production, the analysis of complex sentences, and verbal short-term memory.

gate; the child's idea was that the horse should have used a toilet!) Obviously again, she had never heard anyone saying this, simply because the matter was of no interest for any adult around her!

Clearly, this goes further, into the psychological aspects of language.

Psychological aspects. If we consider Leibniz's statement that "languages are the best mirror of the human mind" (in Chomsky, 1986), we can easily see why the study of language has often been understood as an inquiry into the nature of mind and thought.

Far from being mere imitation, the child's language is an important creation of his mind, yet based on an innate endowment for learning to speak, that is to use language, and the study of human language is of utmost importance.

Firstly, it is a species property, central to human thought and understanding. Secondly, it is a field that can be studied as far as the system of knowledge is attained. We may start from a given point -S_1, that can be well determined, and find out the amount of knowledge gained by the child in a given period of time.

Starting from the study of the acquisition of the language by the child, we can ascertain the nature of the biological endowment that constitutes the human "language faculty", that is the innate component of the mind that yields knowledge of language when presented with linguistic experience, that converts experience to a system of knowledge (Chomsky, 1986).

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