

**1. Describe the developmental pathway of lexical acquisition. What is the basic problem of the acquisition of word meanings, and what solutions have been offered?**

Lexical acquisition starts at the one-word stage (holophrastic utterances) at 12-24 months. Comprehension starts earlier than production, at 9 months and 12 months respectively. At the very beginning, children learn simple lexical items such as words for people, animals, food, toys, or bodily functions. After the age of 2, their vocabulary increases rapidly (~10 words per day), and at the age of 6, they know approx. 14.000 words. Although there are individual differences in vocabulary size, humans reach a level of ~50.000 words at the age of 17.

The first words learned by children belong to basic-level categories, e.g., “flower” for all kinds of flowers. Frequently, over- and underextension occur. In the case of overextension, a word is also used for things that have a similar shape or color, e.g., dog would be used for a bear or wolf. As regards underextension, a word is used only for a subset of what the word refers to, e.g. teddy for the child’s teddy, but not for other teddies.

Still, it is not certain how exactly children are able to assign a meaning to a new word. In 1690, Locke theorized that a caregiver shows the child a thing and repeats its name in order for the child to learn. However, it has been argued that the child is not looking at the thing, but rather at the caregiver’s face, and thus a mapping error might occur. This observation ties in with the mapping/induction/gavagai problem --> how is the child supposed to know what exactly a word refers to? It could be a noun, a verb, an adjective, or even a holophrastic utterance. Moreover, it seems that it is easier for children to learn nouns, as they refer to individual objects or persons. By contrast, it is more difficult to acquire verbs, as their meaning depends on the verb’s arguments.

With regard to these problems, nativists have offered a number of solutions. They argue that children have innate knowledge that enables them to learn words, and they have devised principles which impose restrictions on word learning. In this respect, Markman’s constraint theory is well-known. There are three constraints which influence word learning: the mutual exclusivity constraint (two words cannot refer to the same thing, if it’s a car it can’t be a taxi), the whole object constraint (a new word refers to an object in its entirety and not to one of its parts), and the taxonomic constraint (a new word refers to a class of novel objects, and not to a specific individual).

**2. What possible interpretations are there for the notion of "grammatical rule"? List arguments & counterarguments for each.**

The main debate is between the constructivists and the nativists. The question is, if children learn the language by imitation or if they make hypotheses about underlying rules. Investigations (WUG test) show that children’s word combinations are systematic.

*Nativistic approach:*

- Children are born with an innate knowledge that helps them learn the grammar and lexemes of their language.
- There is a universal development pathway
- Critical period

- There is a lack of negative evidence, because adults don't specifically tell children what is wrong and when they do, it doesn't work.
- Discovering the grammar would require corrections that adults do not give and children are not able to exploit.
- The speech children hear is full of errors
- Grammar is too complex, it is impossible to learn it based on heard examples only
- Children say and understand words that they never heard or are ungrammatical in an adult grammar and errors are systematic.
- Language is not learned, but grows, assisted by LAD
- Universal Grammar, parameter setting
- Children construct rules which they then use creatively
- Nobody teaches them these rules explicitly; adults do not have an explicit knowledge of phonological, morphological etc. rules. Language acquisition proceeds very quickly in the absence of formal education.

*Constructivistic approach:*

- Babies don't have abstract knowledge of grammar
- Simpler and more general learning mechanisms
- Neither innate representations nor special acquisition devices or processes are necessary
- Poverty of stimulus argument is not valid
- Children's early utterances follow adult utterances heard by them quite closely

Researchers suggest that instead of having a language-specific mechanism for language processing, children might utilise general cognitive and learning principles.

Chomsky claims language to be innate, however, language functions appear to be distributed throughout the brain, and in normal use, the whole brain is brought into play.

Connectivist claim that the language that children hear is by no means necessarily partial and ungrammatical (Motherese). It has been suggested that these characteristics offer the child such clear samples of language, that there is no need to posit a Chomskian black box, or UG.

However, in some tribes in Africa, children are never directly talked to but they still acquire language in the same pace.

When caretakers do speak with the children, their language is not necessarily simple e.g. Wh movements. No one has yet found a close correlation between language used by caretakers, and language produced by children.

Not only do the children fail to copy the utterances the adults give them, they also produce utterances that they have never heard, and use structures that they have never heard.

**3. What is the autonomy of syntax in sentence processing, and how does it contrast with interactive models? Why are ambiguous sentences a good testing ground?**

Using his famous example "Colourless green ideas sleep furiously", Chomsky hypothesized that grammar may be seen as "autonomous and independent of meaning". When we hear a sentence, we first process it serially (phonology --> lexical processing --> syntactic processing --> semantic processing). The semantic analysis starts only when we reach a clause boundary.

This is a modular approach; the semantic analysis builds solely on the syntactic phrase structure. Ambiguities are resolved by specific principles of syntactic analysis without invoking any other system; these principles account for all ambiguities. Frequently, the initial parse has to be revised with the help of thematic and discourse information. Hence, it seems that a two-stage analysis is at work: the first analysis builds only on syntactic information, whereas the second analysis takes into account other kinds of information.

By contrast, interactive approaches propose that all levels of sentence processing cooperate freely and continuously. This process is influenced by many parallel computing constraints; these constraints can be non-syntactic as well (e.g., discourse context). Many analyses are computed at the same time; the parser then decides which one is most suitable for the discourse model. Other factors, such as semantic context, expectation may provide cues about the likely interpretation of a sentence.

Moreover, the constraint satisfaction model holds that several potential analyses are activated, but that we are only aware of one. When the conscious analysis fails, we switch to another analysis. However, this does not mean that all potential analyses are activated: semantic context and expectations influence alternative interpretations.

Main questions:

many stages – one stage

modular – interactive

serial – parallel

syntactical processing – all kinds of analysis

In this respect, ambiguous sentences are a good testing ground because they allow for different interpretations. In some cases, the ambiguity cannot be resolved (persistent ambiguity), whereas in other cases, the parser is aware that his initial analysis must be wrong, as the sentence does not make sense (local ambiguity). The latter are called garden path sentences, as they lead the listener/reader “down the garden path”. Experiments may be conducted to find out which analysis is preferred, and this analysis may also be influenced by, e.g., different intonation patterns, or sounds such as clicks at different positions in the sentence.

#### **4. List empirical evidence for the position that stems and suffixes have independent representations. Under what conditions are multi-morphemic words stored as one unit? (analytic vs. holistic word storage)**

Holistic storage: every word has its own access representation : //

/walk/ /walked/ /walking/...

– We access morphologically complex words holistically.

Decomposition:

only morphemes (stems and affixes) have their own access representations:

/pre/ /develop/ /ment/ /al/....

– Morphologically complex words are analysed into their building blocks (prelexical analysis)

The entire word form and its morphemes all have their access representation:  
/predevelopmental/ /pre/ /develop/ /ment/ /al//developmental/...  
– Morphologically complex words can be analysed or accessed holistically.

Multimorphemic words are stored as one unit:

When they are frequent words

When they have non-transparent components

Suffixes: Derivational suffixes are more closely associated to the stem than the inflectional suffixes: Derivational suffixes are rarely detached from the word in speech errors.

Experiment found a processing difference between suffixed and pseudo-suffixed words, when at least 50% of the list contained suffixed words: this ratio facilitated the use of a decompositional strategy.

The cognitive system tries to strike an economic balance between storage space and processing energy.

Real (bound) stems take longer to reject in lexical decision than pseudo-stems:

-vive (revive) vs. -lish (relish)

The same happens with non-words that are a non-existent combination of an existing prefix and an existing stem. They take longer to reject than nonwords containing pseudostems  
- bound stems have their own access representations (morphological structure): prefixed words are decomposed during lexical access.

## **5. What models are there for lexical access of ambiguous words? Enumerate empirical evidence for each.**

-Context-guided (selective) access: Appropriate meaning is chosen by context; other meanings are not considered.

In an ambiguity detection task, longer response time was found when the word was used with its more common meaning.

-Ordered access: Most common meaning is checked first and is accepted if it fits. If not, other meanings are checked.

-Multiple access: All meanings are accessed; context selects among them.

In a phoneme monitoring task, people are slower to detect /b/ in (A) than (B), because straw is ambiguous even though the context (farmer) strongly favours one meaning:

(A) The farmer put his straw beside the machine.

(B) The farmer put his hay beside the machine.

Both meanings are accessed.

-Reordered access model: Access of meanings for an ambiguous word is exhaustive but the order of access is influenced by prior disambiguating context.

Swinney tested the effect of context and found out that listeners access multiple meanings of ambiguous words even when faced with strong biasing contexts that indicates a single meaning.

Later studies have found that evidence for multiple access is clearest with balanced ambiguities and contexts that are not too constraining and with biased ambiguities selective access might be taking place.

Other results support a modular view of sentence processing: lexical ambiguity is resolved by an interaction of frequency and context.

**6. What are the differences between human and animal communication systems?**

**List 5 and explain what they mean.**

1- Animal communication is restricted in its repertoire.

They are able to learn a limited set of signs, whereas the human inventory is infinite. Human communication has many words for similar things (synonyms, redundancy). Moreover, it is highly productive, new words are coined as a product of language change. The system of animals is closed, whereas human communication is open and may be extended.

2. Animal language cannot be broken down into smaller units, it is not combinatorial.

It cannot be combined with other symbols to generate meaning.

3. When animals are taught language or use of a symbol system, they do not transfer this knowledge to their offspring.

Human language is passed on in all parts of the world. Some animals are able to acquire a symbol system, but this system is not passed on.

4. The relationship between a symbol and its meaning is arbitrary in human languages. This is much less so in animal communication.

Animal communication is motivated by the principle of similarity: the connection between sign and concept is not arbitrary. Arbitrariness is a fundamental principle of human languages.

5. Animal communication is stimulus-dependent; human communication is independent of the situation.

Humans can decide in which situation they would like to use language; language use is intentional. We can adapt language use to the situation (use of register) and to the listener (baby-talk). Moreover, humans are able to reflect on language use. By contrast, animal communication is triggered by a stimulus from the environment.

**7. Present the nativist/innatist approach to language acquisition, and the arguments supporting that position. Introduce arguments against this position as well.**

As for the first language acquisition, there are two main views: the nativist and the constructivist approach. The nativist approach holds that children have an innate capacity for language learning, whereas the constructivist approach suggests that children learn their mother tongue through the provision of input from the environment.

Noam Chomsky established the existence of a language acquisition device (LAD), an innate mechanism pre-disposed for the acquisition of language. Seeing that all human languages possess certain features – so-called language universals, such as nouns or verbs – Chomsky also speaks of Universal Grammar. According to this view, there are certain universal constraints on rules and categories; these constraints are biological and therefore innate.

Language acquisition is guided by principles and parameters. Markman argues that lexical acquisition is subject to a number of constraints: the whole object constraint, the taxonomic constraint, and the mutual exclusivity. These principles help children to ascertain the meaning of a word, e.g., the whole object constraint postulates that a novel word refers to an object in its entirety, and not to certain parts of an object.

Various arguments have been put forward in favour of the innateness hypothesis. One argument is the “universal developmental pathway”. Even though children grow up at different locations, have a different social background, and acquire different languages, their linguistic development follows the same milestones. Another argument is the critical period hypothesis as put forward by Lenneberg. This hypothesis holds that language needs to be acquired during the first years of life. If this is not the case, the window has closed, and language will never be fully acquired (feral children, e.g., Genie). This theory also applies to second language acquisition. Whereas children acquire a second language with relative ease, only very few late learners (>15) achieve native-like proficiency.

Moreover, the constructivist approach begs the question if children do indeed receive sufficient input for the acquisition of language (poverty of stimulus argument). Not only can children form utterances which they have never heard before; they also know which utterances are ungrammatical, despite receiving little input in this regard (lack of negative evidence argument). Grammar itself is highly complex, still children acquire it, and the errors they make are highly systematic. Children are not able to repeat sentences which their grammar is not yet able to generate. Hence, it is argued that language is not learned, but rather grows, assisted by the LAD.

Those who oppose the nativist approach argue that the poverty of stimulus argument is not valid, as children’s utterances follow those of adults very closely. Babies do not have an abstract knowledge of grammar, and a mechanism such as the LAD is not necessary in order to learn language. Furthermore, children do receive negative feedback in the form of corrections by their parents, even though they are not able to repeat those utterances.

## **8. What is the linguistic relativity hypothesis? What evidence is there for and against?**

The linguistic relativity hypothesis is also called Sapir-Whorf hypothesis. The hypothesis holds that language determines thought, i.e., it influences the way in which we understand our environment, and may thus influence our actions.

Language reflects reality in different ways through more or less specialized vocabulary. For example, the German word “Platz” has two equivalents in English, namely “square” and “circus”, which allows for a more detailed conceptualization. Moreover, languages may differ with respect to how they divide up the world into nouns and verbs → the English noun lightning is a verb in the Indian language Hopi, as it is seen as a process. Hopi also knows no tenses; it is a “timeless language”. By contrast, European languages reflect the importance of time in our fast-moving society through tense markers.

Language is tied to a people’s culture. There is an urban legend that the Inuit know 50 words for different kinds of snow. Regardless of whether or not this is true, this example shows that a thing can be perceived in different ways. In the culture of the Inuit, snow is ever-present, and it might have become important to distinguish between snow on the ground, falling snow,

and drifting snow. This example shows that our surroundings influence our language, but also that a different language may enable us to conceptualize our world in different ways. Moreover, the example shows that there is a strong view as well as a weak view of this hypothesis.

Another example in favour of this hypothesis is the difference in spatial representation between Korean and English. Korean has no linguistic distinction between placing an object in a container or on a surface (in vs. on); it distinguishes between tight fit (like a ring on a finger) and loose fit (like a fruit in a bowl). In a study, it was demonstrated that English and Korean babies differentiate all potential spatial distinctions, but as a result of acquiring language, certain spatial distinctions become salient in representation (are strengthened through the use of language).

Still, evidence against the hypothesis has been brought forward as well. For example, children are able to grasp the concept of location of objects long before they can express it through the use of language (functional categories are initially missing). Moreover, it has been proven that basic colour terms are perceived in the same way, and that languages use the same basic colour terms (if a language knows only 2 colours, they are always black and white). Hence, colour categories are not arbitrary.