

# Linguistics as a Science

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• Linguistics for Juniors<sup>1</sup> •

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## 1 What is linguistics?

### 1.1 A broad discipline

Linguistics is the scientific study of human language. This definition is very broad; human language can be studied under numerous different lenses, such as:

- *historical (or comparative) linguistics*: an investigation of language development and change overtime, the genealogy of language families and the effects of language contact
- *sociolinguistics/linguistic anthropology*: an investigation of the role of language in society and culture, as a tool for identity construction and/or establishing social positionalities
- *language as a mental or cognitive object*: an investigation of the mental representation that humans have of the languages they speak/use, with an aim of understanding something about the language faculty of the human mind and the nature of human linguistic ability.

### 1.2 A cognitive science

Formal linguistics endeavors to understand language as a cognitive object through theorizing about the components and structure of a **mental grammar**. A mental grammar represents the implicit knowledge that any language user has of the languages they, which consists of:

- An inventory of sounds, and rules for how those sounds can be in sequence with each other (areas of research: *phonetics & phonology*)
- An inventory of ‘words’ and ‘affixes’ (i.e. basic units of sentence construction), and rules for how these units can be in sequence with each other (areas of research: *morphology & syntax*)
- a system of constructing meaning from language, and drawing meaning from linguistic utterances in discourse (areas of research: *semantics & pragmatics*)

### 1.3 A descriptive science

When considering what makes up a mental grammar, it is important to distinguish the endeavor of linguists (descriptivism) from the endeavor of grammarians (prescriptivism). Linguists do not enforce grammar rules, they simply note the different forms used by different individuals.

- **Descriptive grammar**: An objective analysis of how people actually produce and utilize language. Linguists study the structures and patterns found in real communication, whether standard or nonstandard. Observable patterns of behavior in the language use of any individual or language community is considered to be an output of the mental system that linguists are interested in understanding.

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- **Prescriptive grammar:** A set of taught rules about how language *should* be used, often reinforced by institutions of power or authority. It labels certain forms of language as ‘correct’ or ‘incorrect’, and tends to be based on tradition. For example, some prescriptive rules forbid splitting an infinitive (e.g. saying *to boldly go*), or require *whom* instead of *who* in certain questions.

**Linguistics is descriptive, not prescriptive.**

Linguists study how people actually use language— not how they are told to use it. The goal is to discover the mental rules speakers naturally follow, not to enforce arbitrary standards.

As **linguists**, we investigate the structure and use of language—including sounds, words, and sentence patterns—through a scientific lens. We gather data (from speakers, texts, recordings, or experiments) and search for systematic patterns. Because language is a cognitive ability, we also ask how linguistic knowledge is represented in the mind.

## 2 Who is a linguist, and what do they do?

Linguists use both theoretical and practical approaches. Depending on their area of specialty and their research goals, linguists might:

- Document and analyze specific languages, often creating grammars and dictionaries. This includes fieldwork, especially on endangered or understudied languages.
- Conduct experiments to investigate how language is processed and acquired— for instance, how infants learn grammar or how multilingual speakers switch between languages.
- Compare languages to uncover universal patterns and propose theories about how language works cross-linguistically.
- Apply findings in real-world contexts: language education, speech recognition and translation technology, treatment of language disorders, and preservation of linguistic heritage.

Across all these domains, linguists rely on empirical evidence and look for systematic patterns—not just intuition—to understand how language operates.

### 2.1 How do humans to speak and understand language effortlessly?

A linguist who is interested in understanding language as a mental object must contend with the **problem of tacit knowledge**.

- Although all fluent speakers use their language with ease, they typically cannot explain the rules they are following. Yet, speakers clearly obey systematic patterns and conventions in forming sentences and expressions.

**The Problem of Tacit Knowledge**

Tacit knowledge is *implicit*: it resides in the mind, and operates subconsciously. It is the knowledge we rely on fluently, but cannot readily articulate.

Linguists are researchers who seek to uncover this tacit knowledge— but how?

- Through science! Just as physicists theorize about unobservable particles, linguists formulate hypotheses about mental grammar and test them through observation and experimentation.

## 2.2 The scientific method

Linguists formulate empirical generalizations by following the steps of the scientific method:

### i) Examine the initial data.

- (1) a. John cried.  
b. Mary arrived.  
c. \*arrived.

### ii) Form a hypothesis.

- (2) **Hypothesis:** A grammatical English sentence minimally consists of a proper name and a verb.

### iii) Evaluate the hypothesis with respect to data.

- (3) a. Mary and John arrived.  
*Acceptable* — supports the hypothesis.  
b. \*Cried John.  
*Unacceptable* — contradicts the hypothesis.

### iv) Revise the hypothesis if needed, based on observations.

- (4) **Revised Hypothesis:** A grammatical English sentence consists of a proper name that must be **followed** by a verb.

Like all sciences, linguistics contends with hypotheses that are *fallible*; that is, hypotheses that are set up to be tested and contradicted.

**Think:** What data, or set of data, might we look at to test the strength of the Revised Hypothesis in (4)?