

UNIVERSITY of
GREENWICH

PSYC-1031 & PSYC-1036 (INTRODUCTION TO PSYCHOLOGY)

Understanding and Producing Language (Part 1)

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Lecture 13, 22/1/2021



1

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2

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Roadmap of today's pre-recorded lectures

- (1) what *is* language?
- (2) what are the *components* of language?
- (3) Key 'milestones' in language learning
(extra study slides)
- (4) Human vs. animal language
- (5) the nativist vs. empiricist view of language

- Bringing it all together: why should we study the nature of language

3



Learning outcomes

- Describe how **evolutionary changes in the vocal tract system** allowed humans to speak
- Provide a definition of language on the basis of its **universal characteristics**
- Name some of the disciplines that deal with the **scientific study of language**
- Outline some of the **milestones** in children's language development

4



Hey! Is this a linguistics class?!



5



- **Psychology (psycholinguistics):** scientific study of the representational aspects of language (e.g., how language is produced and understood)
- **Linguistics:** Study the nature of language with particular focus on the study of rules that govern the organization of words into sentence
- **Speech sciences:** Study of *physical form* of speech (e.g., how speech is executed by the vocal system)
- **Anthropology:** Role of language in human evolution
- **Neuroscience:** How language is learned, stored & processed in the brain

6



A ubiquitous human behaviour

- Understanding language is a large part of understanding people
 - We talk to others to....
 - communicate thoughts or needs, give instructions, share memories, etc.
 - We also talk to ourselves (inner speech) to....
 - work out problems, rehearse information, etc.
- Manipulate our *mental representations* of the world

7



Typical vs. Atypical Language learning

- Language development is an incredible feat and surprisingly robust
- Yet, for some children, language development does not go smoothly
 - Autism Spectrum Disorder
 - Down syndrome
 - Pragmatic Language Impairment
 - Strong links to Dyslexia/Poor Comprehenders
 - Developmental Language Disorder

8



- Spoken language
 - Focus of today's lecture
 - Evanescence ("Verba volant")
- Written language
 - "Recent" cultural invention
 - Parasitic upon language
 - Requires formal schooling
 - Permanent ("Scripta manent")



9

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But what is language?!

- Two lines of enquiry that are useful for defining language:
 - (1) Research on the origins of language as humans evolved
 
 - (2) Research on human vs. other forms of communication
 

I will come back to this topic in the second part recording

10

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(1) Adaptive functions of language

- Our current 'modern' behavior (*homo sapiens*) is largely different from our ancestors (e.g., *homo erectus*)
- Language: the missing key re: human evolution and the late emergence of modern humans*?
 - Increased communicative efficiency -> social co-operation
 - Revolutionizes thought (lecture 10)
 - Makes culture possible

*40,000 years ago

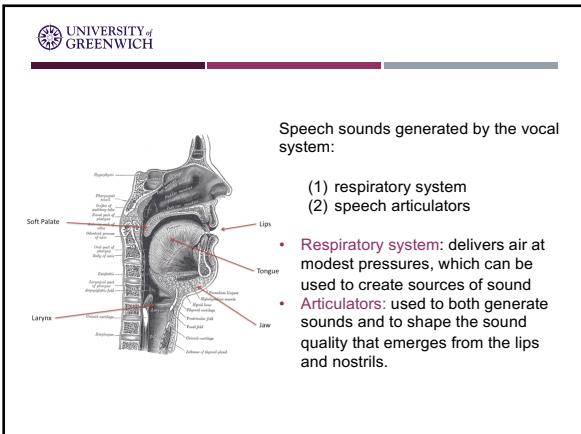
11

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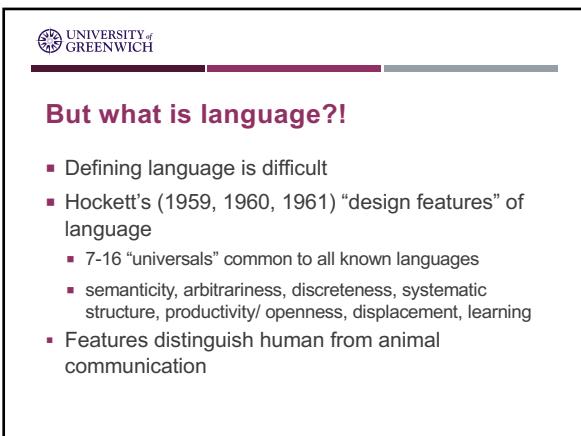
What changes enabled this?

- (1) **Vocal tract** changes (changes to our mouth and throat)
- (2) Brain changes

12



13



14



15



2. Arbitrariness

- The **sound** of a word gives **no hint of its meaning** (Nothing "doggie" about the sound "dog", "chien")
- **Two exceptions**
 - **Onomatopoeia** (e.g., incorporating the sound that a dog makes, woof woof, into the sign for the sound itself) **is an exception**
 - Sign languages embed more **iconicity** (but arbitrary signs exist)

16



3. Discreteness

- Vocabulary is made of distinct units (words) each with their own distinct meaning
- Longer utterances made up of combinations: e.g. "big cat" ("big" and "cat" each contribute to the meaning)



17



4. Systematic structure (Duality of patterning)

1. The meaningful units of language (e.g., words) are built from **sound units** that have no meaning
 - d+o+g combinatorial structure
 - g+o+d
 2. Words can be further combined into sentences
 - The boy bit the dog
 - The dog bit the boy
- compositional structure

18



5. Productivity/openness

- Language is **not a fixed set of messages** that we repeat
 1. We create and understand new words
 - "guess who **facebooked** me last night"
 2. We generate/understand infinite numbers of sentences that we may have never heard before
 - **Alcoholic elves rarely eat margarine!**
- Nothing wrong with this sentence from a **syntactic** point of you – obeys English language rules on word order

19



6. Displacement



20



6. Displacement

- Possible to talk about something which is not present in time and space
- Remembered, anticipated, or even something that might never happen!

7. Learning ("tradition")

- Different languages have different phonemes, words and grammatical structures
- Adopted Chinese baby in UK learns English and adopted English baby in China learns Chinese

21

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To sum up...

- Semanticity words have meaning
- Arbitrariness arbitrary relationship between word form and meaning
- Discreteness distinct forms, distinct meanings and meaning
- Duality of patterning phonemes-> words->sentences
- Productivity/ openness The purple elf drank the milk
- Displacement Adopting English as their learning language
- Cultural transmission

Hocket, 1960

22

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23

The diagram illustrates the progression of language development through three stages: Infancy, Preschool, and Early school years. Each stage is represented by a photograph of a child and a speech bubble, with an arrow pointing from left to right indicating the chronological flow.

- Infancy:** A baby holding a mobile phone, with a speech bubble above it.
- Preschool:** A young child sitting in a high chair, gesturing while speaking, with a speech bubble above it.
- Early school years:** A child holding a pencil and writing, with a speech bubble above it.

Understanding and producing language

Learning language is developmental

24

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extra study slides

Phonology

- Even before recognizable speech has begun, infants:
 - 6 months: discriminate all the sound contrasts languages of the world -- an ability which diminishes given linguistic experience
 - 7 months: canonical babbling ("baba", "da da da")
 - Pre-linguistic babbling - hearing their own productions serves as basis for linking own articulatory movements to acoustic signal
 - 8 months: Detection of typical stress pattern in words

25

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Semantics (vocabulary) development

(1) Receptive vocabulary: understanding the meanings of words and phrases

(2) Expressive vocabulary: using words and phrases to communicate effectively

- From around 50 words (18-month-old English speakers to (at least) 20,000 base words in adulthood
 - Some receptive vocabulary from 6 months (Tincoff & Jusczyk 1999)
 - ~ 12 months: first words produced, followed by 10 words/month until around 50 words
 - "Vocabulary spurt" in second year (though see Ganger & Brent, 2004)

26

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Syntactic development

- "Two-word utterances emerge around 2nd year of life (Anisfeld et al. 1998)
- Syntactical complexity develops **gradually**: negatives emerge ("Mummy no go"), and morphology develop (-ing and -s)
 - Period of overgeneralization in morphology. e.g. of past-tense verb forms
- Passive sentences emerge later (~4 years)

27

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Pragmatic development



"the fish is ready to eat"



Protracted development from infancy well into adolescence.

- We use language to **communicate for social purposes**, and in different manners depending on the social context
- Persuading someone versus appeasing someone
- Engaging in a casual conversation versus delivering a public speech
- Inferring meaning from nonliteral or ambiguous sentences
- Responding to indirect requests
- **Metapragmatic skills**, that is, the ability to reflect on one's own communicativeness,

28

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Learning language is developmental



Infancy Preschool Early school years

29

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Does the timing matter?

- Common belief that children are better at learning language
- **Critical period:** fixed window for learning a particular behavior (e.g., imprinting in ducks)
- Lenneberg (1967): Successful language acquisition biologically constrained to occur within a "critical period" ending at puberty
 1. Data from children who grew up without language
 2. Age effects in *second* language learning
 3. Brain damage

30



Does the timing matter?

- Genie (Curtiss, 1977)
 - Brought up in isolation – not spoken to, punished for making noise.
 - Was rescued at age 13
 - Learned a large vocabulary, but syntax and morphology never fully developed
- problems with interpretation: “*the only safe conclusions to be drawn from the multitude of reports is life in dark closets, wolves' dens, forests, or sadistic parents' backyards is not conducive to good health or normal development*”

31



Other evidence and take-home message

- Data support account where ability to learn language (first or second) *gradually and probabilistically* decreases through the life span (e.g. Hakuta, Bialystok, & Wiley 2003)
- Mechanisms of language learning change with maturation.
Two interpretations of this finding:
 - We are born with **innate** language specific knowledge which is available only in childhood (**nativist view**)
 - an alternative account is that **what worsens** with age are **language learning abilities** which interact with/rely on other broader aspects of cognition (**empiricist view**)

32



Core & recommended reading

- Holt, N. A., Bremner, A., Sutherland, E., Vliek, M., Passer, M., & Smith, R. (2018). Psychology: The Science of Mind and Behaviour. Fourth edition, Berkshire: McGraw-Hill (Chapter 9, pp 652-734).
- Additional reading:
 - Gross, R. (2010). Psychology: The Science of Mind and Behaviour. London: Hodder Education Group. (Chapter 19)
 - Ambridge, B. (2014). Language Development. In H. Miller (Ed.), Encyclopedia of Theory in Psychology (pp. 1000). London: Sage
 - Hakuta, K., Bialystok, E., & Wiley, E. (2003). Critical evidence: A test of the critical-period hypothesis for second-language acquisition. *Psychological science*, 14(1), 31-38.

33

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