The Study of Language 1A

1. Introduction
   1. Things to think about
      1. What was the last thing you said to someone?
      2. What was the last thing you wrote?
      3. Last thing you heard?
      4. How exactly did you do all those things?
   2. Let’s say you decided to tell me your name
      1. What biologically would you need to do that?
         1. Brain parts, mouth, tongue, larynx
      2. What cognitively would you need to do that?
         1. Language the conveys meaning
         2. Word order
      3. What socially would you need to do that?
         1. Knowledge of other users, social rules, attitudes
   3. What daily tasks do you use language for?
   4. What is the purpose of language?
      1. Communication
      2. Express emotion
      3. Social interaction
      4. Sounds
      5. Control environment
      6. Record facts
      7. Think
      8. Humor
   5. Studying language:
      1. Neuropsychology – brain and behavior
      2. Linguistics – just language itself
      3. Psycholinguistics – psychological process involved in language or language and the individual
   6. Psycholinguistics
      1. Understanding, producing, remembering language
      2. Reading, writing, speaking, memory
      3. Development, acquisition
      4. Interaction
2. What is language?
   1. Intuitively – what would you describe language as?
   2. Definition: a system of symbols and rules that enable us to communicate
      1. But if we use this system – do the bonobos count?
   3. Break down the definition:
      1. Symbols – do they have to be written? Think about ASL? Are words our only symbols?
      2. Rules – how the symbols (words) are formed to make meaning
   4. Important terms when defining or studying language:
      1. Semantics – study of meaning
      2. Syntax – word order
      3. Morphology – study of words and word formation
         1. Morphemes – smallest unit of meaning in a word
         2. Inflectional morphology – changes to a word that do not change its underlying meaning
         3. Derivational morphology – changes to word that change the underlying meaning
      4. Pragmatics – study of language use
      5. Phonetics – raw sounds
      6. Phonology – study of how sounds are used within a language
   5. Word – “a unit of language” – but how would you describe a “word”
      1. Smallest unit of grammar that can stand alone as a complete utterance separated by spaces in language
      2. Several levels to understanding words:
         1. Sounds – phonemes > morphemes > words
         2. Letters
         3. Syllables
      3. Lexicon – mental dictionary – word storage
         1. Contains all we know about words, phonology, semantics, orthography (looks), rules
         2. How many words do you know? Estimate that people know about 100,000 words
3. How is language changing?
   1. What new “words” can you think of that have been added in your lifetime?
   2. What words have we dropped from language? (thee thou)
   3. What words have we borrowed from other languages?
   4. How many languages are there out there? (est 5000-6000)
      1. Pictures from language stuff (graph jam?)
   5. Where do we trace English? (Germanic > Indo-European)
4. What is language for?
   1. What is language’s primary purpose?
   2. Communication? – what about when the dog barks to go outside for the bathroom?
   3. Social activity – goal oriented, share ideas, etc.
   4. Form of our language shapes our perception and thinking
5. History and Methods of Psycholinguistics
   1. Who comes to mind when you talk about studying language?
   2. A short history:
      1. 1951 – cornell – conference described as psycholinguistics first time
      2. Galton 1879 studied word associations
      3. Meringer and Mayer 1895 – studied slips of the tongue
      4. Freud 1901 – origin of speech errors
      5. Most commonly people start with Chomsky 1959 – and it’s relationship to transformational grammar
   3. Linguistics versus Psychology
      1. Old linguistics – comparative ling – comparing and tracing origins of different languages
         1. Studying the structure of different languages, discovering them
      2. New linguistics – what is and is not an acceptable sentence?
      3. Psychology: a basic human processor of language
         1. Information theory – emphasizes probability and redundancy in language
            1. For example what would you fill in this sentence?
            2. I went to the bank to deposit my \_\_\_\_\_\_\_\_?
            3. Still very important today – expectancy and frequency are some of the biggest predictors in language.
         2. Behaviorism – S > R pathways, conditioning and reinforcement control language
            1. Also still used even if you don’t think about it – what if someone says something wrong? What do you do?
            2. Very popular idea for language
   4. History:
      1. Chomsky versus Skinner – Chomsky reviewed Skinner’s book Verbal Behavior to show that behaviorism could not account for natural creative language.
      2. 1970s the cognitive processor (or computer) approach took over.
      3. Boxology – models of language that are box and arrows
   5. AI’s influence
      1. A lot of research was done to program computers to become language machines – maybe even write a response to that email that you don’t want to.
      2. However, the success for these programs has been very limited.
      3. Examples: Eliza, Parry, SHRDLU, - can you think of examples from literature or your every day life.
      4. Connectionism – aka parallel distributed processing, neural networks – computer simulation with many simple processing units like neurons that learn statistical regularities
      5. Activation – the amount of energy possessed by something, spreading activation, “turning on”
6. Methods
   1. Computer modeling
   2. Observation
   3. Experimental design
      1. Priming – a target item is processed differently because of previous processing of a related item, priming can help you or hurt you.
      2. Semantic priming – word related priming, where the second related word is processed faster because of it’s previous activation
      3. Reaction times – most common variable measured
7. Language in the brain
   1. Lesion studies – how does brain damage effect performance – before the advent of technology, this was the only way to study the brain functions of certain areas
      1. What are some areas that are associated with language?
      2. One problem with all this research is that it tends to focus on *where* things occur in the brain and not how it’s related to other parts or why it works the way it does.
      3. Double dissociation – a pattern of results were one patient can do one task, but not another and the other patient shows the reverse problem.
         1. This pattern will lead you to think that the areas of lesions are what each of those things do precisely or that there are different pathways.
   2. Neuroimaging – the ability to examine the brain while normal processing is occurring.
      1. CAT, PET, fMRI, optical imaging, EEG, ERP, TMS (show pictures)
      2. What’s the problem?
         1. Expensive
         2. You aren’t always sure what the results mean
         3. Subtraction issues (10% rule!)
8. Main goals of Psycholinguistics
   1. Processes involved in producing and understanding language
   2. What language processes are related to each other?
   3. Modularity – Are these specific language processing or more general cognition?
   4. Nature versus Nurture
   5. Multiple languages (cross language information)
9. Goal / topics / explain
   1. Modularity – the idea that the mind is built up from discrete modules (or processing units)
      1. For example – how do you read the words on this slide?
         1. Features > letters > words > semantics?
      2. Module – a self contained set of processes, converts input to output and are independent of other modules (autonomous) or they can be considered interactive when processes overlap or exchange data
      3. Feedback between levels?
   2. Bottom up versus top down
      1. Bottom up is purely data driven, can only work from sensory information and forward
      2. Top down interacts with the information from the environment
         1. Is word reading changed by context?
   3. Pro modules : Chomsky, Pinker, Fodor / Anti modules : Piaget