Review for MIDTERM 2
A midterm on only 4 lectures... WOHHOO!
Week 4.
Dr. Ben Bergen -
What Profanity Teaches Us About Ourselves.

Week 5.
Michael Allen -
Thinking with Your Body
... AND READINGS!

Week 6.
Dr. Taylor Scott - Cognition, Distributed

Week 6.
Dr. Sarah Creel - Babbling Babies and Musical Mandarin Parents

read  read
Thank you to our amazing COGS1 IA/IA's section slides are GREAT!
Hmm, why study profanity??

It can tell us about -- us!

Brain organization
Language
Culture
Relationship with other animals

=
Categories of Profanity

- Contemporary American English:
  - Religion, copulation, body, slurs
- Other languages ⇒ diff categories
  - E.g. animals, diseases

Taboo Words = Dependent on Culture

- Cultural belief / cultural structures for reinforcement
- Eg 1: Japanese ⇒ NO profanity equivalent;
- Eg 2: bilinguals ⇒ stronger response to taboo words in native language

Characteristics

- Word length
  - 4, also 3 and 5, → one syllable
- Consonants ending
  - 95 % of profane English monosyllabic (closed)
- C onset ← sC onset

Words Can Transform in Meaning Over Time

- Profanity ⇒ constant flux
- E.g. “Dick”
  - 1920’s: Dick = “average guy”
  - Originally a common nickname for Richard
  - Also referred to handle of riding crop (military) ⇒ take on new meaning
**Tourette’s Syndrome**
- Repetitive, stereotyped, involuntary movements and vocalizations
- Eg: coprolalia
- Patients with Tourette’s syndrome have different Basal ganglia
  - Fail to inhibit

**Coprolalia**
- Associated with Tourette’s Syndrome
  - Involuntary and repetitive use of taboo language

**Basal Ganglia**
- Shared with other animals
- Produce sounds to express emotional states

**Automatic Aphasia**

“could not provide the correct expletive for situations described to him nor could he complete a curse”

Speedie et al., 1993
Right Inferior Frontal Gyrus

- Inhibitory control
  - Stop unwanted things
- Evidence
  - Picture-word interference
    - Censorship from the brain will slow you down

Speech Errors

- Errors → unstated and repressed thought (Freud)
- Through experiment
  - More errors for neutral words
My boss hates it when I shorten his name to "Dick" – especially since his name is "Steve."
Behaviorism can only study the observable aspects of thinking.

I don’t care about mental processes.
Behavior occurs through conditioning.

Reward and punishment.
Mental processes!

Gestalt psychology
People process information like computers!

WHAT ABOUT COGNITIVISM?
Cognitivism

Cognitivism is the study in psychology that focuses on mental processes, including how people perceive, think, remember, learn, solve problems, and direct their attention to one stimulus rather than another. Psychologists working from a cognitivist perspective, then, seek to understand cognition. Rooted in Gestalt psychology and the work of Jean Piaget, cognitivism has been prominent in psychology since the 1960s; it contrasts with behaviorism, where psychologists concentrate their studies on observable behavior. Contemporary research often links cognitivism to the view that people process information as computers do, according to specific rules; in this way, it is related to studies in artificial intelligence. In addition, cognitivism has influenced education, as studies of how people learn potentially sheds light on how to teach most effectively.
The Black box of the mind should be opened in order to understand how people learn.

The learner is viewed as the information processor - like a computer

**LEARNING IS A CHANGE IN MENTAL REPRESENTATIONS!!!**
working memory has an upper bound → we can store up to 7(+/−2) “chunks

It is my law! Miller’s Law
Noam Chomsky

Hey Skinner, you can’t explain language learning using behaviorist theory!
I modeled cognition as explicit rule manipulation. I wrote computer programs to mimic the problem skills of a human! Artificial Intelligence!
Cognitivism

But!
Interaction between the brain and the body+environment is necessary for cognition to arise.
Brain in a "VAT" experiment!

<= Input/output, a body is necessary
You need a human body to create cognition.
Cognition arises out of an interaction between the brain and the body
Human cognition doesn't arise w/o:
- Artifacts
- Culture & Language
- Embodiment
Traditional Cognitive Theories

- User's mind
- External representations
- Other people

Distributed Cognition

- User's mind
- External representations
- Other people

Units of analysis can be larger
Cognition is built “outside in”
The mind is built “outside in”, that is, we begin with the social and material organization of cognitive activity, and then see how that is reflected in our cognition.
The roots of distributed cognition are deep, but the field came into being under its current name in the mid-1980s. In 1978, Vygotsky’s *Mind in Society* was published in English. Minsky published his *Society of Mind* in 1985. At the same time, Parallel Distributed Processing was making a comeback as a model of cognition (Rumelhart et al. 1986). The nearly perfect mirror symmetry of the titles of Vygotsky’s and Minsky’s books suggests that something special might be happening in systems of distributed processing, whether the processors are neurons, connectionist nodes, areas of a brain, whole persons, groups of persons, or groups of groups of persons.
For many people, distributed cognition means cognitive processes that are distributed across the members of a social group (Salomon 1993). The fundamental question here is how the cognitive processes we normally associate with an individual mind can be implemented in a group of individuals?
Distributed Cognition, Huh?

- It is the interaction between elements - brain - body and environment!
- It emerges out of the interactions between the elements.
POST COGNITIVISM DUDES...

Don Norman
Design of everyday things

Edwin Hutchins
Cognition in the wild

Jim Hollan
Helped develop DCog theory, HCI
THINKING IS NOT JUST IN THE MIND!! EMBODIMENT

THINKING = MODELS OF SIMULATIONS THROUGH ACTIVE PERCEPTION, PROJECTION AND MANIPULATION.
Surroundings Enable Externalization

- Interactive mental imagery can be generated through:
  - Gestures
  - Body movement
  - Object manipulation
  - Writing
  - Drawing
Our behavior comes from more than just the brain!

We use our body movements to solve problems.
Run in the **same** curved path that the ball is going in...
Moving and using your body is the key to solving the outfielder problem.

It is the mix of the outfielder’s motion + the ball’s motion that helps to predict where the ball will fall.
Using the methodology of field studies, Suchman (1987), Hutchins (1995a, 1995b) and others could demonstrate how much people rely on cues and representations provided by the environment. While traditional accounts of planning rely on mental representations and processes exclusively, human planning can be shown to rely on maps, road signs, guidance by other people, and other external sources. The importance of external representations in problem solving has been repeatedly demonstrated (Zhang 1997).
What is cognitive offloading?

Mind extension tools!

Cognitive demand means we can do more!
SO THE INTERNET IS NOT MAKING ME DUMBER? WHOO HOOO!

The internet is my extended mind! Hmm.

Hmm.
Recall, Otto and his notebook.
Language learning is difficult.

What is so special about language development?
Language at age 3

- Good narrative skills
- Gestures
- [Over]generalizes concepts
  - Obi-Wan is a teacher, garage sale for robots
- Phoneme errors
  - Erratic production of final L sound
    - “well” followed by “wew”
    - sh → s (siny guy, spacesip)
    - th → f (He tried to do it without seeing, Darf Vader)
- Verb forms overregularized ("blowed up")
- Frozen phrases (Don’t talk back to Darf Vader, he’ll get ya!)

Know the five fundamental things about learning a language!
1. Speech sounds
2. Finding word boundaries
3. Mapping meaning to the words
4. Syntax/grammar
5. Language in a social context
Parents, listen next time your baby babbles

August 27, 2014
Parents who try to understand their baby's babbling let their infants know they can communicate, which leads to children forming complex sounds and using language more quickly. The study's results showed infants whose mothers attended more closely to their babbling vocalized more complex sounds and develop language skills sooner.
**How do the two theories differ?**

- **Sequential**
  - Does not really consider speech perception, mostly just speech production!

- **Overlapping**
  - Does account for speech perception – starting from birth (before?) – learning a little of this all at once!
PERCEPTION PRECEDES PRODUCTION!

Producing language

- Speech sounds: ~6-8 months; Babbling onset
- Words: 10-12 months; say first words
- Grammar: 18 months; "word spurt"
- Social context: This takes quite a while...

Perception

- Show some word recognition at 6-9 months (Bergelson & Swingley, 2012)
- Respond to word order at 17 months, before 2-word stage (Hirsh-Pasek & Golinkoff, 1993)
- Show some social (?) responsiveness to language in infancy (Kinzler et al., 2007)
- MANY studies showing non-adultlike sensitivity to differences in speech sounds, voices, vocal emotion, word stress patterns in preschool years and beyond

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BABY STATISTICS!

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STAY WORKING HARD

... SPRING BREAK IS ALMOST HERE!
MIDTERM2 - TUESDAY FEBRUARY 25, 2020

× 11:00am ñ 12:20pm
× Sleep well and study hard.
× You got this!