https://classesv2.yale.edu/portal/

Language
(continued)

Do other animals possess the
same sort of language?

(and if not, can they learn it?)

Non-human communication systems

A finite list of calls

Non-human communication systems

A continuous analog
signal

Non-human communication systems

Random variations on
a theme

Non-human communication systems

No phonology, morphology, syntax

No arbitrary names

No recursive syntax

What about primates trained by humans?

Heated debate over abilities of trained primates

- Few 'words", learned slowly through extensive training
- Very limited ordering; no recursion
- Highly repetitious

Typical chimpanzee utterances, after several years of training

- Nim eat Nim eat
- Drink eat me Nim
- Me gum me gum
- Tickle me Nim play
- Me eat me eat
- Me banana you banana me you give
- Banana me me eat
- Give orange me give eat orange me eat orange

Why would anyone expect chimpanzees to learn human language?

1. Chimps are so smart!

True -- but more is needed for learning language than general smartness (consider genetic disorders)

Why would anyone expect chimpanzees to learn human language?

2. Chimps are our nearest evolutionary relatives

True -- but humans split from chimps 5-10 million years ago; plenty of time for specialized brain structures to evolve

Other topics in the psychology of language

- Language in the brain
- Neurological and cognitive nature of language disorders
- Language perception and production
- Reading
- Bilingualism and multilingualism
- Language and thought

Language and Thought

- Is language necessary for abstract thought?
  -- studies of non-linguistic creatures, such as babies and chimps

- Does the language you learn change the way you think?
  -- studies of speakers of different languages, e.g., Korean vs. English

Reading Response #2

- What do you think about the relationship between knowing syntax and being intelligent? (Do you think that learning syntax makes you smart? Or being smart makes it possible to learn syntax? Both? Neither?). Take a position and defend it with evidence from lecture and from the readings.

Perception &
Attention & Memory

Big themes

PERCEPTION
- The problem of perception is *hard*
- Successful perception involves educated (unconscious) guesses about the world

ATTENTION
- We attend to some things and not others
- We miss a surprising amount of what happens in the world

MEMORY
- There are many types of memory
- The key to memory is organization and understanding
- You can't trust some of your memories

We are often wrong about our experiences …

… of the past and of **right now**

Perception &
Attention & Memory

Why is this so hard?

- You need to infer a 3D world from 2D information
- Mathematically impossible
  (like backwards multiplying)

How do we solve it?

Unconscious assumptions about
how the world works

1. Color
2. Objects
3. Depth

Example 1:

Color

A simple assumption

- Shadows make surfaces darker
- So when we see a surface in shadow, we automatically assume it is lighter than it looks
- And we *see* it as lighter

(remove cues to shadow, we see it as it is.)

Example 2:

Objects

Example 3:

Depth

Depth Perception

- One of our more important perceptual abilities involves seeing in three-dimensions
- Depth perception is difficult because we only have access to two-dimensional images
- How do we see a 3-D world using only the 2-D retinal images?

Depth Perception Cues

- Cue - stimulus characteristics that influence our perceptions
- We are able to see in 3-D because the visual system can utilize depth cues that appear in the retinal images.

Some Depth Cues

-- Binocular disparity

-- interposition
-- relative size
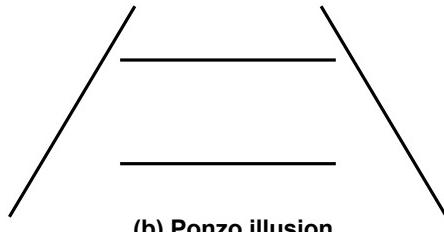-- texture gradient
-- linear perspective

- It is hard to tell if the figure on the upper right is a trapezoid or a square slanted backward.

- If we add texture, the texture gradient helps us see that it is actually a square.

Size-Distance Illusions

- In each of these examples, the top and bottom lines are actually the same length.
- In each case the top line looks longer.
- Why?
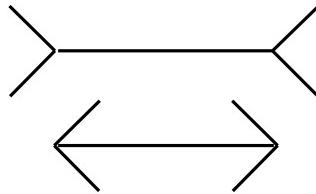
(a) Müller-Lyer illusion

(b) Ponzo illusion

Muller-Lyer Illusion

- Perceptual psychologists have hypothesized that the top horizontal line looks longer because it also looks farther away.
- Specifically, the inward pointing arrows signify that the horizontal line is closest to you, and the outward pointing arrows signify the opposite case.

Ponzo Illusion

- Converging lines indicate that top line is farther away than bottom line

A quick review of some memory distinctions

- Sensory, short-term, long-term
- Implicit, explicit
- Semantic, episodic
- Encoding, storage, retrieval
- Recall vs. recognition

Basic sub-divisions of memory

Attention gets information
from sensory memory to
working memory
(consciousness)

Sometimes attention is
effortless

Sometimes attention requires
work

Sometimes attention is
involuntary

Attention in the real-world

- Basketball
- continuity
- flicker