Child Language II

LIGN 170, Lecture 13

Theories of language acquisition

- Nativist Theories
  - Language is entirely innate
- Learning Theories
  - Language is entirely learned
- Cognitive Theories
  - Language development is related to other cognitive development
- Social Interactionist Theory
  - Language is acquired through communicative interaction

Nativism

- Language capacity is hardwired from birth
  - Acquired through a genetic program
  - Distinct from other cognitive processes
- Language Acquisition Device (LAD)
  - Does not require explicit teaching or experience to acquire language
  - But has a specific time period of function

- Universal Grammar
  - Children come preprogrammed with a kind of default language which can be altered with exposure to a specific language

- Key assumption:
  - Infants develop language even when other cognitive skills are low

Evidence in favor of a predetermined biological language system

1. Other primates don't learn language simply by being treated like human infants

- Gua (common chimp, 1933)
  - Raised by Winthrop and Luella Kellogg alongside their 9 1/2-month-old son Donald for 9 months
    - Never spoke, but learned to comprehend spoken requests

Chimps and language…

Age (months)	Comprehended requests
Gua 9½ Donald 12½	7 2
Gua 12½ Donald 14½	21 20
Gua 13½ Donald 15½	28 32
Gua 16½ Donald 18½	58 68

- Requests all frequent, action-oriented
- No selective response of a single object from among a group of objects
- Many requests uttered in a particular context

Chimps and language...

- Viki (common chimp, 1951)
  - raised alone by Keith and Catherine Hayes from 3 days to 7 years old
  - capable of picture recognition, sorting of pictures and objects into conceptual categories

Chimps and language...

- Viki (common chimp, 1951)
  - Understood large number of words & phrases
  - But, comprehension contextually determined
    - Out-of-context requests and response selection failed:
      - “show me your nose/eyes/ears” were failures

Chimps and language...

- Washoe (common chimp, 1971)
  - Trained by Allen and Beatrice Gardner
  - Modified sign, no spoken language
    - Learned signs via molding of hands
    - By 3 years, produced 85 signs appropriately
      - combinations mostly with “hurry”, “more”, “please”, “gimme” + NOUN

Evidence in favor of a predetermined biological language system

2. Children with other cognitive deficits still learn language

- Language skills can persist even in cases of profound mental retardation
  - *We will return to this next time*

Evidence in favor of a predetermined biological language system

3. Poverty of the stimulus

- Language input to children is ill-formed and incomplete
- Negative evidence
  - Children don't receive explicit rules about what not to do
  - They don't get it even if you do tell them

Evidence in favor of a predetermined biological language system

4. Creoles

- Pidgins develop in language contact situations (mostly colonial)
- Creoles develop from children exposed primarily to pidgins

- Children are, in essence, filling in the gaps of pidgins to make them full languages.

Similarities across creoles

- Regardless of contact languages, creoles have a number of structural similarities
  - Double negation
  - SVO word order
  - No copular *be*

Similarities across creoles

- Creoles and their similarities argue in favor of a universal grammar
  - Pre-specified defaults
  - When language fails to supply evidence that contradicts default, then default prevails

Evidence in favor of a predetermined biological language system

5. Evidence for critical period of language acquisition

Bird Song

- Some birds (like sparrows) have courtship songs
- Songs have dialectal variation
  - Individual song is a version of other songs it hears during "critical period" of first 100 days of life
  - Bird learns song by trail and error (babbling)
  - When deprived of song input early in life, they fail to produce a normal song

song

Bird Song

- Some birds (like sparrows) have courtship songs
- Songs have dialectal variation
  - Individual song is a version of other songs it hears during "critical period" of first 100 days of life
  - Bird learns song by trail and error (babbling)
  - When deprived of song input early in life, they fail to produce a normal song

song

What about people?

- Number of cases of language deprived children
  - Genie
    - Discovered in 1970, age 13
    - Severe neglect, no language input
    - Never attained complex speech (developmentally short of 3-4 years old)

Summarizing Nativism

- Language capacity is hardwired from birth
- Language Acquisition Device (LAD)
  - Evidence from
    - Impoverished language input
    - Failed animal language attempts

Learning Theories

- Language acquisition occurs through three processes:

Learning Theories

- Classical Conditioning

Unconditioned Stimulus

=

Unconditioned Response

Learning Theories

- Classical Conditioning

Unconditioned Stimulus + Conditioned Stimulus = **Conditioned Response**

Learning Theories

- Classical Conditioning

Conditioned Stimulus = **Conditioned Response**

Learning Theories

- Classical Conditioning

Unconditioned Stimulus

=

Unconditioned Response

Learning Theories

- Classical Conditioning

Unconditioned Stimulus	+	Conditioned Stimulus	=	**Conditioned Response**

"bottle"

Learning Theories

- Classical Conditioning

Conditioned Stimulus	=	**Conditioned Response**
"bottle"		

Learning Theories

- Operant Conditioning
  - Reinforcement/rewards
  - Children are rewarded for early attempts at language
  - Selective reinforcement shapes children's language as the requirement for a reward becomes more specific

Learning Theories

- Social Learning
  - Observation and imitation of others, especially those who are powerful, nurturing and similar to the child

Learning Theories

- Not enough to explain the complexities of language by itself
  - Especially syntax and phonology
- Social Learning may be at play for later language development, particularly acquiring social aspects of language use like politeness

Cognitive Theories

- Language is unique to humans
  - But, not a modular, pre-programmed ability
  - General disposition for learning that allows language
    - Pattern recognition
    - Imitation

Other kinds of development

- Language development is related to other forms of development
  - Must have other aspects of cognition in place to be able to communicate them
    - Must have object permanence to be able to talk about "all gone"
- Children have experiences with objects that gives them semantic concepts that can then map onto language

Cognitive theories

- For these kinds of theories to be true
  - Infants must have general skills that clearly contribute to language

Cognition and Language

- Cognitive skills that are not language specific but none-the-less contribute to language
  - Newborns prefer face-like to non-facelike stimuli
  - Quickly learn to recognize their mother's face
  - Young infants focus on the eye region more than other facial regions
  - More inclined to look at a pleasantly moving face than a still one

Cognitive theories

- For these kinds of theories to be true
  - Infants must have greater cognitive skills than previously believed
    - Nativism's LAD proposed because:
      - Infants learn language despite not being able to do much else
  - This also appears to be true
    - Provides lessons about methodology

Object permanence

- Object Permanence
  - Objects exist in time and space, even when out of sight

- It has traditionally been believed that infants had no notion of object permanence until 9 months of age.

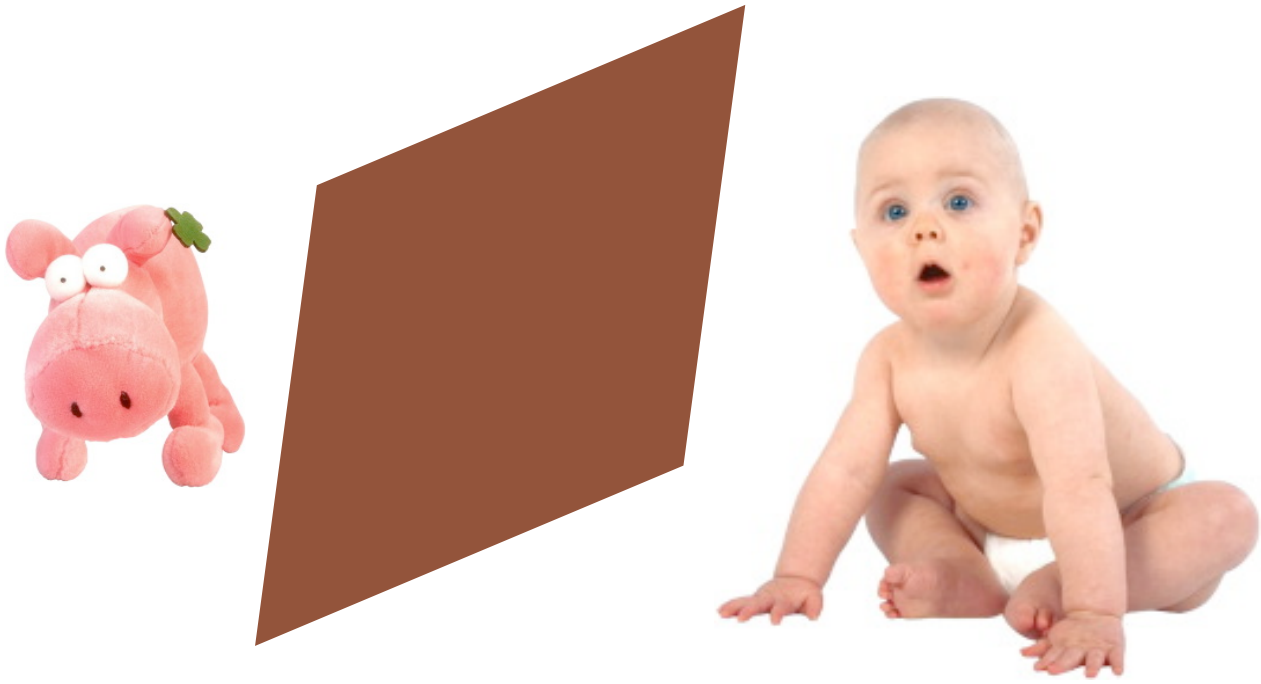
Object permanence

- Evidence

Object permanence

- Around 6-8 months, they begin "pre-object permanence" behaviors like grasping at the object again after being interrupted
- At 9 months, they will search for object

Problem with evidence?



Problem with evidence

- Observations depend on ability of infant to interact physically- reaching for an object
  - This involves additional sets of complex skills
- Infants may know much more than they can demonstrate physically.
- Bigger point for science reporting

  Always ask: are they really testing what they think they are?

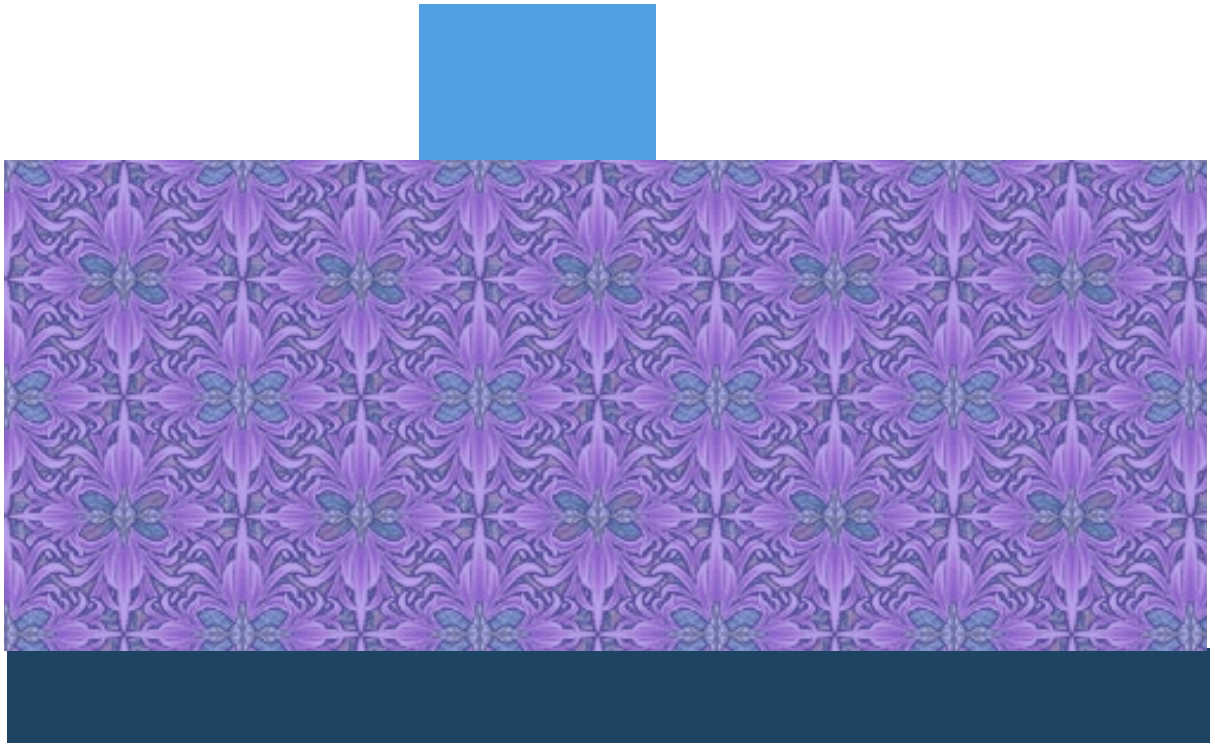
Magic shows as science

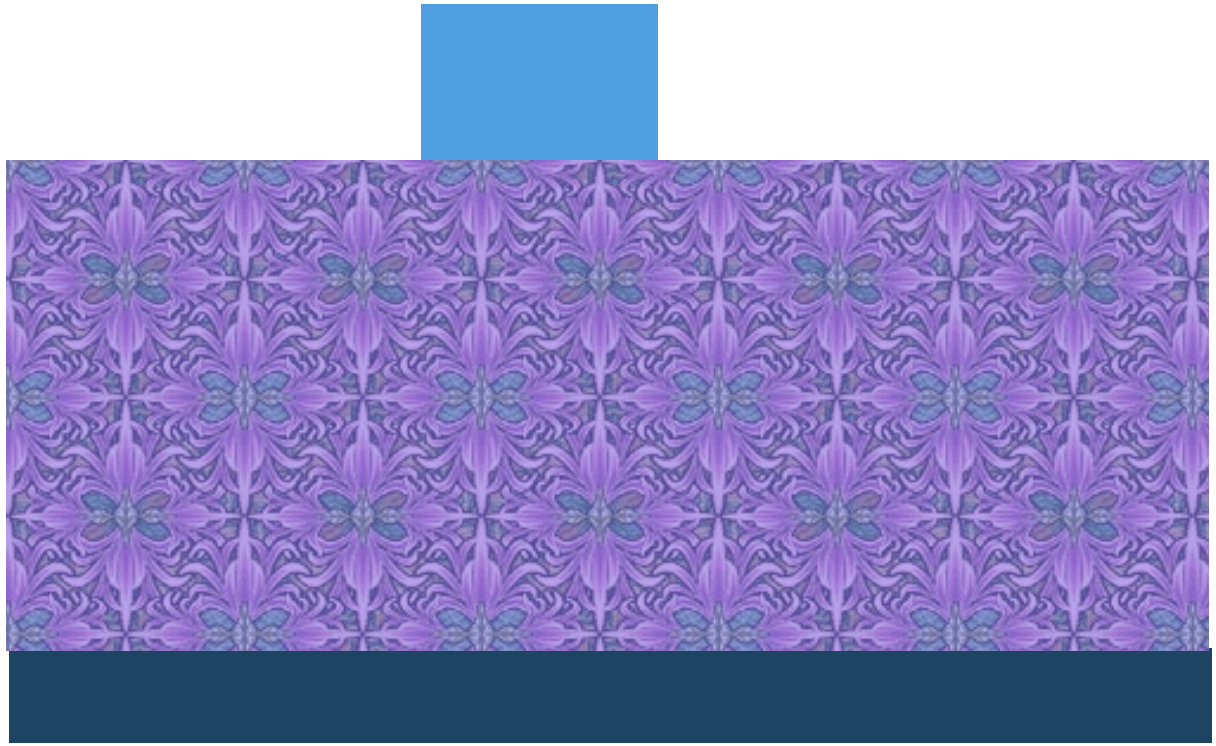
- Violation-of-expectation method
  - Infants are presented with a possible and an impossible test event.

    - Possible event: Consistent with the knowledge being examined
    - Impossible event: Violates this knowledge
- If they have the knowledge, infants will look longer at the impossible event relative to the possible event

Back to objects…

- Can 2.5 month-olds realize that objects exist continuously in time and move along continuous, unobstructed paths?



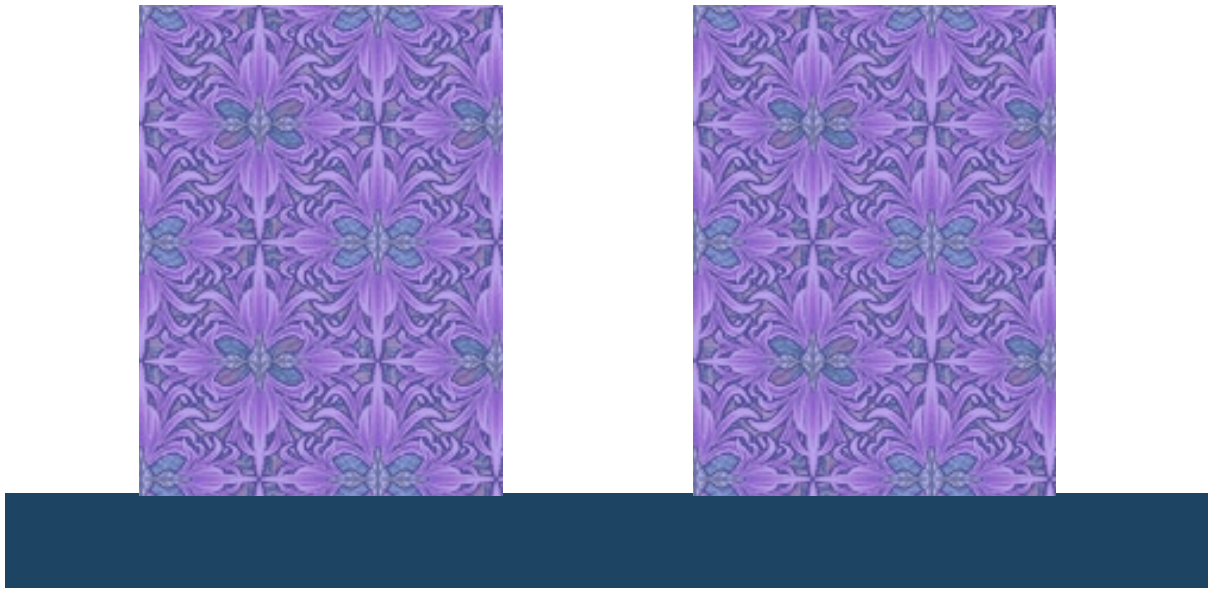


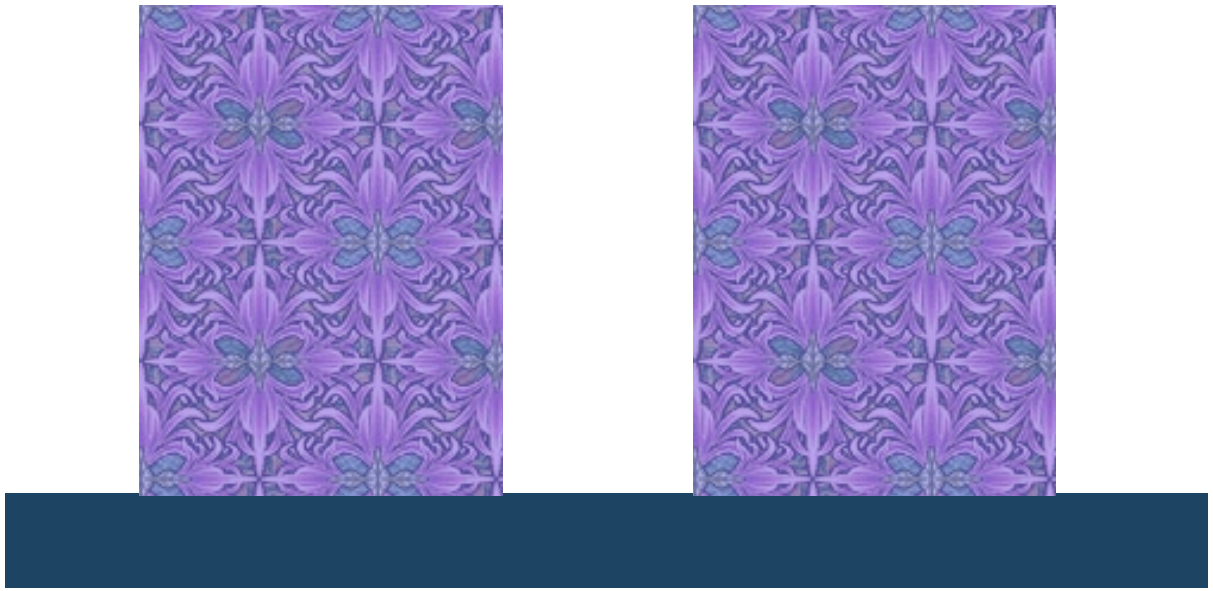
Infants looked longer at the ball when it "magically" went through solid object

Interpretation

- Infants understood ball continued to exist and move after it went behind the screen
  - Ball could not go through 2nd solid box
  - So, they expected the ball to stop at it
- Meaning: Even at 2.5 months, infants already conceive of objects as permanent entities that exist and move continuously in time and space.

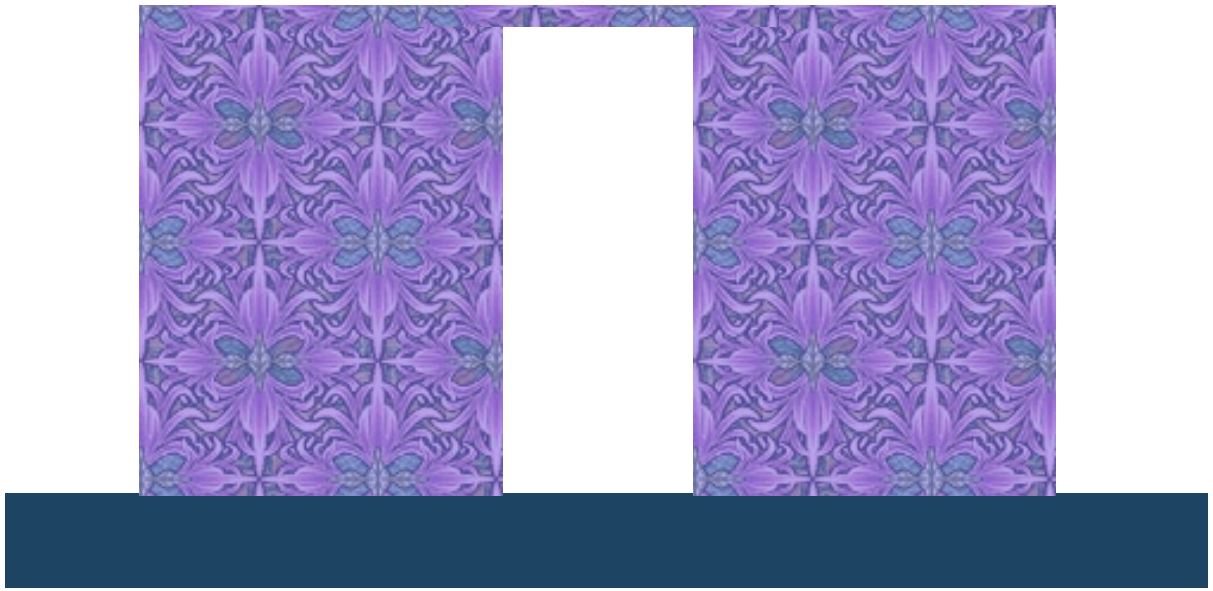
Not always perfect…





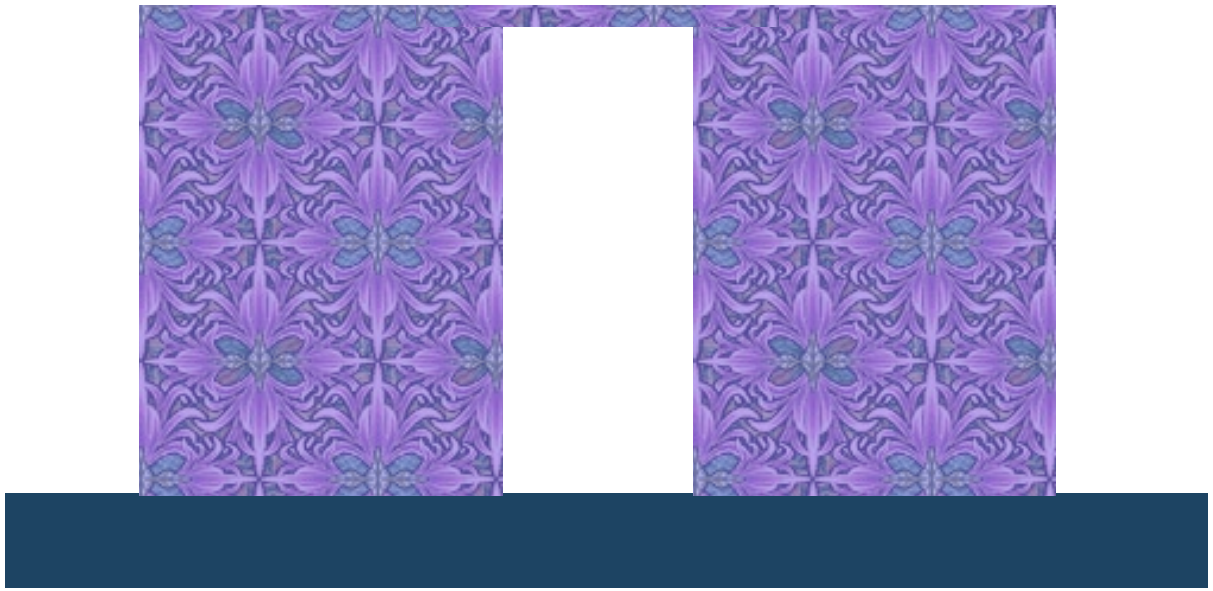
At 2.5 months:

Surprised when ball does not appear in gap



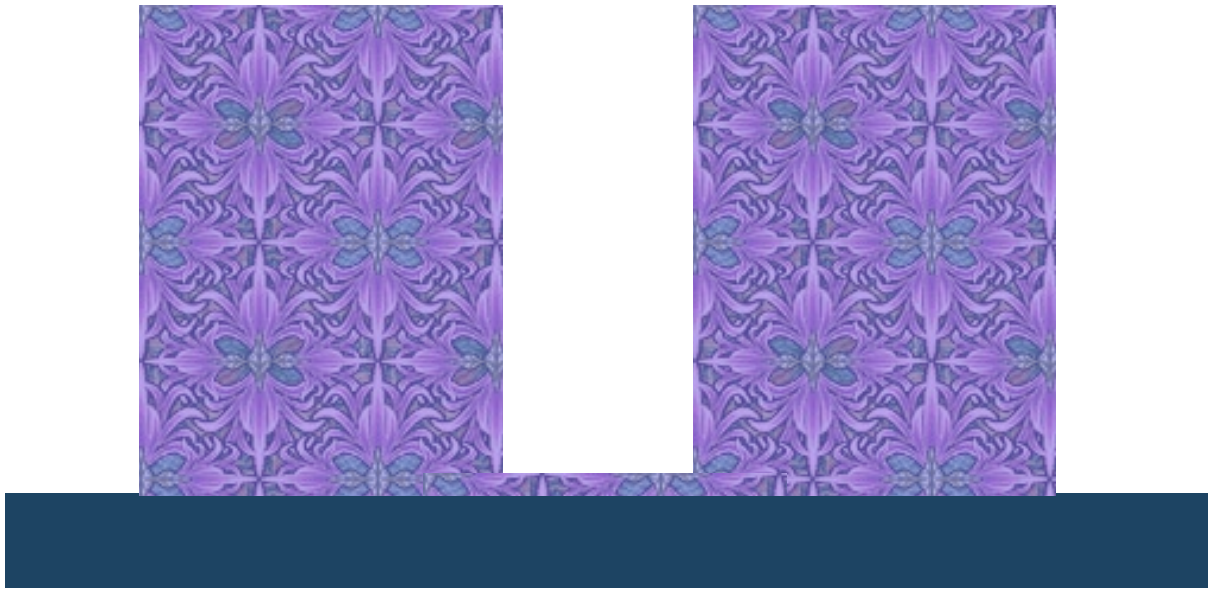
At 2.5 months:

Not surprised when there's a thin connecting strip at top



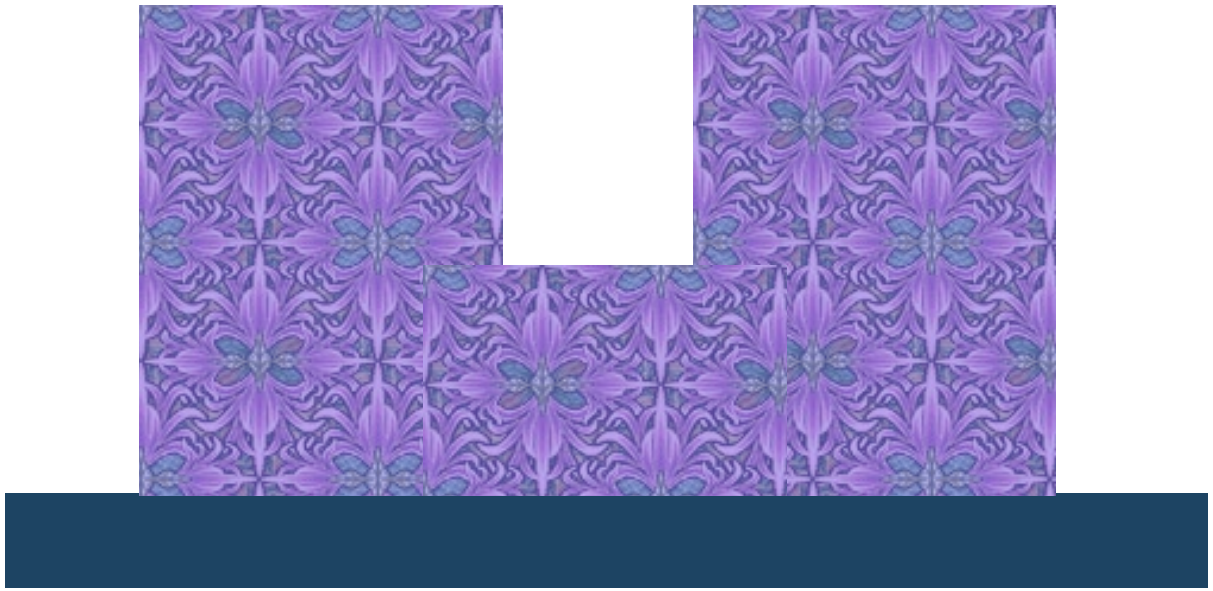
At 3 months:

Surprised when there's a thin connecting strip at top



At 3 months:

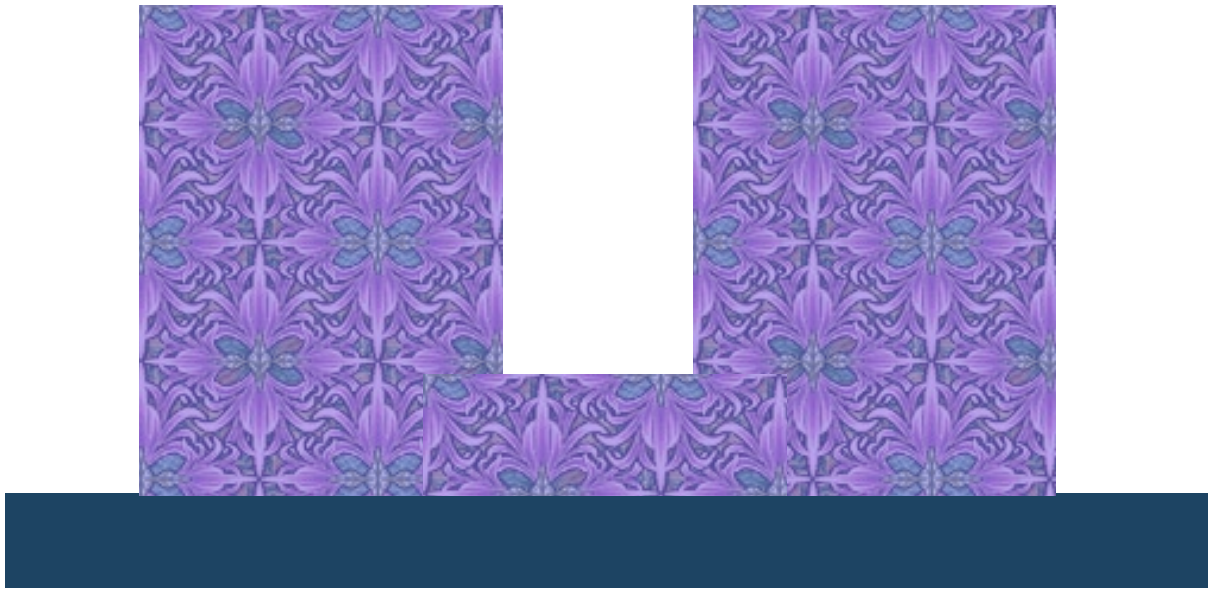
But *not* surprised when there's a thin connecting strip at bottom



At 3.5 months:

Height of connecting strip now counts

Not surprised when strip is taller than moving object



At 3.5 months:

Height of connecting strip now counts

Surprised when strip is shorter than moving object

Why is this relevant?

- Infants as young as 2.5 months appear to have a basic understanding of how physical objects behave
  - 6.5 months sooner than initially thought
- So, infants come into the language learning environment with a much more sophisticated view the world than has been previously thought.
  - LAD device not necessarily needed!

Social Interactionist Theory

- Infant benefits from child directed speech
- Children acquire language in part through their interaction with others - *not* merely "exposure"
- Children are social beings who acquire language in order to communicate

Social Interactionist Theory

- Evidence against Nativist "Poverty of Stimulus" argument
  - Parents *do* respond to ill-formed language
    - Act confused; rephrase correctly
- Joint child-adult attention important
- Increased vocabulary size is associated with mothers who talk about things the child's attention is on

Summary/Take-home

- Language is clearly genetically specified
  - It appears that only humans develop a full version of it.
    - And humans can't acquire the honey bee dance...
- But, not yet established to what extent language is directly specified and to what extent its development is tied up with other aspects of cognitive and social development

Acquiring additional languages

- Over half of the world's population speaks more than one language
  - Yet, bilingualism is often politically controversial
    - Official languages
    - Recognized languages
    - Language in education

One debate

- As a parent, do you promote an environment in which children acquire more than one language?
- Depends on answers to questions about
  - Effects on other cognitive skills
  - Problems with language acquisition
  - Final language competence

  (among others!)

Problems for research

- What is the yardstick?
  - If multilingualism is the norm world-wide, is it fair to judge bilingual language development against monolingual?
    - Assumes that monolingual language acquisition is “correct” and deviations from it are problematic

Problems for research

- How much difference do seemingly minute differences in exposure make?
  - Precise age of exposure to each language
  - Percentage of input in each language
  - Practical & social context of each language
  - Languages involved
- Lots of factors that are difficult to control and/or quantify

Problems for research

- Definition of bilingual
  - Possible to be highly, natively proficient in more than one language
  - Languages within a speaker are rarely used equally in all domains at all times
    - Different languages may be dominant in different situations, at different times, for different purposes
- Back to yardstick problem: must bilinguals be as "good" as monolinguals at all times in order to be considered equally proficient?

Answering concerns

- Given the option, do you promote an environment in which children acquire more than one language?
- Depends on answers to questions about
  - Effects on other cognitive skills
  - Problems with language acquisition
  - Final language competence

  (among others!)

Effects on other cognitive skills

- Currently no conclusive evidence that acquiring multiple languages affects other cognitive skills one way or the other
  - Meta-linguistics skills (i.e. knowledge about language) appear to be better in multilingual children
  - Early evidence suggesting lower IQ for bilinguals throughly debunked
  - ? Some evidence that spatial skills may be higher in bilinguals

Answering concerns

- Given the option, do you promote an environment in which children acquire more than one language?
- Depends on answers to questions about
  - Effects on other cognitive skills
  - Problems with language acquisition
  - Final language competence

  (among others!)

Problems with acquisition

- Some research reports bilingual children tend to start speaking late (after 2nd birthday)
  - But, considerable amount of variation in both monolingual and multilingual children
  - Late talking bilingual children still fall within "normal" range

Separating languages

- Do children have trouble distinguishing between languages initially?
  - Does this lead to problems with final acquisition of the languages involved?
- Concerns about distinguishing languages stem in part from misunderstandings about language mixing

Language mixing

- Common feature of communication among adult bilinguals
  - Also talked about as code switching
  - When speakers switch back and forth between languages during speech, including in the middle of sentences or phrases

Language mixing

- Children also mix languages
  - Questions:
    - Does this represent appropriate language use in a bilingual context?
    - Does this reflect underlying competence in the languages involved?
      - Concern: Children are getting their languages “mixed up”

Language mixing

- By age 2, children appear to choose their language according to the hearer & have their first meta-lingustic utterances about bilingualism
- Early mixes almost always single word
  - Child knows word in both languages
- As early as middle to end of the 2nd year, when children do code-switch, they appear to largely obey structural constraints
- Mixing does not necessarily decrease over time (individual variation!)

Language mixing

- Mixing during language acquisition is probably not due to language confusion on the part of the child

- Other evidence against idea that exposure to multiple languages causes language confusion...

Knowing syntax

- As soon as multiword utterances appear, children appear to appreciate syntactic differences between languages
  - V2 Languages - place finite verb in 2nd second structural position of sentence
  - Subject Verb Object; Object Verb Subject
  - Children acquiring V2 language (e.g. German) and non-V2 language (e.g. French) will respect V2 constraint for German, but not apply it to French

Answering concerns

- Given the option, do you promote an environment in which children acquire more than one language?
- Depends on answers to questions about
  - Effects on other cognitive skills
  - Problems with language acquisition
  - Final language competence

  (among others!)

Final acquisition

- Simultaneous, sequential language input and critical period
  - Does it matter if a 2nd language is introduce at birth, at 3 years, at 7 years, at 12 years?
  - Simultaneous language exposure seems assured of resulting in native proficiency

Return to critical period

- More complicated than sparrows...
  - Child language acquisition (L1) vs. adult language learning (L2)
  - Exposure by age 4: L1 pattern
  - Exposure between 5 & 10: preliminary evidence for resemblance to L2 pattern rather than bilingual L1 development
    - Offset of critical period: child L2 development

Answering concerns

- Given the option, do you promote an environment in which children acquire more than one language?
- Depends on answers to questions about
  - Effects on other cognitive skills
  - Problems with language acquisition
  - Final language competence

  (among others!)