Three Minute Review

ANIMAL LANGUAGE
• Alex Pepperberg

PHYSICAL DEVELOPMENT
• differentiation of neural tube
• vulnerability to teratogens
  – radiation
  – fetal alcohol spectrum disorder
• neural pruning (neural Darwinism)
• myelination

COGNITIVE DEVELOPMENT
• How can we study non-verbal infants?
  – visual tracking
  – preferential looking
  – habituation
  – eye movements
  – behavior
  – sucking response
• critical period
  – imprinting
• stage theories
• Piaget
  – schemes
  – assimilation and accommodation
• we’ll review all the stages on Thursday
Test Yourself

- You are a developmental psychologist trying to determine whether infants can distinguish colors from black and white images. How could you do it?

Why are human brains so big?

One Theory

- Why do humans have the biggest brains (relative to body size) of all mammals?
- Food gathering?
  - Data doesn’t fit
- Social group size?
  - Correlates well with brain size
  - The larger the neocortex, the larger the average size of groups they live with
  - Group of five individuals
    - Must keep track of 10 two-person relationships
  - Group of 20 individuals
    - Must keep track of 190 two-person relationships
  - Predicted group size of humans based on neocortex size: 147.8
  - “It’s the number of people you would not feel embarrassed about joining uninvited for a drink if you happened to bump into them in a bar” -- Robin Dunbar
Group of 150?

- average size of hunter-gatherer villages: 148.4
- rule of thumb for military troop size: 200
- group at which a Hutterite colony divides: 150
  (*“When things get larger than that, people become strangers to one another”* -- Hutterite leader)
- optimal plant size of the successful Gore-tex business: 150

Social Intelligence

“When you observe other mammal species and see instances of conflict between two individuals, it is usually easy to predict which one will triumph: the larger one, or the one with the bigger canines or bigger antlers, or whatever is the appropriate weapon for combat. Not so in monkeys and apes. Individuals spend a lot of time establishing networks of “friendships”, and observing the alliances of others. As a result, a physically inferior individual can triumph over a stronger individual, provided the challenge is timed so that friends are at hand to help the challenger while the victim’s allies are absent.” -- Lewin1992

Machiavellian Intelligence

- *The Prince*
- everyday politics

Example of social intelligence

Reciprocal altruism

- How do you keep track?

Theory of Mind

- the (debatably unique) human ability to explain and predict behavior in terms of people’s mental states (e.g., wanting, believing, pretending)
- Examples
  - understanding another’s beliefs (the Sally-Ann test, the Smarties test) and motivations
  - understanding one’s own beliefs at an earlier time
  - lying requires understanding how others beliefs will affect their behavior
  - understanding alliances and conflicts (Heider & Simmel’s moving shapes)
- appears to be absent or impaired in autistic children (but not Down’s syndrome children)
Sally-Ann Task

- Sally puts her ball in the basket
- Sally goes away
- Ann moves the ball
- “Where will Sally look for her ball?”

Camera Control Task

- A camera takes a picture of the ball in a basket
- Ann moves the ball
- “Where will the ball be in the photograph?”

Normal children do well with both the other person (false belief) and the camera (false picture).

Autistic children to worse with the other person and better with the camera.
The Smarties task

- What's in the Smarties box?
- Oh look, it's ribbons
- What did you think was in the Smarties box?
- What will Aaron think is in the Smarties box?

Temple Grandin

- Some autistics can be very high functioning
- Asperger's syndrome: high functioning autism
- e.g., Temple Grandin, the PhD “anthropologist on Mars”

The Extreme Male Brain Theory of Autism

<table>
<thead>
<tr>
<th>Williams Syndrome??</th>
<th>Females</th>
<th>Males</th>
<th>Autistics</th>
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<td>Better at understanding people than things</td>
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- Williams Syndrome
  - genetic disorder
  - 1/20,000 births
  - mirror image of autism?
  - mild retardation
  - pile-like faces
  - very sociable, endearing personalities
  - expressive language skills, poor spatial skills
  - equal in males and females

- Autism
  - strongly heritable condition
  - 1/100 children in autism spectrum
  - more common in males than females (10:1)
  - some brain abnormalities (e.g., amygdala)
  - "The autistic personality is an extreme variant of male intelligence." – Hans Asperger, 1944
  - "The male brain is defined… as those individuals in whom systemising is significantly better than empathising, and the female brain is defined as the opposite cognitive profile." – Simon Baron-Cohen, 2002

- Asperger's (high functioning autism)

- Williams Syndrome??
The Extreme Male Brain Theory of Autism

A Genetic Explanation for Autism?

Is there a ‘geek’ syndrome?

“We’re all on the spectrum”

Blaming autism on engineers’ mating is ‘insane,’ parent complains

See also the article in Wired (link on 023 web)
Harlow's Attachment Studies

- Infant rhesus monkeys were placed with two surrogate mothers, one made of wire and one covered with soft cloth.
- Milk-producing nipple was attached to either the wire or the cloth mother.
- What would Freud predict? What would Skinner predict?

Harlow's Attachment Studies

- Average age (days)
- Hours per day spent clinging

<table>
<thead>
<tr>
<th>Average age (days)</th>
<th>Wire surrogate</th>
<th>Cloth surrogate</th>
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<td>145</td>
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<tr>
<td>165</td>
<td>Fed on wire mother</td>
<td>Fed on cloth mother</td>
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</tbody>
</table>

Ainsworth's Strange Situation Test

- Mother-child pairs were observed in a playroom.
  -- initial mother-child interaction
  -- mother leaves infant alone in playroom
  -- mother returns and greets child.
Forms of Attachment

- Secure attachment (~65%)
  - child explores the room when mother is present
  - child becomes upset and explores less when mother is not present
  - child shows pleasure when mother returns

- Insecure attachment
  - Avoidant attachment (~20-25%)
    - child is not upset by mother’s departure and ignores her when she comes back
  - Anxious resistant attachment (~10-15%)
    - child is clingly when mother is there, becomes inconsolably upset when she leaves and remains distressed when she returns

Sex vs. Gender

Sex
- XX vs. XY
- plumbing

Gender
- feminine vs. masculine
- heterosexual vs. homosexual

Gender Expectations
**Gender-Specific Toys**

- Barbie Liberation Organization (BLO, 1989)

**Vengeance is mine!!!**

**Math is hard!**

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**Erik Erikson**

- trained by Anna Freud
- proposed 8 psychosocial stages of development
- each stage provides a conflict to resolve
- stages went beyond childhood into adulthood

  - “In youth you find out what you care to do and who you care to be… In young adulthood you learn whom you care to be with… In adulthood, however, you learn what and whom you can take care of.” – Erikson

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**Erikson’s Stages**

**Stage 1: Trust vs. Mistrust**
- birth - 1 year
- children rely on caregiver to meet needs
- success: sense of safety, trust
- failure: insecurity, anxiety

**Stage 2: Autonomy vs. Self-Doubt**
- 1-3 years
- children discover their independence
- success: feelings of self-control
- failure: feelings of lack of control, shame & doubt
Erikson’s Stages
Stage 3: Initiative vs. Guilt
- 3-5 years
- children are given greater interactions and responsibility
- success: self-confidence
- failure: feel lack of self-worth, guilt

Stage 4: Industry vs. Inferiority
- 5-12 years
- children gain knowledge and skills
- success: basic social and intellectual skills, feelings of competence
- failure: feelings of failure

Erikson’s Stages
Stage 5: Identity vs. Role Confusion
- adolescence
- teens develop sense of self and goals
- “Who am I?”
- “to be normal during the adolescent period is by itself abnormal” -- Anna Freud
- success: comfortable with self, roles
- failure: identity confusion, negative identity

Stage 6: Intimacy vs. isolation
- early adult
- young adults test out relationships and friendships, learn to compromise independence and accept responsibility
- success: capacity for closeness and commitment with another
- failure: feelings of aloneness, separation

Erikson’s Stages
Stage 7: Generativity vs. Stagnation
- middle adulthood
- start thinking about contributions to future generations
- success: focus beyond oneself
- failure: self-indulgent concerns, existential angst

Stage 8: Ego-integrity vs. Despair
- late adulthood
- aged look back on life: crises, aspirations, accomplishments
- success: wholeness, satisfaction with life
- failure: feelings of futility, disappointment, incompleteness
Looking back at Erikson

- do other cultures go through same stages?
- how are the stages affected by cultural changes within our society?
  - decline of families and extended families
  - nursing homes
  - respect for elders vs. ageism