Developmental Psychology (Chap 4 thru 4-9; Chap 5-3)

- Subarea of psychology which studies how we change over the lifespan (physically, socially, cognitively, emotionally, etc.)

http://www.youtube.com/watch?v=C7ZN5J1N9Vk

Big Developmental Issues

- Nature vs. Nurture (or Nature AND Nurture)
  - To what extent are behaviors the result of heredity vs. the result of environmental influences?
- Stability vs. Change
  - What early characteristics persist and which may change as we develop?
- Continuity vs Discontinuity/Stages
  - What aspects of development change slowly & gradually, and which change more abruptly at particular times of life?

Fertilized egg (zygote) now has 23 pairs of Genetic Sex

See p 67-71 if you need a refresher on genetics & twin research.

Genetic Sex

- Fraternal (Dizygotic) Twins
  - Two eggs are released and fertilized
  - Two fertilized eggs

- Identical (Monozygotic) Twins
  - One egg is fertilized
  - Fertilized egg divides into two. The two parts are separate and develop independently
  - The two babies have identical chromosomes and genes
Fertilization & the Germinal Stage: During this first prenatal stage the new zygote is on the move for about 10-14 days.

Attachment to Uterus & the 6 week Embryonic Stage

- Body systems develop --- time when the embryo is most susceptible to birth defects and/or miscarriage.

Placenta – Where Mom’s Blood Comes Close to Baby’s Blood

Some Examples of Potential Teratogens (things that produce birth defects)

- Irradiation
- Rubella (German Measles)
- Excess Vitamin A or D
- Cortisone, barbiturates, many other drugs
- Alcohol, Tobacco use

- Even if they don’t cause birth defects, other prenatal factors like mom’s diet and level of stress, affect gene expression, development & later behavior
Fetal Alcohol Syndrome

Brain of normal 6 week old baby

Brain of 6 week old baby with FAS

Capabilities of the Newborn

- Reflexes ("Nature")
  - Rooting
  - Sucking
  - Grasping
  - Swimming
  - Walking or stepping
  - These reflexes disappear later in development as voluntary control of behavior increases
- Vision, focus at 12 inches; preference for human faces
- Recognizes mother by voice, scent
- Other senses well developed by birth
- Begins to imitate immediately ("Nurture")

Motor Development Proceeds Head to Toe ("Cephalocaudal") & from trunk to fingers/toes ("Proximodistal") depends on maturation of CNS & muscles (Nature) and Learning (Nurture)

Another Critical Prenatal Process:
Sexual Differentiation

Sexual Differentiation in Utero

<table>
<thead>
<tr>
<th>XX</th>
<th>ovaries</th>
<th>Female genitalia</th>
</tr>
</thead>
<tbody>
<tr>
<td>XY</td>
<td>testes</td>
<td>Male genitalia</td>
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Chromosomes only trigger 1st step

Hormone environment responsible for genital, duct and brain changes

No or low androgens like testosterone

Remember to read 175-177

Sex chromosomes are “nature” but hormones during development is, at least in part, part of the “environment”.

See those extra pages listed in the syllabus
General Rules

- Genitals & ducts of all embryos are the same for ~1st 4 weeks of pregnancy – they can develop in either direction (M or F)
- Basic “program” for development is female - no early hormones are necessary to develop female genitalia, ducts & brain in the baby
- Males need hormones - androgens like testosterone (to stimulate male development) and MIS (to turn off female duct development). Begin to be produced in the 2nd month of pregnancy (so body differentiates early).

- Similarly, we all start out with the beginnings of both female & male internal reproductive ducts.

- Sexual differentiation of the brain doesn’t begin until the 4th-5th month.
- Environmental influences have the potential to alter this.

Data Supporting the Importance of Early Hormone Environment

- Genetic (XX) females exposed to androgens in utero - masculinized in appearance, brain, and behavior
- Genetic (XY) males insensitive to androgens - develop female appearance, gender identity & behavior
- Hormone induced brain differences in males, females and gays; hormone induced sexual behavior diffs in animals
- Evidence that at certain times in dev the brains of gay males were exposed to less androgen in utero whereas those of some lesbians may have been exposed to more androgen than usual.

Other Evidence for a Biological Basis of Sex Orientation

- If one brother is gay, will the other also be gay?
  - Identical twins - 52% of time
  - Fraternal twins - 22% of time
  - Non-twin brothers - 9% of time
  - Adopted brothers - 11% of time
- Sisters both lesbian?
  - Identical twins - 48%
  - Fraternal twins - 16%
  - Non-twin sisters - 14%
  - Adopted sisters - 6%

- http://www.youtube.com/watch?v=ioZoRbP-0WM
- http://www.youtube.com/watch?v=WTLAof9oXCI
- http://www.youtube.com/watch?v=RGnZgC47SLA

Limits to the Role of Upbringing in Gender Identity: The Case of John/Joan
The Development of Cognitive Abilities

Jean Piaget

- Children do not think like adults, but pass thru 4 distinct stages of cognitive development as their nervous systems mature and they interact with the world.

Sensorimotor Stage

- Initially thought directly tied to sensations & actions – no symbolic thought
- Object not sensed doesn’t exist for infant (out of sight, out of mind)
- Gradually develops "object permanence" (can think about objects not sensed)

Preoperational Stage (~2-7)

- Now has symbolic thought, so shows imaginative play
- But cannot reason logically, especially when faced with problems involving 2 or more variables

Baby Without Object Permanence vs Toddler With Object Permanence

Even once object permanence is present, toddler does not yet have the cognitive ability to continue to track object’s location.
Conservation Tasks
- Preoperational child can’t reason logically about number, mass, amount

Preoperational children show egocentric thinking (can’t put themselves in another’s position or consider things from another’s perspective)

http://www.youtube.com/watch?v=GLj0IZFLKvg&feature=PlayList&p=5543A1C13BAAE02&playnext=1&playnext_from=PL&index=84

Piaget, continued
- Concrete operations (7-11) – can reason logically but thinking tied to concrete experiences
- Formal operations (~12+) - shows abstract reasoning, can speculate or think about hypotheticals

http://www.youtube.com/watch?v=OnqGsfDrD0K&feature=related

Piaget’s Stages of Cognitive Development

Basic Processes Underlying Cognitive Development
- We develop “schema” (mental categories or ways of doing things) through 2 processes as we have new experiences:
  - Assimilation
    * New information/examples incorporated into existing schema
  - Accommodation
    * New information is incompatible with old schema; we must CHANGE and develop a new schema, often with a new way of relating to that object.
A baby fed with a new brand of bottle usually easily assimilates that new object into the "bottle" schema & sucks & holds it in the same way as usual.

The first time a toddler holds a tippy cup it may try to suck it like a bottle or hold it upside down like a bottle, and ends up coughing & choking.

It must accommodate & create a new schema for cups and how to drink from them.

Evaluating Piaget

- Piaget was right about us all passing thru these stages & about how our mental processes become more abstract as we develop.
- BUT: the stages are not as rigid as he proposed
- Piaget underestimated abilities of younger children because of the way he tested them.
- [http://www.youtube.com/watch?v=u2ovHf15SYc](http://www.youtube.com/watch?v=u2ovHf15SYc)
- Changes are more gradual than Piaget proposed & are affected by both genetics and experience.

Attachment

The development of an emotional bond between child and parent/caregiver.
Harry Harlow – Studied Development of Attachments

• Harlow wished to study attachment under controlled, experimental conditions.
• Which is more important in the development of attachments?
  • Physical nurturing (e.g., feeding the baby)?
  • Emotional nurturing (tender loving care)?

Harry Harlow – U. of Wisconsin

Contact Comfort from the terry cloth mom more important for attachment

Aftereffects

• Monkeys raised with surrogate mothers developed into abnormal adults, incapable of normal social, sexual and parenting behaviors.
• (environment can influence even such biologically based behaviors)

Attachment In Humans

• Gradual process that takes place over months
• Depends on good, consistent parenting
• Signs of secure attachment (Ainsworth):
  • At 6-7 months shows separation anxiety; stranger anxiety
  • Happy greeting when parents return
  • Uses parent/caregiver as a base to explore environment
• Insecurely attached infants show more anxious/ambivalent or avoidant/detached reactions to parents
• Type of early attachment correlates with adult attachments & ability to be in committed relationships
• Characteristics of both baby & caregiver affect ease of attachment process

Separation Anxiety Means Attachment Has Occurred
Temperament

- Relatively stable emotional & behavioral characteristics appearing early in life (largely due to genetics). Thomas & Chess identified the following categories of babies:
  - Easy (40%): happy, easy-going, adaptable, have regular schedules
  - Slow-to-warm (15%): more withdrawn & moody, slower to adapt
  - Difficult (10-15%): fearful, fussy, very reactive to new situations
  - Others couldn’t be categorized.
- Will these temperaments persist??

Jerome Kagan's Longitudinal Study

studied 100's of infants with either fearful or fearless temperaments

A fearful, reactive child at 4 months of age

Easy, Outgoing Child

Are Temperaments Permanent?

- Kagan found:
  - Fearful babies tended to still be fearful toddlers.
  - But by age 7 about 70% showed moderate change in temperament, probably reflecting the influence of nurture.
  - Caring, supportive parents helping child to gain positive social experiences can promote change.