



Developing through the Lifespan

Module 10:
Prenatal
development and
Infancy



Class Objectives

- What is Developmental Psychology?
- Prenatal Development
- Factors that influence prenatal development



Development refers to the pattern of continuity and change that occurs throughout the course of life.

Developmental psychologists are interested in how people change, physically and psychologically as they age.



Three types of change

1. *Physical*- Involve changes in an individual's biological nature.
2. *Cognitive*- Involve changes in an individual's thought, intelligence, and language.
3. *Socio-emotional*- Involve changes in an individual's relationships with other people, in emotions, and in personality.



These physical, cognitive, and socio-emotional processes are intricately interwoven

Researchers in developmental psychology are interested in the ways that these processes change over the human life span.



Developmental psychologists seek to understand how nature and nurture influence development.



How can we define Nature versus Nurture?

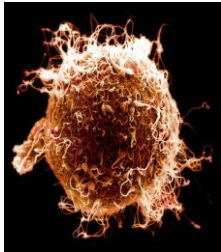
Which influences development most?

- *Nature* refers to a person's biological inheritance
 - Genes
- *Nurture* refers to the individual's environmental and social experiences.
- Determining which one is more influential to our development has been a long-running debate in psychology.

Prenatal Development

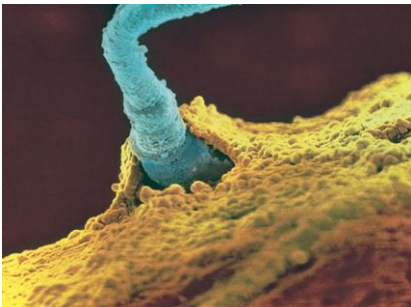


TRUE OR FALSE...
The study of development begins at birth.



The study of development begins at the moment of conception

The sperm “fight” to be the only one that can successfully fertilize the egg.



The first form of life



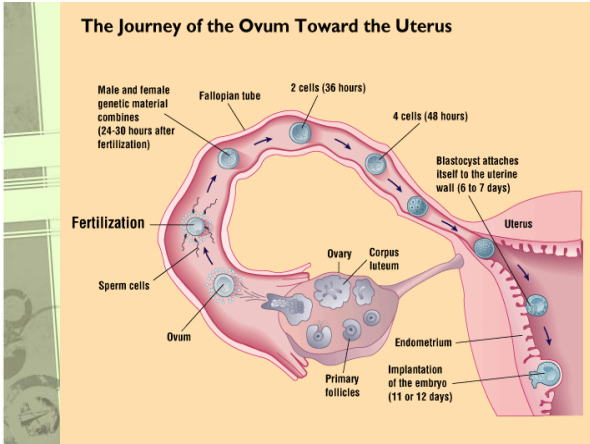
- At conception the genetic material from each parent is fused.
- A living cell called the zygote is formed within hours.

True or false?

50% of fertilized eggs are lost before a woman finds out she's pregnant.

TRUE!





From Zygote to human??

- The Zygote will become transformed through a process of three stages:
- Germinal period- The first two weeks after conception
- Embryonic period- The 3rd to the 8th week after conception
- Fetal period- The ninth week after conception to birth

Hello Embryo!

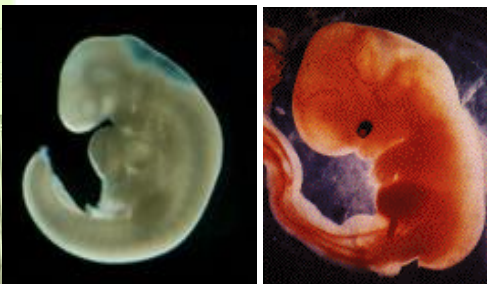
- During the Embryonic stage, it is still not recognizable as a human.
- The neural tube forms (at 22 days), which becomes central nervous system



4 Week Embryo



From 4 to 6 weeks...
Look at the difference!



6-9 week Embryo





TRUE OR FALSE?

- Approximately 20% of all embryos are aborted spontaneously
- **TRUE!** This is most often due to chromosomal abnormalities

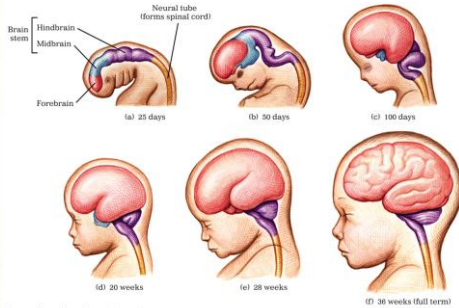


The Fetus Week 9-Birth

- The Brain grows dramatically (6 times in size) and becomes responsive during this time.
- At 22 weeks the fetus reaches the “Age of viability”, which is the age a preterm baby can survive.
- There is only a 50% survival rate at 26 weeks



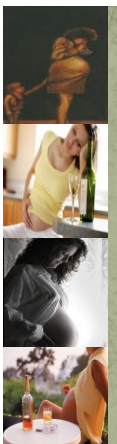
The Brain MUST be able to sustain the body for survival



Source: Adapted from Cowan, 1997, p. 116



It was previously thought that emotions were only expressed after birth



What factors influence prenatal development?



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Test Your Knowledge! True or False?

- Most babies are born healthy and most hazards can be avoided. **TRUE!**
- There are very few prenatal factors that can harm a developing person. **FALSE!**
- Prenatal exposure to a dangerous substance is only harmful in the first trimester of the pregnancy. **FALSE!**
- Research has proven that drinking alcohol (in any amount) during pregnancy is safe. **FALSE!**

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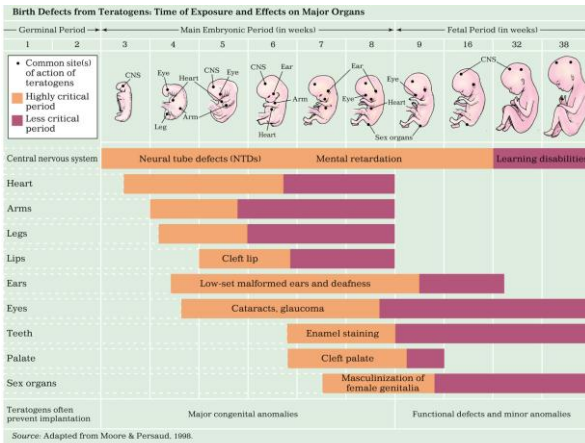
Is the prenatal environment that important??

- YES! There are many factors that can negatively impact the developing person.
- Teratogens are substances that can lead to birth defects or even death during the prenatal period.

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It's all about timing...

- The effect of a *teratogen* is very personal because the impact depends on the timing of exposure.
- Critical period is the time when a particular organ or body part is the most susceptible to damage
- Different *teratogens* can cause damage at different times during development and each body structure has its own critical period ²⁶



Fetal Alcohol Syndrome (FAS)

- This syndrome is caused by a mother drinking excessive amounts of alcohol during pregnancy.

- Heavy drinking during the second trimester seems to cause more features of FAS.

- Particularly weeks 10-20

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What does FAS look like?



A child with Fetal Alcohol Syndrome (©Rahilly 1996).

- Facial Characteristics
 - Flattened features
 - Low-set ears
 - Down syndrome-like appearance

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Facial abnormalities are an obvious indicator of FAS



- Small head circumference
- Small, widely-spaced eyes
- Prolongation of the fold of the upper eyelid
- A short, upturned nose
- Flat mid-face, lowered nasal bridge
- Thin upper lip

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- Approximately 10,000 infants are born each year with physical or cognitive disabilities associated with maternal drinking (Jacobson, 1997).

- Every 1 in 750 births

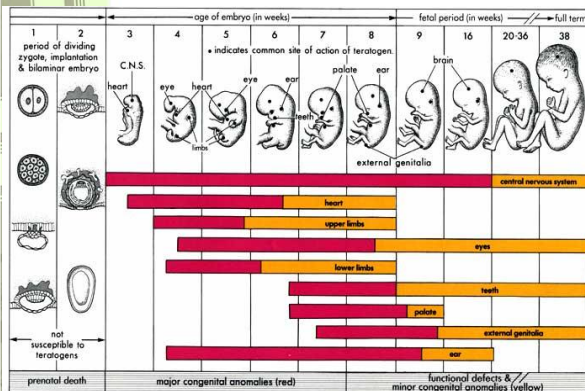
The presence of alcohol in the fetus's bloodstream triggers widespread cell death in the fetal brain.

Normal brain of 6-week-old baby

Brain of 6-week-old baby with FAS



When is the CNS most vulnerable?



Other Factors

- Sexually Transmitted Diseases
 - HIV, gonorrhea, syphilis can infect the fetus before or during delivery and increased still births and pre-term births
- Nutrition
 - Especially folic acid
- Maternal age
 - Negatively affect development if mom is an adolescent or over the age of 35
- Emotional states and stress
 - When a pregnant woman experience intense fears, anxieties, and other emotions – physiological changes occur that may affect her fetus