Why is it important to study infants?

• Because they can help us answer questions such as:
  – Is intelligence innate or learned?
  – Is our behavior instinctive?
  – Is language innate?
  – How important is experience?
  – Are there critical periods in development?
  – Is development plastic?
  – How can we help developmentally disabled infants?

Class Goals

• To find out about the process of development
  – To understand WHAT develops
  – To understand HOW it develops
• The “HOW” question will be our principal focus because the ultimate goal of developmental science is to understand the processes underlying the development of a particular function
Developmental Change

- Change through process of natural growth
- Not reversible
- Permanent
- Occur in sequence
- Results from learning

Process versus Product Approach

- Product (WHAT): Age-specific developmental milestones
- Process (HOW): Explanation of how developmental change occurs

Example of Process versus Product Approach

<table>
<thead>
<tr>
<th>Year</th>
<th>Sitting</th>
<th>Walking</th>
</tr>
</thead>
<tbody>
<tr>
<td>1933</td>
<td>7 months</td>
<td>15 months</td>
</tr>
<tr>
<td>1967</td>
<td>5 1/2 months</td>
<td>12 months</td>
</tr>
</tbody>
</table>
Scientific Theory

• Set of concepts that explain the observable world.
  – Help to organize observations
  – Phrased in terms of general principles that can be applied to specific research findings
  – Should accurately predict future observations

Developmental Theories

• Focus on describing and predicting ways in which people change over time and try to explain the origins of individual differences.

Nature versus Nurture

"The title of my science project is 'My Little Brother: Nature or Nurture.'"
**Main Effects Approach**

- Traditional Approach
- Nature (nativists) versus nurture (empiricists)

**Nativists**

- Gesell – “the original impulse to growth….is endogenous rather than exogenous. The so-called environment, whether internal or external, does not generate the progression of development. Environmental factors support, inflect, and specify, but they do not engender the basic forms and sequences of ontogenesis”.

<table>
<thead>
<tr>
<th>Constitution</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Bad</td>
<td>Bad</td>
</tr>
<tr>
<td>Bad</td>
<td>Bad</td>
</tr>
</tbody>
</table>
Environmentalists

- Watson – "Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select – doctor, lawyer, artist, merchant-chief and yes, even beggarman and thief, regardless of his talents, penchants, tendencies, abilities, vocations, race of his ancestors."

Environmentalists

<table>
<thead>
<tr>
<th>Environment</th>
<th>Good</th>
<th>Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bad</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interactional Model

<table>
<thead>
<tr>
<th>Environment</th>
<th>Good</th>
<th>Medium</th>
<th>Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bad</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Transactional Model

- Sameroff & Chandler, 1975
- Dynamic model – adds time to the model

Ethological Theory

- Ethology: study of how the evolution of a species influences the behavior and development of that species.
  - Natural selection (Darwin)
  - Species-specific innate behaviors
Imprinting

Critical Period

- Critical Period: limited time span during which the individual is biologically prepared to acquire certain behaviors but must have appropriate environmental input in order for normal development to occur.
- Sensitive Period: time that is optimal for certain capacities to emerge - especially responsive to environmental stimulation.

Systems Theory

- All developmental influences are equally important.
- Development is determined through interaction of all influences.
- Focus on process rather than product.
Dynamical Systems Theory

- Individual development is hierarchically organized into multiple levels that influence each other
  - Person
  - Structural/functional components
  - Structural/functional subcomponents
  - Structural/functional sub-subcomponents
- Different trajectories for different children
- Considers development as change or transition in progress

Fundamental Concepts

- Neither genes nor environment is more influential
- Development always occurs in “experiential context”
- Problem: Very abstract and difficult to measure in humans

Continuity versus Discontinuity

- Continuity: linear development - each development builds on previous developments. Continuous change.
- Discontinuity: series of discrete steps or stages. Abrupt, qualitative changes in development.
**Discontinuity**

- Stages – periods in development that are qualitatively different from each other.
- Attractor states – term used in dynamical systems theory: Tendency of organism to certain functioning.
- Phase shift – reorganization of functioning to qualitatively different level (result of atypical experience or maturation)

**Ecological Systems Theory**

- Uri Bronfenbrenner
4 Levels of System Functioning

- **Microsystem**: Immediate surroundings (e.g., family)
- **Mesosystem**: The interrelationships between microsystems
- **Exosystem**: Not directly experienced, but influential
- ** Macrosystem**: Larger social class and culture
- **Chronosystem**: Changes across time

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Bronfenbrenner: Developmental Issues

- We are born with **NEITHER** negative or positive tendencies
- We are Actively Involved in Self-Development & the Environment
- Person & Environment are **BOTH** in a state of flux
- Nature & Nurture are **BOTH** influential
- Can have qualitative and quantitative change
- Most Development is **NOT** universal
- Many Dynamic Contexts: Social, Historical, and Cultural
Direct versus Mediated Effects

- Direct effects: when any one factor exerts influence on another factor directly.
- Mediated effects: factors that influence the direct relationship between other factors.