WHAT DO DEVELOPMENTALISTS WANT TO KNOW?

• ENTITY QUESTIONS: What develops in cognitive development?
  What doesn’t?
  • content (domain-specific) knowledge
  • Kantean domains: number, space, time
  • “Conventional” domains: physics, biology, psychology
  • basic processes, strategies, modules
  • metacognition: “sense of the game” of thinking
  • Theory of mind: what’s going on in other’s minds?

• PROCESS QUESTIONS: What causes change?
  What constrains it?
  Mechanisms of cognitive development (hodgepodge)
  • biological accounts: neural mechanisms
  • “process” accounts: assimilation & accommodation
  • associative competition
  • encoding
  • analogy
  • strategy choice

• Role of nature & nurture: What are the means via which they exert their influence?

• Stages or continuity? Critical periods?

TRADITIONS (-ISMS) IN DEVELOPMENTAL PSYCHOLOGY

Offer different ways to formulate fundamental problems and approach their solutions

<table>
<thead>
<tr>
<th>Tradition</th>
<th>Knowledge</th>
<th>Learning</th>
<th>Development</th>
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</thead>
<tbody>
<tr>
<td>Empiricism</td>
<td>Repertoire of learned patterns</td>
<td>Process that generates knowledge; begins w/exposure to new patterns; connected to responses and generalization</td>
<td>Cumulative learning</td>
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<tr>
<td>(Locke, Hume)</td>
<td>Operations on those patterns</td>
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<td>Skinner?</td>
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<tr>
<td>Rationalism</td>
<td>Structure created by a priori mental concepts; space, time, number, etc. evaluated according to rational criteria: coherence, consistency, parsimony</td>
<td>Process taking place when mind applies existing structure to new experience</td>
<td>Long term transformational changes resulting in new structures</td>
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<td>(Kant)</td>
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<tr>
<td>“Plagietanism”</td>
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<td>Constructivism</td>
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<td>Essentialism</td>
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<td>Dynamism</td>
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<tr>
<td>Sociohistoricism</td>
<td>Created by social group and its historical context</td>
<td>Process of initiation into group life; “Cognitive apprenticeship”</td>
<td>Emergence and training of symbolic &amp; “tool-using” capacities</td>
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<td>(Hegel, Marx)</td>
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<td>Vygotsky</td>
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Cell entries mainly from Case (1996) Table 1
ALL YOU’LL EVER NEED TO KNOW ABOUT DEVELOPMENTAL PSYCHOLOGY
(On a single slide!)

Operationally defined:
- $B_i$: Behavior at time $i$
- $E_i$: Environment at time $i$ (Includes physical, social, self)

Theoretical constructs:
- $S_i$: System at time $i$ (Includes Knowledge and Processes)
- $T_i$: “Transition mechanism” at time $i$

(later that day, or year, or life):
- $S_i$: System at time $i$
- $T_i$: “Transition mechanism” at time $i$

How to tell the story
(levels of analysis)

Levels of investigation and explanation
(temporal, spatial, & epistemological grain size)
- Genetic
- Biological
- Neural
- EIP’s: attending, encoding, storing, scanning, retrieving
- Rates, capacities, buffers, etc.
- Productions and/or networks
- Strategies
- Principles
- Architectures (SOAR, ACT*, Back-prop, etc.)

Describing states and processes

- States - Types of explanation and description:
  - *Empirical.* (unambiguous, but low theoretical power)
    - number of occurrences, STM span, MLU, % correct,
    - proportion of responses of type X rather than type Y,
    - # trials to criterion, habituation, looking & reaching, etc.

- *Theoretical statements* inferred from empirical (but NOT the same!)
  - “digit span” versus “STM capacity” (example) (operational defa.)
  - “attitude” versus “survey responses”
  - “attachment” versus “crying frequency,” “looks to parent”

- *Characteristic claims (essentialism revisited):* (broad, global,
  imprecise, ambiguous)
  - child is “self-reflective” or “concrete operational”
  - child has “theory of mind”

Describing states and processes

- *Process Descriptions:*
  - Global: “Assimilation and “Accommodation” (Piaget)
  - “Casean” processes:
    - merging, integrating, mastering, assembling, generalizing
  - IP models:
    - Symbolic: “Traditional,” “Classic”: production systems
    - “Sub-symbolic” “Distributed” “Connectionism”

  Cognitive Darwinism (Siegler)
  - Variation & Selection (Wave model)
  - Dynamic systems theory (Thelen)