Cognitive Development: Piaget

Chapter 7

Cognitive Development

- Cognition
  - Acquisition of knowledge acquire and process knowledge
- Many theories
  - Jean Piaget

Jean Piaget

Piaget's Theory

- Child as active seeker of knowledge
  - *Constructivist*
- Thinking of world at different points and how developments in this thinking come about

Cognitive Structures

- Interrelated memories, thoughts, strategies
- Schemes
  - Used to make sense of experiences
  - "Scripts"
  - Sensorimotor action patterns

Cognitive Structures (cont'd)

- Schemes (cont'd)
  - Mental representations
    - Symbolic
      - Images, concepts
    - Operational
      - Strategies, plans, rules

Cognitive Growth

- When things make sense…
  - Cognitive equilibrium
- When things don't make sense???
  - Cognitive disequilibrium
  - Adaptation

Adaptation

- Assimilation:
  - Existing schemes used to interpret novel information
  - New information absorbed into existing scheme
- Accommodation:
  - Creation of new scheme or alteration of existing scheme to cope with information that does not fit

Organization

- Internal rearrangement and linking together of schemes
  - "Looking"
  - "Reaching"
  - "Grasping"
  - "Sucking"
  - *LookingReachingGraspingSucking*
  - Visually directed reaching
    - "Looking+reaching+grasping"

Development

- Progressive changes in cognitive structures
- With qualitative change is new stage of development
- Invariant developmental sequence
  - Sensorimotor
  - Preoperational
  - Concrete operations
  - Formal operations

Sensorimotor Stage

- Birth to age 2
- Build newborn reflexes (sucking, rooting, etc.) into symbolic activity
- 6 substages (see text)
  - Marked by increase in complexity of cognitive activity
  - Only a marker
    - Sequential rather than age defined

Sensorimotor Stage (cont'd)

- Circular reactions:
  - Repetitive responses
- Primary, secondary, tertiary:
  - Level of response

Tertiary Circular Reactions

- Early problem solving
- Leads to accommodation and assimilation

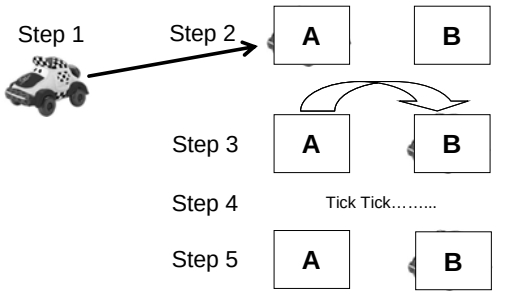
Sensorimotor Stage (cont'd)

- Final point (18 to 24 months)
  - Symbolic problem solving
  - Infant begins to think about and acting on world internally
    - Naming an object not present but thought of
    - Drawing "objects"
    - Fantasy play
    - Deferred imitation
  - Symbolic thought allows mental combination of schemes to facilitate goal oriented behaviour

Object Permanence

- Understanding that objects exist independent of our ability to perceive them
- Substage 1 (1 to 4 months)
  - "Out of sight, out of mind"
- Substage 2 (4 to 8 months)
  - Search for partially concealed objects
- Substage 3 (8 to 12 months)
  - Search for concealed objects

A-not-B Task



Critiques

- Object permanence
  - Baillargeon (1987)
    - Habituation/dishabituation paradigm
    - Possible vs. Impossible event
    - More interest in impossible event
    - Object permanence evident at 3 ½ months
    - (Critiques of critiques)

Preoperational Stage

- 2 to 7 years
- Extraordinary increase in mental representation
- Rapid acquisition of language
  - Due to cognitive (symbolic) development
- Symbolic or pretend play

Preoperational Stage (cont'd)

- Preconceptual reasoning (2 to 4 years)
  - Animism
    - Attribution of life and life-like qualities to inanimate objects
  - Critique
    - Objects used (e.g., sun, moon, and wind) often open to magical interpretations
    - 3 to 4 year olds show understanding of animate v.s. inanimate

Preoperational Stage (cont'd)

- Preconceptual reasoning (cont'd)
  - Egocentrism
    - View world from one's own perspective
    - Difficulty recognizing another's perspective
    - NOT that child was unconcerned with other's *points of view*
    - Centration
    - Three-mountain problem

Three Mountain Problem

- Critiques
  - Simple models
  - Method of response

Three Mountain Problem

- Borke (1975)
  - Made 2 changes to Piaget's design
  - Found 3 year olds could identify correct perspective

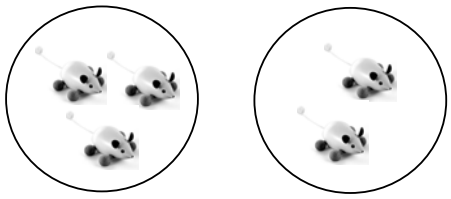
Conservation

- Intuitive period (4 to 7 years)
  - Most important acquisition
  - Properties do not change because appearance changes

Can Children Achieve Conservation Earlier?

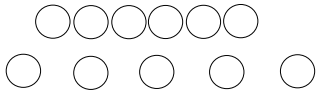
- Task too complex?
- Gelman's (1972) magic mice task

Magic Mice



Conservation

- Current research has revealed:
  - Often children show understanding of conservation if familiar objects are used (e.g., Smarties)



Concrete Operational Stage

- 7 to 11 or 12 years of age
- More logical, objective, and deductive
  - Thinking with concrete objects, not yet abstract
- Visual vs. Verbal

Formal Operational Stage

- 11 or 12 years and up
- Abstract thinking
- "If all blue people live in red houses, are all people who live in red houses blue?"
  - Concrete operational stage vs. Formal operational stage
  - Physically presented vs. Mentally represented

Piaget's Theory: Evaluation

- Clear impact on developmental psychology
- Did Piaget fail to distinguish competence from performance?
  - E.g., Egocentrism
    - Three mountain problem
      - What was the original questions?
      - **BUT** did change in task cause change in reasoning?

NeoPiagetians

- Juan Pascual-Leone (York University)
- Robbie Case (OISE/UT)
  - "Information processing"
  - Biological concepts
  - Social and cultural differences

The Paper

- Read the paper description handout