Piaget: Developmental Psychology

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Stages of Development

- Sensorimotor [0–2]
- Pre-operational [2–7]
- Concrete operational [7–11]
- Formal operational [11–14]
Sensorimotor Period [0-2]

- Rely on reflexes
  - Modify them to adapt to their world
- Trial & error learning
- Goal directed behavior
  - Think of alternate sequences of actions before trying to achieve a goal
- Object permanence (Transitioning)
  - Understand object under blanket has not disappeared
Pre-operational Period [2-7]

• Mentally represent events, objects (the semiotic function) and engage in symbolic play
• Ego-centric perception and communication
• One-dimensional thinking
  - Either color or shape not both
• Transition: Understand conservation
Concrete Operational Period [7–11]

- Conservation
  - number, area, volume, orientation
- Seriation
- Reversibility
- Classification
- De-centering
- Transition: Abstract and hypothetical thought
Formal Operational Period [11–14]

- Abstract thought
  - Love, Existential meaning, Shades of grey,
- Combinatorial systems
- Higher-order reasoning
  - Logical proofs
  - Deductive reasoning
## Sensorimotor vs. Verbal Behavior

<table>
<thead>
<tr>
<th>Sensorimotor</th>
<th>Verbal</th>
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<tbody>
<tr>
<td>Obliged to follow events without being able to exceed the speed of the action</td>
<td>Can represent a long chain of actions very rapidly</td>
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<td>Limited to immediate time and space</td>
<td>Thought can range over large stretches of time and space</td>
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<td>Can only represent successive or step by step acts</td>
<td>Can simultaneously represent all the elements of an organized structure</td>
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Language & Mode of Reasoning Correlation

Pre-operatory (scalars)

“this man has a big one, that man has a small one”

“this one has a lot, that one little”

Concrete Operational (vectors)

“this man has a bigger one than the other man”

“he has more”

“this pencil is longer and thinner”
Obstacles of Operation

- Mentally representing what has already been absorbed at level of action
- Achieving systematic mental representation
- De-centering in physical universe
- De-centering in interpersonal or social universe
Concrete Operations

- Conservation
- Seriation [7,8]
- Classification [3–12]
  - Organize in rows, squares, circles, etc.
  - Organize in groups, does not understand inclusion [5,6]
  - Relative sizes and inclusion [8]
- Number
- Space
Concrete Operations (cont)

- Time and speed:
  - Pre-operative level: consider points of arrival, does not understand speed is required to catch up
  - Operational level: anticipate overtakings as well as observed overtakings
  - Hyperordinal level: Increasing or decreasing size of the intervals
  - Relate duration with distance covered
Concrete Operations (cont)

- Operations notion of time based on:
  - Seriation of events (temporal succession)
  - Duration (inclusion of intervals between events occurring at a certain point of time)
  - Temporal metrics
Causality and Chance

- White beads on one side, black on the other
  - Pre-operatory [4-6]: each bead will return to its place, or they will switch sides
    - Says beads will become unmixed.
  - After [8,9]: anticipation of mixing and awareness of improbability that beads will return to their initial position.
  - Cannot foresee outcome of individual events
  - After [12]: Understand combinations of objects
Preadolescent & Propositional Operations

- Formal Thought and Combinatorial System:
  - Formal Thought: ability to reason from truths the child has not himself experienced
  - Combinatorial System: generalization of classification operations and order relations
Preadolescent & Propositional Operations

- The Combinatorial System [12]:
  - Permutations a little later
  - Propositional Combinatorics: ability to combine ideas or hypotheses in affirmative or negative statements => understands
    - implication (if-then)
    - disjunction (either-or, or both)
    - exclusion (either-or)
    - incompatibility (either-or, or neither-neither)
    - and reciprocal implication
Formal Operatory Schemes [11,12]

- Proportions:
  - Spatial proportions (similar figures)
  - Metrical speeds (S/T = NS/NT)
  - Probabilities (x/y = nx/ny)

- Double systems of reference:
  - Understand a snail moving on a board that is moving in the opposite direction is stationary with respect to the outside world.

- Hydrostatic Equilibrium:
  - Understand the dynamics of a piston

- Notions of probability
Moral Feelings and Judgments

- **Genesis of Duty** – sense of obligation
  - Orders & acceptance of orders
    - Acceptance: affection combined with fear of parents

- **Heteronomy**
  - Before [7,8] law maker must be present for law to hold
Moral Feelings and Judgments (cont)

- **Moral realism**
  - Moral claims are cognitive claims

- **Autonomy**
  - **Games**
    - Younger children [< 7]: rules are a doctrine
    - Older children [>7]: rules are agreed upon and can be changed democratically
  - **Justice**
    - Starting at [7,8] justice becomes more important than obedience
References
