PSYU2235: Developmental Psychology Notes Excerpt

Contents

Week 4

Lecture: Piaget's Theory

Objectives:

- Understanding basic principles of Piaget's theory of development
    - Piaget's stages of cognitive development
- Critically evaluate Piaget's methodologies for assessing children's cognitive development (Tutorial 2)
- Understand the strengths and limitations of Piaget's contribution to our understanding of children

Piaget's Method

- Flexible, discovery-oriented approach
- Focus on observation
- Longitudinal work on infants; cross-sectional work on young children

Piaget's Cognitive Developmental Theory

- Intelligence helps children adapt to environment
  - Innate need to explore and learn about environment
- Focus on biologically maturing child's interaction with environment
  - Less focus on caregiver/other-interaction
- Complexity of thinking dependent on biological maturation

Intelligence Stage Approach

- **Stage Approach:** Stages in intelligence must be achieved before next stages are taken on
- Behaviour signals underlying mental structure
- **Schemas**: Patterns of thinking/frameworks that help child make sense of world
  - Schemas adapt due to disequilibrium

Early child experience of world is fragmented, and later becomes integrated

Equilibrium and Disequilibrium

- **Assimilation**: Occurs during equilibrium
- **Accommodation**: Occurs during disequilibrium – schemas are adjusted

Equilibration

- Babies have temporary disequilibrium when encountering new knowledge of the world
- Progression through stages is prompted by disequilibrium

Gesell: Rhythmic Stages: Progress and stagnation occurs in stages

Stage Movement: Due to biological maturation, environmental experience, and social interaction

- Piaget focussed most heavily on biological maturation

Piaget's Four Stages of Cognitive Development

- **Sensorimotor**: 0-2y
  - Learning via physical engagement with world. Interaction between action and sensation
- **Pre-Operational** (Pre-Logical): 2-7y
  - Can use symbols which represent things in the real world (e.g. drawings, toys)
- **Concrete Operations:** 7-12y
  - Can think logically and rationally, but not in abstract ways
- **Formal Operations:** 12y+
  - Can think logically and in abstract – manipulation of abstract concepts and ideas

0-2y
Sensorimotor Stage

- Schemas developed through *doing* and *experiencing consequences*
- **1. Reflexive Schemes (0-1 months)**

- This involuntary motor movement lays basis for future voluntary movement
- Understand what to look at, suck, grasp, listen to
- Behaviours that started as reflexes become strengthened, generalised, differentiated
    - **2. Primary Circular Reactions (1-4 months)**
        - Accidental interactions with the world can be repeated voluntarily to recreate the experience – beginning of voluntary control
            - Organisation of random movements
        - Actions focussed on the self, e.g. blowing raspberries, babbling, and making sounds, thumb sucking
    - **3. Secondary Circular Reactions (4-8 months)**
        - Actions focussed on objects, e.g. moving rattle around, dropping objects from highchair
        - Infant becomes aware of the impact of oneself on environment
    - **4. Co-Ordination of Secondary Schemas (8-12 months)**
        - Goal-directed, combined secondary circular reaction behaviour
            - Organisation of multiple behaviours to achieve goals, e.g. using tools to pull toy towards oneself
        - Object permanence
    - **5. Tertiary Circular Reaction (12-18 months)**
        - Sensorimotor problem solving
        - Will seek and explore properties of objects, e.g. hitting, throwing, sucking on objects
        - Understanding of cause and effect relationships
        - Trial and error exploration, e.g. if one action doesn't work to reach goal, infant tries another tactic
    - **6. Symbolic or Representational Thought**
        - Mental Manipulation
            - Can use symbols as mental representations of objects, e.g. dolls, people in picture-books
            - Can problem-solve without trial and error
        - Capacity for mental manipulation allows for deferred imitation
    - **Summary:** Infant learns information through sensorimotor activity → organisation of cognitive structures → increasingly voluntary behaviour → self is differentiated from environment

Object Permanence Stages (according to Piaget!)**:**

- **0-4 months:** Only aware of object if within sight
- **4-8 months:** Begins to briefly search for hidden objects
- **8-12 months:** A not B error – child searches for object in the last place they saw it
- **12-18 months:** Keeps searching even if object is not where it was last seen

Challenge to Piaget's Object Permanence

- Tasks involve a.) knowing where object is, and b.) organise behaviours to search for object
- Lesser response demands result in earlier observations of object permanence
    - When truck passes behind object, babies will look for truck reappearance at the point at which it should appear if it is travelling behind object. When the baby thinks

the truck is blocked by an object yet the truck comes out the other end, the baby looks longer (signalling confusion)

Clinical Application of Piaget's Theory: Infancy

- Children with sensorimotor/neurological problems may have secondary problems with cognitive development
    - Compensatory experiences for children can assist cognitive development

2-6y

Preoperational Stage: 2-6y

- Gains in mental representation
- **Centration**: one dimensional thinking
    - **Egocentrism**: Seeing the world through the lens of the self; inability to distinguish between one's own and another's perspective
        - *Spatial Egocentrism: Three Mountains Task*
    - **Conservation**: Inability to understand multiple dimensions of objects; inability to understand change of appearance of object does not change essence of object
        - Related to object permanence – inability to understand permanence of physical world
        - Conservation tasks may measure knowledge of permanency of volume, length, number, area, and weight
    - **Hierarchical Classification:** One thing can fit into many systems
        - E.g. a girl can be a sister *and* a daughter

Conservation Tasks

- **Confounding Issues**
    - Conservation task performance may be confounded by verbal confusion
        - "What has changed" implies something *has* changed
        - What does "more", "longer", etc. mean
            - Rephrase question: "Are they the same"
    - Trust in adult rationality
        - McGarrigle & Donaldson, 1974: Adult giving an explanation as to why objects look different in conservation task (e.g. 5 coins together vs. 5 coins spread apart) leads to child making accurate judgements as to whether objects are the same
            - Explanation such as "naughty teddy accidentally messed up the coins"
- **Conservation Failures due to Preoperational Thinking**
    - Centration: Focus on only one dimension
        - Perception bound: Focus on most salient dimension
    - Static thought: Focus on states rather than transformation between states
        - Cannot mentally undo or reverse transformations
- Applications in Preschool Education
    - Concrete, tangible props and visual aids can help teaching of mathematics
    - Physical practice of transformation of sand, water, playdough
    - Avoidance of lectures on sharing, due to lack of ability to perspective take
    - Computer activities can help with learning spatial relationships and transformations

Emerging Mental Capacities

- Going towards concrete operation stages, children can *categorise* and *sub-categorise* world about them
  - **Departure from centrism** – objects can belong to multidimensional categories
- **Seriation**: Mentally ordering stimuli along quantitative dimensions

Semi-Logical Reasoning in Preschool-Aged Children

- **Animism**: Belief that non-living things have person-characteristics
- **Realism**: Attributing tangible qualities to mental events
- **Artificialism**: Belief that people or other natural things create natural objects
  - E.g. girl believes tree branches create wind

7-11y

Concrete Operations: Formal Reasoning (7-11y): Children can perform mental manipulation of concrete objects

Characteristics of Concrete Operational Thought

- Mental manipulations and transformations of **real-world concepts**
  - Mentally reversing actions consolidates the concept of consolidation
  - Mentally taking on others' perspectives
- Cannot manipulate representations of non-tangible, abstract concepts
  - Cannot do algebra
- Logical reasoning replaces intuitive reasoning *only* in concrete circumstances
- Can classify and categorise objects

Applications for Teaching

- Continued use of props and concrete aids
- Familiar examples for complex ideas
- Extension of problem solving, moving towards logic problems/analytical thinking
- **Piaget's Thoughts:**
  - **Readiness:** Consider child's level of thinking
  - **Constructivist Approach**: Let children discover things for themselves
  - **Sequential Concepts:** Children should master underlying concepts before moving onto more complicated concepts
    - *Problem*: Some advanced children can manipulate numbers in their heads and may find props to be frustrating
  - **Assessment**: Should look at child's reasoning, and learn about their abilities through their mistakes

12y+

Mental Operations on Symbols (12y+)

- Logical, mental manipulations performed on thought/symbols as well as concrete objects
  - Abstract thinking
- Meta-cognition: Can reflect on one's own thinking – performing operations on operations
  - E.g. Modifying memory strategies
- Reflection on life, religion, hypocrisy, motives

Critique of Formal Operations

- 50% of US adults fail Piaget's formal operations task
- Stages are not universal – secondary education and demand for reflective thinking increase ability to achieve this stage of thinking
- Inconsistency across domains: Someone may be good at abstract spatial reasoning, but not verbal abstract reasoning, etc.
- **Vygotsky**: We tend to reserve formal operational reasoning for meaningful problems of interest
- Cultural differences in thinking, dependent on which skills are most valued in that culture

Adolescent Egocentrism (Elkind, 1976)

- Resurgence of egocentrism during adolescence?
    - **Imaginary Audience:** Belief that everyone is looking at you
    - **Personal Fable:** Belief that you are unique; no one understands your feeling
    - **Invincibility:** Belief that you are invincible despite factual risk

Piaget's Post-Formal Operations: Adult Cognitive Functioning

- Capacity to see knowledge as relative, non-absolute
- **Relativistic Thinking:** Knowledge is dependent on one's own perspective
- Capacity to find multiple solutions to problems
- Adaptation of knowledge to fit inconsistencies, contradictions

Piaget on Developmental Issues

- **Human Nature:** Intrinsically motivated
- **Development**: Qualitative change in thinking structures leading to quantitative changes in knowledge
- **Nature/Nurture (Interactionist View):** Biological maturation interacts with environment (although Piaget had little focus on environmental influences)

Critiques of Piaget

- **Strengths:**
    - Recognised cognition in development
        - Identification of childhood theories and strategies of understanding world
    - Ways of thinking can be generalised to other domains (e.g. egocentricity in relationships, spatial judgement, etc.)
    - Learning as an active process
    - Value of unique, surprising aspects in childhood thinking
    - Widely scoped theory
    - High ecological validity: Children's adaptation to everyday circumstances (not culture-specific)
- **Limitations**:
    - Inadequate support for rigid developmental stages
        - Formal operations in one domain may be reached before other domains
    - Stages less rigid than suggested – less consistency during development
    - Understanding of advanced concepts can be trained outside of developmental stages (e.g. training of conservation understanding before 7 years old)

- Confounding of competence with performance (e.g. object permanence)
    - Underestimation of abilities at certain ages
- Overestimation of teen/adult capabilities
- Culturally biased studies (Western, educated)
- Lack of attention to social and emotional aspects of attention
- Infancy work based on his own 2 children (small sample)
- Clinical work was flexible (not entirely standardised – child may influence researcher response)

Summary:

- Children start with action schemes → understanding of mental representation → understanding of internalised organised mental operations → abstract thinking
- Thoughts become decentred, dynamic, reversable