

Overview of Ch 2: Cognitive Dev.

- ◆ Types & Principles of Development
- ◆ Influences on development
- ◆ Brain Development
- ◆ Piaget & Cognitive Development
- ◆ Vygotsky & 'the Zone'



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Types of Development

- ◆ Physical: Brain development
- ◆ Personal: Erikson
- ◆ Social: Kohlberg
- ◆ Cognitive: Piaget

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Principles of Development

- ◆ Development follows same orderly pattern in all children, although timing differs
- ◆ Development is Gradual with overlapping stages, although theories and research reports may make it seem otherwise

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Influences on Development

- ◆ **Genetic: Genotype**
 - The concept of Canalization
- ◆ **Environmental: Phenotype**
 - The concept of Range of Reaction
- ◆ **Genes-Environment Related. Why?**
Sandra Scarr's theory:
 - Passive gene-environment correlation
 - Evocative gene-environment correlation
 - Active gene-environment correlation

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Brain Development



- ◆ **Neural development:** Brain attains 90% of adult weight by 6 yrs.
- ◆ **Myelination:** very rapid in first 2 yrs & continues till adolescence.
 - Function?
 - Pattern?
- ◆ **Lateralization:** Left hemisphere spurts first (4-6 yrs). R-H spurts at age 8-10 yrs.

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Brain Development Cont'd

- ◆ **Specialization**
 - Lower Brain
 - Cerebrum
 - » Left hemisphere
 - » Right hemisphere
 - Corpus Callosum
- ◆ **Implications of brain development for education**

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Piaget's Cognitive Dev. Theory

- ◆ Terminology
 - Schemas
 - Circular reactions
 - Disequilibrium
 - Assimilation (ex. Over-regularization of words)
 - Accommodation

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Piaget's Stages of Cognitive Development

- ◆ Sensorimotor
- ◆ Pre-operational
- ◆ Concrete operations
- ◆ Formal operations

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Sensorimotor Stage : 0-2



- ◆ Learning through senses & actions
- ◆ Circular reactions: Primary, Secondary, then Tertiary
- ◆ Object permanence
- ◆ Goal directed activity
- ◆ Mental Representation emerges

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Preoperational Stage: 2-7



- ◆ Symbolic Thought: most significant advance
- ◆ Centration
- ◆ Egocentrism (ex. Private speech, collective monologue, over-estimating clarity of communication and understanding))
- ◆ Animism
- ◆ Inability to Conserve

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Preoperational Stage Cont'd

- ◆ Focus on states vs. transformations
- ◆ Lack of Hierarchical Classification
- ◆ Irreversible thinking

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Concrete Operational Stage: Ages 7 - 11



- ◆ Thinking more flexible, logical, organized
- ◆ Decentering
- ◆ Lack of abstract thinking
- ◆ Inability to generalize rules

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Formal Operational Stage:

Ages 11 - 15

- ◆ Abstract thinking
- ◆ Propositional thought
- ◆ Hypothetico-deductive reasoning
- ◆ Adolescent egocentrism
- ◆ Imaginary audience
- ◆ Not all individuals reach this stage

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Limitations of Piaget's Theory

- ◆ Stage theory inconsistencies
- ◆ Underestimated young children's abilities
- ◆ Overlooks influence of cultural and social groups



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Implications of Piaget's Theory for Teaching

- ◆ Individuals actively 'construct' knowledge
- ◆ Need to 'Match' teaching to cognitive stage: Illustrations vs. lecture
- ◆ Use disequilibrium to motivate
- ◆ Use mixed groupings to stimulate cognition
- ◆ Use group interactions to help students decenter & overcome egocentrism
- ◆ Point out complexity of many real life situations
- ◆ Watch what you/peers say to adolescents

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Vygotsky's Social Context Theory

- ◆ Role of language & private speech
- ◆ Social transmission
- ◆ Scaffolding & assisted learning
- ◆ Zone of proximal development
