

Development

Age-related changes in behavior and mental processes from conception to death

PRENATAL

- It all counts, from the moment of conception on
- After about 8 weeks we change from a **zygote**, *a rapidly dividing mass of cells*, into:
- A **fetus** – a unique growing organism dependent on Mom for all nourishment, vulnerable to her vices and wants



HORMONAL FACTORS

- The prenatal release of hormones has a dramatic effect on our brains and , consequently, our sexuality
- Right away, the release of *androgens* cause males to develop masculine *gonads*
- Later, a female's *hypothalamus* during puberty directs her *pituitary gland* to release hormones which cause her menstrual cycle

HAZARDS APLENTY

- Despite some protection from our mother's *placenta*, a fetus can be devastated by toxins, drugs, and certain diseases
- Entire first three months is a *critical period* when the fetus is exquisitely sensitive to destructive agents and malnutrition

POOR DIETS, BAD HABITS

- An undernourished mother “shelters” an undernourished fetus
- Infants with *low-birthweight* have much greater risk for later health and behavioral problems
- Frequently their mothers have many high risk behaviors, including ...

WHEN MOM DRINKS AND/OR

- A mother's drinking can lead to *fetal alcohol syndrome* which can cause physical and mental deficits



..... SMOKES

- Smoking leads to a greater chance of early health disorders and *conduct disorder*, marked by trouble in school and elsewhere, and perhaps, criminal behavior

THE MIRACLE OF RESILIENCE

- But somehow, some kids who have everything going against them rise above the chaos and thrive.
- How?
- It's called **resilience** – *the ability to overcome significant obstacles.*

SPECIAL GIFTS GIVE HOPE

- High intelligence
- A pleasing *temperament*
- A cohesive family
- Special abilities and talents
- Strong positive role **models/mentors**
- Good schools
- Effective community outreach – Head Start programs

ASSESSING CAPABILITIES

- The **Apgar test** – at 1 & 5 minutes, test:
 - a) breathing,
 - b) heart rate,
 - c) color,
 - d) muscle tone, and
 - e) reflexes

High predictive value for many qualities

VISION

- Initially, capabilities were down-played as “ a buzzing confusion”
- Now we know better
- Infants quickly learn to attend to human voices and can orient towards objects
- As they crawl, they develop a fear of heights

MEMORY AND LEARNING

- Infants respond differently to stimulus because of prior experience – they have *learned* through *memory*
- They can recognize their mom's voice right away due to exposure in the womb
- At first, they can only control the muscles of their head, eyes and mouth
- With-in 2-3 months they can kick or flail in a certain way to move a mobile

PIAGET & COGNITIVE DEVELOPMENT

- Dominated by the work of **Jean Piaget** in the 1920's and '30's
- A child prodigy in the study of fresh water mussels, he quickly moved on to psychology



A NEW APPROACH

- Worked with Binet and Simon in administering IQ tests
- Focused on children's **mistakes**, not their correct responses



BASIC TERMS

- **Schemas** – *basic behavior strategies, or organized ideas about our relation to the environment that change with experience*
- Initially, infants have few schemas
- Responses associated with nursing
- Soon, behaviors linked with eating foods emerge
- Eventually, schemas for concepts like *mother* and *father* develop

ASSIMILATION & ACCOMMODATION

- **Assimilation** – *applying old schemas to new objects or concepts*
- **Accommodation** – *adjusting old schemas or developing new ones to fit new information*
- **Equilibration** – *the cyclic balancing of assimilation and accommodation*

MORE BASICS

- From his observations, Piaget argued that children reason and think in a **much** different manner from adults
- A difference of **quality** not **quantity**
- He proposed that cognitive development progressed through 4 discrete, all-or-nothing *stages*
- Also, the child's **individual** experience was key

THE FOUR STAGES

- **Sensorimotor** - from birth to 1 ½
- **Preoperational** – from 2 to 7
- **Concrete operational** – from 7 to 10
- **Formal operational** – from 10 on

TABLE 2.1 THE FOUR STAGES OF COGNITIVE DEVELOPMENT

Stage	Approximate Ages	Chief Characteristics
Sensorimotor	Birth–2 years	Discovery of relationships between sensation and motor behavior
Preoperational	4–7 years	Use of symbols to represent objects internally, especially through language
Concrete operations	7–11 years	Mastery of logic and development of "rational" thinking
Formal operations	11 years +	Development of abstract and hypothetical reasoning

SENSORIMOTOR

- Marked by simple motor responses to sensory stimuli
- “Making interesting things happen, again and again and again ...”
- Learning the basic laws of physics by hands-on interactions with the environment

A LONG WAY TO GO

- Lacks :
- *object permanence,*
- language, and
- self-recognition



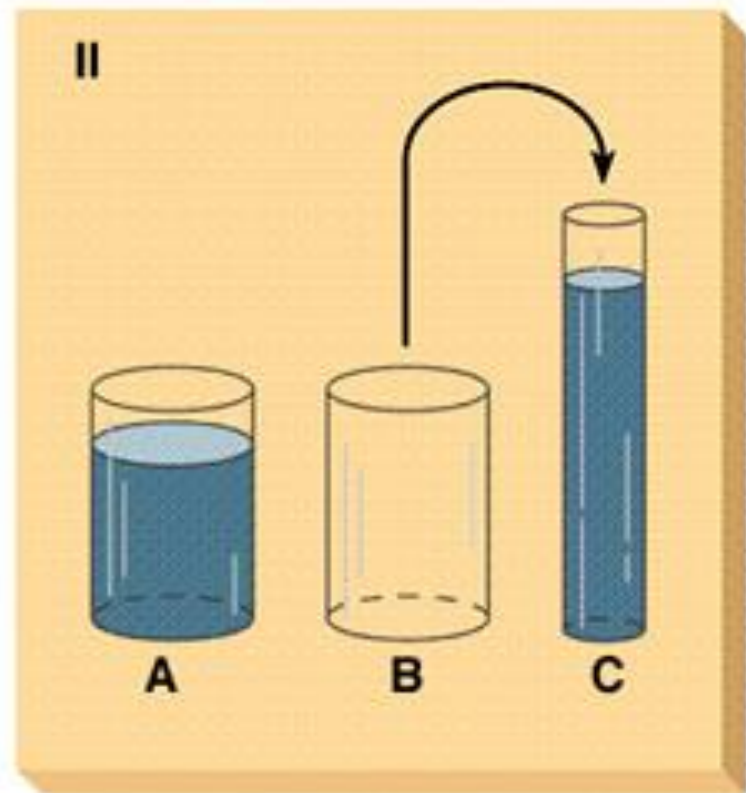
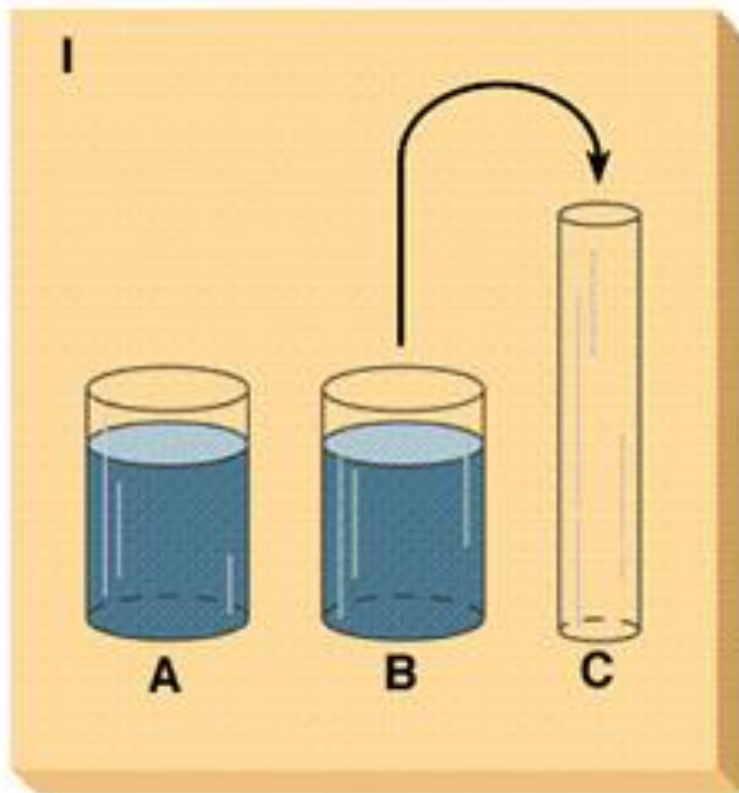
Preoperational Stage



PREOPERATIONAL

- Has mastered **object permanence**, developed some language, and self-recognition
- **Cannot perform operations** – *reversible mental processes*
- Also, lacks the concept of *conservation*
- Limited by **egocentric thinking**

Piaget's Conservation Task



CONCRETE OPERATIONAL

- Now understands **conservation** – *that objects preserve properties such as number, length, mass, etc. despite superficial changes*
- But still pulls up short in the ability to grasp *abstract or hypothetical ideas*
- Some cultures never get beyond this stage

Characteristics of Concrete Operational Thought

Can use operations, mentally reversing action; shows conversation skills

Logical reasoning replaces intuitive reasoning; but only in concrete circumstances

Not abstract (can't imagine steps in algebraic equation, for example)

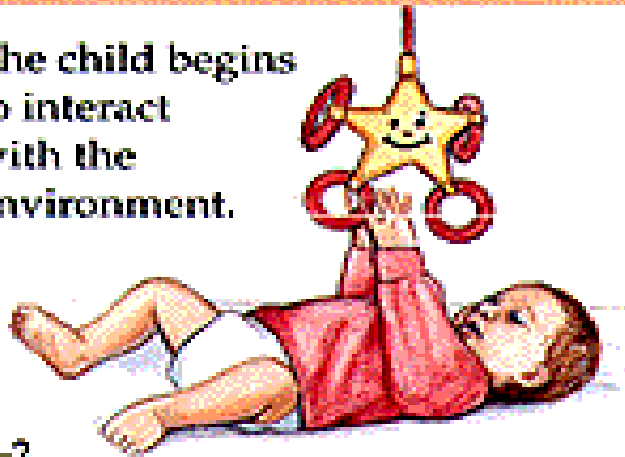
Classification skills -- can divide things into sets and subsets and reason about their interrelations

FORMAL OPERATIONS

- At around 12 to 14 most of us can understand and use abstract ideas and form hypothesis
- We engage in logical thought
- “If x than y”
- We now focus on the future and ideas

SENSORIMOTOR STAGE

The child begins to interact with the environment.



0-2

PREOPERATIONAL STAGE

The child begins to represent the world symbolically.



2-6 or 7

CONCRETE OPERATIONAL STAGE

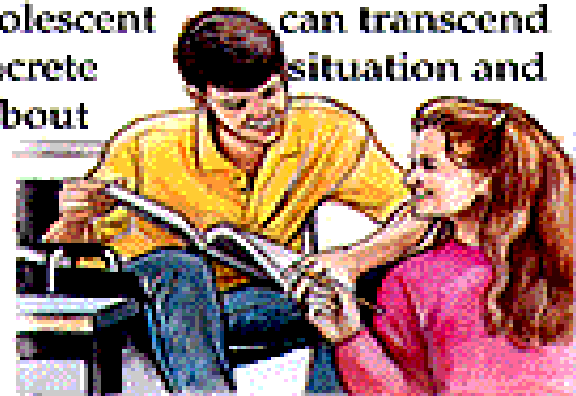
The child learns rules such as conservation.



7-11 or 12

FORMAL OPERATIONAL STAGE

The adolescent can transcend the concrete situation and think about the future.



12-Adulthood

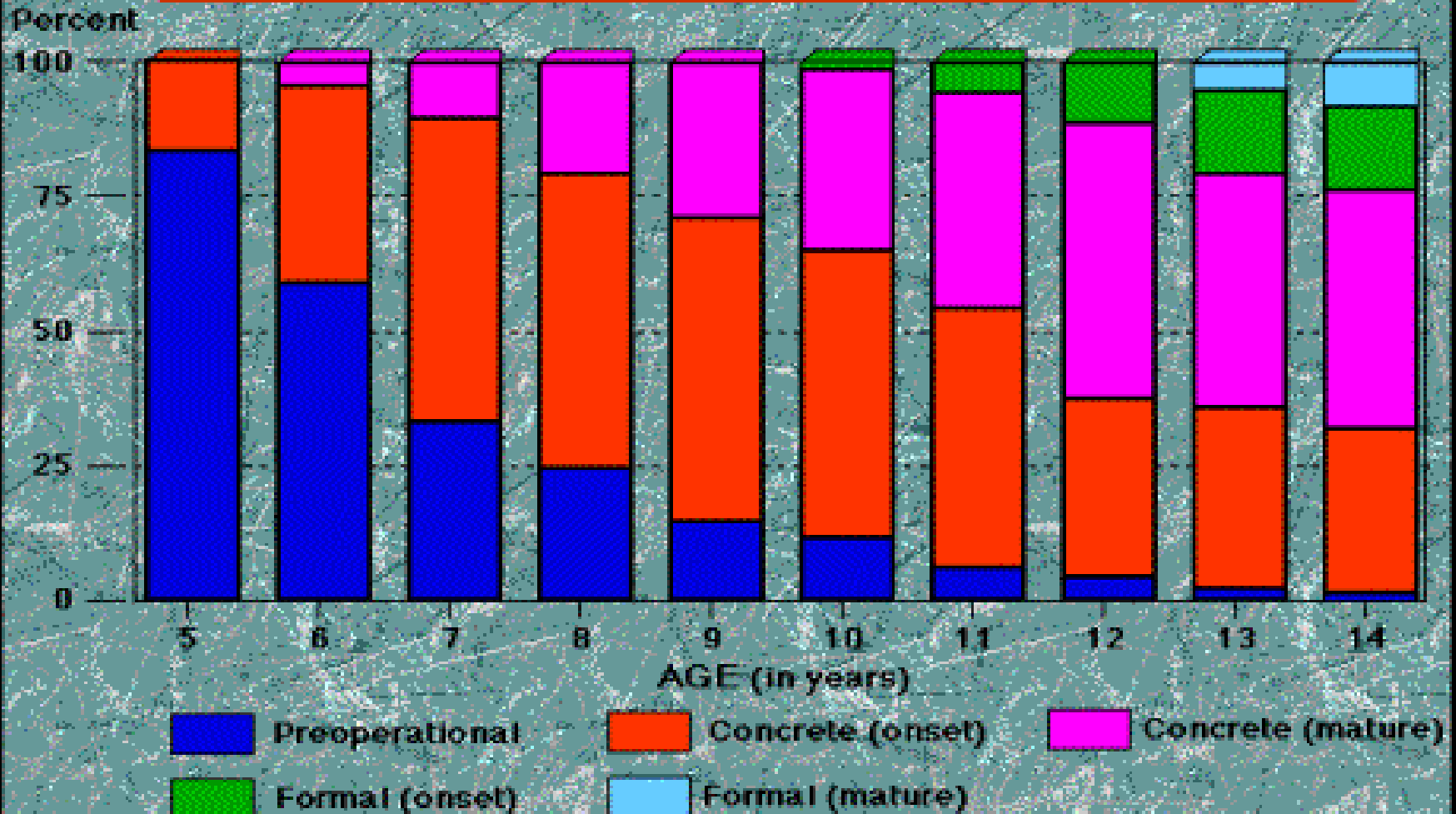
POST-CONVENTIONAL

- Some of us usually, in our late teens, and when we become exposed to a wide array of ideas and other ways of life begin to look **beyond our culture** and drastically change our conceptions of the world
- For example, change religions or political views

SINCE PIAGET

- Later research revealed that children's abilities fluctuate depending on the situation
- In other words, distinctions between the stages are blurred
- Children can often understand advanced concepts if presented in simple ways
- Abilities differ between children of the same age
- Children can be in two stages at once

Percent of Students in Piagetian Stages



TEMPERAMENT

- “Moms are always right!”
- Some children are easier to raise than others
- Beginning in 1970, 141 children from 85 families were followed from 2-3 months of age into adulthood

TEMPERAMENT PATTERNS

- Four broad groupings emerged
- **Easy** – 40%
 - adaptable, respond well to virtually any parenting strategy
 - these children “make” good parents



A REAL CHALLENGE

- **Feisty** – 10% (thank God)

- characterized by
irregular rhythms

- do not adapt well to
changes

- negative mood

- requires parents with a
high degree of consistency
and patience

- if not – TROUBLE!



ANOTHER PATTERN

- Intermediate – 15%

“slow to warm up”

low energy levels

slow to adapt

shy

will do fine if allowed to develop at their own
pace

AND THEN

- Unclassifiable – 35%

this large group doesn't fit any of the other categories

- Conclusion

traits such as mood and activity level are stable

- Genetic based but interacts with environment