Cognitive Development
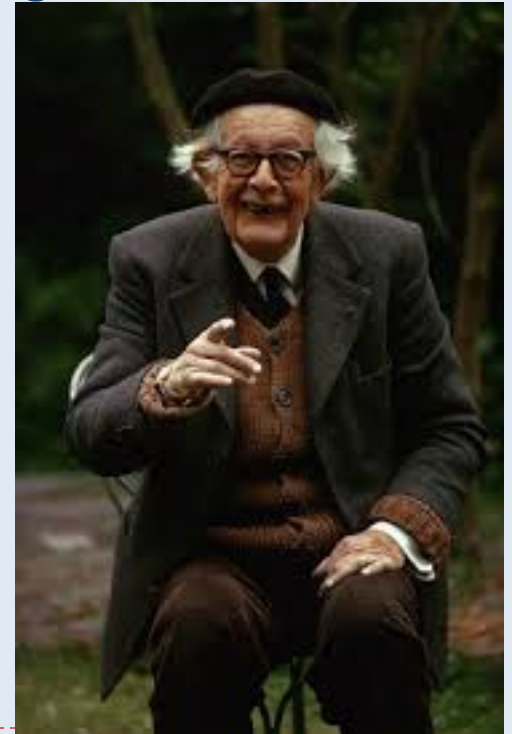
Jean Piaget

Jean Piaget

- Developed a theory of cognitive development and learning
    - *Schema*: organized pattern of thought or behavior
    - Explains how children learn and acquire language
- Everyone needs
    - 1. Biological maturation
    - 2. Environmental experience

Schema (Schemata)

- *Schema*: organized pattern of thought or behavior
  - Schemata = worldview, all your schema put together
- People notice new info. if it fits into their already existing schemata
  - Helps memory and attention
- People have a difficult time when new info. contradicts their schemata
  - They dismiss the new info.
    - No matter how good the fact/stat/story might be
  - This is how stereotypes lead to prejudice

Assimilation and Accommodation

- Assimilation
  - Taking new info and placing it inside already existing schemas
    - Details that fit your preconceived notions

- Accommodation
  - Taking new info that does not fit existing schemata and creating a new schema

Stages of Development

- Each person undergoes changes
  - Biological
    - A brain develops as you age
  - Environmental
    - New experiences
- Kids start by learning to separate themselves from their environment …
- …and end up being able to problem-solve and use deductive reasoning.

Sensori-motor
(0-2 years)

Pre-operational
(2-7 years)

Concrete Operational
(7-11 years)

Formal Operations
(11+ years)

Schema created by child reinforcing that objects are permanent

Understanding of world developed through sensory and physical experimentation

Beginnings of language through understanding of symbols

Egocentric

Difficulty understanding conversation or more than one aspect of a situation

Ordering and classifying based on appearance

Ability to sequence numbers

Developing ability to emphathise

Simplistic understanding of maths, geometry and physics

Ability to draw conclusions based on hypotheses rather than objects

Adolescent egocentrism

Logical

1. Sensorimotor Stage

- Typical age range: Birth – 2 years
- Babies connect senses to physical action
  - Develop hand-eye coordination
  - Manipulate objects
  - Everything goes into the mouth!
- Babies learn they are separate from environment
- Object Permanence is required to move on
  - Objects persist even though we cannot see them

2. Preoperational Stage

- Typical age range: 2 – 7yrs
- Characterized by symbolic play
  - Playing house, having a tea party w/ stuffed animals, being a superhero
- 2-3 – Why?
  - Kids want to "know" everything
  - Magical thinking
- 2-4 – Think in images and symbols
  - How we learn language
  - Egocentrism (kid is center of the universe)
    - I like Sesame Street, so dad must like Sesame Street.
  - Animism – inanimate objects are really alive
- 4-7 – Curiosity and primitive reasoning
  - Kids are wildly curious and are able to start forming more complex schemata
  - Difficulty with ideas like conservation – altering something appearance does not change the basic properties of the substance
    - Conservation and kids

3. Concrete Operational Stage

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▸ Typical age range: 7-11 years

▸ Logic!

　▸ Understand one's own thoughts are different from others'

　▸ Can classify objects in a number of ways:

　　▸ Size, weight, color, shape, etc.

　▸ Can use inductive logic

　　▸ Can use a specific example to generalize

　　　☐ Since all organisms depend on water, a new life form on Earth will probably

　▸ Math knowledge

　　▸ Adding, subtracting, multiplication, division with increasing fluency
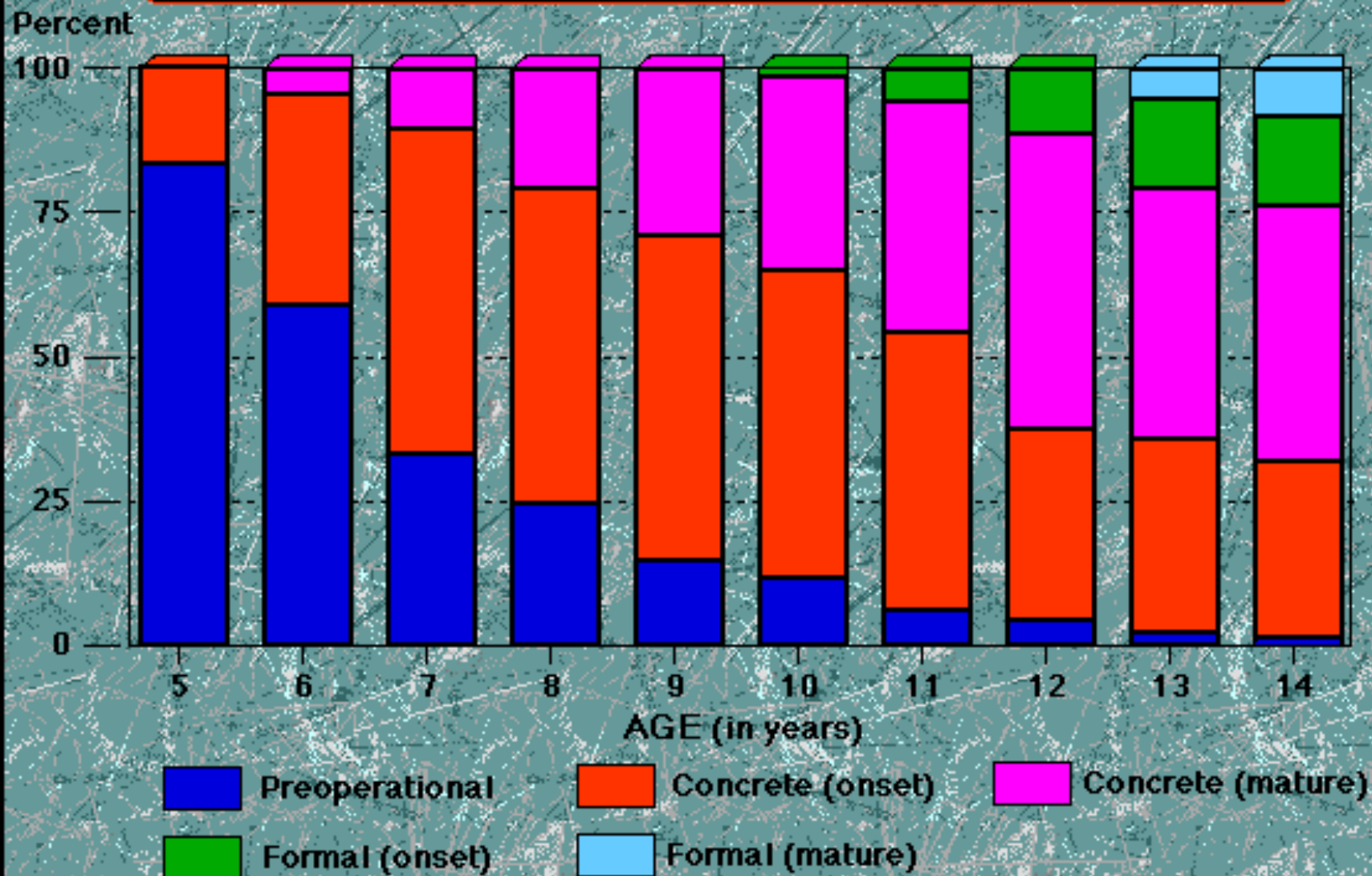
▸ Can explain why they have come up with a solution

▸

4. Formal Operational Stage

▶ Typical age range: teens – adults

  ▸ There are some adults who don't do this well

▶ Deductive logic

  ▶ Are able to think about hypothetical situations

  ▶ Can draw conclusions from various info.

▶ Abstract thought

  ▶ Consequences of possible decisions

▶ Problem-solving

  ▶ Use a method for solving a problem

    ▸ Trial and error -------------hypothesis testing

Percent of Students in Piagetian Stages

References

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- Thanks to Amy Williams, Ph.D