

Piaget and his research

IIE 366: Developmental
Psychology
Greg Francis
Lecture 15



- I. Piaget: A Brief Biography
- II. Piaget's Account of Object Permanence
- III. Core Knowledge of Objects

I. Piaget: A Brief Biography (1896-1980)

- A. A precocious youth
- B. Turning from biology to psychology

A. A Precocious Youth



- Early interest in living things (molluscs)
- Published first scientific paper at age 10.
- Ph. D. in biology at age 21

B. Turning from biology to psychology

- Interest in epistemology (theory of knowledge)
- Test children to study epistemological questions
- Toured European psychological laboratories, including:
 - >clinical psychology
 - >intelligence testing Laboratory of Claude Binet and Théodore Simon

The influence of the "Simon years"

- A more flexible testing format needed
- Errors more revealing than correct answers
- Children's thinking had a logic at its own
 - Not just poorer than adult's
 - Fundamentally different

The rest is “history”

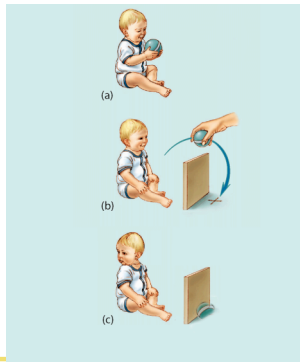


- Piaget spent the rest of his life-- from 1920 to 1980--studying cognitive development
- Late in life, returned to the epistemological questions that interested him initially; created an interdisciplinary research center to study these questions

II. Piaget's account of object permanence

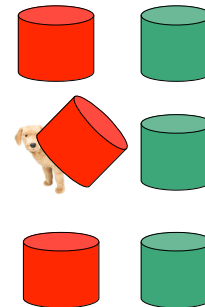
- Understanding of objects progresses through stages and not fully achieved until 2 years of age.
- For 8-month-olds, “out of sight is out of mind”
- For 10-month-olds, object concept linked to actions performed on objects

“out of sight is out of mind”



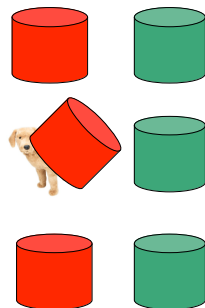
A not B error

- Experimenter hides a toy under box A (red)
- Infant looks for toy and finds it under box A



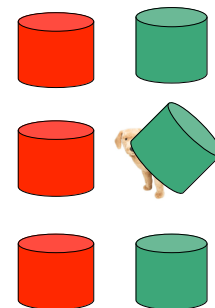
A not B error

- Experimenter hides a toy under box A (red)
- Infant looks for toy and finds it under box A
- Repeat for many trials

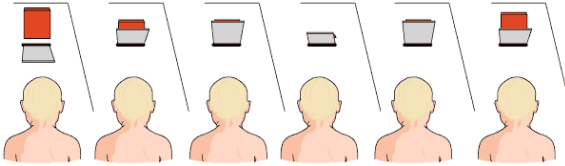


A not B error

- Experimenter hides a toy under box B (green)
- Infant continues to look for toy under box A
- Piaget believed this behavior indicated a lack of understanding about object permanence



Baillargeon's counter evidence



4.5-month-olds look longer at the impossible event

Baillargeon's counter evidence

- To young children this movie seems perfectly normal
- They watch it for a while and then get bored



Baillargeon's counter evidence

- To young children this movie seems unusual
- They watch it longer than the normal video
- They stare longer at the "impossible" situation



Interpreting the A not B error

- A not B errors increase with delay
- A not B errors decrease if containers are more distinctive
- Interpretation: memory that the toy was hidden at B is fragile compared to the robust memory that the toy was hidden at A
- Another interpretation: failure to inhibit prior responses and maturation of PFC

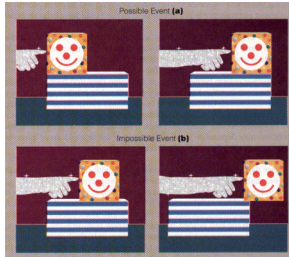
III. Core Knowledge of Objects

- Starting point for this work was Piaget's work on object permanence.
- Later investigators, particularly Renee Baillargeon and Elizabeth Spelke, doubted that children knew this little about objects.

What knowledge would a creature—human or artifact—need to know about objects?



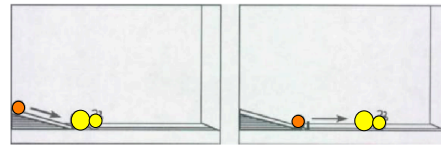
A. Support



- 5.5-month-olds look equally at the two events but 6.5-month-olds look longer at the impossible event

B. Collision

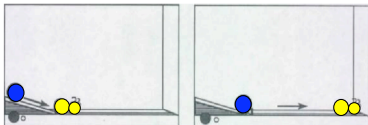
Habituation Events



A medium-sized orange ball collides with a yellow bug and pushes it a medium distance.

Test Events

Large-cylinder Event



Small-cylinder Event

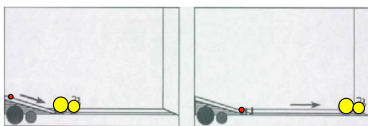


Figure 3C

- 6-month-olds are surprised by the impossible event but not younger infants

Bottom line

- Even though some of the details of Piaget's theory are not correct, he provided the modern view of children as "scientists" constantly trying to understand the world. And his work inspired others to reveal some fascinating aspects of children's thinking.
- This research has shown that Piaget underestimated infants' understanding of objects.

Next time

- Cognitive development
- Memory
- Problem solving
- Academic skills