How Does Our Thinking Change With Age?

Chapter 6:
Cognitive Developmental Approaches

Get out some paper...class survey!
What would you do?

If you were given a third eye to put anywhere on your body where would you put the extra eye and why?

It was once accepted that because babies cannot speak, then they must not think.

Jean Piaget examined the development of thought in children.
How does thought develop?

Piaget's theory focuses on ________________

Piaget believed that children play an active role in their cognitive development.

Piaget's Three Basic Assumptions

1. Children's constructive processes are generating hypotheses, performing experiments, and drawing conclusions
   - ________________

2. Children learn many important lessons on their own, ____________________________

3. Children are intrinsically motivated to learn and do not ____________________________

Piagetian Approach

Piaget proposed a "stage approach" to development and he claimed that all children pass through a series of ________________

- Sensorimotor (birth to 2 years)
- Preoperational (2 to 7 years)
- Concrete operational (7 to 12 years)
- Formal operational (12 years and beyond)
Piaget believed that infants spend a LOT of time trying to make sense of the world.

- A ________________________________, a way of organizing and categorizing thoughts and experiences.
  - Schemas allow children to make ________________________________

- Can be developed or modified through Assimilation or accommodation.

**Assimilation** incorporates ________________________________
  ________________________________

**Example:**

**Wait...I changed my mind!**

- **Accommodation** occurs when a child's theories are ________________________________

**Example:** The baby with a theory of dogs is surprised the first time she sees a cat - it resembles a dog, but meows instead of barks and rubs up against her rather thank licking.

- The baby must ________________________________
Why is this process important?

- As adaptation continues, the child organizes his/her schemata into more ______________

- Assimilation and accommodation are usually in balance (equilibrium), but periodically the balance is upset which results in ______________
  - Children restore equilibrium by replacing obsolete theories with ______________

Piaget’s Stages of Cognitive Development (Part I)

**SENSORIMOTOR STAGE**

(Age 0–2)
The child begins to interact with the environment.
Sensorimotor thinking involves adapting to the environment, understanding objects, and becoming able to use symbols.

This form of thought begins with the infant experiencing the world through their

Simple Reflexes

- During the first month of life, the various reflexes that determine the infant's interactions with the world are at the center of its cognitive life

- Infants begin to modify their reflexes to make them more adaptive

  - Example – thumb sucking

Sensorimotor Period

On your own....
Review the 6 substages of the Sensorimotor period.
**Sensorimotor Period**

<table>
<thead>
<tr>
<th>Substages</th>
<th>Age Range</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Simple Reflexes</td>
<td>Birth to 1 month</td>
<td>Exercising reflexes</td>
</tr>
<tr>
<td>2 First habits and Primary circular reactions</td>
<td>1 to 4 months</td>
<td>Learning to adapt</td>
</tr>
<tr>
<td>3 Secondary circular reactions</td>
<td>4 to 8 months</td>
<td>Making interesting events</td>
</tr>
<tr>
<td>4 Coordination of Secondary Reactions</td>
<td>8 to 12 months</td>
<td>Using means to achieve ends</td>
</tr>
<tr>
<td>5 Tertiary Circular Reactions, Novelty, and Curiosity</td>
<td>12 to 18 months</td>
<td>Experimenting</td>
</tr>
<tr>
<td>6 Internalization of Schemes</td>
<td>18 months to 2 years</td>
<td>Beginnings of Symbolic thought</td>
</tr>
</tbody>
</table>

**Primary circular reactions**

For example, an infant might combine grasping an object with sucking on it, or staring at something with touch.

For example, realizing that a rattle makes noise—they shake their arms and laugh whenever someone puts a rattle in their hand.

**Secondary circular reactions**

Infants begin to interact with...
A baby who enjoys baths may crawl into the bath tub with a bar of soap and remove all her clothes to communicate to Mom that she wants a bath.

**Coordination of Secondary Reactions**

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**Major Advancement**

- **Object Permanence**
  - Third substage: Infants will look for something they've dropped but if they cannot see it, they act as if it no longer exists
    - Out of sight – out of mind
  - Sixth substage: ______________________

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**Assess the infant’s object permanence**

- Five month-old Jack is playing with your car keys, but now you want to leave. You distract the infant and take your keys.
  - How does the infant react?
  - What does this suggest?
The infant responds by doing **NOTHING**. The infant will not even look for the keys. He will act as though the keys do not even exist anymore—because he **DOES NOT** have object permanence.

Click on the picture to watch a video on object permanence.

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**Piaget's Stages of Cognitive Development**

**(Part II)**

**PREOPERATIONAL STAGE**

*(Age 2-6 or 7)*

The child begins to represent the world symbolically.
The period in which children become able to

Limitations of the Preoperational Period:
- Egocentrism
- Animism
- Centration
- Lack of conservation

Infants develop the ability to use symbols and engage in pretend play

Me, Me, Me....
A key element in the preoperational stage is egocentrism, which is the inability to perceive a

- Children in this stage, cannot put themselves in another person's position

Over the course of the preoperational period, egocentric speech becomes less common.
Example of Egocentrism

Three-year-old Jamila loves talking to Grandma Powell on the telephone. When Grandma Powell asks a question, Jamila often replies by nodding her head. Jamila’s dad has explained that Grandma Powell can’t see her nodding, that she needs to say “yes” or “no.” But, no luck. Jamila invariably returns to head-nodding.

Cognitive Advances

- **Use of symbols**
  - Children do not need to be in sensorimotor contact with an object, person, or event in order to think about it

- **Understanding of identities**
  - Children are aware that superficial alterations do not change the nature of things

- **Understanding of cause and effect**
  - Children realize that events have causes

Cognitive Advances Continued...

- **Ability to classify**

- **Understanding of number**
  - Children can count and deal with quantities

- **Empathy**
  - Children become more able to
Limitations according to Piaget

- **Theory of mind**
  - Children become more aware of mental activity and the functioning of the mind

- **Irreversibility**
  - Children fail to understand that some operations or actions can be reversed, restoring the original situation

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Limitations according to Piaget

- Children fail to understand that some operations or actions can be reversed, restoring the original situation

- **Centration**
  - Preoperational children have the tendency to narrowly focus on a single;

  - For example, a three-year-old may choose a nickel over the dime

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**Concrete Operational Stage**

- A milestone of this stage is understanding Conservation

- This ability allows children to recognize that objects can be transformed visually or
Conservation Tasks

<table>
<thead>
<tr>
<th>Type of Conservation</th>
<th>Starting Configuration</th>
<th>Transformation</th>
<th>Final Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Are there the same number of pennies in each row?</td>
<td>Now are there the same number of pennies in each row, or does one row have more?</td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>Are these sticks the same length?</td>
<td>More one stick is to the left and the other is to the right; now are the sticks the same length, or is one longer?</td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>Does each ball have the same amount of clay?</td>
<td>Roll one ball so that it looks like a sausage; now does each ball have the same amount of clay, or does one have more?</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Does each cow have the same amount of grass to eat?</td>
<td>Spread out the squares in one field; now does each cow have the same amount to eat, or does one cow</td>
<td></td>
</tr>
</tbody>
</table>

Appearance as Reality

- Preoperational ______________________________
  Preschool children believe an object's appearance tells what the object is really like.
  - They think if people look happy, they are really happy.

- At the latter end of the stage, ____________ begins. This is a change from a self-oriented view to recognizing the view of others.
Test Your Knowledge

- A child in this stage saw a classmate crying and someone asked, “why is Marcus crying?” What is the child displaying?
- The child responds by saying, “I don’t know… I’m OK.”
- With the same scenario, a child responds, “Marcus is sad”

Concrete Operational Period

- The period in which children become able to reason logically about concrete objects and events.
- Children first use
- Addition, subtraction, multiplication, and division are familiar arithmetic operations that concrete operational children use
Classifying Objects, Ideas and People

- Children can also classify or divide things into different sets or subsets and consider their interrelationships.
- **Classification** is the process of organizing things into groups according to some property they have in common.
  - Children that can categorize can analyze problems, derive correct solutions and ask follow-up questions
- Example: size, shape, volume

Reversibility

- The concrete operational child can operate an action, and then go back to the original condition.
  - 3 + 2 = 5 and 5 – 2 = 3
- **Reciprocity** is another logical principle in which
  - 4 x 6 is the same as 2 x 12
- This is relevant to the development of mathematical processes

Reasoning

- **Inductive Reasoning**
  - Type of logical reasoning that moves from particular observations about members of a class to a general
- **Deductive Reasoning**
  - Type of logical reasoning that moves from a
    - about a particular member or members of the class
Test Your Knowledge…
Inductive or Deductive Reasoning?

- My dog barks. Jason’s dog barks. Carla’s dog barks. Therefore, all dogs bark.
- All dogs bark. Brutus is a dog. Therefore, Brutus barks.

Piaget’s Stages of Cognitive Development (Part IV)

FORMAL OPERATIONAL STAGE
(Age 12-adulthood) The adolescent can transcend concrete situations and think about the future.

Formal Operational Stage 12+

- In this stage, the individual can think hypothetically, consider future possibilities, and use deductive logic.
Do adolescents think like adults yet?

- Teenagers have more skillful selective attention, expanded memory, and ability to understand and ____________

- The development of hypothetical thought emerges during this period.
  - This type of thought involves reasoning about imagined possibilities. ____________

More complex reasoning

- During adolescence, teens are more able to think hypothetically, which allows for hypothetical-deductive reasoning.

- In other words, from specific proven laws or rules we can deduce certain truths. This is often displayed in principles of science and math.

What does your thinking say about you?

- Concrete Operational Child (9-year-old)
  - All of these children placed their third eye on the forehead between their two natural eyes

- Formal Operational Child (12-year-old)
  - These children gave a wide variety of answers with imaginative rationales
  - Some answered palm of the hand or inside the mouth and explained why.
The return of egocentrism!

- Most teens who reach formal operational thought are worried about how others see them, they are constantly consumed with conflicting feelings.

- Analyzing private thoughts and feelings reflect the enhanced capacity for __________________________
  __________________________
  __________________________

Adolescents don’t think quite the same as children or adults…their thinking is distorted due to their egocentrism!

- A logical lapse that occurs from the influence of egocentrism

- Everyone is always watching me!

- The teenager’s false belief that others are intensely interested in their appearance and behavior is called the __________________________
  __________________________
  __________________________
  __________________________
  __________________________

- A logical lapse that occurs from the influence of egocentrism

The Imaginary Audience
- This is one explanation for teen’s obsession with their hair, clothing, and everything else for that matter before going out in public.
- Teens often accuse parents of spying on them and monitoring their every move.

This also explains their need to fit in with their peer group.

“Would you jump off a bridge if everyone did?”

The Personal Fable
- Another false belief that teens exhibit is the personal fable, which is the belief that he or she is so special and unique that no one can understand them.
- “Bad things happen to others...not us!”
Think and review on your own...
Is there a fifth stage of cognitive development?

Analyze the Post-Formal Operational Stage of cognitive development

Four Weaknesses of Piaget’s Approach

1. The stage model depicts children’s thinking as being more consistent than it is
2. Infants and young children are more cognitively competent than Piaget recognized
3. Piaget’s approach underestimates the contribution of the social world to cognitive development
4. Piaget’s approach is vague about the cognitive processes that give rise to children’s thinking and about the mechanisms that produce cognitive growth

What’s Next?

The Sociocultural Perspective: Vygotsky’s Theory