Piaget’s Stages of Development

A child's cognitive development is about a child developing or constructing a mental model of the world.

Imagine what it would be like if you did not have a mental model of your world. It would mean that you would not be able to make so much use of information from your past experience, or to plan future actions.

Piaget was interested both in how children learnt and in how they thought. Piaget believed that children think differently than adults and stated they go through 4 stages of cognitive development.

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Key Concepts

Piaget proposed that the child's mental world is constructed through various processes and structures

**Schema:**
“A mental framework comprising knowledge of the world. It is based on experience.”

When a child's existing schemas are capable of explaining what it can perceive around it, it is said to be in a state of **equilibrium**, i.e. a state of cognitive (i.e. mental) balance.

**Assimilation:**
“Applying an existing schema to a situation”

According to Piaget, when a child assimilates an object or situation using a schema that does not quite fit that situation, the child experiences **disequilibrium**. The child attempts to restore balance or equilibrium by a process called **accommodation**.

**Accommodation** takes place when a new experience is so radically different that it cannot be assimilated into existing schemas and so a new schema needs to be formed.

**Accommodation:**
“The process by which a schema is changed to fit a new situation”

**Adaptation:**
“The process of becoming successfully adjusted in the environment”
**Adaptation** = Assimilation + Accommodation.

Sensorimotor stage (birth to 2 years)

Object permanence means knowing that an object still exists, even if it is hidden.

It requires the ability to form a mental representation (i.e. a schema) of the object.

**Aim:** Piaget wanted to investigate at what age children acquire object permanence.

**Method:** Piaget hid a toy under a blanket, while the child was watching, and observed whether or not the child searched for the hidden toy. Searching for the hidden toy was evidence of object permanence. Piaget assumed that the child could only search for a hidden toy if s/he had a mental representation of it.

**Results:** Piaget found that infants searched for the hidden toy when they were around 8-months-old.

**Pre-operational stage (2 – 7 years)**

**Egocentrism** refers to the child's inability to see a situation from another person's point of view. According to Piaget, the egocentric child assumes that other people see, hear and feel exactly the same as the child does.

Egocentric children assume that other people will see the same view of the three mountains as they do.

Piaget wanted to find out at what age children decentre - i.e. become no longer egocentric.

He used the **three mountains task** (see picture above) to test whether children were egocentric.

At age 7, thinking is no longer egocentric as the child can see more than their own point of view.

**Concrete operational stage (7 – 11 years)**

**Conservation:** is the understanding that something stays the same in quantity even though its appearance changes. To be more technical (but you don’t have to be) **conservation** is the ability to understand that redistributing material does not affect its mass, number or volume.

By around seven years the majority of children can **conserve liquid**, because they understand that when water is poured into a different shaped glass, the quantity of liquid remains the same, even though its appearance has changed. Five-year-old children would think that there was a different amount because the appearance has changed.

**Conservation of number** develops soon after this. Piaget set out a row of counters in front of the child and asked her/him to make another row the same as the first one. Piaget spread out his row of counters and asked the child if there were still the same number of counters. Most children aged seven could answer this correctly, and Piaget concluded that this showed that by seven years of age children were able to conserve number.
**Formal operational stage (11 years +)**

At about age 11+ years, the child begins to manipulate ideas in its head, without any dependence on concrete manipulation; it has entered the formal operational stage. It can do mathematical calculations, think creatively, use abstract reasoning, and imagine the outcome of particular actions.

What would happen if people no longer had children?

No one will have experienced this situation first hand. Therefore, to answer the question we must use abstract (i.e. theoretical) reasoning, a characteristic of the formal operational stage.

For example, eventually the human race would die out. However, before this happens many other things would occur. Can you think of any answers to the above question?

An example of the distinction between concrete and formal operational stages is the answer to the question “If Kelly is taller than Ali and Ali is taller than Jo, who is tallest?” This is an example of inferential reasoning, which is the ability to think about things which the child has not actually experienced and to draw conclusions from its thinking. The child who needs to draw a picture or use objects is still in the concrete operational stage, whereas children who can reason the answer in their heads are using formal operational thinking.

Piaget devised several tests of formal operational thought. One of the simplest was the *third eye problem*. Children were asked where they would put an extra eye, if they were able to have a third one, and why. Schaffer (1988) reported that when asked this question, 9-year-olds all suggested that the third eye should be on the forehead. However, 11-year-olds were more inventive, for example suggesting that a third eye placed on the hand would be useful for seeing round corners.

The pendulum task

Formal operational thinking has been tested experimentally using the pendulum task.

The method involved a length of string and a set of weights. Participants had to consider three factors—the length of the string, the heaviness of the weight and the strength of push.

The task was to work out which factor was most important in determining the speed of swing of the pendulum.

Results showed that formal operational children approached the task systematically, testing each variable.

Piaget concluded that this indicated that these children were thinking logically, in the abstract (unlike younger children).


Criticisms of Piaget

1. Naturalistic observations

   o Piaget used naturalistic observations of his own children when they were only a few weeks old.

   o The tendency for observers to be biased can be counteracted by using two or more observers (re: inter-observer reliability), but Piaget observed and made notes alone.

   o Generalisations should not be made from research such as this, but Piaget did generalise and many of his ideas on sensorimotor and pre-operational stages are based on these observations.

2. Use of tests

   o As several studies have shown Piaget underestimated the abilities of children because his tests were sometimes confusing or difficult to understand.

3. General Criticisms

   o Changes in children's thinking occur at an earlier age than Piaget claimed.

   o Because Piaget concentrated on the individual child, he failed to consider the effect that the social setting may have on cognitive development. The way that adults use language and gestures and the child's experience through social interactions are very influential on cognitive development (re: Vygotsky).