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The 4 Stages of Cognitive Development

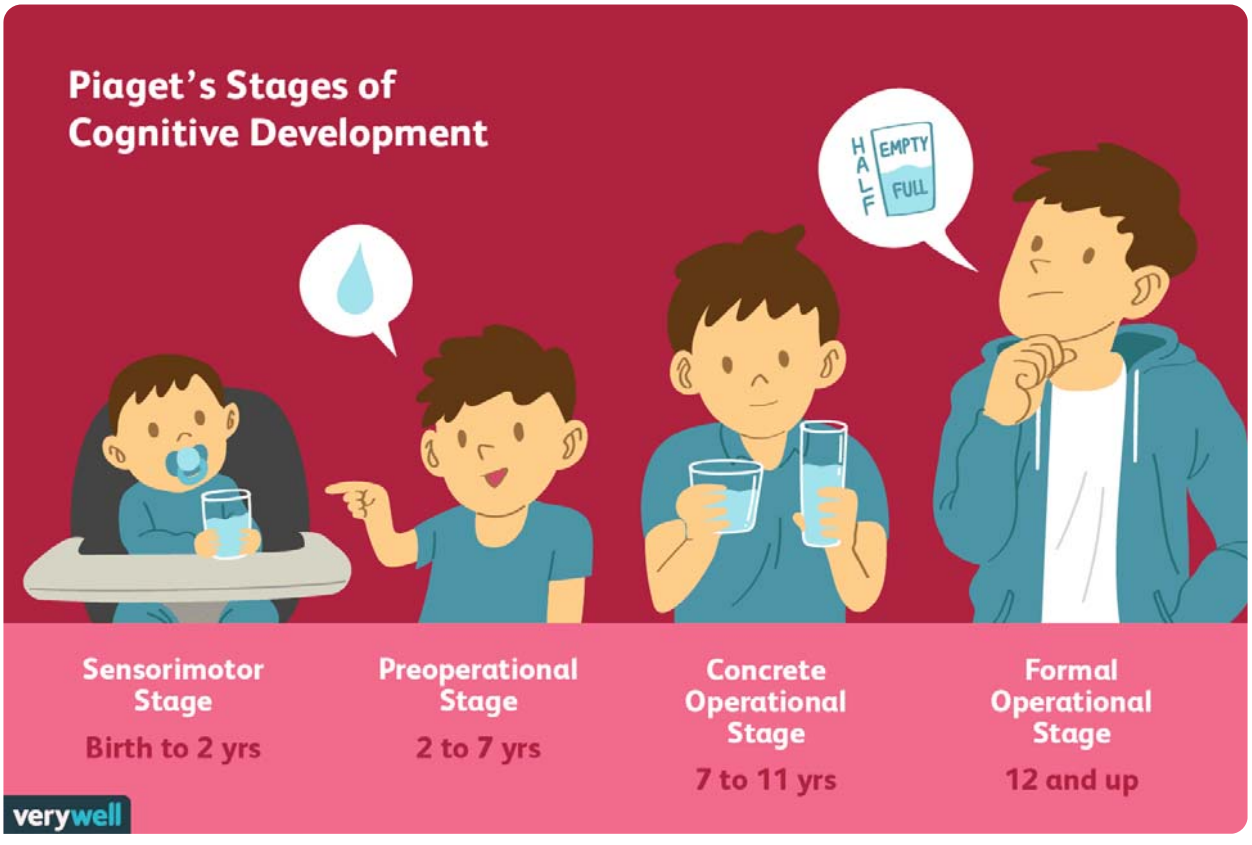
Background and Key Concepts of Piaget's Theory

By Kendra Cherry | Medically reviewed by a board-certified physician | Updated May 07, 2019

Jean Piaget's theory of cognitive development suggests that children move through four different stages of mental development. His theory focuses not only on understanding how children acquire knowledge, but also on understanding the nature of intelligence. Piaget's stages are:

- Sensorimotor stage: birth to 2 years
- Preoperational stage: ages 2 to 7
- Concrete operational stage: ages 7 to 11
- Formal operational stage: ages 12 and up

Piaget believed that children take an active role in the learning process, acting much like little scientists as they perform experiments, make observations, and learn about the world. As kids interact with the world around them, they continually add new knowledge, build upon existing knowledge, and adapt previously held ideas to accommodate new information.



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How Piaget Developed the Theory

Piaget was born in Switzerland in the late 1800s and was a precocious student, publishing his first scientific paper when he was just 11 years old. His early exposure to the intellectual development of children came when he worked as an assistant to Alfred Binet and Theodore Simon as they worked to standardize their famous IQ test.

Much of Piaget's interest in the cognitive development of children was inspired by his observations of his own nephew and daughter. These observations reinforced his budding hypothesis that children's minds were not merely smaller versions of adult minds.

> Up until this point in history, children were largely treated simply as smaller versions of adults. Piaget was one of the first to identify that the way that children think is different from the way adults think.

Instead, he proposed, intelligence is something that grows and develops through a series of stages. Older children do not just think more quickly than younger children, he suggested. Instead, there are both qualitative and quantitative differences between the thinking of young children versus older children.

Based on his observations, he concluded that children were not less intelligent than adults, they simply think differently. Albert Einstein called Piaget's discovery "so simple only a genius could have thought of it."

Piaget's stage theory describes the cognitive development of children. Cognitive development involves changes in cognitive process and abilities. In Piaget's view, early cognitive development involves processes based upon actions and later progresses to changes in mental operations.

The Stages

Through his observations of his children, Piaget developed a stage theory of intellectual development that included four distinct stages:

The Sensorimotor Stage

Ages: Birth to 2 Years

Major Characteristics and Developmental Changes:

- The infant knows the world through their movements and sensations
- Children learn about the world through basic actions such as sucking, grasping, looking, and listening
- Infants learn that things continue to exist even though they cannot be seen (object permanence)

- They are separate beings from the people and objects around them
- They realize that their actions can cause things to happen in the world around them

During this earliest stage of cognitive development, infants and toddlers acquire knowledge through sensory experiences and manipulating objects. A child's entire experience at the earliest period of this stage occurs through basic reflexes, senses, and motor responses.

It is during the sensorimotor stage that children go through a period of dramatic growth and learning. As kids interact with their environment, they are continually making new discoveries about how the world works.

The cognitive development that occurs during this period takes place over a relatively short period of time and involves a great deal of growth. Children not only learn how to perform physical actions such as crawling and walking; they also learn a great deal about language from the people with whom they interact. Piaget also broke this stage down into a number of different substages. It is during the final part of the sensorimotor stage that early representational thought emerges.

> Piaget believed that developing object permanence or object constancy, the understanding that objects continue to exist even when they cannot be seen, was an important element at this point of development.

By learning that objects are separate and distinct entities and that they have an existence of their own outside of individual perception, children are then able to begin to attach names and words to objects.

Learn More: **The Sensorimotor Stage of Cognitive Development**

The Preoperational Stage

Ages: 2 to 7 Years

Major Characteristics and Developmental Changes:

- Children begin to think symbolically and learn to use words and pictures to represent objects.
- Children at this stage tend to be egocentric and struggle to see things from the perspective of others.
- While they are getting better with language and thinking, they still tend to think about things in very concrete terms.

The foundations of language development may have been laid during the previous stage, but it is

the emergence of language that is one of the major hallmarks of the preoperational stage of development.

> Children become much more skilled at pretend play during this stage of development, yet continue to think very concretely about the world around them.

At this stage, kids learn through pretend play but still struggle with logic and taking the point of view of other people. They also often struggle with understanding the idea of constancy.
For example, a researcher might take a lump of clay, divide it into two equal pieces, and then give a child the choice between two pieces of clay to play with. One piece of clay is rolled into a compact ball while the other is smashed into a flat pancake shape. Since the flat shape *looks* larger, the preoperational child will likely choose that piece even though the two pieces are exactly the same size.

Learn More: Preoperational Stage of Cognitive Development in Young Children

The Concrete Operational Stage

Ages: 7 to 11 Years

Major Characteristics and Developmental Changes

- During this stage, children begin to thinking logically about concrete events
- They begin to understand the concept of conservation; that the amount of liquid in a short, wide cup is equal to that in a tall, skinny glass, for example
- Their thinking becomes more logical and organized, but still very concrete
- Children begin using inductive logic, or reasoning from specific information to a general principle

While children are still very concrete and literal in their thinking at this point in development, they become much more adept at using logic. The egocentrism of the previous stage begins to disappear as kids become better at thinking about how other people might view a situation.

> While thinking becomes much more logical during the concrete operational state, it can also be very rigid. Kids at this point in development tend to struggle with abstract and hypothetical concepts.

During this stage, children also become less egocentric and begin to think about how other people might think and feel. Kids in the concrete operational stage also begin to understand that their thoughts are unique to them and that not everyone else necessarily shares their thoughts, feelings, and opinions.

Learn More: The Concrete Operational Stage in Cognitive Development

The Formal Operational Stage

Ages: 12 and Up

Major Characteristics and Developmental Changes:

- At this stage, the adolescent or young adult begins to think abstractly and reason about hypothetical problems
- Abstract thought emerges
- Teens begin to think more about moral, philosophical, ethical, social, and political issues that require theoretical and abstract reasoning
- Begin to use deductive logic, or reasoning from a general principle to specific information

The final stage of Piaget's theory involves an increase in logic, the ability to use deductive reasoning, and an understanding of abstract ideas. At this point, people become capable of seeing multiple potential solutions to problems and think more scientifically about the world around them.

> The ability to thinking about abstract ideas and situations is the key hallmark of the formal operational stage of cognitive development. The ability to systematically plan for the future and reason about hypothetical situations are also critical abilities that emerge during this stage.

It is important to note that Piaget did not view children's intellectual development as a quantitative process; that is, kids do not just add more information and knowledge to their existing knowledge as they get older. Instead, Piaget suggested that there is a *qualitative* change in how children think as they gradually process through these four stages. A child at age 7 doesn't just have more information about the world than he did at age 2; there is a fundamental change in *how* he thinks about the world.

Learn More: Formal Operational Stage of Cognitive Development

Important Concepts

To better understand some of the things that happen during cognitive development, it is important first to examine a few of the important ideas and concepts introduced by Piaget.

The following are some of the factors that influence how children learn and grow:

Schemas

A schema describes both the mental and physical actions involved in understanding and knowing. Schemas are categories of knowledge that help us to interpret and understand the world.

In Piaget's view, a schema includes both a category of knowledge and the process of obtaining that knowledge. As experiences happen, this new information is used to modify, add to, or change previously existing schemas.

For example, a child may have a schema about a type of animal, such as a dog. If the child's sole experience has been with small dogs, a child might believe that all dogs are small, furry, and have four legs. Suppose then that the child encounters an enormous dog. The child will take in this new information, modifying the previously existing schema to include these new observations.

Related: **What Role Do Schemas Play in the Learning Process?**

Assimilation

The process of taking in new information into our already existing schemas is known as assimilation. The process is somewhat subjective because we tend to modify experiences and information slightly to fit in with our preexisting beliefs. In the example above, seeing a dog and labeling it "dog" is a case of assimilating the animal into the child's dog schema.

Related: **Assimilation and Jean Piaget's Adaptation Process**

Accommodation

Another part of adaptation involves changing or altering our existing schemas in light of new information, a process known as accommodation. Accommodation involves modifying existing schemas, or ideas, as a result of new information or new experiences. New schemas may also be developed during this process.

Related: **The Role of Accommodation in How We Learn New Information**

Equilibration

Piaget believed that all children try to strike a balance between assimilation and accommodation, which is achieved through a mechanism Piaget called equilibration. As children progress through the stages of cognitive development, it is important to maintain a balance between applying previous knowledge (assimilation) and changing behavior to account for new knowledge (accommodation). Equilibration helps explain how children can move from one stage of thought to the next.

A Word From Verywell

One of the most important elements to remember of Piaget's theory is that it takes the view that creating knowledge and intelligence is an inherently *active* process.

"I find myself opposed to the view of knowledge as a passive copy of reality," Piaget explained. "I

believe that knowing an object means acting upon it, constructing systems of transformations that can be carried out on or with this object. Knowing reality means constructing systems of transformations that correspond, more or less adequately, to reality."

Piaget's theory of cognitive development helped add to our understanding of children's intellectual growth. It also stressed that children were not merely passive recipients of knowledge. Instead, kids are constantly investigating and experimenting as they build their understanding of how the world works.

Read Next: What Is the Sensorimotor Stage of Cognitive Development?

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