

# Cognitive Development

Stage	Cognitive development characteristic behaviour
<p>Sensorimotor stage (Birth – Age 2)</p>	<ul style="list-style-type: none"> <li>• The child is trying to make sense of the world. During this stage the child’s knowledge of the world is limited to their sensory perceptions. The behaviour of the child is limited to simple motor responses caused by sensory stimuli, hence the name of the stage - sensorimotor. Children employ the skills and abilities they were born with, such as looking, touching, sucking, grasping, and listening, to learn more about the environment.</li> <li>• At 2 months a child develops perception. This is demonstrated through repetitive voluntary movements such as opening and closing fingers. Most of their actions are reflexive.</li> <li>• Children learn to repeat behaviours that bring about pleasure, for example, sucking their thumb.</li> <li>• At this stage children undertake trial and error experimentation, which involves manipulating objects to determine their properties. For example, a child might realise that a rattle will make a sound when shaken.</li> <li>• By 1 year of age, children acquire knowledge of cause and effect relationships. They begin to engage in goal-directed behaviour (i.e. doing things they know will bring about desired results). Example: Pulling a pillow towards them in order retrieve a toy resting on it. Their actions become intentional.</li> <li>• Children now begin exploring the environment around them. They also begin to imitate the observed behaviours of others. Example: Talk on toy phones when playing.</li> <li>• Children begin to understand object permanence, which is an understanding that physical objects continue to exist even when they are out of sight. They might begin searching for objects that are hidden.</li> <li>• By age 2, children are developing symbolic thought, developing symbols to represent events or objects in the world around them. They begin to comprehend the world through mental operations rather than purely through actions.</li> </ul>
<p>Pre-operational stage (Age 2-Age 6 or 7)</p>	<ul style="list-style-type: none"> <li>• Children are able to recall past events and anticipate future events.</li> <li>• Their vocabulary increases and words become symbols that enable children to think about objects even when they cannot be seen. This is known as transductive reasoning</li> <li>• Children begin to express their thoughts verbally.</li> <li>• Children are able to verbally receive information from other people.</li> <li>• They may begin to engage in fantasy or make-believe type play with plots and assigned roles (e.g. mummy, teacher, doctor) to act out the roles and behaviours they see around them.</li> <li>• They begin to use symbols in play, for instance, pretending a broomstick is a horse.</li> <li>• Their thinking is animistic, meaning they tend to assign living attributes to inanimate objects. Example: They may believe a doll will be hurt if it is dropped.</li> <li>• As this stage, children are essentially egocentric and are generally and are unable to see situations from another person’s perspective. Example: They will not understand that certain comments might hurt someone else’s feelings. Additionally, they might presume you know who they are talking about when they refer to someone by ‘he’ or ‘she’.</li> </ul>

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	<ul style="list-style-type: none"> <li>• Children’s thinking tends to be intuitive rather than logical. Example: They may believe they have more money if they have a 50 cent piece rather than a \$2 coin because the 50 cent piece is bigger. Similarly, if a child is presented with 2 rows of 4 apples but one row is more spaced out, the child will believe that there are more apples in the row that is more spaced out.</li> <li>• Children will have conservation problems. The term ‘conservation’ refers to the ability to understand that the amount of a substance remains the same even if its appearance is altered. Example: A child may believe that when you roll a ball of Play-doh into a flat pancake you have more Play-doh than you did when it was in a ball.</li> <li>• Children will begin to be able to place objects in a quantitative sequence, such as tallest to shortest. This is known as seriation. They will also be able to classify objects in very simple terms.</li> <li>• At this stage, children will have difficulty thinking in reverse. This explains why a child might not be able to tell you where they left their school bag. It is hard for them to think in reverse about where they have been.</li> </ul>
Concrete operations stage (Age 6 or 7-11 or 12)	<ul style="list-style-type: none"> <li>• At this stage children’s thought processes become more logical. They begin to understand that their own feelings and perspectives are not necessarily shared by others. They begin to understand the concept of personal opinion and become less egocentric.</li> <li>• Children become more able to attend to important stimuli and ignore or disregard irrelevant stimuli.</li> <li>• They understand concepts of right and wrong and will begin to seek external validation for their ideas. They might, for instance, begin to ask questions such as <i>‘Is that right?’</i> or <i>‘What do you think?’</i></li> <li>• Children will begin to think before they act.</li> <li>• They are able to classify objects into two categories at the same time, for instance, they might be able to categorise blocks by their shapes and colours. Therefor a block can simultaneously be classified as being red and rectangular.</li> <li>• Children become capable of conservation and understand that if nothing is added or subtracted the amount stays the same, even if the shape r arrangement changes. They might, however, still have difficulty with conservation of weight, until the end of this stage.</li> <li>• Children acquire transitivity. Transitivity is the ability to recognise logical relationships among elements in a serial order. They will understand, for example, if x is taller than y, and y is taller than z, then x must be taller than z.</li> <li>• Children may have difficulty understanding abstract or hypothetical concepts. Example: In Mathematics they might have difficulty understanding the concept of infinity or negative numbers. In English they might have difficulty understanding metaphors or proverbs.</li> <li>• They are capable of concrete problem solving. This means that they are only able to solve problems that apply to actual (concrete) objects or real life situations, and not abstract concepts or hypothetical tasks. Children are able to play games with complex rules and games that require tactics and strategy. They will consciously practice or train to improve and refine their skills</li> <li>• A degree of reverse thinking is now possible. This enables children to understand that numbers or objects can be changed, then returned to their original state. As such, a child will be able to rapidly determine that is <math>5+5</math> equals 10, <math>10-5</math> will equal 5, the original quantity.</li> </ul>

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Formal operations stage (Age 11 or 12 through adulthood)	<ul style="list-style-type: none"> <li>• As children reach adolescence they will develop the ability to consider future implications or current actions.</li> <li>• They will be able to solve complex problems and draw conclusions from information given.</li> <li>• They will learn to understand that issues can have multiple causes and interrelationships.</li> <li>• They will be able to deal with ambiguity, hypotheticals and abstract concepts and make logical deductions about situations that have no basis in physical reality.</li> <li>• Adolescents develop the skills needed for advanced reasoning in science and mathematics. They will, for instance, be able to test hypotheses by changing one variable whilst holding other variables constant. They will also develop an understanding of fractions, decimals, percentages, ratios, algebra and negative numbers.</li> <li>• Students will be able to interpret metaphors and proverbs, seeing past their literal meaning and understanding underlying messages.</li> <li>• Thinking often become idealistic, envisioning alternatives to current social, political, religious and ethical practices. They may show concern about world problems. Their recommendations for change/solutions will not always be grounded in reality or practicality, however.</li> </ul>