



JEAN PIAGET'S THEORY OF COGNITIVE DEVELOPMENT

Dr. Pramod Mishra

Assistant Professor, Centre for Teacher Education (CTE) DEPT., Institute of Professional Excellence & Management (IPEM), Ghaziabad (UP)

Ms. Shiwali Singh*

B.Ed Ist Yr Student, Centre for Teacher Education (CTE) DEPT., Institute of Professional Excellence & Management (IPEM), Ghaziabad (UP)
*Corresponding Author

ABSTRACT

The Swiss researcher and writer Jean Piaget (1896-1980) spent most of his adult life describing the cognitive development of children. Although Piaget was never trained as a psychologist (his formal schooling was in Biology and Zoology), his theory of cognitive development had a dramatic impact on how we view the abilities of children. In 1970, Piaget came up with the theory of cognitive development. Piaget believed that children pass through four stages in cognitive development (Sensorimotor, Preoperational, Concrete Operational and Formal Operational). The paper focuses on Piaget's theory of cognitive development and its educational implications.

KEYWORDS : Jean Piaget, Cognitive Development

INTRODUCTION

The Swiss researcher and writer Jean Piaget (1896-1980) spent most of his adult life describing the cognitive development of children. Although Piaget was never trained as a psychologist (his formal schooling was in Biology and Zoology), his theory of cognitive development had a dramatic impact on how we view the abilities of children. In 1970, Piaget came up with the theory of cognitive development. Piaget believed that children pass through four stages in cognitive development (Fig 1).

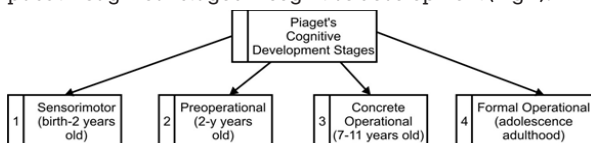


Fig 1 : Stages in Cognitive Development

The most rapid cognitive development takes place during the first few years of life when the brain is growing rapidly. Piaget felt that cognitive development proceeded through four stages: the sensorimotor stage lasts from birth to approximately 18 months of age, the preoperational stage lasts from 2-7 years of age, the stage of concrete operations covers the 7-12 years and finally, formal operations, extends from twelve years on.

According to Piaget, the order in which children pass through these stages is invariant or does not vary. The rate at which children pass through these stages does vary from child to child.

Piaget wrote that each stage of cognitive development represents a qualitatively different way of thinking. That is, children in each stage think differently from children in the other stages. Therefore, it is not just that children acquire more information as they grow older, but how they think actually changes with age. Children pass from one stage to another as a result of biological maturity and experiences in their environment. The Piaget's four stage are as follows :

1. Sensorimotor stage (0-2 years)
2. Preoperational stage (2-7 Years)
3. Concrete operations (7-11 years)
4. Formal operation (11- adult)

1. Sensorimotor Stage (0-2 years)

Children think during this stage as a result of coordination of sensory input and motor responses. Because the child has not developed language, intelligence is nonverbal or non-symbolic (the child cannot mentally represent objects or

events). This stage is divided into six sub-stages that outline how cognitive development proceeds during this stage. These six sub-stages also represent the development of object permanence. Piaget was the first to suggest that infants lack object permanence-that is, they cannot mentally represent or think about objects that they are not directly interacting with (or, put another way, 'out of sight, out of mind'). Piaget mentioned the Sensorimotor stages as (Fig: 2):

Fig 2 : Sensorimotor Stages

1	Reflexive Schemes	Birth-1 months	Newborn reflexes
2	Primary Circular Reactions	1-4 months	Simple motor habits centered around own body
3	Secondary Circular Reactions	4-8 months	Repeat interesting effects in soundings
4	Coordination of Secondary Circular Reactions	8-12 months	Intentional, goal-directed behaviour,
5	Tertiary Circular Reactions	12-18 months	Explore properties of objects through novel actions
6	Mental Representations	18 months-2 years	Internal depictions of objects or events; deferred imitation

2. Preoperational Stage (2-7 years)

Preoperational thinkers can now symbolize or mentally represent their world. They can now think about objects that they are not interacting with at the present time. This period is dominated by a rapid development of language, which is a form of symbolic thinking. Children do have several limitations during this stage, however. These include irreversibility or the inability to mentally reverse a physical action to return an object to its original stage, centration (tendency to focus on one detail in a situation to the neglect of other important features) and egocentrism (inability to consider another's viewpoint). These three limitations are used to describe why preoperational children cannot solve conservation tasks (i.e., they do not understand that quantity cannot be judged by appearance alone). A preoperational child might believe that when you pour water from a tall, thin glass into a wide-mouthed, shorter glass, you have less water. The child centrates attention on the appearance of more water and cannot mentally reverse the operation and think about pouring the water back into the tall, thin glass.

3. Concrete Operations (7-11 years)

During concrete operations, children understand conservation. They understand, for example, that when water is poured from a tall, thin glass into a wide-mouthed, shorter glass, there is the same amount of water. Concrete operational children, therefore, can decenter their attention and understand reversibility. Concrete thinkers can also arrange objects according to size or weight and can divide something into its parts. Mathematical operations develop during this stage. Children are limited in this stage because thinking can only be applied to concrete objects and events and they will have difficulty dealing with hypothetical problems.

4. Formal Operations (11- above)

Formal operational thinkers can handle hypothetical problems. They are, for instance, able to project themselves into the future and think about long-term goals. Scientific reasoning is also possible. That is, the ability to isolate a problem, review it systematically and figure out all possible solutions is evident. The formal thinker is capable of understanding and appreciating the symbolic abstractions of algebra and literary criticism as well as the use of the metaphor in literature. Formal operations, therefore involve the development of logical and systematic thinking.

Criticism of Piaget's Theory

Criticism of Piaget's Theory theory include his underestimation of children's cognitive abilities. Studies have shown that children are capable of performing many tasks (e.g., conservation) at earlier ages than Piaget predicted. Piaget also paid little attention to individual differences. Some aspects of his theory (e.g., formal operations) may be culturally specific.

Application Of Piaget's Theory At Various Life Stages

Adolescence

Adolescence is that time in development that occurs between childhood and adulthood.

Physical Changes Puberty refers to rapid physical growth that occurs with hormonal changes that bring sexual maturity. Secondary sex characteristics (the physical features associated with gender but not directly involved in reproduction, such as male facial hair) emerge at this time. Menarche refers to girls' first menstrual period. The peak growth spurt during puberty occurs earlier for girls than for boys.

Social Concerns The main task for adolescents is to establish an identity. Adolescents are in Erikson's identity versus role confusion stage. Adolescents enter what Erikson called a psychosocial moratorium, which relates to the gap between the security of childhood and the autonomy of adulthood, where a person is free from responsibilities and can experiment with different roles. At the turn of the century, psychologist C. Stanley Hall characterised adolescence as a time of storm and stress. Current research suggests that most adolescents make it through this time without any more turmoil than they are likely to encounter at other points in their lives.

Cognitive Skills Cognitively, adolescents begin entering Piaget's stage of formal operations. Adolescent egocentrism may occur whereby adolescents believe that others are as preoccupied with them as they are with themselves.

ADULTHOOD

Certain events mark adult attainment in our society. Such events include leaving one's family, supporting oneself, getting married and having children. Many of these transitions into adulthood involve changes in family relationships and responsibilities.

EARLY ADULTHOOD

It extends from approximately 20-40 years of age.

Physical Changes Reaction time and muscular strength peak in the early to mid-twenties. External signs of aging begin to show in the 30s when the skin loses elasticity and hair becomes thinner and begins to turn gray.

A gain in weight is common because a lowered metabolic rate contributes to increased body fat relative to muscle.

Social Concerns Social development during early adulthood is focused on forming intimate relationships. Individuals are in Erikson's intimacy versus isolation stage.

Cognitive Skills Intellectual abilities and speed of information processing are relatively stable and gains in intellectual skills are possible during early adulthood. Some studies have shown that approximately 50% of all adults have reached Piaget's stage of formal operations.

MIDDLE ADULTHOOD

It lasts from approximately 40-65 years of age.

Physical Changes During middle adulthood the number of active brain cells declines, but the significance of this loss is unclear. In vision, farsightedness increases. Sensitivity to high-frequency sounds decreases. In women, menopause (ending of monthly menstruation) occurs at around 51 years of age. The male climacteric includes decreased fertility and decreased frequency of orgasm. For both sexes, sexual activity declines although capacity for arousal changes only slightly.

Social Concerns Over time, individuals become more aware of their own mortality and the passage of time and enter Erikson's generativity versus stagnation stage. Those in middle adulthood are often caught between the needs of their children and those of their own aging parents and thus referred to as the sandwich generation. There has been much debate concerning whether or not most people go through a midlife crisis. Many studies have failed to find increased emotional turbulence at midlife.

Cognitive Skills Effectiveness of retrieval from long-term memory begins a slow decline but is often not noticeable until after age 55. Despite a decreased speed in cognitive processing, intelligence and problem-solving skills usually remain stable. Career development peaks.

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