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COGNITIVE PSYCHOLOGY
L3 /ALL GROUPS
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LECTURE 02: THEORIES OF COGNITION

1. THEORIES OF COGNITION

Cognitive development is a major domain of early childhood development. The term cognition refers to how the mind operates and the study of cognitive development focuses on how the mind thinks and learns during the early years of life[1]. Examples of cognitive development in childhood include children learning to distinguish between behaviors that will be rewarded, versus those that will be punished by their parents

a) PIAGET'S THEORY OF COGNITIVE DEVELOPMENT

Jean Piaget *(1896-1980)* was one of the most influential researchers in the area of developmental psychology during the 20th century. Piaget originally trained in the areas of biology and philosophy. He was mainly interested in the biological influences on "how we come to know." He believed that what distinguishes human beings from other animals is our ability to do "abstract symbolic reasoning." Piaget's views are often compared with those of **Lev Vygotsky** *(1896-1934),* who looked more to *social interaction* as the primary source of cognition and behavior.

While working in **Binet's IQ** test lab in Paris, Piaget became interested in how children think. He noticed that young children's answers were qualitatively different than older children which suggested to him that the younger ones were not dumber (a quantitative position since as they got older and had more experiences they would get smarter) but, instead, answered the questions differently than their older peers because they thought differently. There are two major aspects to his theory: the process of coming to know and the stages we move through as we gradually acquire this ability.

PROCESS OF COGNITIVE DEVELOPMENT

As a biologist, Piaget was interested in how an organism adapts to its environment (Piaget described as intelligence.) Behavior (adaptation to the environment) is controlled through mental organizations called **schemata** (sometimes called *schema or schemes**) that the individual uses to represent the world and designate action. This adaptation is driven by a biological drive to obtain balance between schemes and the environment (**Equilibration**).

SCHEMA : 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.

Piaget hypothesized that infants are born with schema operating at birth that he called "reflexes." In other animals, these reflexes control behavior throughout life. However, in human beings as the infant uses these reflexes to adapt to the environment, these reflexes are quickly replaced with constructed schemata.

Piaget described two processes used by the individual in its attempt to adapt: **Assimilation** and **accomodation**. Both of these processes are used though out life as the person increasingly adapts to the environment in a more complex manner.

Assimilation is the process of using or transforming the environment so that it can be placed in preexisting cognitive structures. **Accomodation** is the process of changing cognitive structures in order to accept something from the environment. Both processes are used simultaneously and alternately throughout life. An example of assimilation would be when an infant uses a sucking schema that was developed by sucking on a small bottle when attempting to suck on a larger bottle. An example of accomodation would be when the child needs to modify a sucking schema developed by sucking on a pacifier to one that would be successful for sucking on a bottle.

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.

Stages of Cognitive Development

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

The Sensorimotor Stage (Birth to 2 Years)

- 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

The Preoperational Stage (2 to 7 Years)

- 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 Concrete Operational Stage (7 to 11 Years)

- 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

The Formal Operational Stage (12 and Up)

- 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.

b) Vygotsky and Sociocultural Theory

Sociocultural theory grew from the work of seminal psychologist Lev Vygotsky (1896-1934), who believed that parents, caregivers, peers, and the culture at large were responsible for developing higher-order functions. According to Vygotsky, learning has its basis in interacting with other people. Once this has occurred, the information is then integrated on the individual level.

Sociocultural theory focuses not only how adults and peers influence individual learning, but also on how cultural beliefs and attitudes affect how learning takes place.

According to Vygotsky, children are born with basic biological constraints on their minds. Each culture, however, provides "tools of intellectual adaptation." These tools allow children to use their abilities in a way that is adaptive to the culture in which they live. For example, while one culture might emphasize memory strategies such as note-taking, another might use tools like reminders or rote memorization.

The Zone of Proximal Development

An important concept in sociocultural theory is known as the zone of proximal development. According to Vygotsky, this "is the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers."

Essentially, it includes all of the knowledge and skills that a person cannot yet understand or perform on their own, but is capable of learning with guidance. As children are allowed to stretch their skills and knowledge, often by observing someone who is slightly more advanced than they are, they are able to progressively extend this zone of proximal development.

2. Piaget vs. Vygotsky Differences

Piaget	Vygotsky
Believed that development occurred in distinct stages and that each must be reached in order.	Did not believe that development occurred in distinct stages.
Believed that development precedes learning.	Believed that social learning precedes development.
Believed that development begins in the individual and continues to the social world.	Believed that development begins in the social world and gradually becomes internalized in the individual.
Believed that egocentric speech serves to prove that children are self-centred and not able to see from any point of view but their own.	Believed that egocentric speech occurs as children progress from language as a tool used to communicate socially to language as private speech and then inner speech (thought).
Focused little on language as a tool of cognitive development.	Strong focus on language as a tool of cognitive development.
Believed that language is driven by thought.	Believed that thought is driven by language.
Believed that the pace of cognitive development is dictated by the child's level of maturation.	Believed that children are born with innate elementary functions.
Believed that children learn independently.	Believed that children depend on social interaction to learn (zone of proximal development).
Believed that the child takes on the role of scientist.	Believed that the child takes on the role of apprentice.
Believed that development is the same in every child.	Believed that development varies depending on cultural differences.

(Piaget and Vygotsky, Week 4, ECE1075) (MacLeod 2007) (Psychology Wiki)