

# Piaget's Theory of cognitive development

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# JEAN PIAGET

- Swiss psychologist(1896–1980)who became leading theorist in 1930's
- His major enterprise was what he termed “genetic epistemology,” the study of the development of logic, reasoning and higher-level thinking.
- Developmental psychologist who introduced ***“Four stage theory of cognitive development”***
- It is analogous to **Sigmund Freud's or Erik Erikson's theories of emotional or personality development.**



# COGNITION

- Mental process of knowing and becoming aware; function is closely associated with judgement.
- All the mental activities associated with thinking, knowing, and remembering
- Children think differently than adults

# PIAGET'S THEORY OF COGNITIVE DEVELOPMENT

- Piaget believed that ***“children are active thinkers, constantly trying to construct more advanced understandings of the world”***
- These “understandings” are in the form of structures he called ***schemas***
  - concepts or mental frameworks that people use to organize and interpret information
  - sometimes called schemes
  - a person’s “picture of the world”

# DEVELOPMENT OF SCHEMAS

- Schemas are frameworks that develop to help organize knowledge
- **Assimilation**—process of taking new information or a new experience and fitting it into an already existing schema
- **Accommodation**—process by which existing schemas are changed or new schemas are created in order to fit new information

# ASSIMILATION/ACCOMMODATION



**Two-year-old Jocelyn has learned the schema for "dog" from her picture books.**

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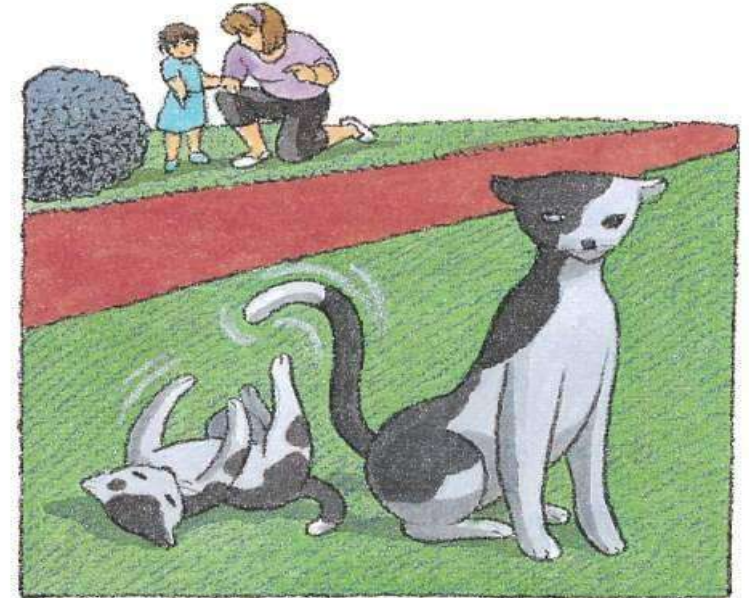
# ASSIMILATION/ACCOMMODATION



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**Jocelyn accommodates her schema for 4-legged animals and continues to modify that schema to include different kinds of dogs and cats in the neighborhood.**

# PIAGET'S APPROACH

- Primary method was to *ask children to solve problems and to question them about the reasoning behind their solutions*
- Discovered that children think radically in different ways than adults
- Proposed that development occurs as a series of 'stages' differing in how the world is understood

# STAGES OF INTELLECTUAL DEVELOPMENT POSTULATED BY PIAGET

## Piaget's Stages of Cognitive Development



**Sensorimotor  
Stage**

Birth to 2 yrs

**Preoperational  
Stage**

2 to 7 yrs

**Concrete  
Operational  
Stage**

7 to 11 yrs

**Formal  
Operational  
Stage**

12 and up

# SENSORIMOTOR STAGE (BIRTH – 2 YEARS)

- *The sensorimotor period of intelligence is so named because the child's construction of mental schemata is not aided by representations, symbols or thoughts. Rather, schemata depend totally on sensory perceptions and bodily movements.*
- In this stage child perceives and manipulates but does not reason
- Symbols become internalized through language development
- *Divided into six stages-*



Age	Characteristics
Birth-2 months	Marked by a relatively few organized reflexes that stand out from the spontaneous general activity of the neonate. These primitive reflexes demonstrate three types of assimilation: (1) reproductive (2) generalizing and (3) recognitory
2-5 months	Contains the <b>first habits</b> and the <b>primary circular reactions</b> . The First habits develop out of the original schemata and Primary circular reactions occur when, by chance, the infant experiences a new consequence of a motor act and tries to repeat the act.
5-9 months	<b>Secondary circular reaction:</b> Seeks out new stimuli in the environment; starts both to anticipate consequences of own behavior and to act purposefully to change the environment; beginning of intentional behavior

Age	Characteristics
9 -12 months	<p>Combining actions to solve simple problems. (first sign of intentionality)</p> <p>Shows preliminary signs of object permanence; has a vague concept that objects exist apart from itself; plays peek-a-boo; imitates novel behaviors.</p>
12-18 months	<p>Tertiary circular reaction: Seeks out new experiences; produces novel behaviors.</p>
18 -24 months	<p>Symbolic thought: Uses symbolic representations of events and objects; shows signs of reasoning (e.g., uses one toy to reach for and get another); attains object permanence</p>

- The distinction between stages 4 and 5 lies in the relative creativity.
- Stage 4 is marked by the use of familiar means. Stage 5 is marked by a search for new means based on further differentiations of already known schemata and by tertiary circular reactions.
- Discovery is a hallmark of stage 5.
- Stage 6 is transitional, leading into the preoperational subperiod. In stage 6, the child becomes capable of inventing new means, not by direct actions on objects, but by mental combination. Whereas discovery marked stage 5, insight is a characteristic of stage 6. For example, a child who has seen the father bang on a drawer to loosen it may bang on a toy box to make it easier to open.

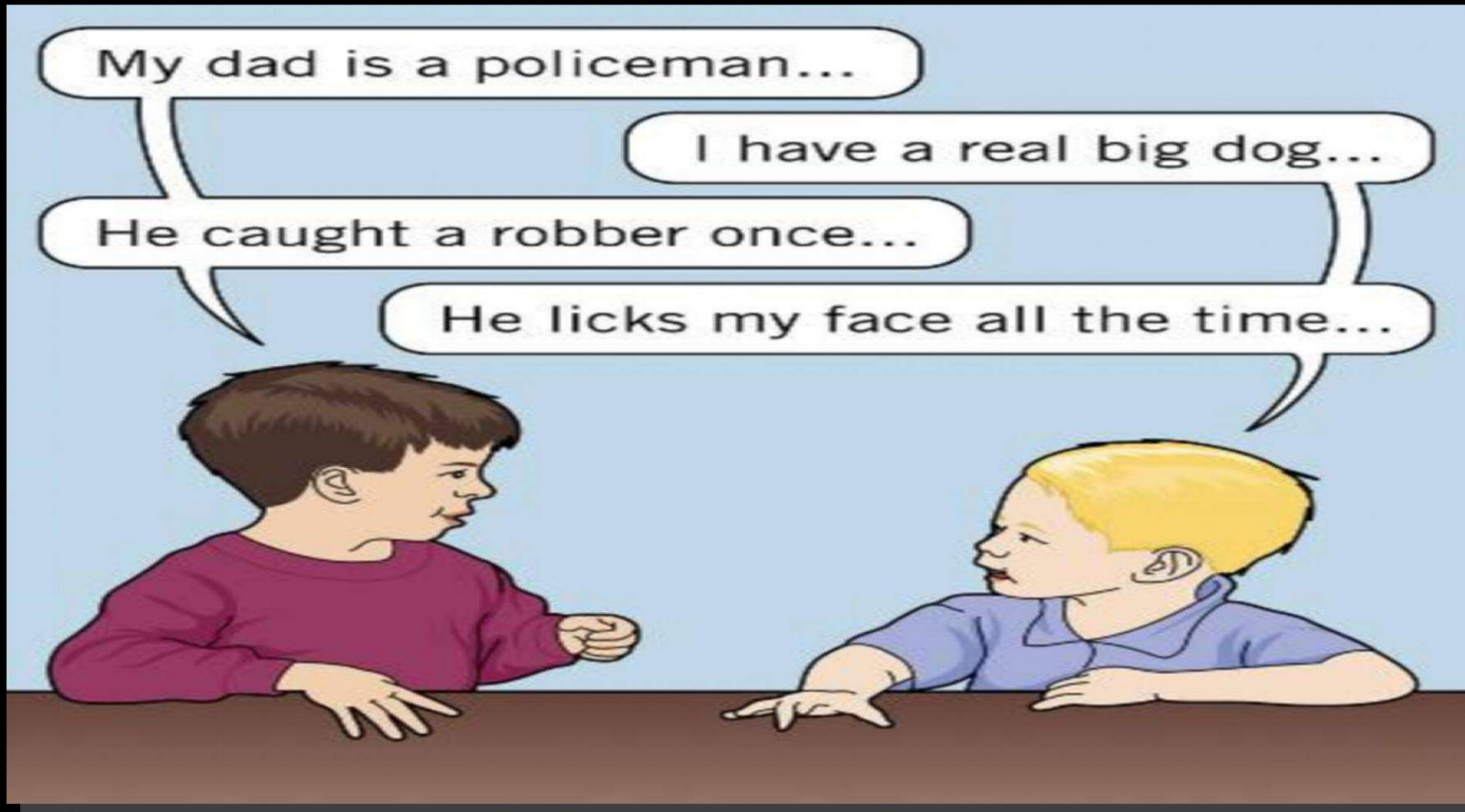
- During the sensorimotor period, a number of significant concepts are developed, including the child's concepts of space, time, and causality. These categorical concepts develop in a process parallel to the sequence of the six stages.
- Most importantly, the child develops the schema of object permanence, the first major victory of conservation and the foundation of all future knowledge.



# PREOPERATIONAL STAGE (2–7 YEARS)

- The word *operations* refers to logical, mental activities; thus, the *preoperational* stage is a *prelogical* stage
- Children can understand language but not logic.
- They can name objects but can not classify.
- Things are represented in terms of their function.
- Emergence of *symbolic thought* - ability to use words, images and symbols to represent the world.
- **Centration** - tendency to focus, or center, on only one aspect of a situation, usually a perceptual aspect, and ignore other relevant aspects of the situation

# EGOCENTRISM



# PREOPERATIONAL STAGE (2–7 YEARS)













- **Egocentrism** - inability to take another person's perspective or point of view
  - Also includes a child's inability to understand that symbols can represent other objects
- Lack the concept of **conservation** - which holds that two equal quantities remain equal even if the appearance of one is changed, as long as nothing is added or subtracted
- **Irreversibility** - child cannot mentally reverse a sequence of events or logical operations back to the starting point

# PREOPERATIONAL STAGE (2–7 YEARS)

- Children in the preoperational stage cannot deal with moral dilemmas
- They have a sense of what is good and bad.
- Children also use a type of magical thinking, called *phenomenalistic causality*  
Events that occur together are thought to cause one another
- Cognitive Developmental Characteristics - Deferred imitation, symbolic play, graphic imagery (drawing), mental imagery and language (verbal evocation)

# CONSERVATION

## Tests of Various Types of Conservation

Type of conservation	Initial presentation	Transformation	Question	Preoperational child's answer
Liquid	Two equal glasses of liquid. 	Pour one into a taller, narrower glass. 	Which glass contains more?	The taller one. 
Number	Two equal lines of checkers. 	Increase spacing of checkers in one line. 	Which line has more checkers?	The longer one. 
Matter	Two equal balls of clay. 	Squeeze one ball into a long, thin shape. 	Which piece has more clay?	The long one. 
Length	Two sticks of equal length. 	Move one stick. 	Which stick is longer?	The one that is farther to the right. 

# CONCRETE OPERATIONAL STAGE (7–11 YEARS)

- Notions of conservation are the mark of well-established concrete-operational thinking
- Ability to think logically about concrete objects and situations
- Classification and categorization
- Less egocentric
- Inability to reason abstractly or hypothetically
- Children are able to reason and to follow rules and regulations.
- **Conservation** of quantity, weight, volume, length, and time based on reversibility by inversion or reciprocity; operations; class inclusion and seriation
- **Reversibility** - The capacity to understand the relation between things. To realize that one thing can turn into another and back again



### Conservation of substance (6–7 years)



The experimenter presents two identical plasticine balls. The subject admits that the balls have equal amounts of plasticine.



One of the balls is deformed. The subject is asked whether the balls still contain equal amounts.

### Conservation of length (6–7 years)

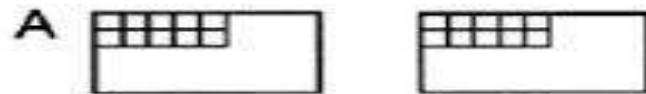


Two sticks are aligned in front of the subject. The subject admits their equality.

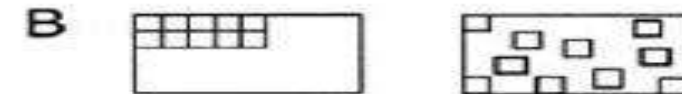


One of the sticks is moved to the right. The subject is asked whether they are still the same length.

### Conservation of area (9–10 years)



The subject and the experimenter each have identical sheets of cardboard. Wooden blocks are placed on the sheets in identical positions. The subject is asked whether each sheet has the same amount of space remaining.



The experimenter scatters the blocks on one of the sheets. The subject is asked the same question.

Some simple tests for conservation, with approximate ages of attainment. When the sense of conservation is achieved, the child answers that **B** contains the same quantity as **A**.

# FORMAL OPERATIONAL STAGE (AGE 11 YRS – END OF ADOLESCENCE)

- The stage of formal operations is so named because young persons' thinking operates in a formal, highly logical, systematic, and symbolic manner.
- Characterized by the ability to think abstractly, to reason deductively, and to define concepts, and also by the emergence of skills for dealing with permutations and combinations; young persons can grasp the concept of probabilities.
- Adolescents attempt to deal with all possible relations and hypotheses to explain data and events during this stage.



# FORMAL OPERATIONAL STAGE (AGE 11 YRS – END OF ADOLESCENCE)

- Language use is complex; it follows formal rules of logic and is grammatically correct.
- Abstract thinking is shown by adolescents' interest in a variety of issues—philosophy, religion, ethics, and politics.
- Instead of focusing on empirical givens, as a child in the concrete-operational stage does, the adolescent using formal operational thinking constructs a hypothetical system comprising the empirical givens. Whereas the younger child could classify events according to various categories, such as length, width, and weight, the adolescent uses that classification as a basis for abstracting all possible combinations of variables.

- Hypothetico-deductive thinking, the highest organization of cognition, enables persons to make a hypothesis or proposition and to test it against reality.
- Deductive reasoning moves from the general to the particular and is a more complicated process than *inductive reasoning*, which moves from the particular to the general.

# ASSESSING PIAGET'S THEORY

- Scientific research has supported Piaget's most fundamental idea:
- That infants, young children, and older children use distinct cognitive abilities to construct their understanding of the world

BUT...

- Piaget underestimated the child's ability at various ages.
- Piaget confused motor skill limitations with cognitive limitations in assessing object permanence during infancy.
- Piaget's theory doesn't take into account culture and social differences.

# CRITIQUE OF PIAGET'S THEORY

- Underestimates children's abilities
- Overestimates age differences in thinking
- Vagueness about the process of change
- Underestimates the role of the social environment
- Lack of evidence for qualitatively different stages
- Some adults never display formal operational thought processes outside their area of expertise
- By and large he avoided the emphasis on individual differences or interventional psychology, as practiced by clinical diagnosticians and therapists, and focused instead on the most universal and general characteristics of children's cognitive development.

- Piaget's experiments focused on how children comprehend the relationship between physical objects, developing the ability to classify them by such parameters as shape or size, but most children can classify their emotions and emotionally relevant relationships far earlier than they can classify physical objects.
- Focuses primarily on logical-deductive reasoning. Little attention is paid to social intelligence, emotional intelligence, or alternative types of intelligence, such as artistic or athletic intelligence.
- Observations and conclusions depended majorly on children's perceptual and motor performance to signal cognitive advances, even though motor skills often lag behind other skills.

# EXTENSIONS OF PIAGET'S THEORY

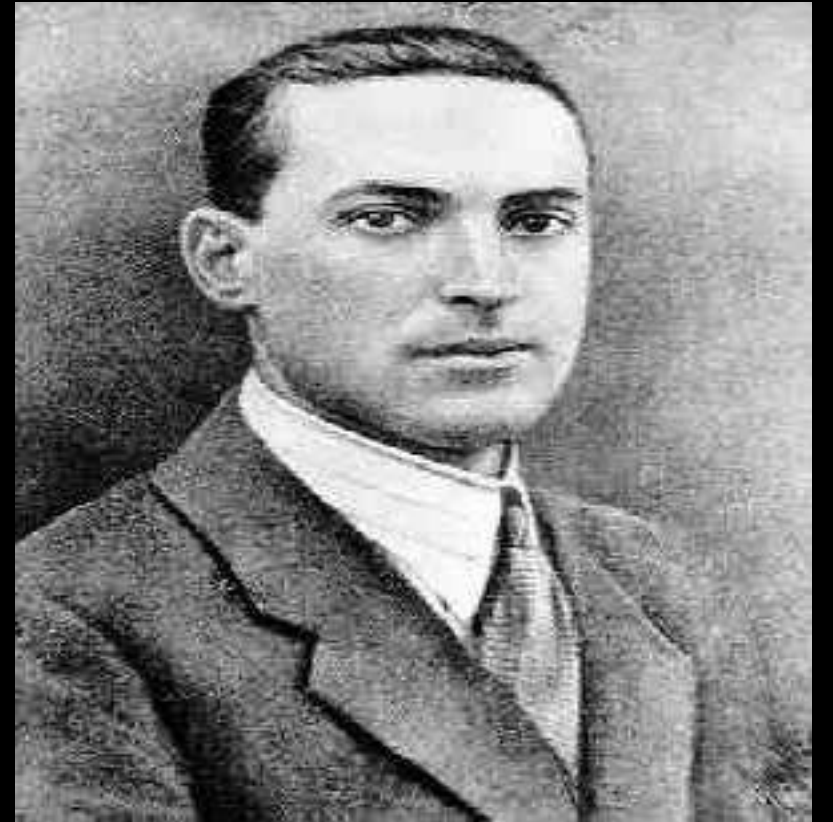
- Although Piaget wrote *The Moral Judgment of the Child*, he did not further develop this area in subsequent work. Kohlberg developed a stage model in which the child's stage of moral reasoning depended on his or her stage of (Piagetian) cognitive development.
- Kohlberg described three major stages of moral reasoning. The three major stages included the morality of the preschool period (based on notions of avoiding punishment and striving for reward), conventional morality (based on notions of authority or mutual benefit), and principled morality (based on general internalized moral principles).
- Limitations - detached from moral content; research methodology was highly verbal, so that intelligence and verbal sophistication could be confounded with moral reasoning; entirely male sample.

# Attempts to relate Piaget's model to social cognition.

- Rather than attempting to layer stages of social cognition on stages of intellectual development, **Youniss** proposed that social cognition has its own process of development, but that these are based on abstractions from interpersonal interactions.
- James Youniss then developed a theory of children's concepts of other people that appropriated a different key element from Piaget's work. Rather than attempting to layer stages of social cognition on stages of intellectual development.
- Integrating Piagetian psychology with the *interpersonal psychiatric theory of Harry Stack Sullivan*, **Youniss** proposed two major categories of children's social cognition: schemas about peers and schemas about authority figures.

# VYGOTSKY'S SOCIOCULTURAL PERSPECTIVE

- Emphasized the child's interaction with the social world (other people) as a cause of development
- **Vygotsky**-believed language to be the foundation for social interaction and thought
- **Piaget**-believed language was a byproduct of thought





# VYGOTSKY'S SOCIOCULTURAL PERSPECTIVE

- Believed that cognitive development is strongly influenced by social and cultural factors
- The support and guidance that children receive from parents, other adults, and older children
- Children learn from interactions with other people
  - **Zone of proximal development**—what a child can do by interacting with another person, but can't do alone.
  - Critical thinking based on dialogue with others who challenge ideas
- Piaget—focused on children's interaction with the physical world

# CROSS-CULTURAL VIEWPOINT

- Cross-cultural studies show that cognitive development is strongly influenced by the skills that are valued and encouraged in a particular environment

# PSYCHIATRIC APPLICATIONS

- Hospitalized children in sensorimotor stage do not achieve object permanence and, therefore, suffer from separation anxiety.
- They are better off if their mothers are allowed to stay with them overnight.
- His influence on education was considerable, not through a specific teaching method, but through his view of the child as an active constructor of his or her own knowledge, rather than a passive recipient of information.
- Children at the preoperational stage, who are unable to deal with concepts and abstractions, benefit more from role-playing proposed medical procedures and situations than by having them verbally described in detail.

# PSYCHIATRIC APPLICATIONS

- For example, a child who is to receive intravenous therapy is helped by acting out the procedure with a toy intravenous set and dolls.
- Children at preoperational stage do not understand cause and effect, thus they may interpret physical illness as punishment for bad thoughts or deeds
- Children have not yet mastered the capacity to conserve and do not understand the concept of reversibility (which normally occurs during concrete operational stage), hence they cannot understand that a broken bone mends or that blood lost in an accident is replaced.

# PSYCHIATRIC APPLICATIONS

- Adolescents' thinking, during the stage of formal operations, may appear overly abstract when it is, in fact, a normal developmental stage.
- Adults under stress may regress cognitively as well as emotionally.
- Their thinking can become preoperational, egocentric, and sometimes animistic

# IMPLICATIONS FOR PSYCHOTHERAPY

- Ask the young child to make a drawing that shows different and conflicting feelings in one person. This technique represents an application of the concrete operation of class inclusion to the realm of the emotions.
- Cognitive therapist accomplishes by Socratic questioning and asking if there are other ways to look at the same event- The notion of equilibration is relevant here.

Here by helping the individual see that previous cognitive structures are in some ways inadequate, the therapist disturbs the old cognitive structure, and the patient or student experiences a disruption that leads to the search for more-adequate structures. The compensation for external disturbance is what Piaget termed *equilibration*.

- Piagetian insights in psychotherapy by integrating Piaget's findings into a broader model. *Greenspan*, has articulated a *developmentally based psychotherapy*.
- The core developmental processes based on this, makes dealing with conflicts, anxieties, maladaptive behaviours, and thoughts possible.
- These processes are the foundation of the ego and, more broadly, the personality. Their presence constitutes emotional health, and their absence constitutes emotional disorder.

# SUMMARY

- Jean Piaget developmental psychologist who introduced a 4 stage theory of cognitive development-

*Sensorimotor stage, from birth to age 2, preoperational stage, from age 2 to age 7, concrete operational stage, from age 7 to age 11 formal operational stage, from age 11 to end of adolescence.*

- Each new stage represents a fundamental shift in how the child thinks and understands the world
- He underestimated the child's ability at various ages.



# SUMMARY

- Confused motor skill limitations with cognitive limitations in assessing object permanence during infancy.
- Piaget's theory doesn't take into account culture and social differences.
- The Piagetian view of intelligence can be further understood by contrasting it with other contemporary models of intelligence.
- Extensions of his theories influenced psychotherapeutic approaches in multiple ways.

# REFERENCES

- Kaplan & Sadock's comprehensive textbook of psychiatry, 10th edition
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- <https://eppppfree.com/piaget-and-cognitive-development>

"What we see changes what  
we know. What we know  
changes what we see."

- Jean Piaget

Thank You