CHILD PSYCHOLOGY

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THEORY OF COGNITIVE DEVELOPMENT

Jean Piaget (1896 – 1980)

The principle goal of education in the schools should be creating men and women who are capable of doing new things, not simply repeating what other generations have done.

-Jean Piaget

- Born August 9, 1896
- Died September 16, 1980
- **B**orn in Switzerland, began showing an interest in the natural sciences at a very early age.
- By age 11, he had already started his career as a researcher by writing a short paper on an albino sparrow.
- He continued to study the natural sciences and received his Ph.D. in Zoology from University of Neuchâtel in 1918.

INTRODUCTION

- Broad theoretical system for the development of cognitive abilities.
- Emphasized the ways that children think and acquire and knowledge.
- *"Genetic Epistemology"*
- Intellectual capabilities develop in stages called epigenesis.
- Development of intelligence is 'Biologic Adaptation'

- Assimilation and Accommodation
- Child incorporates or assimilates events within the environment into mental categories called cognitive structures.
- Accommodation occurs when child changes her cognitive structure to better represent the environment.

- First the child will try to assimilate into existing cognitive categories.
- If it do not work, he will try to accommodate by creating new ones……

STAGES OF LIFE……

- Sensorimotor period (birth – 2yrs)

- Pre operational period (2 – 7yrs)

  Preconceptual stage (2 – 4 yrs)

  Intuitive stage (4 – 7 yrs)

- Concrete operational period (7yrs to puberty)

- Period of formal operations (adolescence through adulthood)

SENSORIMOTOR PERIOD:

- New born infant – totally dependent on reflex activities
- Starts developing rudimentary concepts of objects.
- Simple modes of thought that are foundation of language develop.
- Little ability to interpret sensory data
- Limited ability to project forward or backward in time.

Age	Characteristics
Birth – 2 months	Uses in-born motor and sensory reflexes to interact and accommodate to the external world.(sucking, grasping, looking)
2 -5 months	Primary circular reaction; displays curiosity
5 -9 months	Secondary circular reaction; seeks out new stimuli in the environment, beginning of intentional behaviour. (dawn of logic)

Age	Characteristics
9 months – 1yr	Shows preliminary signs of object permanence, plays peek – a – boo, initiates novel behaviour. (first proper intelligence)
1yr – 18 months	Tertiary circular reaction – seeks out new experiences, produces novel behaviors
18 months – 2 yrs	Symbolic thoughts, signs of reasoning, attains object permanence.

PREOPERATIONAL PERIOD (2-7 YRS)

- Use language similar to adults.
- Develops mental symbols representing things and events not present, learn to use words to symbolize these absent objects.
- Use words to symbolise the external appearance .
- Fail to consider important aspect such as

  function.

- Concrete nature of thought process.
- Understand the world in the way they sense through 5 primary senses……
- Understand language in the literal sense.
- Idioms, sarcastic and ironic statements are likely to be misinterpreted.

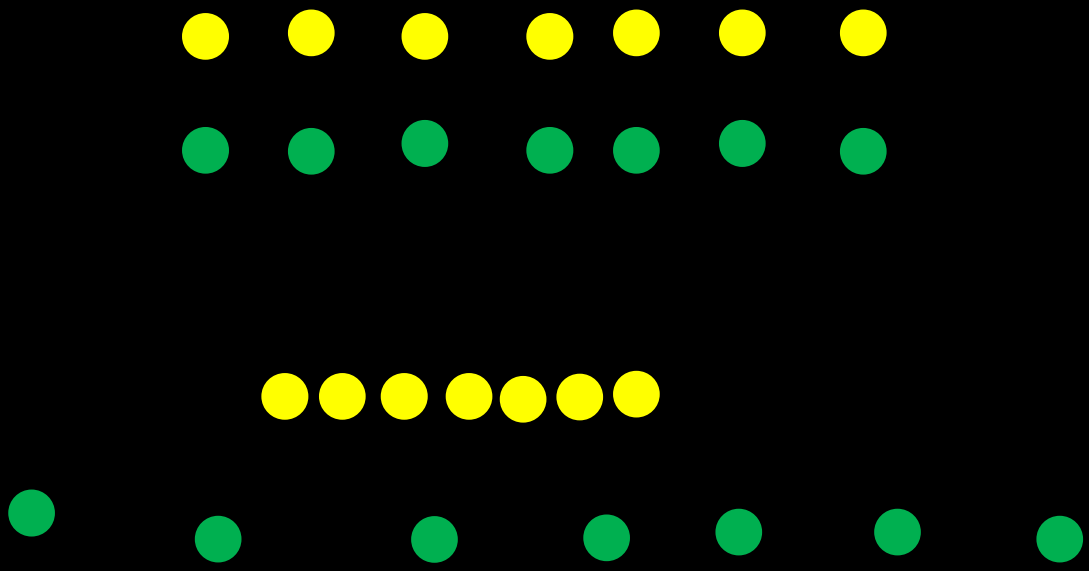
PRE CONCEPTUAL STAGE (2-4 YRS)

- Start of symbolic activity.
- Child's reactions are based simply not on the physical nature of stimulus but on its meaning.
- Stimulus begins to take meaning and child uses stimulus to represent other objects.

INTUITIVE STAGE (4 – 7 YRS)

- Pre logical reasoning appears.
- Play with imaginary companions.
- Objects cannot have more than one name.
- Word carry much more information than they actually do.
- Understanding is still based on what he sees.
- Reaction is based on a single salient perceptual aspect of the stimulus.

- Logical reasoning are limited.
- Thought process are dominated by immediate sensory impressions.
- Liquid conservation problem.
- “ Conservation”
- “Reversibility”



- Dental staff should use immediate sensation rather than abstract reasoning in discussing concepts like prevention of dental problems with a child at this stage.

CONSTRUCTIVISM

- Child's acquisition of reality is accomplished by touching, exploring and observing (constructivism)
- They acquire knowledge about the reality around them by using their senses and motor activities.
- Constructs knowledge about the unknown world of dentistry through activities such as handling and working with dental instruments, observing and touching appliances, tasting and smelling oral hygiene materials.

COGNITIVE EQUILIBRIUM

- Knowledge acquired by a child produce a state of balance called cognitive equilibrium.
- Passage through each developmental stage is characterised as a cognitive disequilibrium ie, acqisition of new, more permanent knowledge.
- Dentist should recognise the child's need to gather knowledge, stimulate his or her curiosity.

ANIMISM

- Children attribute vitality and spontaneity of movement to inanimate objects.
- Instruments can be given life like qualities.
- Principle of physiognomic properties……. Inanimate objects take on the emotions of human beings.

CENTERING (CENTRATION)

- Child focusses on the most important characteristics of what he sees, excluding everything else.
- They focus on the detail of an event, unable to shift attention to other aspects of a situation.

EGOCENTRISM…… until age 6

- Child is incapable of assuming another person's point of view.
- View the world in a self centered way.
- Child's view of time is centered around the present.
- They should be treated by making them feel more important.

MAGIC (ARTIFICIALISM)

- Confusion about physical and temporal world.
- Everything created by man.
- He can control everything.
- Everything is made for man, everything about him is willed and intentional and everything is for good of man.
- Parents are omniscient
  omnipotent
  omnipresent

PERIOD OF CONCRETE OPERATIONS (7- PUBERTY)

- Ability to reason emerges.
- Use logical processes for objects that can be handled and manipulated. (concrete objects)
- Reasoning on abstract level is limited.
- Animism declines.
- Ability to see another point of view.

CLINICAL IMPLICATION

- Instruction must be illustrated with concrete objects.

Eg: how to wear appliance

PERIOD OF FORMAL OPERATIONS

- Ability to deal with abstract concepts and abstract reasoning develops.
- Capable of understanding concepts like health, disease and preventive treatment.
- Should be treated as adults.
- They can think about thinking
- Assumes that others are thinking about the same thing he is thinking about, namely himself.

- “On stage”
- Observed and criticized by those around them.
- “Imaginary audience” (Elkind)
- Effect of orthodontic treatment.

- “Personal fable” (Elkind)
- Influence of personal fable on dentistry

PSYCHIATRIC APPLICATIONS

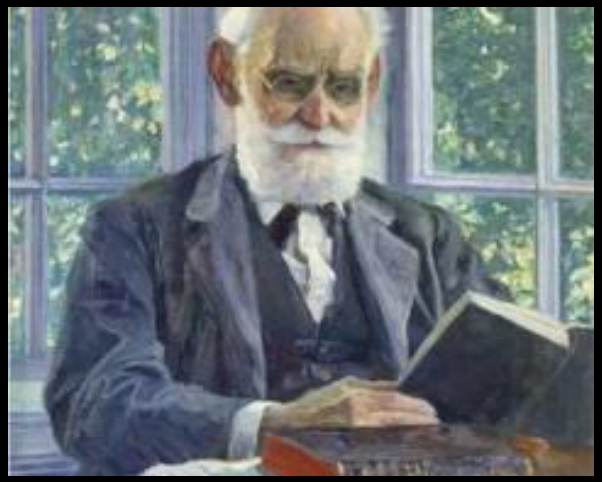
- Sensorimotor stage …. no object permanence ……. separation anxiety …… mothers can stay with them during treatment.

- Pre operational stage……unable to deal with concepts and abstractions…..role playing of medical procedure

- More applied in the area of education.
- Used to resolve educational problems such as assessing intellectual development, scholastic aptitude, grade placement and reading readiness.
- “Head Start”……provides an enriched environment for children from families at low socioeconomic levels.
- Experience plays a major role in the maturation of cognitive functioning.
- Greater the richness, complexity and diversity of the environment, greater the likelihood that high levels of mental functioning are achieved.

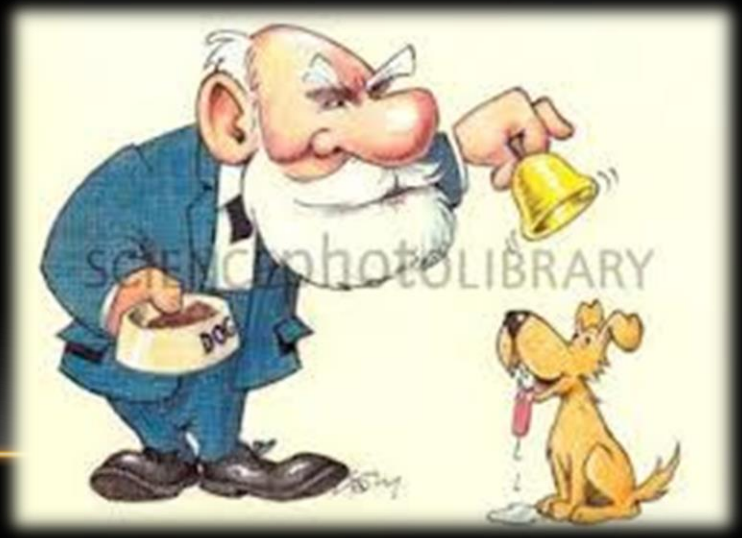
CLASSICAL CONDITIONING

IVAN PAVLOV



Born : September 26, 1849, **Ryazan, Russia**
Died: February 27, 1936, Saint Petersburg, Russia

- Apparently unassociated stimuli could produce reflexive behavior.
- Classical conditioning operates by the simple process of association of one stimulus with another.
- Learning by association.

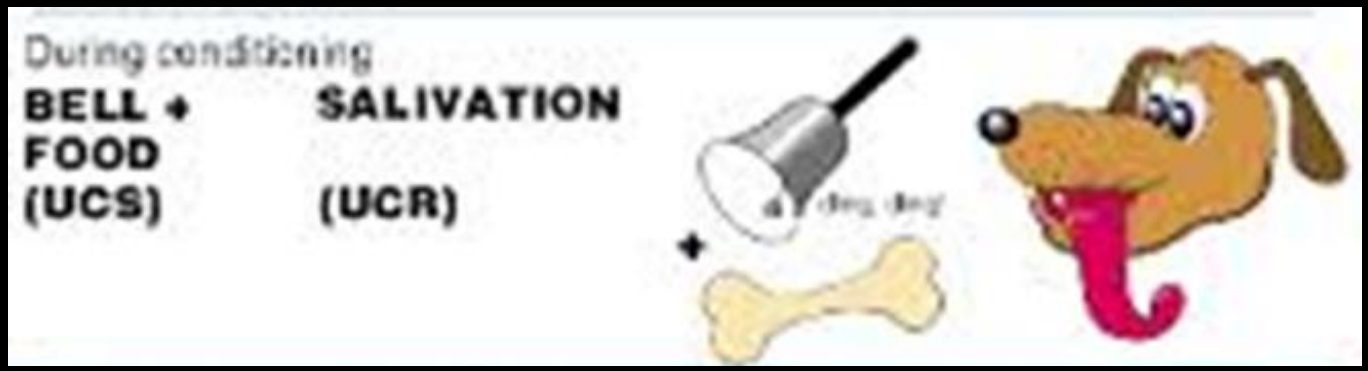


STEP I : BEFORE CONDITIONING

- US – one that elicit the reflex (meat)
- UR
- NS – neutral with respect to UR (bell)

STEP 2 : THE CONDITIONING PROCESS

- Presenting NS and US at same time contiguosusly and repeating it many times.
- The more repetitions, stronger the conditioning.



STEP 3 : AFTER CONDITIONING

- Testing the conditioning.
- Presented with only ringing of bell.

STIMULUS GENERALIZATION

- Stimuli with tones above or below the tone of original still give the CR but to a lesser degree.

STEP 1: BEFORE EXTINCTION

- Begin with an established conditional stimulus.

STEP 2 : EXTINCTION PROCESS

- Repeatedly presenting the CS (bell) without US (meet)
- Stronger the original conditioning, more times trial are necessary.

STEP 3 :AFTER EXTINCTION

- Less and less salivation as more extinction trials occur.

CONDITIONING IN CHILDREN

- Experience with pediatrician involves needles for immunisation…..anxiety evoking experiences.
- Doctor in white uniform is a neutral stimulus.
- Each time a new stimulus occurs, surprise reaction called “orienting reflex”
- On familiarisation …….. Orienting reflex will decrease due to habituation.

First visit

White coat → pain of injection

(neutral stimulus) (unconditioned stimulus)

Pain of injection → fear of crying

(unconditioned stimulus) (response)

Second visit

Sight of white coat

(conditioned stimulus)

pain of injection

(unconditioned stimulus)

Pain of injection

(Unconditioned stimulus)

fear and crying

(response)

GENERALIZATION

- Painful experience associated with medical treatment become generalised to the atmosphere of a physician's office.
- Dental office should look little like a typical pediatrician's office.
- Treatment that produce pain should be avoided at first visit to dental clinic, if at all possible.

REINFORCEMENT

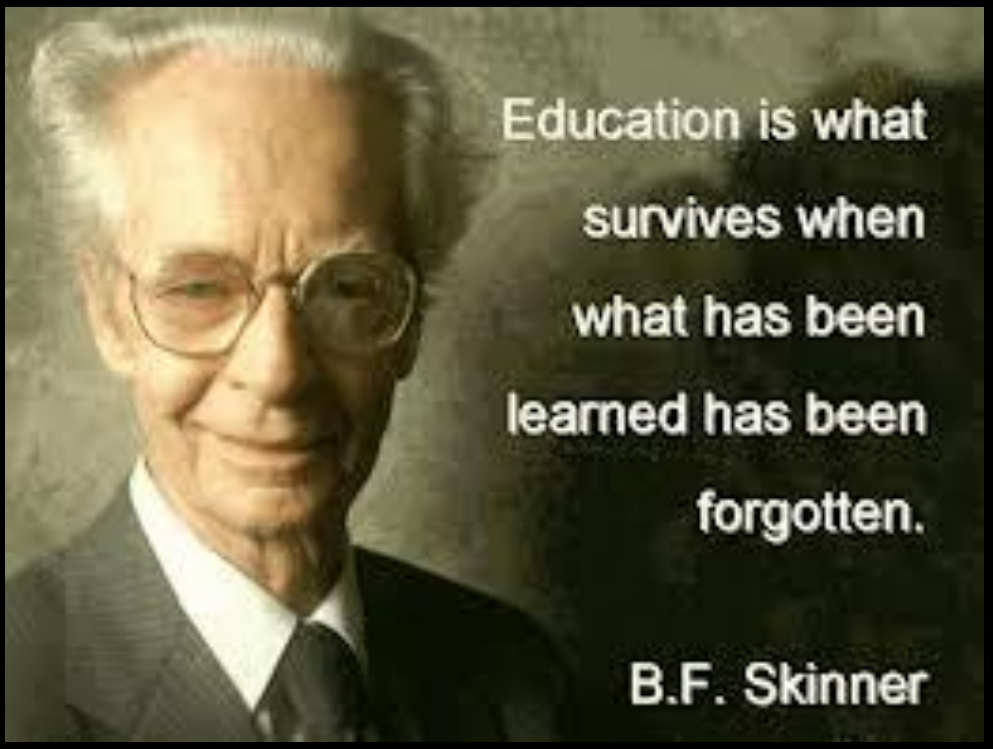
- Association between a conditioned and unconditioned stimulus is strenghtened everytime they occur together.
- Child becomes more sure of his conclusion that bad things happen in such a place.

EXTINCTION

- If not reinforced association becomes less strong.

DISCRIMINATION

- Conditioned association of white coat with pain can easily be generalised to any office setting.
- If taken to other office…. And no pain ….discrimination between 2 types of office will develop……. Generalised response to any office as a place where painful things occur will be extinguished.



OPERANT CONDITIONING

B.F SKINNER

Born: March 20, 1904, Pennsylvania, United States

Died: August 18, 1990, Cambridge, United States

- Theory relies on 3 principles:
- Operant behaviors are voluntary and not of reflexive response.
- Consequence of a behavior is in itself a stimulus that affects future behavior.
- We can teach behaviors that subjects does not express. (behavior shaping)

REINFORCEMENT

POSITIVE REINFORCEMENT

- I f a pleasant consequence follows a response, that response has been positively reinforced.

NEGATIVE REINFORCEMENT

- Response that is reinforced is a response that leads to the removal of an undesirable stimulus.

TYPES OF REINFORCERS

- UNLEARNED
- Behavioral consequences which perform exactly as one might expect them to do.
- Learned reinforcers are events one learns that will strengthen behavior.

- Token reinforcers
- Activities
- Greatest reinforcement of desired behavior in dental chair is permission to leave.
- Therefore not allowing the child to leave until he sits quietly is one step in teaching desired behavior.
- Social reinforces

AVERSIVE LEARNING

OMISSION / TIME OUT

- Removal of a pleasant stimulus after a particular response.

PUNISHMENT

- Unpleasant stimulus is presented after a response.

CLINICAL IMPLICATION

- Positive reinforcement
- Negative reinforcement

- Omission (anger / frustration)
- Punishment (fear / frustration)
- Voice control (used with care, immediate reward should be given)

- In operant conditioning, concepts apply to situation in which a response leads to a particular consequence.
- In classical conditioning, conditioned stimulus directly controls the conditioned response.
- Positive and negative reinforcements become more effective if repeated.
- But not necessary to provide a reward at every visit.
- Conditioning obtained through positive reinforcement can be extinguished if the desired behavior is now followed by omission, punishment or simply a lack of further positive reinforcement.

- Generalisation of operant conditioning

CRITICISM

- Informed consent
- Inappropriate use of techniques by untrained professionals.
- Described as assertive or invasive.
- Weinstein and Nathan hypothesize that by the time ineffectual procedures are resorted to, the dentist has already lost control of the situation.

SOCIAL LEARNING THEORY

ALBERT BANDURA

Born: December 4, 1925 (age 87), Mundare, Canada

- Explains human behavior in terms of continous reciprocal interaction between cognitive, behavioral and environmental influences.

PRINCIPLES OF SOCIAL LEARNING THEORY

- People can learn by observing the behvior of others and the outcome of those behaviors.
- Learning may or may not result in a behavior change.
- Awareness and expectation of future reinforcements or punishments can have a major effect on the behavior that people exhibit.
- SLT can be considered as a bridge between behaviorist learning theories and cognitive learning theories.

APPLICATIONS

- Understanding of aggression and psychological disorders
- Helps in behavior modification
- Foundation of behavior modelling.

BOBO DOLL EXPERIMENT

- 88% children imitated the aggressive behavior.
- 8 months later, 40% of tha same children reproduced the behavior.

4 components influence the observer's behavior:

ATTENTION

- Cannot learn much by observation unless they percieve and attend to the significant features of the model behavior.

RETENTION

- Inorder to reproduce the behavior, the individual must code the information into long term memory.

MOTOR REPRODUCTION

- Ability to reproduce models behavior.

MOTIVATION OR REINFORCEMENT

- Observer expects to receive positive reinforcement for the modelled behavior.

INFLUENCE OF ENVIRONMENT ON BEHAVIOR

- The observer is reinforced by the model.
- The observer is reinforced by a third person.
- The imitated behavior itself leads to reinforcing consequences.
- Consequence of the models behavior affect the observers behavior (vicarious reinforcement)

COGNITIVE FACTORS IN SOCIAL LEARNING

- Learning without perfomance: makes a distinction between learning through observation and actual imitation of what has been learned.
- Cognitive processing during learning: attention is a critical factor in learning.
- Expectations
- Reciprocal causation: person ,behavior and environment can have influence on each other.
- Modelling

EFFECT OF MODELLING

- Teaches new behavior
- Influences the frequency of previously learned behavior.
- Encourage previously forbidden behaviors.
- Increases the frequency of similar behavior.

CLINICAL APPLICATION

- Role modelling
- Parent, sibling, peer group
- Expected consequence of the behavior. (reinforcement, punishment)
- Motor ability to reproduce the behavior.
- Attitude of parents.
- Setting of the dental clinic.

CRITICISM

- Completely ignored individuals biologic state.
- Rejects the difference of individuals due to genetic, brain and learning differences.
- Bobo doll experiment was unethical

EDUCATIONAL IMPLICATION

- Students learn a lot by simply observing people.
- Describing the consequence of behavior can increase or decrease behavior.
- Alternative to shaping (faster and efficient)
- Teachers and parents must model appropriate behaviors.

- Teachers should expose students to a variety of other models.
- Students must believe that they are capable of accomplishing school tasks. (teachers can give them confidence giving messages, watch others be successful and experience success on their own.
- Self regulation techniques provide an effective method for improving student behavior.

CONCLUSION

- Knowledge about child psychology is important to manage a child in the dental clinic.
- Different behavior management technique can be employed depending upon the age of the child.
- Attitude of the child should also be understood to employ a particular behavior mangament method.
- Incorrect application of behavior management techniques can sometimes worsen a child’s behavior.

- Pediatric dental medicine: Donald J Forrester
- Text book of pediatric dentistry: Shobha Tandon
- Behavioral science: Barbara Fadem
- Essentials of child psychopathology: Linda Wilmhurst.
- World wide web


Thank you
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