PSYCHOLOGY *for* NURSES

Psychology for Nurses is a comprehensive book written for those taking diploma and degree programmes in nursing. It is also for the registered nurses (RN) who would like to enrich their nursing practice. Psychology as a subject must provide adequate insight for those who are embarking into the nursing profession, a healthcare profession which requires adjustment to the behaviour of the patients and those around them; understanding the patients' anxiety, fear or pain; and self-acceptance by the nursing care givers in order to function independently within the areas of their responsibility.

This book is unique in that the author who is a psychologist and a mental health nurse practitioner has introduced new concepts that are relevant to the nursing practice. Among these concepts are psychology of nursing care; psychological interventions, like the therapeutic smile; and the therapeutic use of self or presence. The basic concepts of psychology are also presented in this book since, as the author views it, it is very important that all nurses know and understand the origin and the development of psychology as a science.

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Arnel Banaga Salgado

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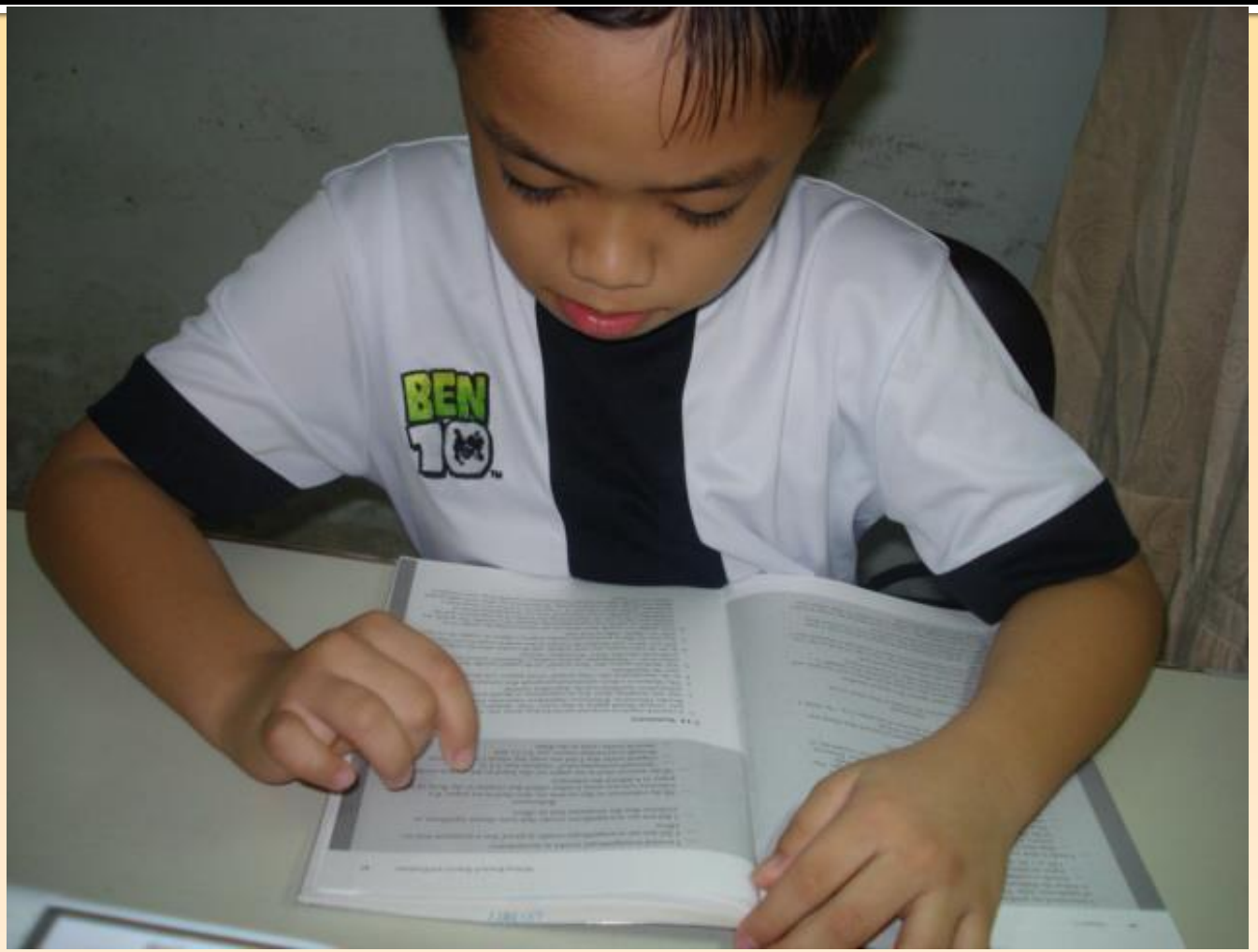
Chapter 8



Chapter 8

Intelligence, Learning, and Cognitive Psychology

EXPECTED LEARNING OUTCOMES

After studying this chapter, you are expected to:

1. define intelligence and determine its dynamics;
2. determine what genetic and environmental factors influence intelligence;
3. identify the components and attributes of learning;
4. describe the basic principles of learning; and
5. describe the processes studied in cognitive psychology, their roots, methods and applications.

Introduction

- This chapter is very useful for your guide in preparing health education classes which would be designed for the clients who are confined in the hospital, community education or any set-up where nurses take the role as an educator.

What is Intelligence?

- Through the years, psychologists have disagreed about what intelligence is and how to measure it, how hereditary and environmental factors influence intelligence, and the extremes of intelligence.

- Robert Sternberg and William Salter (1982, p. 3) reported that most experts view intelligence as "a person's capacity for goal-directed adaptive behavior." Intelligent behavior reflects a capacity to adapt, by learning from experience, solving problems, and reasoning clearly.

- Papalia and Olds (1985, p.237) defined intelligence as "a constantly active interaction between inherited ability and environmental experience, which results in an individual's being able to acquire, remember and use knowledge; to understand both concrete and eventually abstract concepts; to understand relationships among objects, events and ideas; and to apply and use all the above in a purposeful way to solve problems in everyday life."

Theories of Intelligence

1. The Processes Approach

- This stresses the ability of an individual to use information to solve problems

2. The Psychometric Approach

- The theories of Spearman, Thurstone, Guilford, Cattell and Horn emphasized the measurement of intelligence and employed statistical technique of factor analysis as a tool to discover the nature of intelligence.

Charles Spearman (1863-1945)

- Charles Spearman believed that cognitive abilities could be narrowed down to one critical g-factor or general intelligence.
- The *s-factors* represent specific knowledge needed to answer questions on a particular test.
- People always have special abilities that stand out.
- Spearman believed that this commonality, the *g factor*, underlies all of our intelligent behavior, from excelling in school to navigating the sea. This is called Two-Factor Theory.

L.L. Thurstone (1887-1955)

- He identified seven clusters of "primary mental abilities" such as word fluency, memory, reasoning, numerical ability, spatial visualization, perceptual ability, and verbal comprehension.

- Word fluency is the ability to think of words rapidly; verbal comprehension is the ability to define words; spatial ability is the ability to recognize a figure whose position in space has been changed; perceptual speed is the ability to detect similarities and differences between designs; reasoning is logical thought; number and memory.

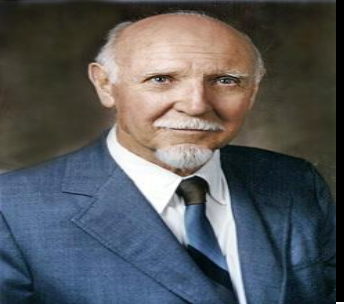
- This is called the Theory of Primary Mental Abilities.

J.P. Guilford (1959-1982)

- J.P. Guilford proposed that there are 150 intelligence factors. Intelligence consists of 150 distinct abilities.

- These separate factors result from interaction of contents (what we think about), operations (the way we think about) and products (the results of the application of certain operation to a certain content or our thinking a certain way about a certain subject).

- Content includes such things as visual, auditory, symbolic, semantic and behavioral. Products are units, classes, relations, systems, transformation and implications while operations include evaluation, convergent production, divergent production, memory and cognition.



R. B. Cattell (1965) and J. L. Horn (1967-1968)

- R. B. Cattell (1965) and J. L. Horn (1967-1968) proposed a distinction between two types of intelligence which they termed as "fluid" and "crystallized."

- Fluid intelligence includes reasoning and problem solving while crystallized intelligence are specific knowledge gained from applying fluid intelligence.

- Crystallized intelligence involves the ability to use an accumulated body of general information to make judgments and solve problems. This kind of intelligence has to be specially learned and is therefore dependent on education and culture.

Contemporary Theories of Multiple Intelligences

- Howard Gardner (1983-1993 cited in Myers, 1995, p.373) supports the idea that "intelligence comes in different packages. He notes that brain damage may diminish one type of ability but not others.

- Gardner also studied reports of people with exceptional abilities, including those who excel in only one, for example, savant syndrome in some people.

- They score low on intelligence tests but have an island of brilliance – some incredible ability as in computation, drawing or musical memory."

- Gardner argues that we do not have an intelligence but instead have multiple intelligences, each independent of the others.

- In addition to the verbal and mathematical aptitudes assessed by standard tests, he identifies distinct aptitudes for musical accomplishment, for spatially analyzing the visual world, for mastering movement skills, and for insightfully understanding ourselves and others.

- He proposed seven different components of intelligence that include not only language ability, logical-mathematical thinking and spatial thinking but also musical, bodily kinesthetic, interpersonal and intrapersonal thinking.

The model of Gardner's Multiple Intelligence

Triarchic Theory of Intelligence

- Robert Sternberg and Richard Wagner (1987-1993) agree with Gardner's idea of multiple intelligences but distinguish more simply among three intelligences: the academic problem-solving skills assessed by intelligence tests, the practical intelligence often required for everyday tasks and the creative intelligence demonstrated in reacting to novel situations.

- This theory is called Triarchic Theory of Intelligence.

There are three parts of intelligence:

1. The componential intelligence,
2. The experiential intelligence and
3. The contextual intelligence.

Influences on Intelligence

- The evidence from studies, from adoption studies and from other research does seem to indicate that heredity plays a significant part in determining intelligence.
- Most behavior geneticists conclude that about half the difference in IQ between American and European whites is the result of genetic differences.
- It is difficult to pinpoint the exact proportion of responsibility to be borne by heredity and environment since the way the two influences interact prevents one's ability to look at them as separate ingredients.

- Another factor that influences intellectual development is nutrition.

- Severe early malnutrition seems to retard intellectual development (Winick, Brasel & Ross, 1969; Lester, 1975).

The mentally retarded and Mentally Gifted intelligence

The mentally retarded has three essential features:

1. Intellectual functioning must be significantly below average. Intelligence test scores of below 70 or two standard deviations below the mean are considered below average;

2. Significant deficits in adaptive functioning must be evident. Adaptive functioning refers to social competence or independent behavior that is expected based on chronological age; and

3. Onset must be prior to age 18.

Levels of Mental Retardation

Level	IQ Scores	Percentage	Adaptations to Demand of Life
Mild	50 – 70	85	May learn academic skills up to sixth grade leevl. Adults may, with assistance, achieve self-supporting, social and vocational skills.
Moderate	35-49	10	May progress to second grade level academically. Adults may contribute to their own support by labor in sheltered workshops.
Severe	20	4	May learn to talk and to perform simple work tasks under supervision but are generally unable to profit from vocational training.
Profound	2	2	Require constant aid and supervision

Emotional Intelligence

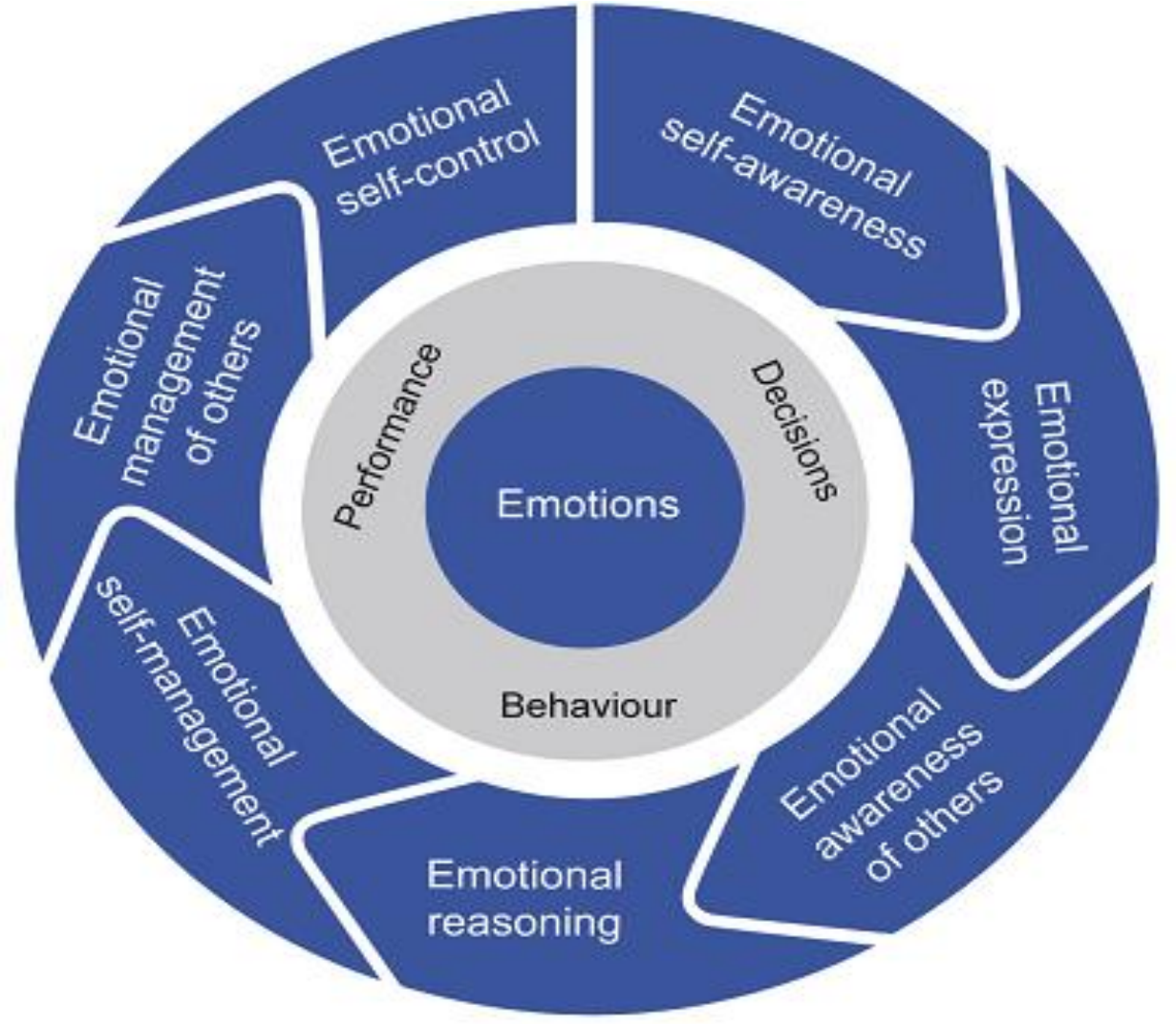
- The concept emotional intelligence has gained popularity through the publication of recent books (Goleman, 1998).

- Two opposing views emerged.

- One view is that emotional intelligence includes almost everything related to success that is not measured by IQ.

- The other view argues for a more restrictive view where emotional intelligence is defined as the ability to perceive and understand emotional information (Mayer et al., 2000).

The Model of Emotional Intelligence



Goleman (1998)

- Goleman (1998) defines emotional intelligence as "including abilities such as being able to motivate oneself and persist in the face of frustrations; to control impulses and delay gratification; to regulate one's moods and keep distress from swamping the ability to think; to empathize and to hope" (1995, p. 34) and more recently, "the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions as well in ourselves and in our relationships" (1998, p. 317).

Mayer, Salovey and their colleagues (2000)

- Mayer, Salovey and their colleagues (2000) related emotional intelligence to personality factors such as warmth and outgoingness.

- They proposed a framework of emotional intelligence and defined it more strictly as an ability to recognize the meanings of emotions and to use that knowledge to reason and solve problems.

The abilities pertain to:

1) accurate appraisal and expression of emotions in oneself and others;
2) assimilation of emotional experience into cognition;
3) recognition, understanding, and reasoning about emotions; and
4) adaptive regulation of emotions in oneself and in others."

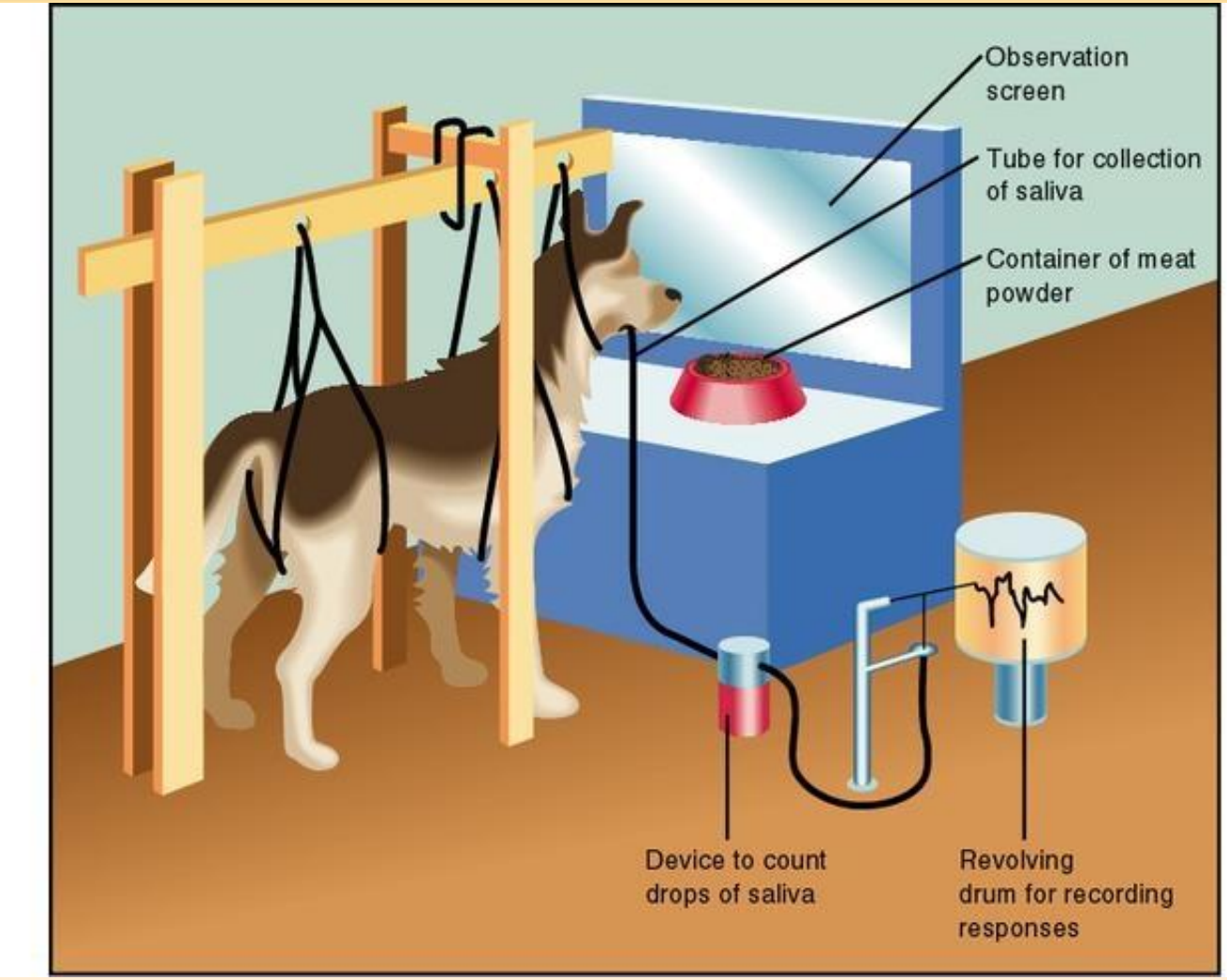
What is Learning?

- Learning has been described as a relatively permanent change in behavior as a result of experience or interactions with our environment (Grucec, Lockhart, and Walters; 1990).

Classical Conditioning

- The notion that the sequence of certain events is important in producing learning is at the heart of the study of classical conditioning also referred to as Pavlovian conditioning or respondent conditioning because of the systematic investigation of classical conditioning carried out by Ivan P. Pavlov, a Russian psychologist.
- He studied the salivary reflex in dogs (1927).
- A dog was surgically prepared for these experiments so that the flow of one of the salivary glands was led outside the animal's cheek to a collecting tube in which the saliva could be measured.

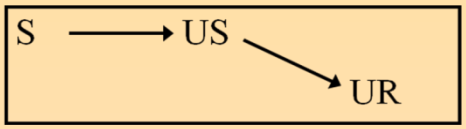
Pavlov's experiment

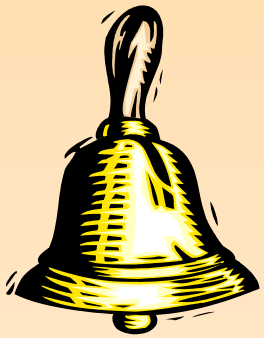


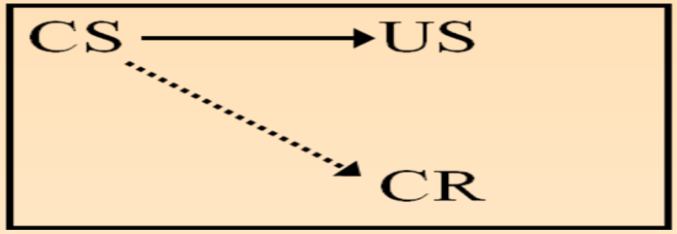
- The dog was restrained in a harness in order to restrict its movements and maintain control over the presentation of stimuli and the recording of responses. In order to stimulate the salivary reflex, food powder or a weak acid solution was introduced into the dog's mouth.

- The amount of the resultant saliva was then measured. This observation forms the basis for the study of classical conditioning.

The elements of classical conditioning







Basic Principles of Conditioning

1. EXTINCTION.

- The repeated presentation of the CS without the US results in the weakening and eventual disappearance of the conditioned reflex.
- Typically, the first few presentations of the CS alone are followed by salivation but as CS continues to be presented without the US, there is a measurable decrease in salivation over trials.
- This extinction procedure is important because it is a way of reducing or eliminating existing conditioning. The greater the resistance to extinction of a conditioned response, the stronger the learning is assumed to be.

2. SPONTANEOUS RECOVERY

- After a prolonged series of extinction trials, if the dog is returned to its living quarters and then is put back into the experimental situation the next day, the CS will again elicit some salivation.

- This return of the reflex is called spontaneous recovery. Spontaneous recovery indicates that extinction is something more than a passive forgetting of a learned response.

3. INHIBITION

- Pavlov thought that there were two kinds of conditioning processes, excitatory conditioning and inhibitory conditioning.
- In excitatory conditioning, the CS comes to excite a CR. In inhibitory conditioning, the CS actively suppressed a learned reflex.
- Pavlov also discovered that an inhibited response could itself be inhibited. This release of inhibition was called disinhibition (cited in Grucec, et al., 1990, p. 94).

4. GENERALIZATION AND DISCRIMINATION

- Two other principles were discovered by Pavlov which are important in understanding learning and these are: stimulus generalization and discrimination learning.

Operant Conditioning

- Edward Lee Thorndike studied learning from a different perspective.
- In 1898, Thorndike reported on the results of his experimental device called the puzzle box.
- He studied cats which learned how to escape from a box a hungry cat would be locked in the box and inside each box was a lever or a string or a latch that when properly operated, released the cat from the box.

- When first placed inside the box, the animal would make abortive attempts to escape, such as clawing at the door, or pushing at the ceiling.

- After a while, the cat would more or less accidentally perform the appropriate response which would open the door and release the animal thus giving it access for food. Thorndike noted that his cats became more efficient in escaping from the box over a series of trials.

Skinner's Concept of Operant Conditioning

Principles of Operant Conditioning

1. PRINCIPLE OF EXTINCTION

- Extinction of a response can be produced by removing the US following CS presentation.
- We must be able to do two things in order to bring about extinction of an operant response: identify the reinforcer that has been maintaining the behavior and be able to arrange its removal.

2. Differential Reinforcement

- There is a way of reducing the frequency of a behavior by combining the use of a reinforcer with extinction.

3. DISCRIMINATION

- Discrimination therefore is a training which the organism learns to emit a response only when it is appropriate. This is because the organism learns that each stimulus signals different consequences of a certain behavior being able to discriminate between stimuli.

Attributes of Learning

1. Learning is a permanent change of behavior.
2. Learning is a change that takes place due to maturation, practice and experience.
3. Learning must be permanent.
4. Learning is continuous.
5. Learning is a gradual process.

Types of Learning

1. Trial and Error Learning which was introduced by Edward L. Thorndike.

- From his experiments, Thorndike derived some laws. One is the law of effect. Any response that produces satisfaction in a given circumstance happens again, response is more likely to be repeated.

2. INSIGHT LEARNING.

- Classical and operant conditioning are examples of association learning.
- Other type of learning is on the cognitive process. Cognitive learning states that the learner uses mental structures and memory to make judgments about behaviors.
- Cognitive learning comprises insight, observational and latent learning.

SPECIFIC TYPES OF LEARNING

1. **Learning by Listening and Reading.** People communicate through language. They learn immense amount of information by reading and listening to others.

2. Language Learning. One of the most complex types of learning is learning to speak and understand a language, yet normal children gain this skill during the first few years

3. **Motor Skills Learning.** A motor skill is the capacity to do coordinated sets of physical motions. Learning a motor skill like playing a musical instrument is a gradual course that needs practice and feedback

4. Concept Formation Learning. Concept formation happens when individuals learn to group different objects as parts of a single category. Concept formation is important because it assists us to identify stimuli that we have not met before

5. **Social Learning.** An attitude is a learned disposition that actively guides us toward specific behaviors. It consists of feelings, beliefs, and behavioral tendencies.

Cognitive psychology

- Cognitive psychology refers to all processes by which the sensory input is transformed, reduced, elaborated, stored, recovered and used (Neisser, 1967).
- Cognitive psychology, therefore, deals with processes.

The process could be described this way:

1. It begins with sensory input;
2. This sensory input is transformed;
3. Cognitive codes can be reduced or elaborated; and
4. Cognitive codes can be stored and recovered.

Approaches to Cognition

- **Information-Processing Approach**, humans and computers have organized memories.

Approaches to Cognition

- **Connectionist Approach**, computers do one thing at a time but speedy while cognitive systems are much slower but they possess some awesome advantage.

- Cognitive systems can do more than one thing at a time.

Methods and Applications

- Cognitive psychologists often use experiments to their subject matter which involve manipulation of some independent and observation of changes produced in a dependent variable.
- They measure reaction time to the presentation of stimuli.
- The use of computers to model or simulate cognitive and neural processes.

- They use ecological validity.

- Ecological validity refers to the quest for theories of cognition that describe people's use of knowledge in real, everyday, culturally significant situations. Although the approach is theoretical, cognitive psychologists frequently hope for some possibility of applying their findings to day to day

KEY POINTS

- There are two main approaches to explain the nature of intelligence. The psychometric approach emphasizes the measurement of intelligence, while the processes approach focuses on the processes underlying intelligence.
- Research indicates that both heredity and environment are determinants of intelligence.
- Intelligence shows two extremes: the gifted and the mentally retarded. Learning can be viewed **both** as a continuous and gradual process and as a behavior.

- The learning process has three major elements: the stimulus, the organism, and the response.

- The different types of learning include classical conditioning, operant conditioning, trial and error learning, observational learning, insight learning, latent learning, learning by listening and reading, language learning, motor skills learning, concept formation, and social learning.

- Cognitive psychology deals with processes by which sensory input is transformed, reduced, elaborated, stored, retrieved, and used.