

# Modern Learning Theories

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# Modern learning theories

Behaviourist:

There are three well-known behaviourists:

- Ivan Pavlov - Classical Conditioning
  - Classical conditioning is a type of learning in which an organism learns to connect or associate stimuli.
- Edward L. Thorndike - Law of Effect
  - States that behaviours followed by positive outcomes are strengthened and that behaviours followed by negative outcomes are weakened
- B.F Skinner - Operant Conditioning.
  - Most influential in the study of learning in the 20th Century.

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B.F. Skinner:

- Operant Conditioning is a form of learning in which consequences of behaviour produce change in the probability that the behaviour will occur.
- Consequence of behaviour is also called reinforcements or rewards.
- In other words, if you provide the proper rewards, people will change their behaviour to get that reward or to avoid punishment.

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## Operant Conditioning

- A form of learning in which consequences of behaviour produce change in the probability that the behaviour will occur.
- Consequences of behaviour are also called reinforcements or rewards. In other words, if you provide the proper rewards, people will change their behaviour to get that reward.
- Behavioural learning is derived primarily from BF Skinner's response-reinforcement theory.
- Under this paradigm, the assumption of learning is that a learner will gradually develop a patterns of responses to specific stimuli when the responses are followed by a particular reinforcement.

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## Operant Conditioning

- Basically, it advocates that a learner is primarily a product of conditioning and that the learner is controlled by factors outside himself.
- In such a paradigm, the concern is not primarily with the inner structure of the mind.
- Skinner argues that since it is not possible to prove the inner processes with any scientific methods, researchers should concentrate on the cause-and-effect relationship.

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## Operant Conditioning

There are 3 types of feedback:

(i) Positive Reinforcement

(ii) Negative Reinforcement

(iii) Punishment

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Positive Reinforcement - provide a positive enforcer to enhance the behaviour. The frequency of a response increases because it is followed by a stimulus.

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Negative Reinforcement - provide a negative enforcer to enhance behaviour.

Therefore, the frequency of a response increases because the response either removes a stimulus or involves avoiding a stimulus.

In doing this type of learning, the company must know what does the student consider as a positive enforcer or a negative enforcer



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Punishment usually takes on the form of setting of condition we will work hard to avoid.

In other words, it is consequence that decreases the probability a behaviour will occur.

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Because feedback is so important to behavioural training, it needs to be strong and well-timed which means as close as possible to the occurrence of a well-performed task.

Organisational learning:

Proper policies to reward as well as to punish must be in place and implemented appropriately. This will create trust, credibility as well as reliability between employees and management.

Rewards are generally provide better incentives and motivation than negative reinforcement.

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Examples of rewards:

- Increase in pay
- Position
- Responsibility (Power!)
- Time off
- Awards

Examples of negative reinforcements:

- Flexi hour
- Do this else no bonus policies
- Don't do this else no bonus policies

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Corporations use this learning to build corporate climate and culture of learning

Learning gets recognised during performance appraisal, at award ceremonies and in the paycheck.

For example: Pay-for-knowledge incentives schemes

3M: Workers are allowed up to 15% of their time to work on their own projects. They also developed a Pathfinder award which recognises those who develop new products or new applications

In 2001 alone, there were about 80 awards given to various teams. Those ideas generated about \$600 million in terms of sales.

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## **Cognitive Learning**

- Between 1950 and 1980, a whole new subfield of psychology was created by researchers who wanted to know what goes on in the mind when people process information.
- Drawing on emerging fields of linguistics and computer science, cognitive psychologists devised clever experiments and built creative models to describe human information processing.
- Collectively, their work is known as a cognitive learning theory

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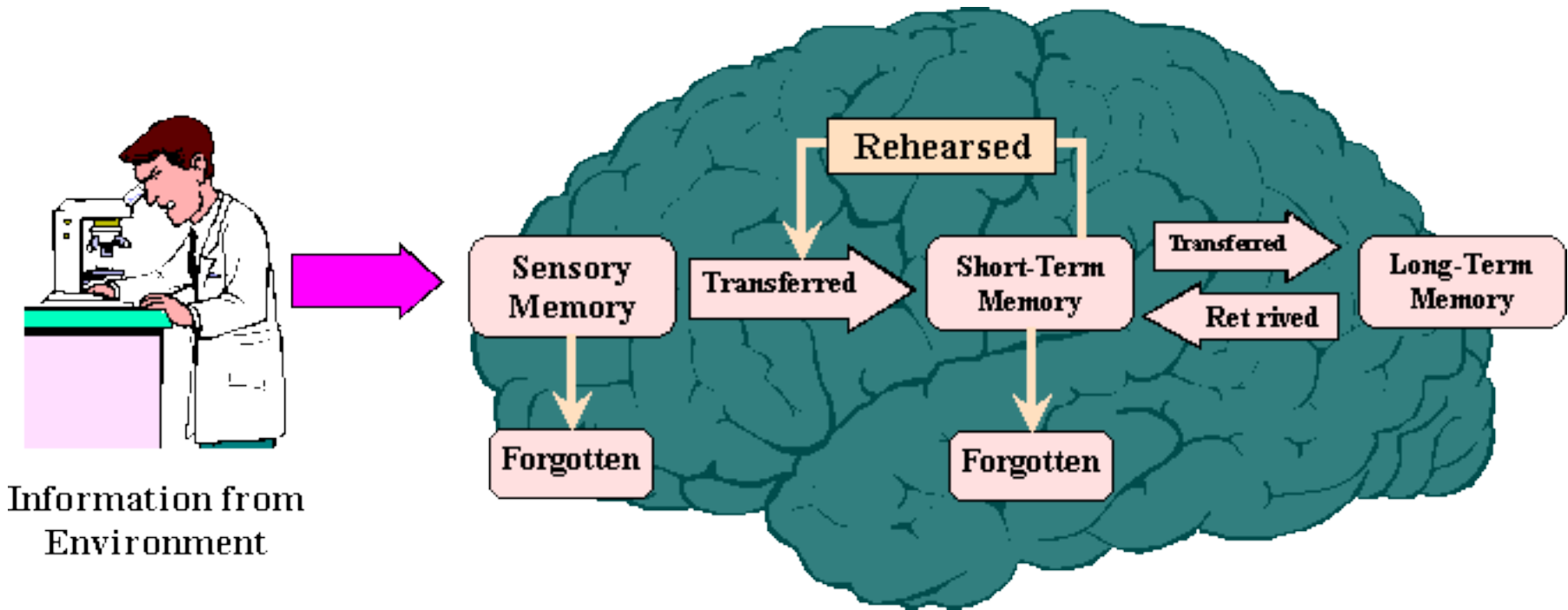
## **Information processing theory**

- Use to understand how our minds work
- Developed by George Miller in 1960s

### Areas in focus:

- Attention
- Processing
- Memory

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## **Senses:**

According to this model, information enters through any of the five senses and impinges on a sensory register.

Filters are activated and let pass or screen out what we will give our attention to, based on interest or necessity. The main feature of the information are to be analysed and encoded.



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## **Information processing - making meaning**

Researchers have found that context, meaning and prior knowledge deeply affect our understanding of information.

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## **Context:**

We process things in the context of their surroundings, we look at the big picture and its frame.

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For example:

The same elements tend to be grouped together so that we see rows of Xs and rows of Os.

X X X X

O O O O

X X X X

O O O O

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(2) Meaning - We also look for **semantic meaning**.

For example, look at this sentence:

"The car slide on ..."

Finished the sentence.

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Naturally ,we think of ice or oil not a banana peel.

When we read we are not only examining letters and words, we are looking for meaning.

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It is not always necessary to have all the letters present to get meaning.

When we read, we process words, group of words, and phrases - chunks of information - not individual letters.

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## **(3) Prior Knowledge**

Meaning does not come out of thin air, it comes from prior knowledge.

What a person already knows about the information being presented has a great effect on the speed and ease of processing it. If the presenter throws in an acronym that is foreign to you, you will have trouble processing it.

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**For example:**

$$**E = M C^2**$$

What does this mean?



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There is considerable evidence that we organise this prior knowledge into scripts, frames and schemas and we call up this prior knowledge rapidly and in pre-organised packets to make meaning of new information

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## Memory

How do you remember things?

After many years of research, cognitive psychologists have agreed on a distinction between Short-Term Memory (STM) and Long Term Memory (LTM).

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ST is known as working memory and does not last very long or hold very much. It is used to keep information in mind long enough to decide what to do with it. STM is like RAM.

LTM is what most people mean by memory - the capacity to remember information over time. It is like the HD.

LTM picks up where STM leave off (after a few seconds /minutes /hours) and goes on for weeks months or years.

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**Here are some memory devices to change STM to LTM:**

- Rehearsal - This is the most frequent used and least effective memory device but it has at least limited use. Rehearsal, aka ROTE LEARNING involves repeating the info, over and over again till it sinks in.

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**Here are some memory devices to change STM to LTM:**

- Encoding - involves associating a key word with the word or words to be remembered.
  - (i) Using a synonym is one form of encoding so is placing the new word in a memorable sentence. EG -"Every good boy does fine" to remember the lines on a music sheet EGBDF.
  - (ii) chunking is another way of encoding -it involves sub-dividing long strings of information down into smaller chunks

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**For example:**

**How do we remember 4557972009890008 ?**

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**For example:**

**How do we remember 4557972009890008 ?**

**We can chunk the numbers into groups of four:**

**4557**

**9720**

**0989**

**0008**

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## Jean Piaget

- Born at 9 August 1896, Switzerland. Pioneer of Swiss philosopher and child psychologist.
- Piaget's theories are known as Individual Constructivism, as it deals with how an individual constructs his/her knowledge



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Piaget's theory has two components:

(1) Stages of child development:

Students construct knowledge by transforming, organising and re-organising previous knowledge and information depending on the age or the stage of development the child is in. \_

(2) Cognitive Development Theory

It proposes that humans cannot be "given" information which they immediately understand and use.

Instead, humans must "construct" their own knowledge and build it knowledge through experience.

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## Theory of cognitive development

- It proposes that human cannot be given information which they immediately understand and use. Instead, humans must construct their own knowledge and build knowledge through experience.
- Experience enable them to create schemas or mental models in their heads

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Theory of cognitive development

These schemas are changed, enlarged and made more sophisticated through two complimentary processes:

- (i) Assimilation – fitting a new experience/knowledge into an existing mental structure
- (ii) Accommodation – revising an existing schema because of a new experience
- (iii) Equilibrium – seeking cognitive stability through assimilation and accommodation

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## Process

- (1) It begins with what is called Cognitive conflict.
  - When individuals encounter new information which does not fit in to their current mental model of knowledge, the contradiction occurs which causes mental disequilibrium.

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## Process

### (2) Assimilation

This refers to the way in which a person transforms new information so that it makes sense within their existing knowledge base. The person will try to fit the new information into his or her knowledge understanding or structure.

If this is possible, then the new information will fit into the mental model and the state of equilibrium will be reached and thus the person will have learnt something new through constructing meaning using prior knowledge.

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Process:

(3) If this is not possible,, the mental disequilibrium will still occur until the person accommodates the new information by modifying their current understanding of the world.

Only then, he or she will reach the new mental equilibrium and in this way, the learner will construct their own knowledge.