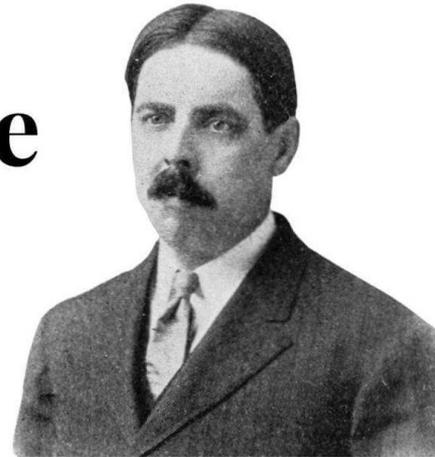


# Thorndike's Trial and Error Theory

**Edward Thorndike**  
"The Founder of  
Modern Educational  
Psychology"



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**After the completion of the unit, students will be able to:**

- 1.Acquire Knowledge of the trial-and-error learning development
- 2.Understand the laws of learning
- 3.Understanding about the factors affecting learning
- 4.Apply the implication about Thorndike`s Learning theory

## Meaning of Thorndike's Trial and Error Theory:

- Edward Lee Thorndike (1874-1949) is generally considered to have been the foremost educational psychologist not only of the United States but of the world. He contributed to research and theory in the field of learning and genetic psychology, testing and social psychology, testing and social psychology.
- Thorndike first stated the elements of his theory of learning in 1913 that connections are formed in the nervous system between stimuli and response. These connections formed are illustrated by the symbols S-R. Another word used to describe these connections is the word 'bond' and hence, this theory is sometimes called a 'Bond Theory of learning'. Thorndike has written- "Learning is connecting. The mind is man's connection system."

## Trial & Error learning - Thorndike

- Describes an organism's attempts to learn/solve a problem by trying **alternative** possibilities until a correct solution or desirable outcome is achieved

### Usually involves

1. A number of **attempts** & a number of **errors**  
- Before correct behaviour is learnt
  2. **Motivation** (to achieve a goal)
  3. **Exploration** – either random or purposeful
  4. **Reward** – the correct response is rewarded –
    - which will lead to **repeat** performance of the correct response, strengthening the **association** between the behaviour & its outcome
- Once learnt behaviour will usually be performed quickly and with fewer **errors**

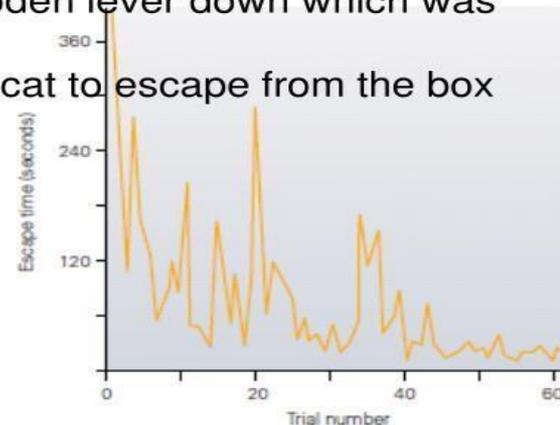


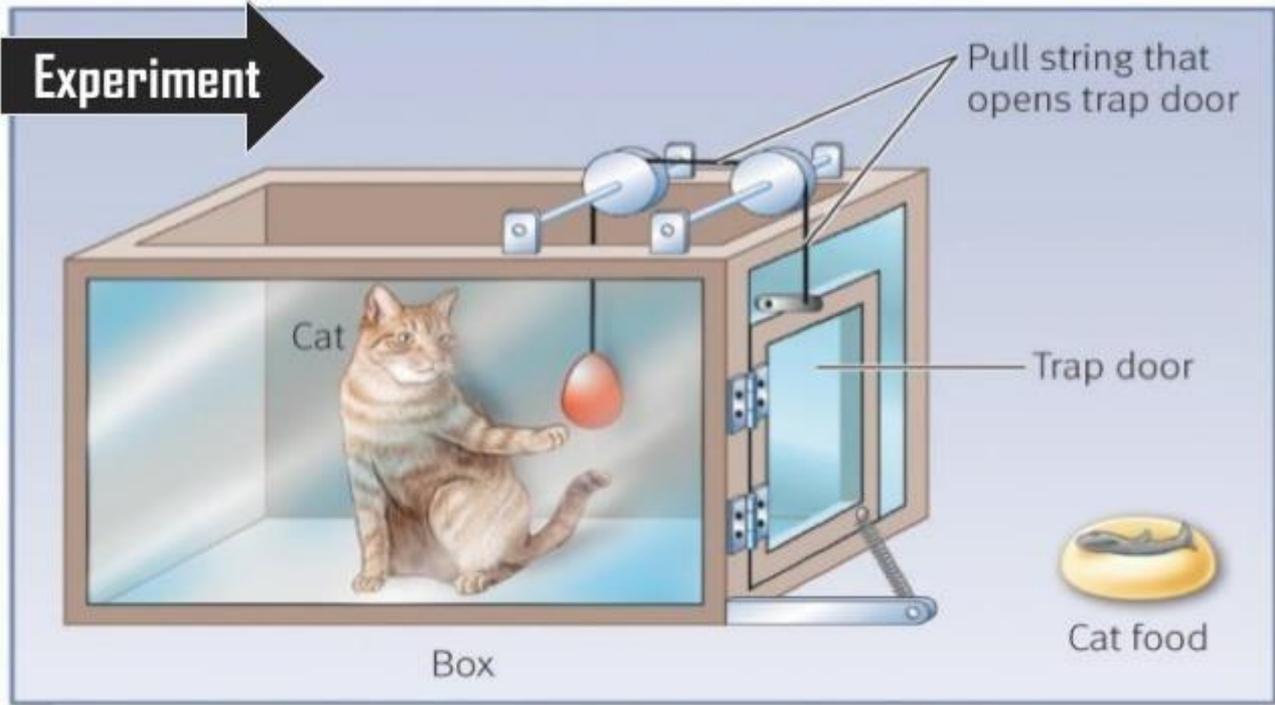
- According to Thorndike learning takes place by trial and error. Some people call it, “Learning by selection of the successful variant,” accordingly when no ready-made solution of a problem is available to the learner, he adopts the method of trial and error. He first, tries one solution. If it does not help him, he rejects it, then, he tries another and so on. In this way he eliminates errors or irrelevant responses which do not serve the purpose.
- Thus, in trial and error method, the learner makes random activities and finally reaches the goal accidentally. Here, one thing should be remembered that in trial and error also, there are often systematic and relevant responses. Activities are not wholly random. All these activities, though apparently random are suggested to him by the situation and the learner proceeds on accordingly. The stages through which the learner has to pass are Goal, Block (hinderances),

Random Movements or multiple response, chance success, selection and Fixation.

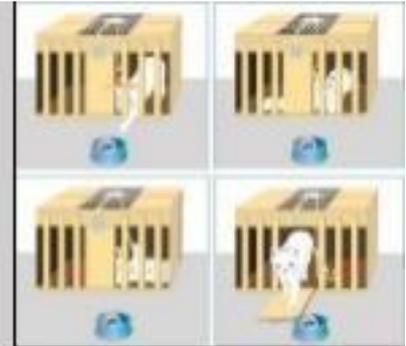
# Thorndike's puzzle box experiments – trial and error.

- Thorndike put a hungry cat in the 'puzzle box' and put fish on the outside.
- When the cat was placed in the box, it made numerous attempts to escape.
- The box had wooden slats so it could see and smell the food but it was beyond its reach.
- To escape the cat needed to push a wooden lever down which was attached to a pulley device.
- Thorndike measured the time it took the cat to escape from the box on each trial.
  - *The cats had to be hungry (their motivation) and they had to be rewarded for acquiring the correct behaviour – food when it escaped from the puzzle box.*





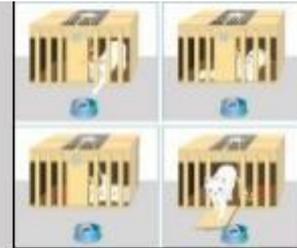
# 1. Motive or drive



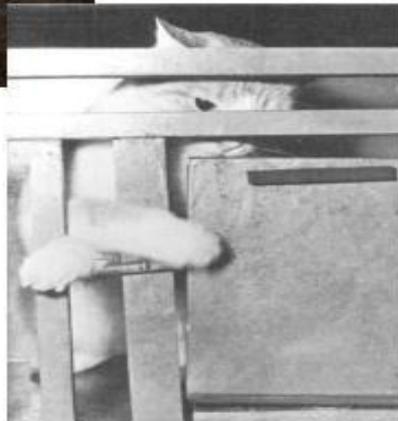
Drive is a tension state resulting from needs. Where there is drive or motive there is learning. In the present experiment drive was hunger.

## 2. Stimulus or goal

It is the casual factor for activity. In the present experiment, food is the stimulus. To get the food by getting out of the box is the goal.



# Edward L. Thorndike



- Animals placed in puzzle boxes
- String pulled, latch released, animal jumps out and receives food
- Learning by random trial and error
- **Law of Effect** – Thorndike's principle that responses are “stamped in” by rewards and “stamped out” by punishments.

## 1. Law or Readiness:

- Law or Readiness' or the 'Law of Action Tendency', which means that learning takes place when an action tendency' is aroused through preparatory adjustment, set or attitude.  
Readiness means a preparation for action. If one is not prepared to learn, learning cannot be automatically instilled in him, for example, unless the typist, in order to learn typing prepares himself to start, he would not make much progress in a lethargic and unprepared manner.

## Law of readiness

The law states that “when any conduction unit is ready to conduct, for it to conduct is satisfying. When any conduction unit is not ready to conduct, for it to conduct is annoying. When any conduction unit is ready to conduct, for it not to conduct is also annoying.”



- **2. Law of Exercise:**

- The second law of learning is the 'Law of Exercise', which means that drill, or practice helps in increasing efficiency and durability of learning and according to Thorndike's S-R Bond Theory, the connections are strengthened with trial or practice and the connections are weakened when trial or practice is discontinued.
- The 'law of exercise', therefore, is also understood as the 'law of use and disuse' in which case connections or bonds made in the brain cortex are weakened or loosened. Many examples of this are found in case of human learning. Learning to drive a motorcar, typewriting, singing or memorizing a poem or a mathematical table, and music etc. need exercise and repetition of various movements and actions many times.

# Law of exercise



## 1. Law of use:

With practice, the connection is strengthened.

## 2. Law of disuse:

When the practice is discontinued, connection is weakened.

# LAW OF EFFECT

- “When a modifiable connection between a situation and response is made and is accompanied or followed by a satisfying state of affairs that connection’s strength is increased, but when made and accompanied by an annoying state of affairs its strength is decreased”.

## THE LAW OF EFFECT

Actions that are followed by favorable consequences are more likely to be repeated than actions followed by unfavorable consequences.



- The third law is the 'Law of Effect', according to which the trial or steps leading to satisfaction stamps in the bond or connection. Satisfying states lead to consolidation and strengthening of the connection, whereas dis-satisfaction, annoyance or pain leads to the weakening or stamping out of the connections.
- In fact, the 'law or effect' signifies that if the responses satisfy the subject, they are learnt and selected. While those which are not satisfying are eliminated. Teaching, therefore, must be pleasing. The educator must obey the tastes and interests of his pupils. In other words, greater the satisfaction stronger will be the motive to learn. Thus, intensity is an important condition of the 'law of effect'.

# The Law of Learning

## Law of Effect

- Emotional reaction of the learner
- Positive outcomes = repeat behaviour

## Law of exercise

- Encourage repetition to acquire skills
- Practice makes perfect

## Law of readiness

- Physical, mental and emotional state of the learner
- Cold room = negative learning experience

## **The implications of the theory are**

- 1. According to his theory the task can be started from the easier aspect towards its difficult side. This approach will benefit the weaker and backward children.
- 2. A small child learns some skills through trial and error method only such as sitting, standing, walking, running etc. In teaching also the child rectifies the writing after committing mistakes.
- 3. In this theory more emphasis has been laid on motivation. Thus, before starting teaching in the classroom the students should be properly motivated.

- 4. Practice leads a man towards maturity. Practice is the main feature of trial and error method. Practice helps in reducing the errors committed by the child in learning any concept.
- 5. Habits are formed as a result of repetition. With the help of this theory the wrong habits of the children can be modified and the good habits strengthened.
- 6. The effects of rewards and punishment also affect the learning of the child. Thus, the theory lays emphasis on the use of reward and punishment in the class by the teacher.

- 7. The theory may be found quite helpful in changing the behaviour of the delinquent children. The teacher should cure such children making use of this theory.
- 8. With the help of this theory the teacher can control the negative emotions of the children such as anger, jealousy etc.
- 9. The teacher can improve his teaching methods making use of this theory. He must observe the effects of his teaching methods on the students and should not hesitate to make necessary changes in them, if required.
- 10. The theory pays more emphasis on oral drill work. Thus, a teacher should conduct oral drill of the taught contents. This helps in strengthening the learning more.

## **CHECK YOUR PROGRESS**

- Explain the theory proposed by Edward L Thorndike?
- What are the educational implications of trial-and-error theory?
- State the laws of theory proposed by E L Thorndike?
- What are the limitations of trial-and-error method?