

# **Learning Intentions**

- **Define behaviour**
- **Difference between Innate and learned behaviour**
- **Brief summary of some learned behaviours**

# Animal Behaviour

- Behaviour refers to the activities carried out by animals in response to both internal and external stimuli.
- When a behaviour is essentially the same in all members of a species, the behaviour is called innate or inborn behaviour.
- It is genetically controlled









**ETHOLOGY** - is the scientific study of animal behaviour.

Studied by a zoologist.

**ANTHROPOMORPHISM** – is the attribution of human characteristics to animals.

# Innate Behaviour

Innate or inborn behaviours refer to those that are not learned.

The formation of an attachment to something in the environment shortly after hatching or birth is called imprinting.

The learning that takes place during imprinting is rapid and cannot be reversed

# Innate Behaviour

Innate or inborn behaviours refer to those that are not learned. They are genetically determined and are similar in all members of the species.

# Innate Behaviour

## Examples:

- Web building in spiders.
- Suckling behaviour in newborns.(see wiki)
- Escape reflex shown by yabbies.
- Reproductive behaviours in male sticklebacks (fish).



# Innate Behaviour

However, innate behaviour is not necessarily fully developed at birth and may be modified by learning.

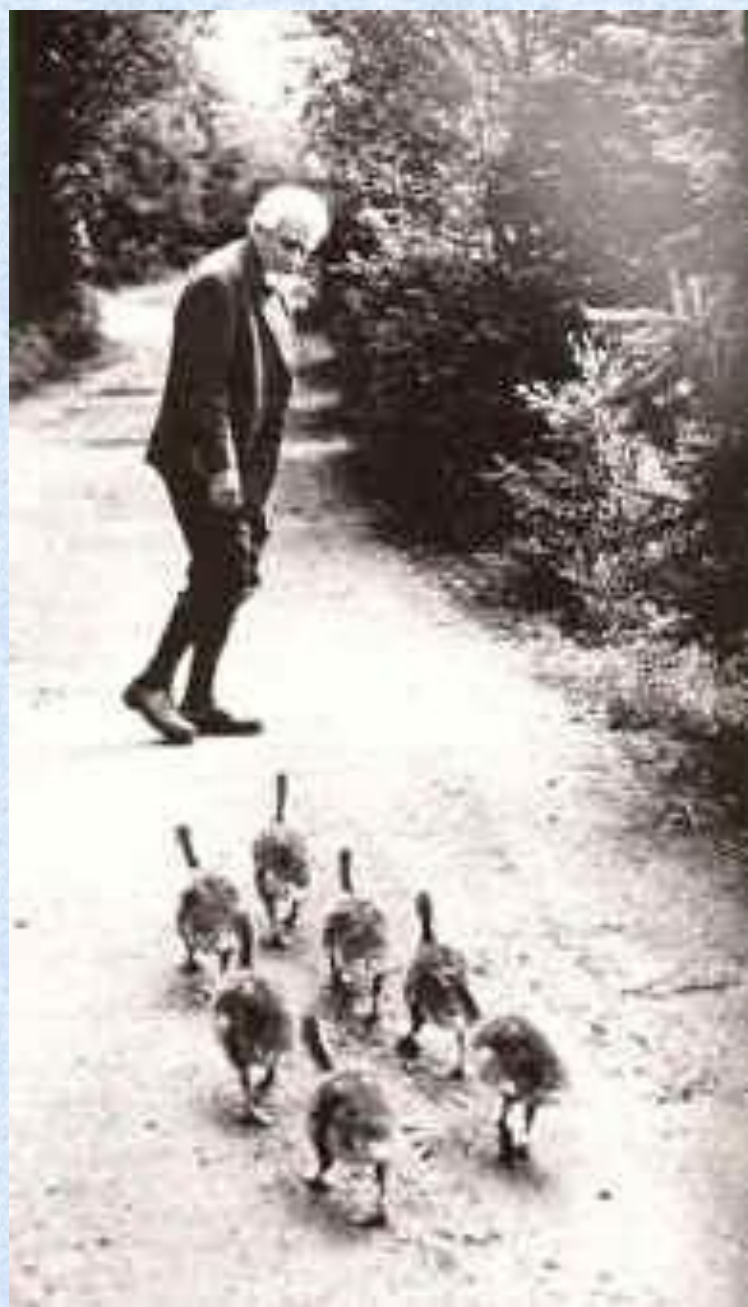
This learning comes through trial-and-error and experience.

# Imprinting

This is a type of rapid learning commonly found in ground-nesting birds and some mammals. Chicks fix, or imprint, on the first object they see and hear after hatching - usually their parent. Imprinting can usually only occur in a critical period of the animal's life







# Learned Behaviours

These are behaviours that have been modified by previous experience. When a behaviour is changed as a result of experience, learning has occurred. Learning enables an animal to adapt to change.

## Types of learned behaviours.

1. Habituation
2. Associative learning
3. Trial and Error learning
4. Observational Learning
5. Insight Learning.

# Habituation

A decline in the tendency to respond to stimuli that have become familiar and have proved harmless.

or

The ability to 'get used to' a repeated stimulus, such as a noise



## **Why is Habituation important for animals?**

- ❖ Animals will respond to a noise if they think it has been made by a predator.
- ❖ enables animals to distinguish the unimportant noises and shapes from those that are important
- ❖ allows animals to ignore meaningless stimuli and save energy for activities critical for survival.



# Habituation

## **Example:**

Sea slugs have floppy, vulnerable gills that they retract with the slightest touch. But if they are poked repeatedly, and nothing bad happens, they switch off the retraction behaviour because it's a waste of energy.

# Habituation

Example:



After a few days

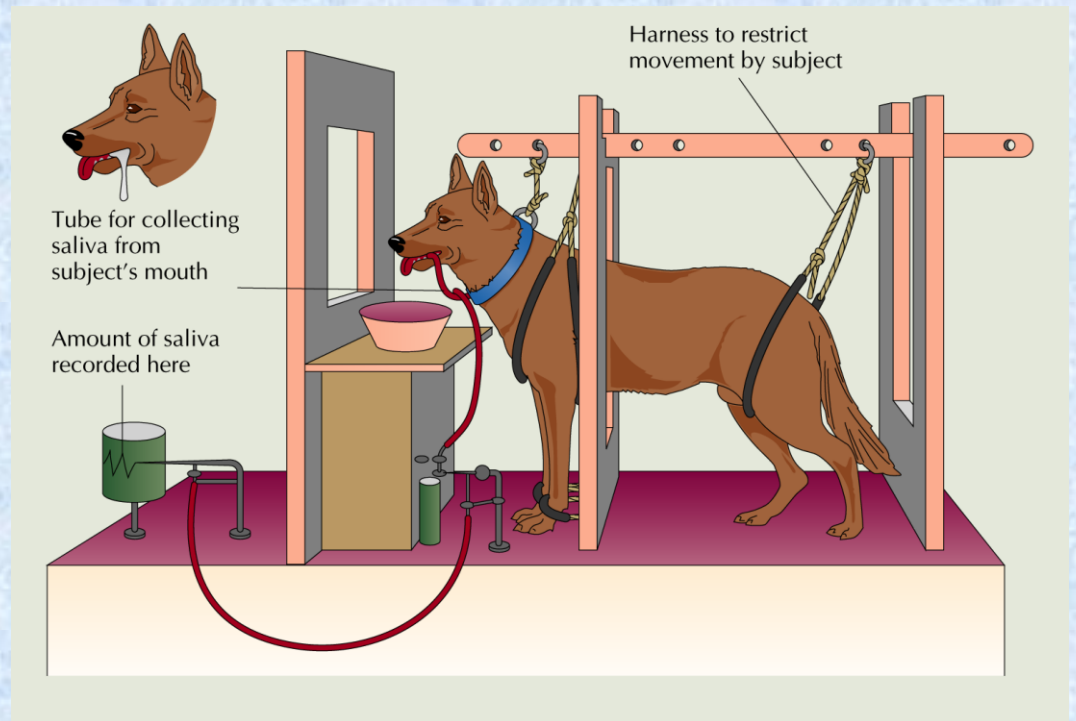
# Habituation to Noise





# Associative Learning

Also known as classical conditioning. It refers to the transfer of behaviour from one stimulus to a completely new stimulus.

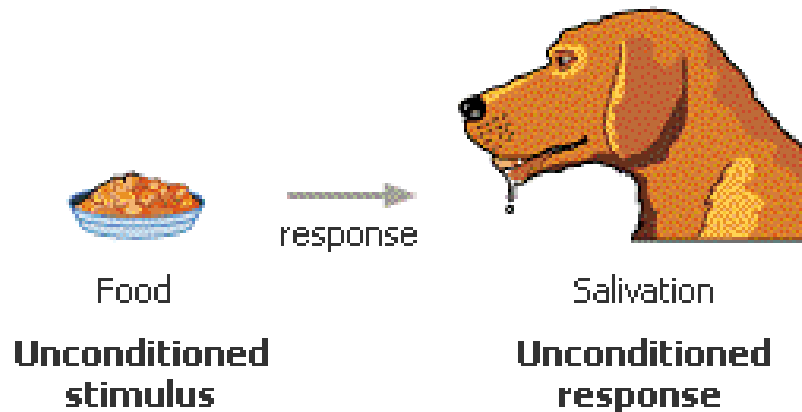


Eg food stimulus/response

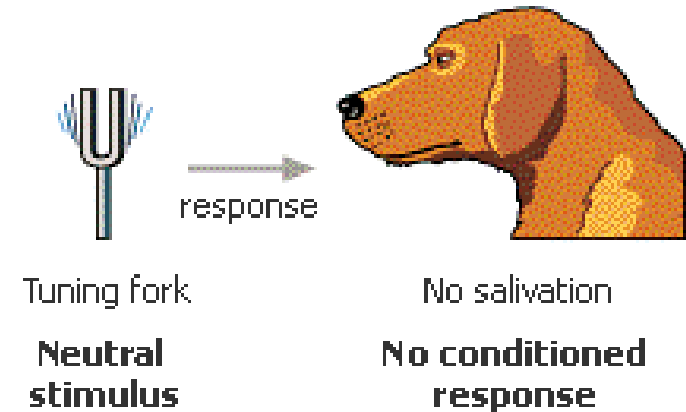
Pavlov's Dog experiment – the ringing of a bell prior to feeding a dog. Eventually the dog salivates just at the ringing of the bell.

# Examples of Associative Learning (Pavlov's Dogs)

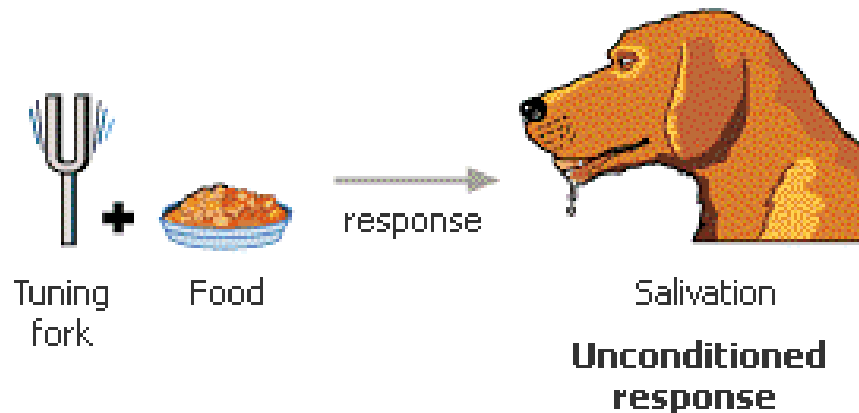
1. Before conditioning



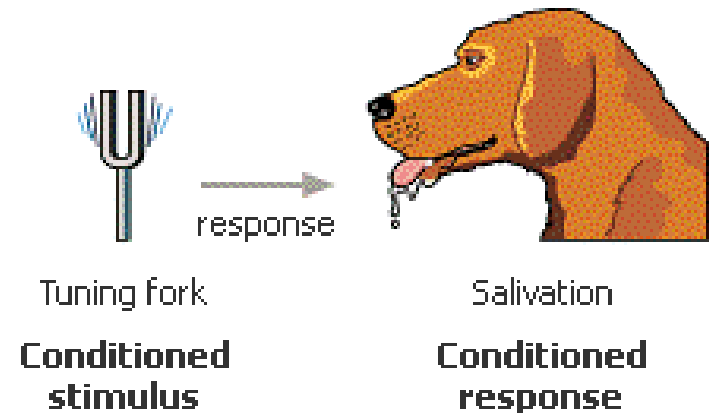
2. Before conditioning



3. During conditioning



4. After conditioning



1. Before conditioning



Food

Salivation

**Unconditioned  
stimulus**

**Unconditioned  
response**

2. Before conditioning



Tuning fork

No salivation

**Neutral  
stimulus**

**No conditioned  
response**

3. During conditioning



+



Tuning  
fork

Food

Salivation

**Unconditioned  
response**

4. After conditioning



Tuning fork

Salivation

**Conditioned  
stimulus**

**Conditioned  
response**



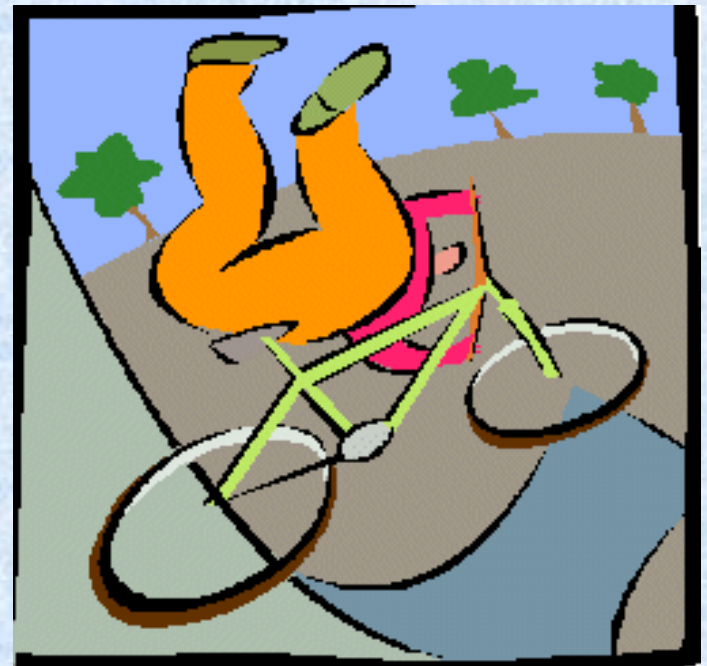
# Another Example

In Western Australia during a drought, Farmers cut down Acacia scrub to feed hungry sheep as there was no grass. The farmers used axes to do this that made a ringing sound. The sheep eagerly raced to the area ate the acacia scrub.

After some time, the sound of the axe alone was sufficient to get the sheep to move to a certain area.

# Trial and Error Learning

A form of learning based on previous experience, resulting in a task becoming easier to perform. (see skinner box youtube clip)



# Operant Conditioning (Trial and error)

- When behaviour is learned by rewards or punishment and repeats or avoids the behaviour.
- E.g. Positive reinforcement is when an animal gets rewarded for doing something right such as a dog gets a biscuit when told to sit.
- (Difference between negative reinforcement and punishment)



# Observational Learning

This refers to learning gained by watching the behaviour of others.

Example: Baboons learning by watching the behaviour of Imo the baboon.



[http://www.youtube.com/watch?v=enYMUvIS\\_Oc](http://www.youtube.com/watch?v=enYMUvIS_Oc)

In 1953 a young female Japanese macaque called Imo began washing sweet potatoes before eating them, presumably to remove dirt and sand grains. Soon other monkeys had adopted this behaviour, and potato washing gradually spread throughout the troop.

Three years after her first invention, Imo devised a second novel foraging behaviour, that of separating wheat from sand by throwing mixed handfuls into water and scooping out the floating grains.

# Insight Learning

A complex form of learning usually associated with a relatively high level of intelligence.

Insight learning is related to the ability of an animal to apply past experience to solving a new problem without a trial-and-error period.

Most highly developed in humans. Play forms an important part in developing problem-solving skills for later use.

Examples (on wiki):

The learning showed by Imo.

Problem solving in pigeon





# Behaviour

Activity performed in response to stimulus

## Innate Behaviours

Behaviours that are essentially the same in all members of a species

Rhythmic behaviours

Eg. Eating, sleeping, seasonal migration

Communication behaviours

Reproductive behaviours

Competitive behaviours

Dominance behaviours

Territoriality

Social interactions



## Learned Behaviours

Behaviours that develop or change as a result of experience

Conditioning – respond to stimulus that normally does not elicit response

Operant conditioning – animal relates behaviour with reward or punishment and repeats or avoids behaviour

Habituation – cease to respond to stimuli

Imprinting – association with an object after exposure to it very early in life

Observational – learns from observing actions of others

# Homework

Heinemann

Chapter 17.1 and 17.2

Q. 1-10