3.2.1 APPROACHES IN PSYCHOLOGY

Origins of psychology: Wundt, introspection and the emergence of psychology as a science.

The basic assumptions of the following approaches:

- Learning approaches: the behaviourist approach, including classical conditioning and Pavlov’s research, operant conditioning, types of reinforcement and Skinner’s research; social learning theory including imitation, identification, modelling, vicarious reinforcement, the role of mediational processes and Bandura’s research.

- The cognitive approach: the study of internal mental processes, the role of schema, the use of theoretical and computer models to explain and make inferences about mental processes. The emergence of cognitive neuroscience.

- The biological approach: the influence of genes, biological structures and neurochemistry on behaviour. Genotype and phenotype, genetic basis of behaviour, evolution and behaviour.
ORIGINS OF PSYCHOLOGY
WILHELM WUNDT (1832-1920)

- He was the first person to call himself a Psychologist
- He paved the way for the acceptance of Psychology as a Science
- He used the experimental method to study human behaviour
- He had a laboratory in Leipzig, Germany and only studied aspects of behaviour that could be controlled under experimental conditions
  - These included reaction time, sensation and perception
WILHELM WUNDT (1832-1920)

- Wundt aimed to study the structure of the human mind and believed the best way of doing this was to break down behaviours into their basic elements.
- His approach was referred to as structuralism and the technique he used was **INTROSPECTION**.
- He eventually realised that higher mental processes like learning, language and emotions couldn’t be studied in a controlled manner.
  - These topics could be described in terms of general trends in behaviour among groups of people.
  - He referred to this as **CULTURAL PSYCHOLOGY**.
INTROSPECTION

- In Latin this means “looking into” and is the process where a person gains knowledge about his/her mental and emotional states.
- Perceptual ability enables us to observe and make sense of the outer world; our introspective ability enables us to observe our inner world.
- Wundt claimed that, with sufficient training, mental processing like memory and perception could be observed systematically as they occurred using introspection.
- This information could be used to gain insight into the nature of the mental processes involved.
  - In Wundt’s work on perception, participants would be presented with carefully controlled stimuli (e.g. visual image) and then were asked to provide a description of the inner processes they were experiencing as they looked at the image.
- This made it possible to compare different participants’ reports in response to the same stimuli, and so establish general theories about perception and other mental processes.
PSYCHOLOGY AS A SCIENCE

https://www.youtube.com/watch?v=EhV3g9F6MaI
EMERGENCE OF PSYCHOLOGY AS A SCIENCE

- **Empiricism** is the belief that all knowledge is derived from sensory experience.
- Empiricists believe that knowledge comes from observations and experience alone (rather than being innate).
- When empirical methods were first applied to the study of humans by Wundt and his followers, psychology began to emerge as a distinct science.
- This new "scientific" approach to psychology was based on two major assumptions:
  1. All behaviour is seen as being *caused* (determinism).
  2. If behaviour is determined, then it should be possible to *predict* how humans would behave in different conditions (predictability).
SCIENTIFIC METHOD IN PSYCHOLOGY

- This refers to the use of investigative methods that are objective, systematic and replicable
- It is objective so preconceived ideas or biases do not influence the collection of data
  - It is systematic in that observations and experiments are carried out in an orderly way
  - Measurement is carried out accurately and with consideration for the possible influence of other factors on the results obtained
  - It is replicable in that observations can be repeated by other researchers to determine if the same results are obtained. If the results are not replicable, then they are not reliable and cannot be accepted as being universally true
- The research process also needs to use reason to explain the results of these observations
- The development of scientific theories and the constant testing and refining of these theories through further observation completes the scientific cycle
SCIENTIFIC METHOD IN PSYCHOLOGY

THE SCIENTIFIC CYCLE

- Objective, systematic and replicable observation
- Building, refining or falsifying
- Development of a scientific theory
- Testing

⚠️ The scientific cycle.
EVALUATION FOR ORIGINS OF PSYCHOLOGY
A criticism of Wundt’s structuralist approach is that it relied on “non-observable” responses. Although participants could report on their conscious experiences, the processes themselves (e.g. memory, perception) were considered to be unobservable constructions.

Wundt’s approach ultimately failed because of the lack of reliability of his methods. Introspective “experimental” results were not reliably reproducible by other researchers in other labs. However, Pavlov and Thorndike contrasted this by achieving reproducible results and discovering explanatory principles that could be generalised to all humans.
INTROSPECTION IS NOT PARTICULARLY ACCURATE

- Nisbett and Wilson (1977) claimed that we have very little knowledge of the causes of, and processes underlying, our behaviour and attitudes
  - This challenges the value of introspective reports
- Nisbett and Wilson found that participants were unaware of factors that had been influential in their choices of a consumer item
- This problem is particularly serious in the study of attitudes that are out of our consciousness (e.g. stereotypes that are unknown to us)
STRENGTHS OF A SCIENTIFIC APPROACH TO PSYCHOLOGY

- Knowledge gained using the scientific method is more than just the passive acceptance of facts.
- Because scientific methods rely on a belief in determinism, they are able to establish the causes of behaviour through the use of methods that are both empirical and replicable.
- If scientific theories no longer fit the facts, they can be refined or abandoned, meaning that scientific knowledge is self-corrective.
  - As psychologists are always repeating each other’s experiments, it is hard for a theory that does not explain the facts to hang on for very long.
LIMITATIONS OF A SCIENTIFIC APPROACH TO PSYCHOLOGY

- By concentrating on objectivity and control in observations, scientific psychologists create artificial situations that tell us little about how people act in more natural environments.
- Much of the subject matter of psychology is unobservable, so cannot be measured with any degree of accuracy.
- Not all psychologists share the view that all human behaviour can be explored by the use of scientific methods.
- If human behaviour is not subject to the laws and regulations implied by scientific methods, then predictions become impossible and these methods inappropriate.
INTROSPECTION IS STILL USEFUL IN SCIENTIFIC PSYCHOLOGY

- Csikszentmihalyi and Hunter (2003) used introspective methods as a way of making “happiness” a measurable phenomenon.
- They found that most of the teenagers were unhappy rather than happy.
- They also found that when their energies were focused on a challenging task, they tended to be more upbeat.
3.2.1 APPROACHES IN PSYCHOLOGY

- Origins of psychology: Wundt, introspection and the emergence of psychology as a science.

The basic assumptions of the following approaches:

Learning approaches: the behaviourist approach, including classical conditioning and Pavlov’s research, operant conditioning, types of reinforcement and Skinner’s research; social learning theory including imitation, identification, modelling, vicarious reinforcement, the role of mediational processes and Bandura’s research.

- The cognitive approach: the study of internal mental processes, the role of schema, the use of theoretical and computer models to explain and make inferences about mental processes. The emergence of cognitive neuroscience.

- The biological approach: the influence of genes, biological structures and neurochemistry on behaviour. Genotype and phenotype, genetic basis of behaviour, evolution and behaviour.
BEHAVIOURIST APPROACH IN PSYCHOLOGY
Animals (including humans) are born with a number of natural reflexes like salivating when food is placed in the mouth.

These reflexes are made up of a stimulus (e.g. food) and its naturally associated response (e.g. salivation).

When other stimuli are consistently associated with this stimulus, and predict its arrival, then they too trigger the same response (e.g. salivation) and the animal is described as having been “classically conditioned”.
Pavlov (1927) was investigating the salivary reflex in dogs when he noticed that they salivated when a stimulus coincided with the presentation of food (i.e. the bowl).

The natural stimulus in any reflex is referred to as the **unconditioned stimulus (UCS)** and the natural response to the stimulus is the **unconditioned response (UCR)**.

A **neutral stimulus (NS)**, one that does not cause the UCR, is presented slightly before the UCS.

After many pairings of the NS + UCS; the NS is now able to produce the same response in the absence of the UCS.

The NS is now referred to as the **conditioned stimulus (CS)** and the response it produces is called the **conditioned response (CR)**.

[http://www.youtube.com/watch?v=hhqumfpxuzI](http://www.youtube.com/watch?v=hhqumfpxuzI)
# PAVLOV'S RESEARCH

## BEFORE CONDITIONNING TRIALS BEGIN
- **Food** (UCS) → **Salivation** (UCR)
- **Bell** (NS) → **No Salivation**

## DURING CONDITIONNING TRIALS
- **Bell** (NS) + **Food** (UCS) → **Salivation** (UCR)

## AFTER CONDITIONNING
- **Bell** (CS) → **Salivation** (CR)
OTHER IMPORTANT FEATURES

TIMING
- If the NS is presented after the UCS or the time interval between the NS and UCS is too great, then conditioning will not take place.

EXTINCTION
- The CR does not become permanently established as a response.
- After a few presentations of the CS in the absence of the UCS, the CS loses the ability to produce the CR.

SPONTANEOUS RECOVERY
- Following extinction, if the CS and UCS are paired together again, the link between them is made more quickly and so producing the CR once again.

STIMULUS GENERALISATION
- Once an animal has been conditioned, they will also respond to other stimuli that are similar to the CS (e.g. a different tone of bell).
Skinner (1938) suggested that organisms spontaneously produce different behaviours, and these behaviours produce consequences for that organism. Some of these may be positive (i.e. desirable) and some negative (i.e. undesirable). The likelihood of this behaviour being repeated is dependent on the nature of the consequence (i.e. it is reinforced). 

http://www.youtube.com/watch?v=MOgowRy2WC0
REINFORCEMENT

- This is something in the environment that strengthens or reinforces a particular behaviour (making it more likely to occur)
- Both positive and negative reinforcement make the behaviour more likely to recur

POSITIVE REINFORCEMENT

- When a behaviour produces a consequence that is satisfying or pleasant for the organism
  - E.g. giving praise to a child after they do something particularly well

NEGATIVE REINFORCEMENT

- When a behaviour removes something that is unpleasant
  - E.g. hitting the “off” button on an alarm clock
SCHEDULES OF REINFORCEMENT
- A continuous reinforcement schedule (e.g. reinforcing a rat every time it presses a lever) is most effective in establishing a particular response, a partial reinforcement schedule (e.g. reinforcing every third lever press or every 10 minutes) is more effective in maintaining that response and avoiding extinction

PUNISHMENT
- This is the circumstance whereby behaviour is followed by a consequence that is undesirable or unpleasant for the organism
- Reinforcement increases the likelihood of a behaviour recurring; punishment decreases it
- Punishment can be positive (i.e. adding something unpleasant as a consequence, like slapping a naughty child)
- Punishment can be negative (i.e. taking away something pleasant, like “grounding” teenager)
EVALUATION FOR THE BEHAVIOURIST APPROACH
<table>
<thead>
<tr>
<th></th>
<th><strong>STRENGTHS</strong></th>
<th><strong>LIMITATIONS</strong></th>
</tr>
</thead>
</table>
| **CLASSICAL CONDITIONING** | • This has led to the development of treatments for the reduction of anxiety associated with various phobias (e.g. SD).  
• The learned anxious response is replaced with one that no longer makes the patient anxious.                                                | • The relationship between the CS and UCS tend to be more difficult to establish for some species than others.  
• Animals are *prepared* to learn associations for survival needs (e.g. smell of meat with presence of food) yet *unprepared* to learn associations that are not significant (sound of bell with food). |
| **OPERANT CONDITIONING** | • Research relies on experimental method (uses controlled conditions to discover causal relationships between 2 or more variables).  
• By manipulating the consequences of behaviour (the IV) psychologists can accurately measure the DV.                                                | • Some studies received criticism as experiments involved the study of non-human animals rather than humans (e.g. Skinner). So they cannot tell us little about human behaviour.  
• Critics claim that humans have free will rather than being determined by reinforcement.  
• Skinner argued that free will was merely an illusion and is actually the product of external influences. |
OTHER EVALUATION
A LIMITED PERSPECTIVE ON BEHAVIOUR

- Behaviourists have been accused of ignoring other levels of explanation such as cognitive factors.
- By treating humans as a product of their conditioning alone means that we ignore the evidence for the role of these other factors (e.g. cognitive) in shaping behaviour.
- However, Skinner rejected this claim, arguing that these internal states (i.e. thoughts) are scientifically untestable.
- And that even complex behaviours like our interactions with the opposite sex can be better understood by studying the reinforcement history of the individual.
3.2.1 APPROACHES IN PSYCHOLOGY

- Origins of psychology: Wundt, introspection and the emergence of psychology as a science.

The basic assumptions of the following approaches:

- Learning approaches: the behaviourist approach, including classical conditioning and Pavlov’s research, operant conditioning, types of reinforcement and Skinner’s research; social learning theory including imitation, identification, modelling, vicarious reinforcement, the role of mediational processes and Bandura’s research.

- The cognitive approach: the study of internal mental processes, the role of schema, the use of theoretical and computer models to explain and make inferences about mental processes. The emergence of cognitive neuroscience.

- The biological approach: the influence of genes, biological structures and neurochemistry on behaviour. Genotype and phenotype, genetic basis of behaviour, evolution and behaviour.
SOCIAL LEARNING THEORY IN PSYCHOLOGY
PROCEDURES

Children observed aggressive and non-aggressive adult models and were then tested for imitative learning in the absence of the model.

Half the children were exposed to/observed adult models interacting aggressively with a life-sized Bobo doll:
- E.g. hitting the doll with a mallet, accompanied by verbal aggression like saying “Pow”
- After this these children were frustrated by being shown attractive toys but not allowed to play with them.

The other half of the children were exposed to non-aggressive models.

Both groups were then taken (independently) to a room where there were a range of toys including a Bobo doll.

BANDURA ET AL (1961)
Children who observed the aggressive model reproduced a good deal of physical and verbal aggressive behaviour resembling that model

Children who observed the non-aggressive model showed virtually no aggression toward the Bobo doll

About 1/3 of the children who observed the aggressive model repeated the model’s verbal responses; while none of the non-aggressive group made verbally aggressive comments

Bandura and Walters (1963) completed a follow-up to this study where children saw the aggressive model being rewarded for aggressive acts

- These children were more likely to show a high level of aggression in their own play
“Bobo” Study Fact = a child going into the experiment was heard saying “Look Mummy. There’s the doll we’re supposed to kick”

This suggests that the child was not acting naturally as it would outside the laboratory = DEMAND CHARACTERISTICS
For social learning to take place, someone must carry out/model the attitude or behaviour to be learned.

Individuals that perform this role are called MODELS.

There are different types of models:
- Live Models – might be a parent, teacher or peer
- Symbolic Models – might be someone in the media

The models provide the behaviour that can be observed by the individual and later reproduced by them – this is known as IMITATION.
SOCIAL LEARNING THEORY (BANDURA, 1986)

IMITATION

- Much what a child learns is gained through imitation of attitudes and behaviours that are modelled by parents and significant others.
- Unlike the slow learning that takes place with conditioning, when a model is provided, whole patterns of behaviour can be gained rapidly.
- The key determinants of whether a behaviour is imitated are:
  1. The characteristics of the model
  2. The observer’s perceived ability to perform that behaviour
  3. The observed consequences of the behaviour
SOCIAL LEARNING THEORY (BANDURA, 1986) IDENTIFICATION

- This is the extent to which an individual relates to a model and feels that he or she is similar to that person.
- In order to identify with a model, observers must feel that he or she is similar enough to them that they would be likely to experience the same outcomes in that situation.
- Shutts et al (2010) suggests that children are more likely to identify with, and learn from, models who are similar to them (especially same-sex models).
- Identification with a model means that the individual is more likely to imitate their behaviour, meaning that social learning is more likely to be effective.
SOCIAL LEARNING THEORY (BANDURA, 1986)

VICARIOUS REINFORCEMENT

Bandura and Walters (1963) noted that children who observed a model rewarded for aggressive behaviour were much more likely to imitate that behaviour than children who had observed a model punished for the same behaviour.

This is called **VICARIOUS REINFORCEMENT**

- I.e. individuals learn about the consequences of an action and then adjust their subsequent behaviour accordingly.

Vicarious reinforcement suggests that individuals do not need to experience rewards or punishments directly in order to learn.
SOCIAL LEARNING THEORY (BANDURA, 1986)  
THE ROLE OF MEDIATIONAL PROCESSES

- Social learning differs from other learning approaches in that it places special importance on internal MEDIATIONAL PROCESSES

- Bandura (1986) claimed that, in order for social learning to take place, the observer must form mental representations of the behaviour displayed by the model and the probable consequences of that behaviour in terms of expectancies of future outcomes

- When appropriate opportunities arise, the individual might display the learned behaviour provided that the expectation of positive consequences is greater than the expectations of negative consequences
EVALUATION FOR THE SOCIAL LEARNING THEORY
<table>
<thead>
<tr>
<th><strong>STRENGTHS</strong></th>
<th><strong>LIMITATIONS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Principles of SLT have been applied to improve our understanding of human behaviour (e.g. criminal behaviour – likelihood of someone engaging in criminal behaviour increases when they are exposed to a criminal model who they identify with and expect positive consequences).</td>
<td>• Saying that SLT causes deviant behaviour due to association with deviant peers suggests that this is the reason for their behaviour and nothing else.</td>
</tr>
<tr>
<td>• Strongest cause of violent behaviour in adolescence was association with delinquent peer groups, where violence was modelled and rewarded (Ulrich, 2003).</td>
<td>• The cause of delinquency may not be social learning as a result of exposure to deviant models, but the possession of deviant attitudes <em>prior</em> to contact with deviant peers.</td>
</tr>
<tr>
<td>• According to the SLT, observing a model similar to the self should lead to more learning than observing a dissimilar model. Greater identification with a model leads to more learning as it is easier to visualise the self in place of the model. Fox and Bailenson (2009) found evidence of this using computer generated “virtual” humans similar/dissimilar to the participants.</td>
<td>• These young people will seek out peers with similar attitudes and behaviours (Siegal and McCormick, 2006).</td>
</tr>
<tr>
<td>• Focusing on the SLT means that other potential influences on behaviour are disregarded.</td>
<td>• The problem for social learning theorists is that anything can have an influence on specific behaviour so it becomes very difficult to show that one thing is the main cause of behaviour (i.e. not just SLT).</td>
</tr>
<tr>
<td>• There are a number of influences that interact in complex ways (e.g. biological predispositions, the media, personality, etc).</td>
<td></td>
</tr>
</tbody>
</table>
OTHER EVALUATION
THE IMPORTANCE OF IDENTIFICATION IN SOCIAL LEARNING OF HEALTH BEHAVIOURS

Media attempts to change health-related behaviours have shown that models similar to the target audience are more likely to bring about identification and so greater social learning

- E.g. health campaigns have tried to match models with the target audience in terms of physical characteristics, attitudes and behaviours to achieve the highest levels of identification
- Greater identification is then expected to influence modelling behaviour

Andsager et al (2006) found that perceived similarity to a model in an anti-alcohol advertisement was positively related to the effectiveness of the message

Based on this, the researchers suggest that some of the message’s potency may be lost if the individual finds it difficult to identify with the model used
3.2.1 APPROACHES IN PSYCHOLOGY

- Origins of psychology: Wundt, introspection and the emergence of psychology as a science.

The basic assumptions of the following approaches:

- Learning approaches: the behaviourist approach, including classical conditioning and Pavlov’s research, operant conditioning, types of reinforcement and Skinner’s research; social learning theory including imitation, identification, modelling, vicarious reinforcement, the role of mediational processes and Bandura’s research.

The cognitive approach: the study of internal mental processes, the role of schema, the use of theoretical and computer models to explain and make inferences about mental processes. The emergence of cognitive neuroscience.

- The biological approach: the influence of genes, biological structures and neurochemistry on behaviour. Genotype and phenotype, genetic basis of behaviour, evolution and behaviour.
COGNITIVE APPROACH IN PSYCHOLOGY
COGNITIVE PSYCHOLOGY

- Cognitive psychology focuses on how people perceive, store, manipulate and interpret information.
- Cognitive psychologists believe it is necessary to look at internal mental processes in order to understand behaviour.
- Much of cognitive psychology uses an information processing model, whereby information received through the senses is processed by various systems in the brain.
- The information processing approach uses terms like “encoding/coding”, “processing” and “retrieval” to describe what goes on in the human brain.
THE STUDY OF INTERNAL MENTAL PROCESSES

- The cognitive approach studies information processing, i.e. ways in which we extract, store and retrieve information that helps to guide our behaviour.
- Many different kinds of mental processing contribute to information processing.
- These include:
  - Selecting important information (attention)
  - Using it to solve problems (thinking)
  - Storing it in memory and retrieving it as and when it is needed.
- The cognitive approach recognises that these mental processes cannot be studied directly and so must be studied indirectly by inferring what goes on as a result of measuring behaviour.
- This enables cognitive psychologists to develop theories about the mental processes that led to the observed behaviour.
THE ROLE OF SCHEMAS

A **schema** is a cognitive framework that helps organise and interpret information in the brain.

- For example, schemas for specific events are based on expectations of how to behave in different situations (e.g. in a restaurant or a classroom) or in different roles (e.g. as a guard in a mock prison).

Schemas are useful as they allow us to take shortcuts when interpreting the huge amount of information we have to deal with on a daily basis.

However, schemas also cause us to exclude anything that does not conform to our established ideas about the world, focusing on things that confirm our pre-existing beliefs and ideas.
THE ROLE OF SCHEMAS

Schemas help us fill gaps in the absence of full information about a person, event or thing

- E.g. if we classify food as “foreign”, our schemas will tell us what to expect and we act accordingly, regardless of how tasty the food might be

A consequence of this is that we may develop stereotypes that are difficult to disconfirm, even when faced with new and conflicting information
THE ROLE OF THEORETICAL MODELS

In cognitive psychology, like the multi-store and working memory models are simplified representations based on current research evidence.

Models are often pictorial in nature, represented by boxes and arrows that indicate cause and effect or the stages of a particular mental process.

Models, like the WMM, are informal and are changed, updated, and refined.

- E.g. the WMM was first proposed in 1974, but this was updated in 2000 by adding the episodic buffer due to research evidence.
The development of computers and computer programming led to a focus on the way in which sensory information is “coded” as it passes through the system.

Using a computer analogy, information is inputted through the senses, encoded into memory and then combined with previously stored information to complete a task.

A computer model of memory is a good example:

- Information stored on the hard disk is like LTM and RAM (random access memory) corresponds to the working memory.
- The idea of working memory as a temporary workspace fits the computer model as well (as RAM is cleared and reset when the task being carried out is finished).
THE EMERGENCE OF COGNITIVE NEUROSCIENCE

- The rapid advances in ways of studying the brain in the latter part of the 20th Century has meant that neuroscientists are now able to study the living brain, giving them detailed information about the brain structures involved in different kinds of mental processing (cognitive neuroscience).
- The use of non-invasive neuroimaging techniques such as positron emission tomography (PET) and functional magnetic resonance imaging (fMRI) helps psychologists to understand how the brain supports different cognitive activities and emotions by showing what parts of the brain become active in specific circumstances.
- E.g. Burnett et al (2009) found that when people feel guilty, several brain regions are active, including the medial prefrontal cortex, an area associated with social emotions.
EVALUATION FOR THE COGNITIVE APPROACH
### STRENGTHS

- The Cognitive approach has been applied to many other areas of psychology.
- In social psychology, research in social cognition helped psychologists to better understand how we inform impressions of other people.
- In psychopathology, it has been used to explain how much dysfunctional behaviour can be traced back to faulty thinking processes. Which has led to treatment of depression and OCD by using cognitive-based therapy.

### LIMITATIONS

- The cognitive approach uses computer models to explain human coding.
- However, there is an important difference between the sort of information processing that takes place within a computer program and what takes place in the human mind.
- Computers do not make mistakes, nor do they ignore available information or forget anything that has been stored on their hard drives. However, humans do.

- Cognitive psychologists use scientific methods (i.e. experimental methods) for collecting data and evaluating evidence.
- This means that conclusions about how the mind works are based on more than common sense and introspection.

- A problem for the cognitive approach is that, although it can tell us *how* different cognitive processes take place, it fails to tell us *why* they do.
- This means that the role of emotion and motivation are ignored by this approach.
- The lack of focus on motivation may be explained by the over-dependence on information processing (as motivation is clearly irrelevant to a computer, but not to a human).
OTHER EVALUATION
Many studies of cognitive psychology tend to use tasks that have little in common with participants’ natural everyday experiences.

For example, experiments in memory use artificial test materials that are relatively meaningless in everyday life (e.g. random word lists or digits) rather than try to understand the way in which memory is used in everyday life (e.g. why people forget to appointments or repress early childhood memories).

As a result, it is unlikely that we would be able to generalise their findings to real-life situations.

Therefore, much of the research in cognitive psychology might be criticised as lacking ecological validity, i.e. it fails to reflect the behaviours that occur in real-life settings.
3.2.1 APPROACHES IN PSYCHOLOGY

- Origins of psychology: Wundt, introspection and the emergence of psychology as a science.

The basic assumptions of the following approaches:

- Learning approaches: the behaviourist approach, including classical conditioning and Pavlov’s research, operant conditioning, types of reinforcement and Skinner’s research; social learning theory including imitation, identification, modelling, vicarious reinforcement, the role of mediational processes and Bandura’s research.

- The cognitive approach: the study of internal mental processes, the role of schema, the use of theoretical and computer models to explain and make inferences about mental processes. The emergence of cognitive neuroscience.

- The biological approach: the influence of genes, biological structures and neurochemistry on behaviour. Genotype and phenotype, genetic basis of behaviour, evolution and behaviour.
BIOLOGICAL APPROACH IN PSYCHOLOGY
INFLUENCE OF GENES ON BEHAVIOUR

GENES: MECHANISMS OF HEREDITY

- Heredity is the passing of characteristics from one generation to the next through genes.
- Genes carry instructions for particular characteristics (e.g. intelligence or temperament).
- Development of characteristics depends on interaction with other genes and the influence of the environment.
- Psychological characteristics determined by genes or environment is also known as the NATURE-NURTURE DEBATE.
What is Genotype?
This is the genetic code that is “written” in the DNA of an individual’s cells.

What is Phenotype?
This is the physical appearance that results from this inherited information.

Is there always a direct relationship between the two? I.e. Can we always determine the genotype from the phenotype?
Think of eye colour.
We may inherit a gene for blue eyes, but have brown eyes. This is because the blue gene is recessive and the brown gene is dominant.
We all have a unique combination of genetic instructions and so differ from others in terms of personality, intelligence, abilities, etc.

The more that a trait is influenced by genetic factors, the greater its heredity.

From this, studies of identical twins have suggested that the variation in individual intelligence could be 60-80% due to genes.
The nervous system carries messages from one part of the body to another by neurons.

Neurons transmit nerve impulses in the form of electric signals.

Many aspects of behaviour are under neural control (e.g. breathing, eating, etc.)
THE BRAIN

The cerebrum is about 85% of the total mass of the brain.

The cerebral cortex (outer surface of the cerebrum) is responsible for lots of “higher-order” functions like thought and language.

The cerebrum is divided into two hemispheres which are sub-divided into 4 lobes:
- Frontal Lobe (speech, thought and learning)
- Parietal Lobe (touch, temperature and pain)
- Temporal Lobe (hearing and memory)
- Occipital Lobe (processing visual information)
NEUROTRANSMITTERS

- Neurotransmitters are released at the end of a neuron (across the synapse) and to another neuron.
- Neurotransmitters that stimulate the receiving neuron or the brain are called **excitatory** neurotransmitters (e.g. Dopamine).
- Neurotransmitters that inhibit the receiving neuron or calm the brain are called **inhibitory** neurotransmitters (e.g. Serotonin).
HORMONES

- These are chemicals produced by the endocrine glands (e.g. pituitary gland).
- Hormones are secreted into the bloodstream by the glands and travel to their “target cells” to stimulate receptors on these cells.
- This will then cause a physiological reaction in the cell and changing its activity.
- E.g. Carre et al (2006) found an increase in the release of testosterone when a Canadian Ice Hockey team played in their home stadium (defending their home territory).
EVALUATION FOR THE BIOLOGICAL APPROACH
<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>LIMITATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• This approach uses the Scientific Method (i.e. <strong>experimental method</strong>).</td>
<td>• <strong>Reductionism</strong> is the belief that complex human behaviour can be explained by breaking it down into its smallest component parts (e.g. action of genes, hormones).</td>
</tr>
<tr>
<td>• So studies take place in <strong>highly controlled</strong> environments (making it</td>
<td>• E.g. <strong>many explanations of mental disorders are reductionist</strong> as genes/neurochemical imbalances are said to be the main cause of these disorders.</td>
</tr>
<tr>
<td>easy to replicate and improving it’s validity).</td>
<td>• However, we cannot fully understand behaviour without also taking account of the other factors that influence it (including cognitive, emotional and cultural factors).</td>
</tr>
<tr>
<td>• Early studies had difficulties with researcher bias and lack of control,</td>
<td>• The Biological Approach provides clear predictions.</td>
</tr>
<tr>
<td>but with the <strong>improvements in technology</strong> (imaging and recording</td>
<td>• This has led to <strong>applications of Biological research into the real world</strong> (e.g. research into the imbalance of neurochemicals for depression led to the development of drugs to correct this imbalance and minimise depressive symptoms).</td>
</tr>
<tr>
<td>techniques) has increased the precision and objectivity of experimental research.</td>
<td>• <strong>Evolutionary explanation of behaviour</strong> is complicated as most human behaviours can be passed on by genetic and cultural routes.</td>
</tr>
<tr>
<td>• <strong>Reductionism</strong> is the belief that complex human behaviour can be explained by breaking it down into its smallest component parts (e.g. action of genes, hormones).</td>
<td>• <strong>Many established patterns of human behaviour</strong> have purely cultural origins with no survival or reproductive value.</td>
</tr>
<tr>
<td>• E.g. incest taboos which are present in most societies (an evolutionary explanation would emphasise the problem of genetic mutations that would occur from inbreeding; so natural selection would favour those that avoid such practices).</td>
<td></td>
</tr>
</tbody>
</table>
OTHER EVALUATION
Knowledge about the genetic basis for criminal behaviour could lead to genetic screening of the population to identify this genetic susceptibility and possible discrimination against those with a predisposition for criminality.

This also means there could be a danger that genes might be used as convenient explanations for complicated human behaviour.

Other psychologists suggest that if individuals discover that they have a genetic likelihood for criminality or a mental disorder, then they have the opportunity to avoid environmental situations that could trigger a disorder/criminal behaviour OR they could develop coping skills that would protect them from its influence.