

Free will versus Determinism



What do we mean by Free will?



- The belief that behaviour is chosen by the individual
- To what extent do you believe that you have choice in all of your actions?
- This approach sees human beings as self-determined.
- It does not mean that behaviour is uncaused and completely random, rather it proposes that biological or environmental influences can be ignored or rejected at will.
- One early philosopher (William James, 1890) suggested that we have `soft determinism;` free will is not freedom from causation, but freedom from coercion or constraint.

What do we mean by Determinism?

- The belief that every physical event (human behaviour) is caused by a/set of preceding factor/s.
- If all events are caused, with perfect knowledge we should be able to predict behaviour.
- Determinism emphasizes causal laws, and thus the basis of science is to determine these laws and **predict** and **control** the future. This is often referred to as `Scientific Determinism`.
- We also have biological determinism, genetic determinism, psychic determinism and environmental determinism.
- Thus all behaviour is governed by either external or internal mechanisms over which we have no control.



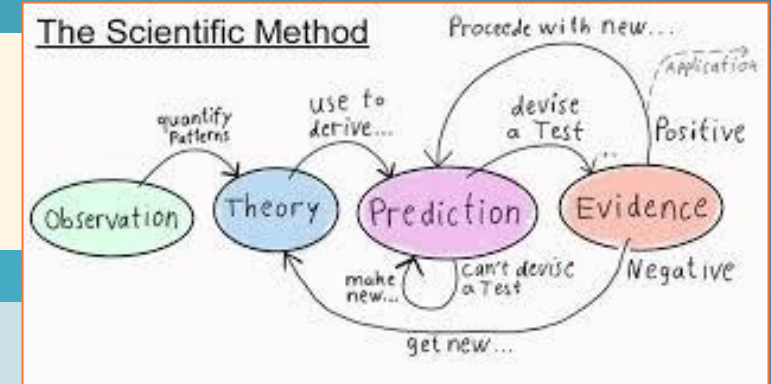
Genetic Determinism

- The more we discover regarding the human genome, the more it appears that much of our behaviour is determined by our genes.
- For example, research on ;Alzheimer's disease, intelligence and depression has identified specific genes responsible:
- Genes related to Alzheimer's disease are found on chromosome 1, 10, 14 and 21 (Levy-Lahad et al., 1995; Schellenberg et al., 1992; Ertekin-Taner et al., 2000).
- Genes related to intelligence; the **IGF2R**, are proposed by Chorney et al. (1998) on chromosome 6.
- Genes associated with depression are believed to `short-short` alleles of the serotonin transporter gene (Bleys, Luyten, Soenens & Claes, 2018).

Genetic Determinism

- However, it is doubtful that there will ever be 100% genetic determination for any single specific behaviour.
- Think about the abundance of twin studies that show concordance rates among monozygotic and dizygotic twins for behavioural traits such as intelligence, personality etc.
- Intelligence – Bouchard & McGue (1981) MZ twins reared apart – 72%
- Personality – Bouchard, Lykken, McGue, Segal & Tellegen (1990).
- Eating disorders – Thornton et al. (2010) MZ twins – 74%.
- Depression – McGuffin et al. (1996) MZ twins 46%.
- Schizophrenia – Joseph (2004) MZ twins 40.4%

Scientific Determinism



- Scientific research is based on causal explanations of events and the application of the scientific method.
- By definition, psychology is a science, and therefore if you do not adopt a deterministic view you cannot place any value on psychological research. In addition it means that you cannot predict or infer any potential behaviour in another human being. This would make human relationships rather difficult and contrary to what we usually experience...
- However, another key debate within psychological research is whether or not psychology should be considered a science... this is for another day!

Scientific Determinism

- Moreover, Dennett (2003) argues that in the physical sciences, it is now accepted that there is no such thing as total determinism, and that causal relationships are **probabilistic** rather than determinist.
- Chaos theory additionally proposes that very small changes in initial situations can eventually lead to major changes; sometimes referred to as the butterfly effect. i.e. one small change in behaviour can ultimately lead to a series of other unpredictable events.



Biological Determinism

- If free will is the result of conscious thought and decision making, in theory we should be able to explain these processes in terms of brain wave activity that equates to consciousness (given that we know how brain activity can be measured with EEG`s and various neuroimaging techniques).
- But... actually measuring brain wave activity is not enough; many scientists think this `hard problem` insoluble, because consciousness cannot be reduced to pulses in neurons in the same way bodily functions can be explained by gene expression.
- While our consciousness is the only thing we know, it is the most mysterious thing in the world. Ideally to address the biological determinism issue it would be ideal to find a way of measuring consciousness in terms of sentience (more on this shortly).

Biological Determinism

- Determinist explanations tend to oversimplify human behaviour. We may be able to apply them to animals, or non sentient species, but humans are more complex and their behaviour is influenced by multiple factors and not simply our brain.
- Valentine (1992) argued that behaviour is always determined, but can appear less determined on occasions where the situation **appears** to be voluntary, and more determined where a situation **appears** to be involuntary.
- This was demonstrated in a study by Westcott (1982), where university students were asked to indicate the extent to which they felt `free` in 28 different situations. They reported feeling most free when in situations with little responsibility or when in situations where their behaviour would result in an escape from an unpleasant situation (little constraint).

Free will and Determinism

- William James (1890) suggests `soft determinism`, the idea of separating behaviour into the physical and mental realms. The former is determined and the latter subject to free will.
- Additionally, Heather (1976) suggests that behaviour is predictable but not inevitable. We are free to choose behaviour, but usually from a limited set of options.
- Stephen Pinker (2008) argues that behaviour is determined by our biological system, but is never wholly predictable because of the billions of cells and trillions of connections between them. Therefore we appear to have free will because our behaviour is never totally predictable. [What is free will?](#)
- And, Dennett (2003) draws attention to the fact that we can anticipate future events, consider and evaluate consequences of acts before deciding on an appropriate response, thus leaving us with a degree of free will.

Measuring Free will and Determinism

- A new way of measuring consciousness to infer biological determinism –
- Marcello Massimini and colleagues at the University of Milan devised a test that zaps the brains of patients with magnetic stimulation, captures brain activity with electroencephalography (EEG), and analyzes the results with a data-compression algorithm. 102 healthy participants and 48 responsive but brain-injured patients were “zapped and zipped” when conscious and unconscious, creating a value called a “perturbational complexity index” (PCI). Across all 150 pp`s, when the PCI value was above a certain value (0.31) the person was conscious; if below, she or he was always unconscious.



Measuring Free will and Determinism

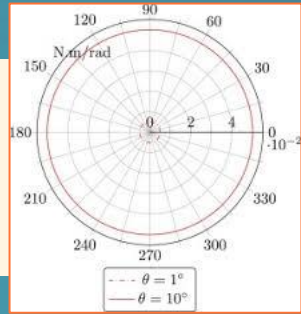
- Massimini then tested patients who were either minimally conscious or else unresponsive but wakeful. Here, the results were more ambiguous.
- Almost all pp`s who were minimally conscious were correctly described as somewhat awake. Of 43 unresponsive but wakeful patients, where communication was impossible, 34 were below the level of consciousness, as expected. But nine people showed a complex pattern of brain activity above the threshold of consciousness. I.e., they might be experiencing the world, but unable to tell anyone that they were still there.
- This test is important because it is the first real proof of integrated information theory (IIT), a theory of consciousness invented by neuroscientist and psychiatrist Giulio Tononi at the University of Wisconsin. In the 20 yrs since Tononi began working on IIT, the theory has prompted an enormous literature and generated passionate, often acrimonious debate.



Measuring Free will

- Whilst this research and the IIT doesn't try to answer the hard problem. Instead, it does something more subtle;
- We can tell, just by looking at the value, whether someone is conscious or not. We can assess consciousness in nonresponsive patients.
- And whilst this doesn't answer the free will determinism debate, it is an important step forward in scientific research.
- What about free will?
- In 1983 Libet developed a way to test free will. Let`s give this a go...
 - Look at the second hand of the clock, counting down from 60s to 0s.
 - At a time of your choosing, tap on the desk with your pen.
 - Record the time at which you decided to tap on the desk

Measuring Free will



- In Libet's experiment, participants were connected to an EEG and an EMG. They were instructed to look at an oscillator and asked to note the position of the dot when they were aware of the intention to act. The time between the intention and the action is measured via the oscillator and on average was 500 milliseconds.
- More recent research has shown that this time difference can be as much as 10 seconds (Soon et al., 2008).
- These findings imply that free will has no part in our wish to act, it is just our awareness of our actions.
- Trevana & Miller (2009) further argue that these brain changes in activity do not necessarily indicate causal mechanisms, but rather a state of 'readiness' to act.

Why is this debate so important?

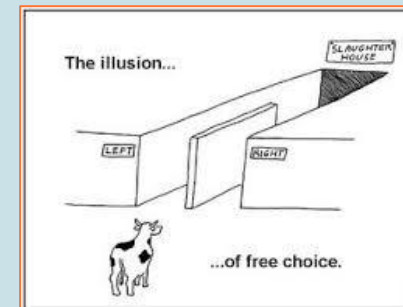
- 1. Moral responsibility:
- Our society assumes that we are all responsible for our actions (unless we are mentally ill or young children), regardless of genetic or any other factors. Think of the implications for criminal behaviour. One example is of Stephen Mobley who killed a Pizza Shop manager in 1981 and claimed that this occurred because he was `born to kill`.
- 2. Treatment of mental health conditions:
- If you take the assumption that mental health conditions such as schizophrenia or depression are determined by genes or biology, then it follows that treatments should be biological. This could be unhelpful however, as other therapeutic interventions such as CBT would possibly not be seen as relevant.

Why is this so important?

- 3. The role of subjective experience:
- We all like to think that we have a degree of freedom to choose our own actions. For some psychologists, the subjective experience of the individual should be at the heart of psychology.
- However, thinking and feeling is not proof of free will, the causes may simply be unavailable to us.
- 4. People are self-determining:
- Individuals do make decisions; we are not innately governed by our desires and inclinations. Moreover, culture may also play a role in guiding behaviour. Western society is deemed individualistic, whereas other non-western cultures are more collectivist and base decisions of the wider needs of the community.

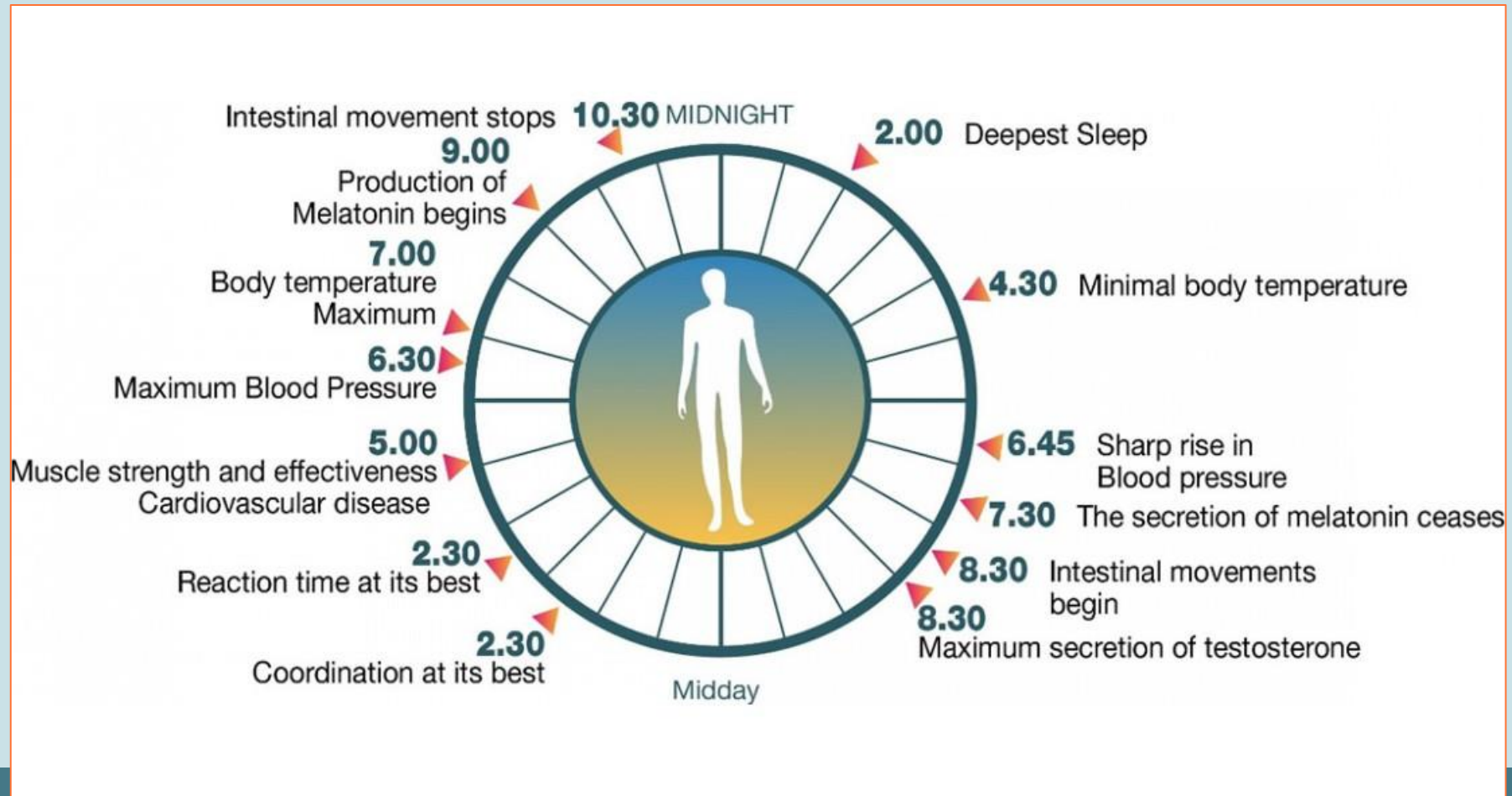
Where does each Psychological Approach stand?

- Biological Approach – Biological and Genetic Determinism
- Psychodynamic Approach – Psychic Determinism
- Behavioural Approach & Social Learning Theory – Environmental/Reciprocal Determinism (Hard Determinism)
- Cognitive Approach – Soft Determinism
- Humanistic Approach – Free will



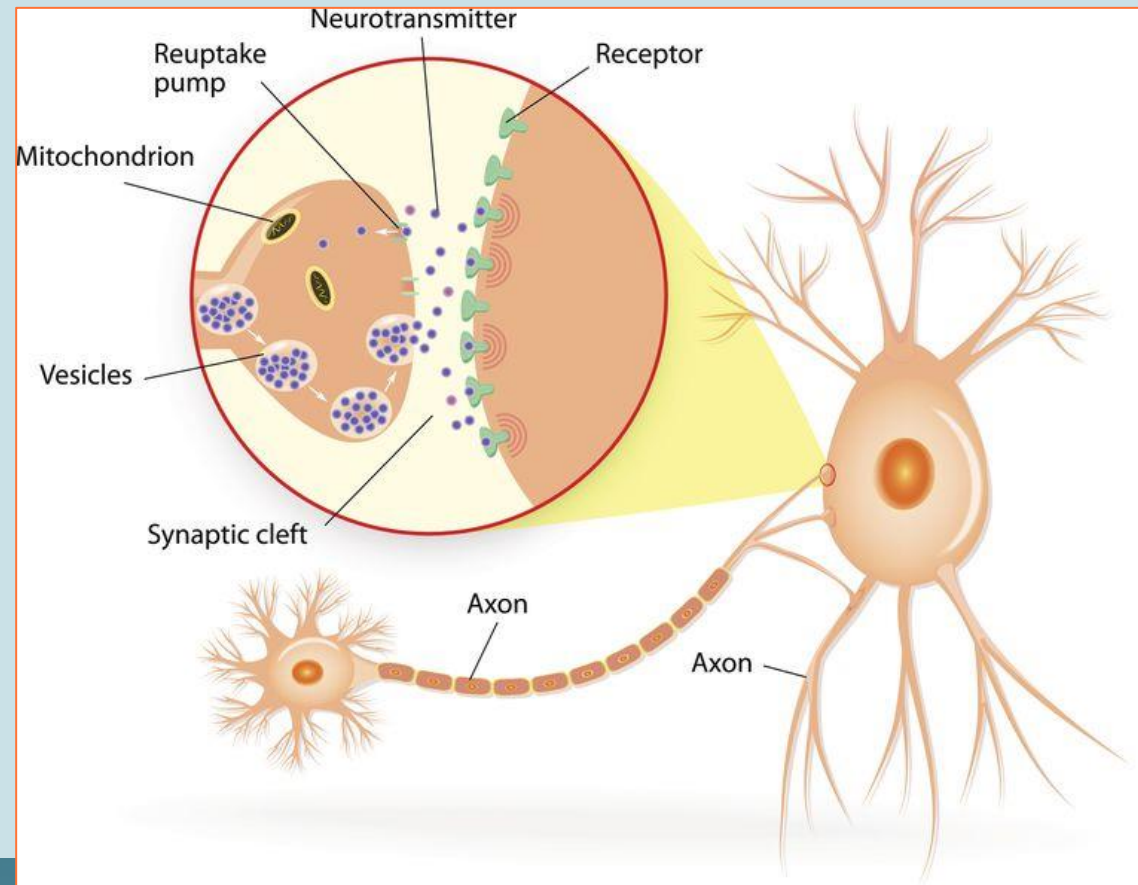
Biological Approach – Biological and Genetic Determinism

- The role of the hormone melatonin in regulating the circadian rhythm.



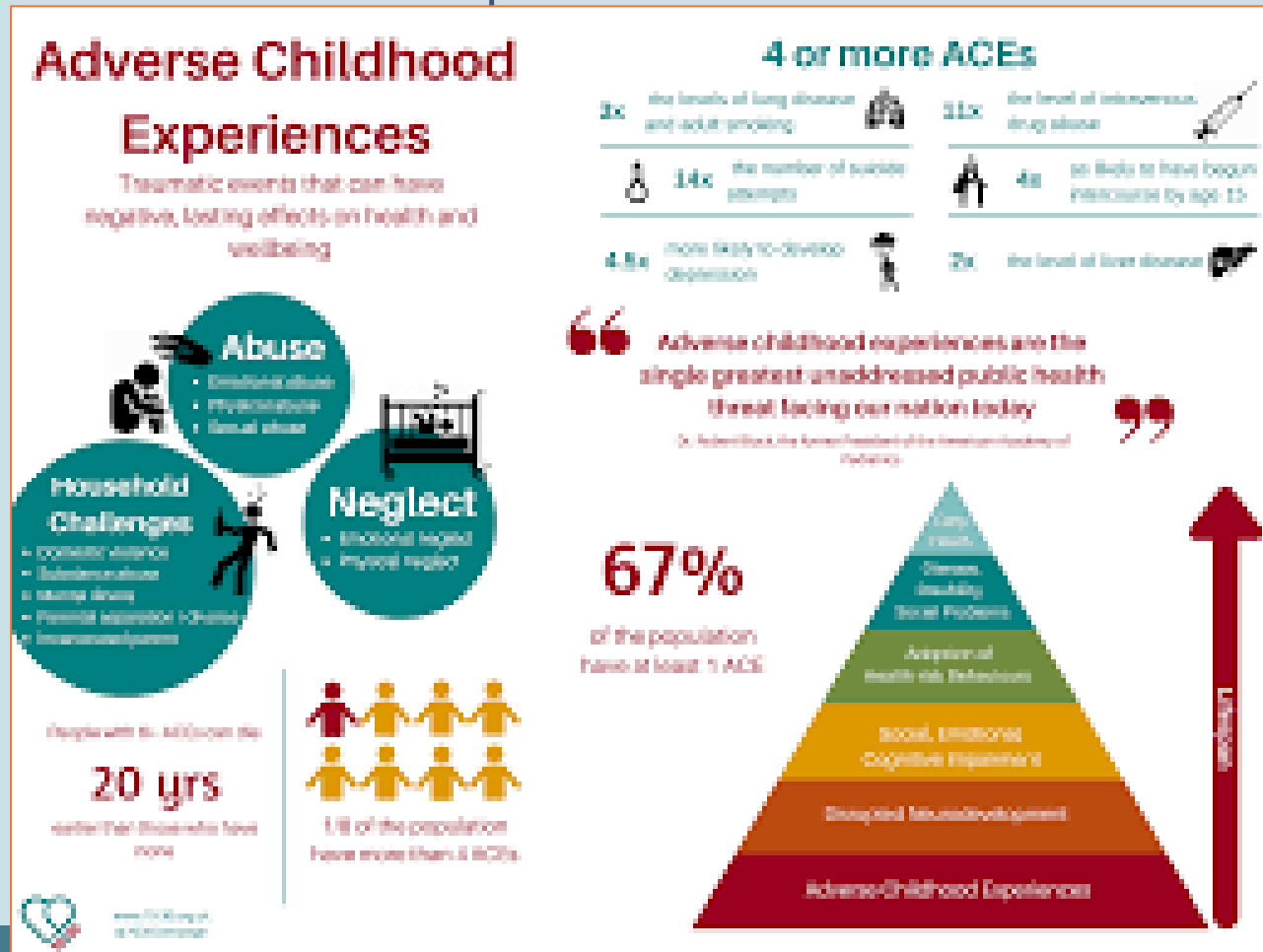
Biological Approach – Biological and Genetic Determinism

- The role of the various neurotransmitters in regulating emotions and feelings, such as serotonin and depression.



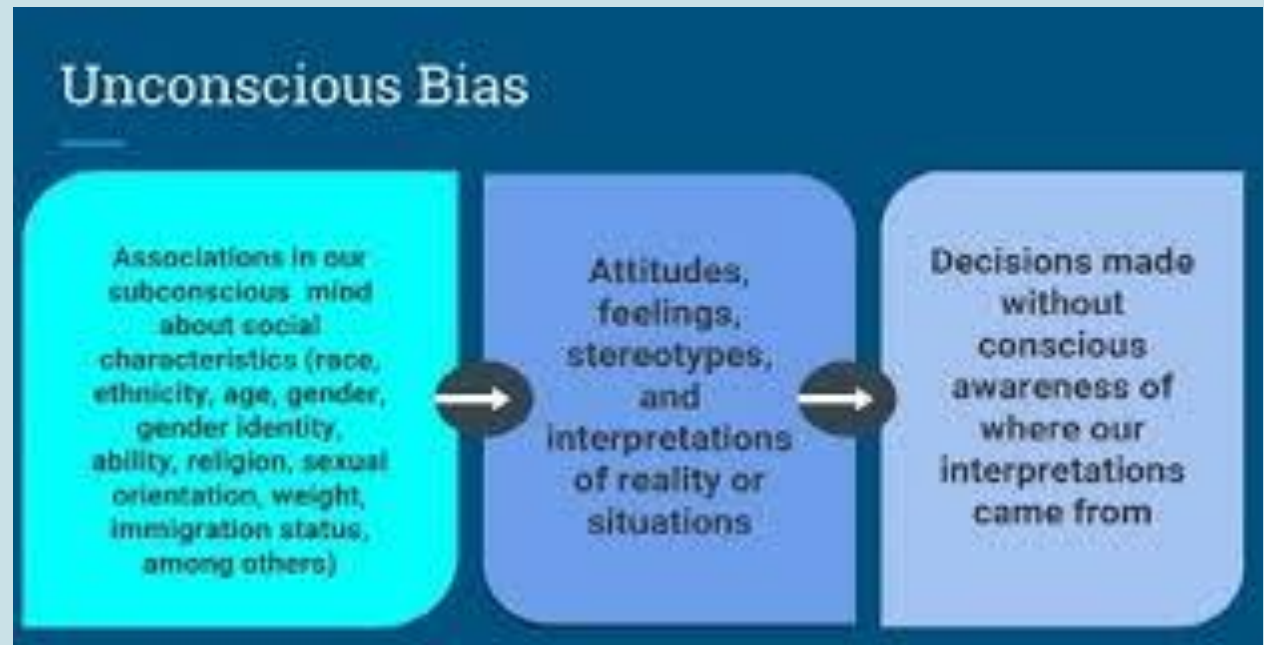
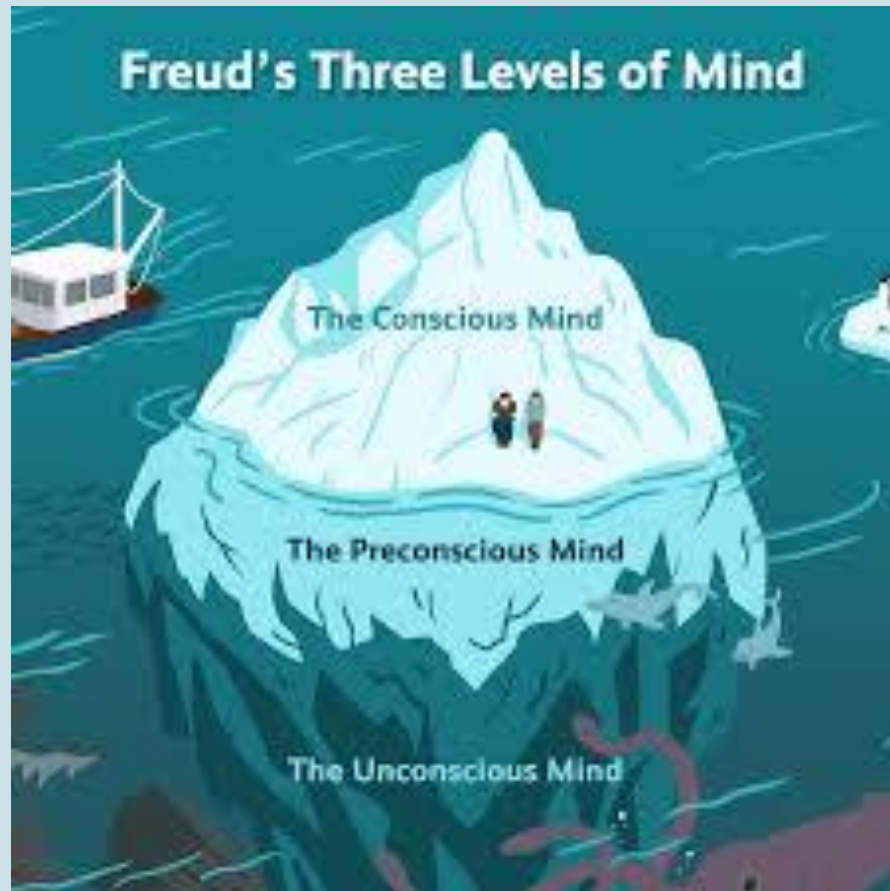
Psychodynamic Approach – Psychic Determinism

- The importance of childhood experiences



Psychodynamic Approach – Psychic Determinism

- The importance of the unconscious mind



Behavioural Approach – Environmental Determinism

- The mind as a tabula rasa and the illusion of free will.
- Thus a person who commits a crime will do so because of environmental circumstances and a personal history, which makes breaking the law inevitable.
- E.g. Differential Association (Sutherland, 1939).

Differential Association Main Principles

- Criminal behavior is learned from intimate personal groups.
- The learning includes techniques for committing crimes, motives, rationalizations and attitudes.
- The specific direction of motives and drives is learned from definitions of legal codes as favorable or unfavorable.
- A person becomes delinquent because of an excess of definitions favorable to breaking the law.

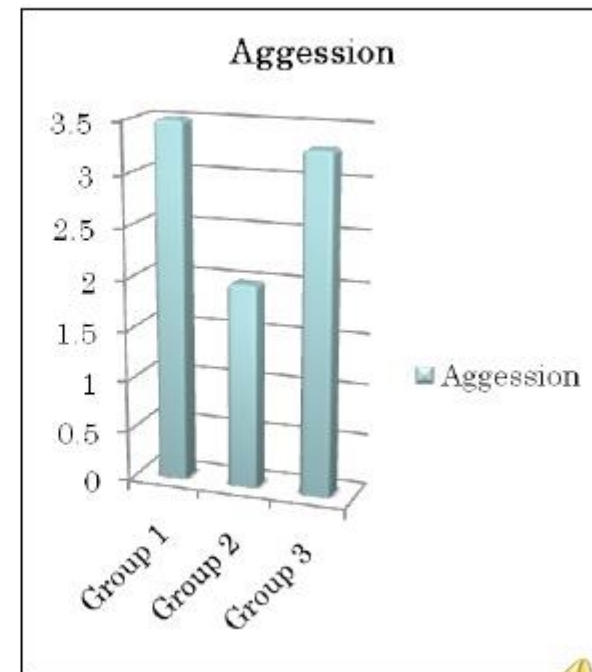
Social Learning Theory Approach – Reciprocal Determinism

- Bandura and the learning of aggressive behaviour

Bobo Doll Experiment

Each group watched a film of a model behaving aggressively towards a “bobo doll.” But, each of the three films had a different ending:

- **Group 1 Film Ending** - The model in the film was praised for his aggressive behavior.
- **Group 2 Film Ending** - The model was sent to the corner and not allowed to play with toys.
- **Group 3 Film Ending** - The model simply walked out of the room.



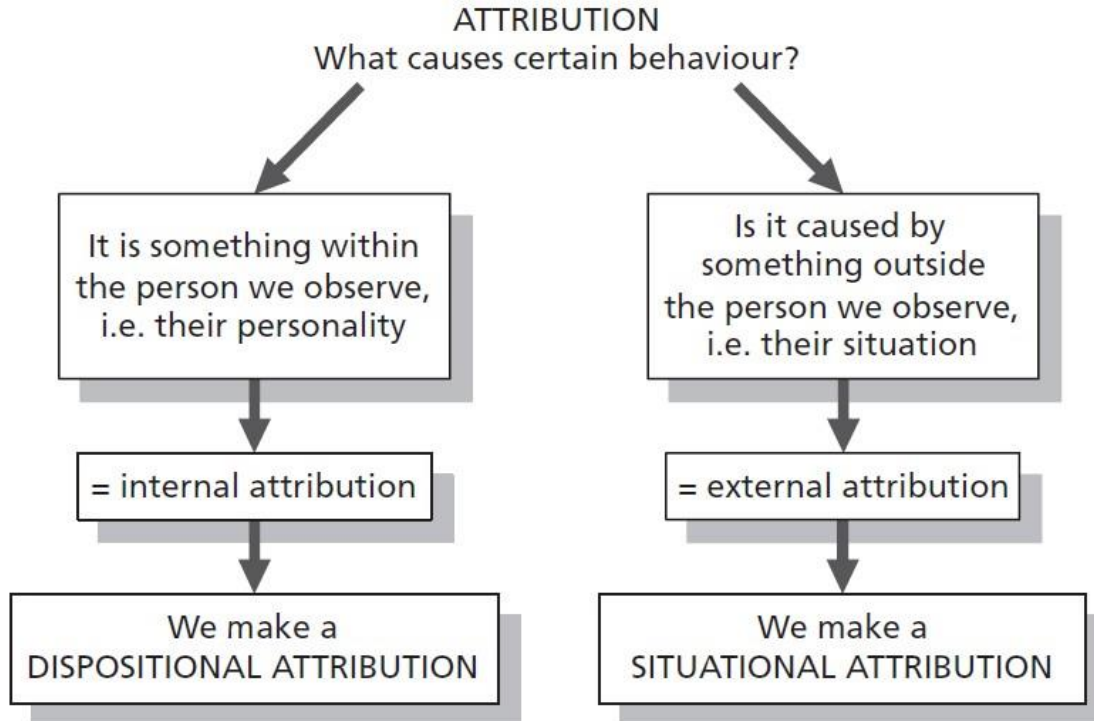
Cognitive Approach – Soft Determinism

- Moral development in children – Kohlberg (1958).

Level/Stage	Age Range	Description
I: Obedience/Punishment	Infancy	No difference between doing the right thing and avoiding punishment
I: Self-Interest	Pre-school	Interest shifts to rewards rather than punishment – effort is made to secure greatest benefit for oneself
II: Conformity and Interpersonal Accord	School-age	The “good boy/girl” level. Effort is made to secure approval and maintain friendly relations with others
II: Authority and Social Order	School-age	Orientation toward fixed rules. The purpose of morality is maintaining the social order. Interpersonal accord is expanded to include the entire society
III: Social Contract	Teens	Mutual benefit, reciprocity. Morally right and legally right are not always the same. Utilitarian rules that make life better for everyone
III: Universal Principles	Adulthood	Morality is based on principles that transcend mutual benefit.

Cognitive Approach – Soft Determinism

- Attribution theory (Heider, 1958).



Attribution Biases

Fundamental Attribution Error - tendency to make attributions to internal causes when focusing on someone else's behavior

Self-serving Bias - tendency to attribute one's own successes to internal causes and one's failures to external causes



Humanist Approach – Free will

- The role of personal agency and the choices we make

1. Free Will

- This Approach is very different to others in its view of free will.
- It claims that all humans are basically self-determining.
- We are '**active agents**' in determining our own development.
- We choose who we become.



Techniques of Person-Centered Therapy

- "Way of being"
- Active listening
- Reflection of feelings
- This model does not include diagnostic testing, interpretation, taking a case history, or questioning for information.

