Burton: Chapter 1

PSYCHOLOGY: THE STUDY OF MENTAL PROCESSES AND BEHAVIOUR

- The scientific investigation of mental processes and behaviour
- One needs to understand a person's biology, psychological experience and cultural context
- Biopsychology (behavioural neuroscience): physical basis of psychological phenomenon (motivation, emotion, stress)
- Cross-cultural psychology: psychological processes that differ according to various cultures
  - Munchausen's Syndrome (extreme hypochondriac): whereby one induces factitious illnesses, they are self-fabricated or induced. Researchers believe it is motivated in part for a need for attention. Usually difficult to treat due to patient resistance.
  - Munchausen's Syndrome by proxy: one induces illness in others.
- Leads to the questioning between mental and physical events, between meaning and mechanism
- All psychological processes occur through the interaction of cells in the nervous system
- Human action occurs in the context of cultural beliefs and values that render it meaningful
- Biopsychologists aim at linking the mind and body, the psyche and the brain
  - (LeDoux 1995) Scientists created lesions in one brain structure at a time to understand the function of pathways and the production of emotion (pain in this case)
  - Once this lesion disrupted learning, this area/others connected to it must be involved in fear
  - Localisation of function: (Dr. Marc Dax 1836) started momentum with his paper suggesting the left hemisphere of the brain was in control of language function
- Particular experiences/behaviours reflect patterns of activated cells that are 'wired' together
- The pattern of firing cells determines the meaning of an neural event
- Psychological events (e.g., emotions or thoughts) are distributed throughout the brain, as every part contributes to the total experience
- Behavioural neuroscience has become increasingly prominent in psychology
- Boundary with culture
  - To what extent do cultural differences create psychological differences?
  - Margaret Mead/Ruth Benedict: argued that individual psychology is fundamentally shaped by cultural values, ideals and ways of thinking
  - As children develop, they conform to cultural standards
- Psychological anthropologists, who study psychological phenomena by observing people in their natural environment, began to study the way economic realities shape child-rearing practices, which in turn mould personality
Philosophical roots of Psychology: is human action the product of free will or determinism

Descartes (1596-1650): contended that human action follows from human intention

Psychological determinists actions are determined by physical forces (internally by genetic processes, externally by environmental events)

Mind-body problem: how can a non-material force (will) displace material forces?? (how mental and physical events interact)

Psychologists do not tackle these questions directly

Philosophical issues:

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Philosophical speculation to scientific investigation

Philosophers searched for answers as to the nature of thought, feeling and behaviour in their minds using logic and argumentation

By the 19th century scientific methods seemed to better explain their questions

Wilhelm Wundt (1832-1920): used scientific methods to uncover elementary units of human consciousness that combine to form more complex ideas

Introspection: looking inward and reporting on one’s conscious experience

Wundt trained observers to report verbally on everything that went through their minds when presented with a stimulus

Concluded that the basic elements of consciousness are sensations and feelings

Also the study of myths, religion and language in various cultures were essential for understanding higher mental processes

Structuralism and functionalism

Structuralism and functionalism were the 2 schools of thought

Functionalism emphasised the role/function of psychological processes in helping individuals to adapt to their environment

Functionalist Williams James (1842-1910): introspection and experimentation and the study of children, animals and mentally ill

Interested in explaining (not just describing) the contents of the mind

Structuralism attempted to uncover the basic elements of consciousness through introspection

Perspectives in Psychology

Thomas Kuhn (1970): philosopher of science observed that science does not progress primarily through the accumulation of facts but depends on the development of better and better paradigms

Paradigm: broad system of theoretical assumptions that a scientific community uses to make sense of its domain of study

Components:

1. A set of theoretical assertions that provide a model of the object of study
2. A set of shared metaphors that compare the object under investigation to something else that is readily apprehended (e.g. the mind is like a computer; mental models that make the unfamiliar seem familiar.

3. A set of methods that members of the scientific community agree will produce valid and useful data.
   - Psychology lacks a unified paradigm but has a number of schools of thought (perspectives) that can be used to understand psychological events.
   - **THE 5 PERSPECTIVES:**
     - **Psychodynamic Perspective**
     - Sigmund Freud (1856-1939): theory of mental life and behaviour and an approach to treating psychological disorders (psychoanalysis).
     - 3 Key Premises:
       1. People’s actions are determined by the way thoughts, feelings and wishes are connected in their minds.
       2. Many of these mental events occur outside of conscious awareness.
       3. These mental processes may conflict with one another, leading to compromises among competing motives.
     - Therefore, people are unlikely to know the chain of events that lead to a feeling or behaviour.
     - Due to Freud’s lack of scientific methods to test these hypothesis, these psychodynamic concepts lie outside mainstream psychology.
     - **Origins or psychodynamic perspectives**
     - Freud originated his theory in response to patients whose symptoms were not based on psychological malfunctioning.
     - Freud: If symptoms were not consciously created or maintained, and had no physical basis, their basis must be unconscious.
     - Argued that they had powerful unconscious motives that underlie their conscious intentions.
     - Metaphor of an iceberg: visible tip, large body hidden.
     - Most psychological processes occur outside awareness and the associations between feelings and behaviours or situations that guide our behaviour are expressed implicitly.
     - **Methods and data of the psychodynamic perspective**
     - Aim: to infer underlying wishes, fears and patterns of thought from an individual’s conscious, verbalized thought and behaviour.
     - A clinician will observe patients’ dreams, fantasies, posture and subtle behaviour towards the therapist.
     - Heavily relies on the case study method (in-depth observation of a small number of people).
     - Assumption that people reveal themselves in everything they do.
     - Psychodynamic psychologists are increasingly making use of experimental methods to try to integrate psychodynamic thinking with scientific psychology.
     - **Behaviourist Perspective**
     - Dominated in the middle of the twentieth century.
     - Focuses on the way objects in the environment (stimuli) come to control behaviour through learning.
• Relationship between external events and observable behaviours
• Asserted that the behaviour of humans can be understood entirely without reference to internal states (eg thoughts and feelings)
• Countered Cartesian Dualism (doctrine of dual spheres of mind and body)
• John Watson (1925) claimed that he could control the development of babies by controlling their environments

The Environment and behaviour
• According to behaviourists, psychologists cannot study conscious thoughts as only the subject has access to them
• Method: study observable behaviours and environmental events and build a science around the way people and animals behave
• Today they believe that mental events do not play a causal role in human affairs
• Rather, mental processes are by products of environmental events
• Metaphors, methods and data of behaviourism
• Not particularly interested in how the brain processes a though but what can be observed
• Experimental: framing a hypothesis and building an experiment around it
• The data can be measured quantitively, experimenters can test the accuracy of their predictions and then apply them to practical situations

BEHAVIOUR FOLLOWS ITS CONSEQUENCES
• Empiricism: the belief that the path to scientific knowledge is systematic and experimental observation

Humanistic Perspective
• Focuses on the uniqueness of the individual
• Self-actualisation: idea that people are motivated to reach their full potential
• Represents an optimistic view of human experience
• Think about bodybuilding!!
• Assumes that people are innately good and will almost always choose adaptive, goal-directed and self actualizing behaviours
• Metaphors, methods and data of the humanistic perspective
• Humanistic theorists believe that people are not powerless victims of external forces but have an innate desire to improve themselves
• Approach is very person-centred and relies on the therapists empathy
• Idea is to treat people with respect and warmth, stressing every individual’s freedom to make their own choices in life
• Behaviour can be modified to by helping people to become more self-aware and self-directed in life
• Data of humanistic theory include the thoughts, motives and actions that reflect a person’s inner drive to realise their full potential
• Behaviour is determined by the way in which people perceive their own worlds
• Humanistic theorists believe that people experience problems when there is a discrepancy between self-concept and the ideal self (eg expectations exceed our achievements)
• Focuses on people’s immediate experience

Cognitive Perspective
Cognition (thought) dominates psychology today

Cognitive perspective: the way people perceive, process and retrieve information

Cognitive psychologists are interested in how memory works, how people solve problems and make decisions, and similar questions

Computer metaphor: thinking (information processing), environment provides inputs, which are transformed, stored and retrieved using various mental 'programs'

Memory system is also like the computer database

Researchers can either:
1. Ask a question: eg Do you remember seeing this object?
2. See how quickly a person can name an object they saw some time before

Our memory system puts the more recent information at the front of our memory, thus response time is a useful measure of memory

Cognitive memory is useful in understanding processes (decision making)

Origins of the cognitive perspective

Initially raised by a series of questions as to where knowledge comes from

Aristotle: emphasised the role of experience in generating knowledge

Locke: proposed complex ideas arise from the mental manipulation of simple ideas and these ideas are products of the senses

Cognitive philosophers are interested in the questions raised by Descartes and other rationalist philosophers; role of reason in creating knowledge

Belief that concepts are derived from experience, but often differ from any particular instance the person has ever perceived, which means they must be mentally constructed

Metaphors, methods and data of cognitive psychology

Differentiated from behaviourists as it noted the mental programs that produce output

An idea can be conceived as a network of brain cells that are activated together

Committed to empiricism and experimental methods

Use experimental procedures to infer mental processes at work

Evolutionary Perspective

Nature and nurture controversy

Argues that many behavioural tendencies in humans evolved because they helped our ancestors survive and rear healthy offspring

Like functionalists, evolutionary psychologists believe that most enduring human attributes at some time served a function for humans as biological organisms

Origins of the evolutionary perspective

Natural selection (Charles Darwin)

Adaptive traits: characteristics that help organisms to adjust and survive in their environment

Because adaption is always relative to a specific niche, evolution is not synonymous with progress

Ethology, sociobiology and evolutionary psychology
Burton: Chapter 5

CONSCIOUSNESS

- Consciousness: the subjective awareness of mental events
- James (1890): consciousness is like a constantly moving stream of thoughts, feelings and perceptions
- 2 Functions of consciousness:
  1. It monitors the self and the environment
  2. Regulates thought and behaviour
- The control function of consciousness allows for people to initiate and terminate thought and behaviour in order to attain goals
- Consciousness monitors both the inner and outer experiences to prevent and solve problems
- Consciousness is often exercised by things that are unexpected, unusual, contradictory or contrary to expectations
• States of consciousness are qualitatively different patterns of subjective experience
• Neuroimaging suggests that the dorsolateral prefrontal cortex, which is involved in working memory and conscious decision making, is activated when people exercise conscious control (eg Stroop task)
• Stroop task leads to activation of the dorsolateral prefrontal cortex
• The anterior cingulate becomes active when the colour of the ink and the work conflict but not when the colour of the ink is congruent with the word
• Hence, the anterior cingulate is involved in consciously regulating conflicting cues and perhaps in inhibiting responses that are incorrect
• James: consciousness is often grabbed by things that are unexpected, unusual or contradictory (Stroop task), or contrary to expectations - the things that could affect wellbeing or survival
• Consciousness and attention
• Attention refers to the process of focusing conscious awareness, providing heightened sensitivity to a limited range of experience requiring more extensive information processing
• Usually guided by both external stimulation and our own personal goals
• Some psychologists liken attention to a filtering process through which only important information passes
• Cocktail party phenomenon: hearing someone mention your name across the room, suggests that we implicitly process much more information than reaches consciousness
• Mind wandering: occurs when our conscious thoughts do not remain on topic and our brain processes additional, unrelated sensory information
• This is a stable cognitive trait that can increase with stress, boredom, or sleepiness; it decreases with concentration, effort, successful, enjoyable tasks or happiness
• Selective inattention: diverting attention from information that may be relevant but emotionally upsetting
• Components of attention:
  1. Orienting to sensory stimuli: involves turning sensory organs, such as the eye, towards a visual stimulus
  2. Controlling behaviour and contents of consciousness: to notice something consciously, unconscious attentional mechanisms have to alert us to its potential significance, such as listening when someone talks
  3. Maintaining alertness: wide range of tasks that involve prolonged alertness
• Divided attention: attention is split between 2 complex tasks
• Measured through dichotic listening tasks: participants are fitted with earphones, and different information is simultaneously presented to the left and right ears
• The normal flow of consciousness
• Daydreaming: turning the attention away from external stimuli to internal thoughts and imagined scenarios
• Normal flow of consciousness is studied through experience **sampling techniques**: participants report on the contents of consciousness at specific times
• Beeper studies: experience-sampling technique that has provided a more natural window to the flow of consciousness in everyday life; participants report their conscious experiences at various points throughout the day via a ‘beeper’
• Herbert (2007) found that students minds would wander when overtaxed by tasks, rather than when they were bored

**Psychodynamic unconscious**
1. Conscious mental processes: involve subjective awareness of stimuli, feelings or ideas
2. Preconscious mental processes: are not presently conscious but could be readily brought to consciousness if the need arose
3. Unconscious mental processes: are inaccessible to consciousness because they would be too anxiety provoking to acknowledge and thus have been repressed
• Negative thoughts may be repressed, making them dynamically unconscious (kept unconscious for a reason)
• Freud believes keeping mental thoughts out of awareness requires continuing psychological effort
• He also noted that many psychological processes are descriptively unconscious: unconscious even though they are non-threatening

**Subliminal perception**
• Perception of stimuli below the threshold of consciousness
• Recent development has demonstrated that subliminal presentation of stimuli can influence thought and emotion
• Various examples in the past decades, like the Simpsons :P

**Unconscious emotion and motivation**
• Research suggests that a distinction between conscious and unconscious motivational systems similar to the distinction between implicit and explicit memory in cognitive psychology
• People can be primed to achieve these implicit motives
• Psychodynamic hypothesis that individuals can respond emotionally to people or situations without knowing why

**The cognitive unconscious**
• Refers to information-processing mechanisms that operate outside of awareness (such as implicit memory) rather than information the person is motivated to keep from awareness
• Most information-processing models distinguish between explicit (conscious) and implicit (unconscious) memory and cognition, such as conscious problem-solving strategies versus automatic, unconscious heuristics
• The brain synthesizes a unitary conscious experience from the various activated unconscious networks, highlighting those that best fit the data

**The functions of conscious and unconscious processes**
• Unconscious processes, notably skills and associative processes such as priming and classical conditioning, are extremely fast and efficient
Since they are based on learning, they tend to lead to adaptive responses that make sense in the light of observed regularities in the environment.

The unconscious processes can operate simultaneously.

Yet conscious processes can only form one 'scene' in our minds at one time.

Yet conscious processes are more flexible than the unconscious, as the consciousness is not limited to quasi-independent networks operating in parallel in their own small domains, consciousness can survey the landscape and consider the big picture.

When conscious goals are active, they spread extra activation to networks associated with goal attainment.

Neuropsychology of consciousness

An integrated view suggests that consciousness is a specialised processing function that monitors and controls current sates for the purpose of maximising adaptation.

Consciousness thus highlights or inhibits information based on its relevance to adaptation and its emotional consequences.

Consciousness involves a network of neurons distributed throughout the brain.

Damage to the hindbrain structures, particularly the reticular formation, can lead to a complete loss of consciousness.

The neural networks that ‘shine a spotlight’ on perceptions, thoughts, emotions or goals at any moment appear to involve the prefrontal cortex, the thalamus and midbrain regions of the reticular formation.

Blindsight

In blind patients, they tend to have lesions to the primary visual cortex in the occipital lobes, a region central to vision sensation.

When asked to give an objects location or shape, they do so with accuracy far better than chance.

A hypothesis for this involves 2 neural pathways involved in vision.

1. Neurons of the optic nerve carrying sensory information project to the thalamus via the optic tract; then the information is transmitted to the primary visual cortex in the occipital lobes. This is responsible for visual perception and for determining the precise nature of stimuli.

2. Neurons carrying information from the retina project to the midbrain structure responsible for vision. Then the information passes through the thalamus and eventually to the cortex.

In blindsight the 2nd pathway seems to allow some visual processing at the midbrain level, even though the 1st pathway is unoperational.

Thalamic processing may also permit some recognition of what an object is, even though this knowledge cannot be consciously accessed.

The state of simply being conscious most significantly requires the hindbrain, midbrain structures, especially the reticular formation.

Patients undergoing anaesthesia tend to have reduced activity in the midbrain and the thalamus, which plays an important role in conscious awareness.

The pons and medulla are involved in regulating states of conscious arousal.
Consciousness is distributed across a number of neural pathways, most of them found in the cortex as well as the reticular formation and the thalamus. The reticular formation extends throughout the hindbrain and sends axons through the midbrain. These fibres then synapse with nuclei in the thalamus, which in turn synapse with parts of the cortex. The prefrontal cortex is involved with momentarily storing, manipulating or calling up information from various senses into working memory and hence making them conscious. The Necker cube produces 2 distinct conscious percepts that depends on subjectivity, which is independent of V1.

- **Sleep and dreaming**
- Ideally, one should take 10-15 mins to fall asleep
- Chronic sleep deprivation is related to high levels of psychological distress

- **Circadian rhythms**
- The cycle of sleep and waking in humans and other animals, like the ebb and flow of body temperature, hormones and other life support processes is a circadian rhythm
- This is a biological process that evolved around the daily cycles of light and dark
- Largely controlled by the hypothalamus, a special neural tract that projects from the retina to the hypothalamus responds only to relatively intense light
- During darkness, the brain produces melatonin which influences sleep and sexual arousal
- Melatonin supplementation can trick the body into inducing sleep

- **Sleep deprivation**
- Sleep appears to be essential to both physical and emotional wellbeing
- Research suggests that this is associated with impaired immune and motor function and psychological problems such as memory and attention deficits
- Insomnia in Australia is the second most common medical problem
- Sleeping tablets are problematic as they do not address the cause of insomnia

- **Stages of sleep**
- Measured via EEG: as people move from a wakening state to a sleep state, their brainwaves become slower and more rhythmic
- Awake: 14 cps (cycles per second) to deep sleep: 0.5 cps

- **Early stages of sleep**
- An awake brain has an irregular pattern with high mental activity, called beta waves
- As people close their eyes and relax, alpha waves emerge, signaling a slowing of mental activity and a transition into sleep

1. **Stage 1:** sleep is brief (for a few minutes), theta waves. Eye movements slow, muscles relax and blood pressure drops