PSYC1102 Psychology: Behaviour in Context

End-of-Semester Examination Notes
CHAPTER 9 LANGUAGE AND THINKING

PART 9.1 | LANGUAGE

- Mental representations – include images, ideas, concepts and principles.
- Language – a system of symbols and rules for combining these symbols in ways that can generate an infinite number of possible messages and meanings.
- Psycholinguistics – the scientific study of the psychological aspects of language.

- Language use evolved as humans adopted a more socially oriented lifestyle and formed larger social units.
    - Divisions of labour
    - Cooperative social systems
    - Developing social customs
    - Communicating thoughts
    - Passing down knowledge
- Physical characteristics → highly developed brain, FOXP2 gene, a vocal tract → flexible speech → language.

- 4 essential properties to any language:
    - Symbol
    - Structure
    - Meaning
    - Generativity
    - Displacement (fifth)
- Language is symbolic and structured:
    - Grammar – the set of rules that dictate how symbols can be combined to create meaningful units of information.
    - Syntax – the rule that govern the order of words.
- Language conveys meaning:
    - Semantics – the meaning of words and sentences.
    - Can be difficult with idioms – "I nailed the test".
- Language is generative and permits displacement:
    - Generativity – the symbols of language can be combined to generate an infinite number of messages that have novel meaning.
    - Displacement – the fact that language allows us to communicate about events and objects that are not physically present.

- Surface structure and deep structure:
    - Surface structure – consists of the symbols that are used and their order.
    - Deep structure – the underlying meaning of the combined symbols.

- Sentences can differ in surface structure but have the same deep structure, e.g.:
  - Sam ate the cake.
  - The cake was eaten by Sam.
  - Eaten by Sam the cake was.
- Double entendre – a single surface structure gives rise to two deep structures.
- Listening – surface → deep.
- Expressing – deep → surface.

- The hierarchal structure of language:
  - Phoneme – the smallest unit of speech sound in a language that can signal a difference in meaning.
    - Sounds, e.g. a, t, th, sh etc.
  - Morphemes – the smallest units of meaning in a language.
    - Formed by combining phonemes.
    - Includes roots, prefixes, suffixes and 's' at the end of words meaning plural (also includes -ed, -ing etc.).
  - Words
  - Phrases
  - Sentences
  - Discourse – in which sentences are combined into paragraphs, articles, books, conversations and so forth.
    - Sixth and most comprehensive level.

- Bottom-up processing – individual elements of a stimulus are analysed and then combined to form a unified perception.
- Top-down processing – sensory information is interpreted in light of existing knowledge, concepts, ideas and expectations.
- Speech segmentation – perceiving where each word within a spoken sentence begins and ends.
- Use of top-down cues to tell when one spoken word ends and another begins.

- Pragmatics – a knowledge of the practical aspects of using language.
  - A good example of top-down processing during communication.
  - E.g. "Do you have the time?"
    - What time is it?
    - Are you free?
    - Context dependent
  - Also, using formal or informal language given the context → lecturer vs. friends.
  - E.g. "the sleeping policeman" when given directions
    - Pragmatics suggest that it can't be a policeman on the road.
    - In England, pragmatics may suggest it is a pub.
    - Sadly, the guy who gave you directions meant speed bump – the sleeping policeman was a local idiom.
    - He violated the rule of clarity.

- Broca's area – left hemisphere's frontal lobe – most centrally involved in word production.
- Wernicke's area – rear portion of temporal lobe – more centrally involved in speech comprehension.
- Damage to one or both areas:
  - Aphasia – an impairment in speech comprehension and/or production.
    - Can be permanent or temporary.

PSYC1102 Psychology: Behaviour in Context

End-of-Semester Examination Notes
CHAPTER 10 INTELLIGENCE

- Intelligence – the ability to acquire knowledge, to think and reason effectively and to deal adaptively with the environment.

PART 10.1 | INTELLIGENCE IN HISTORICAL PERSPECTIVE

- Sir Francis Galton – first to posit a relationship between biological variables and intelligence.
- Alfred Binet:
    - 2 assumptions:
        - Mental abilities develop with age.
        - Rate of mental competence gain is a characteristic of the person and is fairly awkward.
    - Score of mental age: age that defies mental competence.
- William Stern – intelligence quotient (IQ) – ratio of mental age to chronical age, multiplied by 100.
    - We no longer use mental age and the use of chronical age is troubling.
    - Modern IQ – a person's performance relative to the scores of other people the same age, with a score of 100 corresponding to the average performance of that group.
- Lewis Terman – Stanford-Binet – mostly verbal items and yields a single IQ score.
- Army alpha – verbally oriented test → army beta – using non-verbal instruments for recruits unable to read.
- Eugenics – the idea that children with lower IQs were genetically inferior.
- David Wechsler – Stanford-Binet relied too much on verbal skill. Intelligence should be measured as a group of distinct but related verbal and non-verbal skills.

PART 10.2 | THE NATURE OF INTELLIGENCE

- Psychometrics – the statistical study of psychological tests.
- Factor analysis – reduces a large number of measures to a smaller number of clusters, or factors, with each cluster containing variables that correlate highly with one another but less highly with variables in other clusters.
- Charles Spearman – intellectual performance is determined partly by a g factor – general intelligence (the core of intelligence) – and partly by whatever special abilities might be required to perform that particular task.
- LL Thurstone – human mental performance depends not on a general factor but rather on 7 distinct abilities called primary mental abilities.
    - S – space
    - V – verbal comprehension
    - W – word fluency
    - N – number facility
    - P – perceptual speed
    - M – rote memory
    - R – reasoning
    - Educators fond this notion more attractive → more interested in identifying the specific mental skills involved in learning subjects such as reading, mathematics and science.
- Raymond Cattell and John Horn – broke down general intelligence:

- Crystallised intelligence – the ability to apply previously acquired knowledge to current problems.
- Fluid intelligence – defined as the ability to deal with novel problem-solving situations for which personal experience does not provide a solution.
  - Involves inductive reasoning and creative-problem solving.
  - it is dependent on the primarily on the efficient functioning of the CNS rather than to prior experience and cultural context.
  - Because long-term memory remains strong even as we age, performance on tests of crystallised intelligence improves during adult hood and remains stable well into late adulthood.
  - Performance on tests of fluid intelligence begins to decline as people enter late adulthood.

- John B Carroll – three-stratum theory of cognitive abilities – establishes three levels of mental skills – general, broad and narrow – arranged in a hierarchal model.
  - Top – Stratum III (general) → g factor
  - Middle – Stratum II (broad) → 8 broad intellectual factors arranged in its extent to which they are influenced with g.
    - Fluid intelligence → crystalline intelligence → broad abilities (e.g. memory and learning).
  - Bottom – Stratum I (narrow) → nearly 70 highly specific cognitive abilities.

- Cognitive process theories – explore the specific information processing and cognitive processes that underlie intellectual ability.
- Robert Sternberg – triarchic theory of intelligence – addresses both the psychological processes involved in intelligent behaviour and the diverse forms that intelligence can take.
  - Metacomponents – the higher-order processes used to plan and regulate task performance.
    - Fundamental sources of individual differences in fluid intelligence.
    - Intelligent people spend more time framing problems and developing strategies.
  - Performance components – the actual mental processes used to perform the task.
  - Knowledge-acquisition components – allow us to learn from our experiences, store information in memory and combine new insights with previously acquired information.
    - Underlie individual differences in crystallised intelligence.
  - More than one kind of intelligence → environmental demands call for 3 different classes of adaptive problem solving.
    - Analytical intelligence – involves the kinds of academically oriented problem-solving skills measured by traditional intelligence tests.
    - Practical intelligence – refers to the skills needed to cope with everyday demands and to manage oneself and other people effectively.
    - Creative intelligence – comprises the mental skills needed to deal adaptively with novel problems.

- Seeing intelligence as independent intelligences vs mental competence.
- Howard Gardner – multiple intelligences:
  - Linguistic
  - Logical-mathematical
  - Visuospatial
  - Musical
  - Bodily-kinaesthetic
  - Interpersonal
  - Intrapersonal
  - Naturalistic
  - Existential (speculated)

PSYC1102 Psychology: Behaviour in Context

End-of-Semester Examination Notes
CHAPTER 12 DEVELOPMENT OVER THE LIFESPAN

PART 12.1 | MAJOR ISSUES AND METHODS

- 4 broad issues guide developmental research:
    - Nature and nurture – to what extent is our development the product of heredity (nature) and of environment (nurture)?
    - Sensitive and critical periods – Are some experiences especially important at particular ages?
        - Sensitive period – an optimal age range for certain experiences, but if those experiences occur at another time, normal development is still possible.
        - Critical period – an age range during which certain experiences must occur for development to proceed normally or along a certain path.
    - Continuity versus discontinuity – Is development continuous and gradual, or is it discontinuous (stages)?
    - Stability versus change – how consistent are our characteristics as we age?

- Cross-sectional design – comparison of people of different ages at the same point in time.
- Longitudinal design – repeatedly tests the same cohort as it grows older.
- Sequential design – combines the cross-sectional and longitudinal approaches.

PART 12.2 | PRENATAL DEVELOPMENT

- Zygote – fertilised ovum.
- Embryo – develops from the end of week 2 through to week 8 after conception.
- Foetal stage (foetus) – from week 9 after conception until birth.
- Teratogens – external agents that cause abnormal prenatal development.
    - Foetal alcohol spectrum disorders (FASD) – involve a range of mild to severe cognitive, behavioural and/or physical deficits caused by prenatal exposure to alcohol.
        - Foetal alcohol syndrome (FAS) – involves a cluster of severe developmental abnormalities.

PART 12.3 | INFANCY AND CHILDHOOD

- Robert Fantz – preferential looking procedure – study infants' visual preferences.
    - Infants looked longer at complex patterns to simple patterns and colours.
- Neonates are equipped with reflexes – automatic, inborn behaviours that occur in response to specific stimuli (e.g. rooting reflex, sucking reflex).
    - Neonates habituate to repeated, non-threatening stimuli.
    - They can acquire classically conditioned responses.
    - Reproduce a simple facial expression made by an adult model (imitation).

- Maturation – the genetically programmed biological process that governs our growth.

- Cephalocaudal principle – reflects the tendency for development to proceed in a head-to-foot direction.
- Proximodistal principle – states that development begins along the innermost parts of the body and continues towards the outermost parts.
- The brain increases in density of neural networks followed by pruning under the influence of experience during early childhood.
- Epigenetics – suggests the environmental factors can have an even more powerful effect.
- 3 points that apply to human development:
    - Biology sets limits on environmental influences.
    - Environmental influences set limits on biology.
    - Biological and environmental factors interact.

- Jean Piaget – Piaget's stage model:
    - Piaget viewed children as natural-born scientists:
    - The brain builds schemas – organised patters of thought and action.
    - Cognitive development occurs as infants acquire new schemas and elaborate existing schemas.
        - Assimilation – the process by which new experiences are incorporated into existing schemas.
        - Accommodation – the process by which new experiences cause existing schemas to change.
    - 4 major stages of cognitive growth:
        - Sensorimotor stage – birth-2 y.o. – infants understand their world primarily through sensory experiences and physical interactions with objects.
            - For young infants 'out-of-sight' literally means 'out-of-mind'.
            - 8 months – object permanence – the understanding that an object continues to exist even when it can no longer be seen.
        - Preoperational stage – 2-7 y.o. – they represent the world symbolically through words and mental images but do not yet understand basic mental operations or rules.
            - They do not understand conservation – the principle that basic properties of objects, such as their volume, mass or quantity, stay the same even when their outward appearance changes.
            - 4 y.o. – irreversibility – it is difficult for them to reverse an action mentally.
            - Egocentrism – difficulty in viewing the world from someone else's perspective.
                - Not 'selfish' but that others perceive things the same way as they do.
        - Concrete operational stage – 7-12 y.o. – they can perform basic mental operations concerning problems if they involve tangible objects and situations.
        - Formal operational stage – 12+ – individuals can think logically about concrete and abstract problems, form hypotheses and systematically test them.
    - Tests conducted globally suggest:
        - 1 – The general cognitive abilities suggested by Piaget's four stages occur in the same order across cultures.
        - 2 – Children acquire many cognitive skills and concepts earlier than Piaget believed.
        - 3 – Cognitive development within each stage seems to proceed unevenly.
        - 4 – Culture influences cognitive development.
    - Zone of proximal development – the difference between what a child can do independently and what the child can do with assistance from adults or more-advanced peers.
    - Information-processing approaches:
        - Information-search strategies:
            - 3-10 y.o. often fail to compare differences between 2 complex images.
        - Processing speed, attention and response inhibition: