
# PSYC 1010
# Exam-AID
# Review Package 3

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# Preface

This document was created by the York University chapter of Students Offering Support (York SOS) to accompany our PSYC 1010 Exam-AID session. It is intended for students enrolled in any section of Dr. Jubis‟ 2010/2011 PSYC 1010 course who are looking for an additional resource to assist their studies in preparation for the exam.

# References

Weiten, W., & McCann, D. (2010). *Psychology: Themes and variations* (2nd Canadian ed.). Toronto, ON: Nelson.

# Contents



# What is Students Offering Support?

Students Offering Support is a national network of student volunteers working together to **raise** funds to **raise** the quality of education and life for those in developing nations through **raising** marks of our fellow University students.

This is accomplished through our Exam-AID initiative where student volunteers run group review sessions prior to a midterm or final exam for a $20 donation.

All of the money raised through SOS Exam-AIDs is funneled directly into sustainable educational projects in developing nations. Not only does SOS fund these projects, but SOS volunteers help build the projects on annual volunteer trips coordinated by each University chapter.

# Tips for General Midterm Success

***Use mnemonics to remember concepts better***. An example of a mnemonic would be acronyms. For instance, knowing the word “ocean” can help you remember the Big Five personality traits: **o**penness to experience, **c**onscientiousness, **e**xtraversion, **a**greeableness and **n**euroticism.

***Do practice multiple choice questions***. Doing these practice questions can assess your understanding of what you‟ve learned and can help you identify areas of weakness. Practice multiple choice questions are found in textbooks, on textbook companion websites, and/or provided by your professor. *Psychology: Themes and Variations* has practice questions in it and on its online companion website (http://www.themesandvariations2ce.nelson.com/student/chapter/).

***Read a multiple choice question and try to answer it BEFORE looking at the possible answers***. Having an answer in mind before looking at possible answers can reduce the chances of being fooled by wrong answers.

***Use logic and process of elimination on multiple choice questions***. For example, if you know that answer A is wrong, then logically an answer “A and B are correct” in the same question must also be incorrect. When you don‟t know the answer, eliminating wrong answers (as opposed to just random guessing) can increase your chances of getting the question right.

***Practice writing answers to short answer questions***. If you know ahead of time what the questions will be on the short answer section, make a list of essential points you want to include in each answer and practice writing the answer on paper. If you don‟t know what questions will be on the short answer section, you could try scanning the material to identify concepts that have enough content to be a possible short answer question. Again, you can make a list of essential points you want to include in each answer and practice writing the answer on paper. Even if the question you thought of doesn‟t show up on the short answer section, doing this can help solidify what you learned.

***Don’t spend too much time on a difficult question***. It is better to move onto easier questions to ensure getting those marks than to get hung up on a difficult question, especially when time is limited.

***Get adequate sleep the night before your test***. Sleeping at night helps consolidate what you learned during the day into memory so that it is better remembered in future. Not only does staying up late the night before a test destroy your concentration during the test the next day, but your brain has not effectively learned the material.

# Chapter 7: Human Memory

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## Introduction

**Encoding**: forming a memory code
**Storage**: maintaining encoded information over time
**Retrieval**: recovering information from memory stores

### Encoding: Getting Information into Memory

*Next-in-line Effect*: tendency to forget much of what was said before they took their turn speaking

**Attention**: focusing awareness on a narrowed range of stimuli or events

- linked to a *filter* that screens out most potential stimuli while allowing a few select stimuli to pass through to consciousness awareness
- filter found in early (during sensory input) or late (after brain processing)?
    - evidence for both, therefore filters assumed to be not fixed, but flexible between 2 extremes
- people experience large reduction in memory performance when dividing attention between memory encoding and other tasks
    - as well as task performance when attention divided among several tasks
        - e.g. driving while conversing on cell phone
- information can be acquired through effort, but as well as automatically

**Levels of Processing**

- not all attention is equal
- **levels-of-processing theory**: proposes deeper levels of processing result in longer-lasting memory codes
    - **shallow processing** (*structural encoding*): physical structure of stimuli
    - **intermediate processing** (*phonemic encoding*): what a word sounds like
    - **deep processing** (*semantic encoding*): meaning of the verbal input
- deeper processing leads to enhanced memory
- length of time is not reliable in determining level of processing

**Enriching Encoding**

- **elaboration**: linking a stimulus to other information at the time of encoding
- **visual imagery**: creation of visual images to represent the words to be remembered
    - concrete images easier to encode than abstract (e.g. ‘juggler’ easier to encode than ‘truth’)

    - **dual code theory**: memory is enhanced by forming semantic and visual codes, since either can lead to recall
- **self-referent encoding**: deciding how or whether information is personally relevant
    - enhances recall by promoting additional elaboration and better organization of information

## Storage: Maintaining Information in Memory

**Sensory Memory**: preserves information in its original sensory form for a brief time, usually only a fraction of a second

- allows sensation of visual patterns (as *afterimage*, like sparkler), sound or touch to linger
- retention of sensory input quickly loss if not acted upon

**Short-Term Memory** (**STM**): limited-capacity store that can maintain unrehearsed information for up to about 20 seconds

- store STM indefinitely through **rehearsal**: process of repetitively verbalizing or thinking about information
    - e.g. repeating a phone number you're about to dial
- duration of STM has been found to be shorter with different approaches
- loss of information due to *decay* as well as *interference* from competing material
- George Miller pointed out that people can recall only about 7 items in task with unfamiliar material
- increase capacity of STM by combining stimuli into larger, possibly higher-order units called **chunks**: group of familiar stimuli stored as a single unit
    - easier to recall chunks when related with information from long-term memory
- considered now as **working memory** (more responsibility):
    - STM found to be not limited to phonemic encoding
    1) *phonological rehearsal loop*: *represented STM in earlier model*
    2) *visuospatial sketchpad*: *permits people to temporarily hold and manipulate visual images*
    3) *executive control system*: controls deployment of attention
    4) *episodic buffer*: temporary, limited-capacity store that allows various components of working memory to integrate information and serves as interface between working memory and long-term memory

**Long-Term Memory** (**LTM**): unlimited capacity store that can hold information over lengthy periods of time

- 1 theory suggests information is permanently stored in LTM
    - forgetting results from inability to retrieve information

    - e.g. patients recall long lost memories through electrical stimulation of brain
- **flashbulb memories**: unusually vivid and detailed recollections of momentous events (e.g. 9/11, people can recall where they were, etc.)
    - closer scrutiny shows:
        - long lost memories show distortions and impossibilities
        - flashbulb memories become less detailed and complete and are often inaccurate
- no convincing evidence as of yet

**Are Short-Term Memory and Long-Term Memory Really Separate?**

- sensory memory may be nothing more than perceptual process
- separation of STM and LTM based on different encoding
    - STM : phonemic encoding and forgetting due to decay; LTM: semantic encoding and forgetting due to interference
    - STM found to have elements of LTM
- other view: STM is tiny and changing portion of LTM
- radical view: 1 single, unitary memory store

Organization of Memory

- **conceptual hierarchies**: multilevel classification system based on common properties of items
    - **clustering**: tendency to remember similar or related items in groups
- **schemas**: organized cluster of information about an object or event abstracted from previous experience with the object of event
    - e.g. recalling things in things in the office that weren't there, but they're associated with the office
    - relational schemas: regularities associated with social settings
- **semantic networks**: consists of concepts joined by pathways of linking related concepts
    - ovals represent nodes, shorter lines = closer relationships
- **connectionist networks** or **parallel distributed processing** (**PDP**) models: assume that memories consist of patterns of activation in connectionist networks that resemble neural networks
    - differs from semantic network because piece of knowledge is represented by a particular pattern of activation across an entire network

## Retrieval: Getting Information Out of Memory

Using Cues to Aid Retrieval

- **tip-of-the-tongue phenomenon**: temporary inability to remember something you know, accompanied by the feeling that it's just out of reach (increases with age)
- people can partially remember what they're trying to recall

- memory can be jogged by retrieval cues

Reinstating the Context of an Event
- **encoding specificity principle**: better memory for information when conditions during encoding and retrieval are similar
- **context cues** often facilitate retrieval of information (putting yourself back in the situation)
- *mood* and *state* during encoding affect retrieval efforts
    - e.g. if you were enraged, intoxicated, etc.

Reconstructing Memories and the Misinformation Effect
- memories are sketchy reconstructions of the past that can be distorted (due to schemas)
- **misinformation effect**: recall of an event is changed by misleading postevent information
    - e.g. witness accounts in court

Source Monitoring and Reality Monitoring
- **source monitoring**: process of making attributions about the origins of memories (trying to pinpoint when something occurred)
- **source-monitoring error**: occurs when memory derived from 1 source is misattributed to another source
    - explains *cryptomnesia*: inadvertent plagiarism
- **reality monitoring**: process of deciding whether memories are based on external sources (one's perception of actual events) or internal sources (one's thought and imagination)

## Forgetting: When Memory Lapses

How Quickly We Forget: Ebbinghaus's Forgetting Curve
- Hermann Ebbinghaus conducted forgetting research on himself using nonsense syllables
- determined **forgetting curve**: graphs retention and forgetting over time
- concluded most forgetting occurs very rapidly after learning something
- important to remember he worked with meaningless material and his curve is very steep

Measures of Forgetting
- **retention**: refers to proportion of material retained (remembered), kinds:
    - **recall measure**: subjects reproduce information on their own without cues
    - **recognition measure**: subjects select previously learned information from an arrow of options (e.g. multiple choice questions)
        - tendency to be easier than recall measure (difficulty varies)

    - **relearning measure**: subject memorizes information a second time to determine how much time or how many practice trials are saved by having learned it before

Why We Forget

- *pseudoforgetting*: forgot something you never really learned (due to lack of attention)
    - due to ineffective encoding
    - e.g. penny design
    - e.g. studying textbook while doing something else, you could just be reading it outloud (phonemic encoding, which is inferior to semantic encoding)
- **decay theory**: forgetting occurs because memory traces fade with time (found in sensory input, STM, not evidence supporting LTM)
- **interference theory**: people forget information because of competition from other material
    - decreasing similarity of material should reduce interference
    - types:
        - **retroactive interference**: new information impairs retention of previously learned information
        - **proactive interference**: previously learned information interferes with retention of new information
- **retrieval failure**: failure in the process of retrieving
    - **encoding specificity principle**: states value of retrieval cue depends on how well it corresponds to the memory code
    - **transfer-appropriate processing**: initial processing of information is similar to the type of processing required by subsequent measure of retention
        - poor fit between processing done during encoding and the processing invoked by the measure of retention
- **motivated forgetting**:
    - **repression**: keeping distressing thoughts and feelings buried in unconscious

**Repressed Memories Controversy**

- recent years show surge of reports of recovered memories of previously forgotten sexual abuse in childhood
- psychologists and psychiatrists assert sexual abuse in childhood is far more widespread than most people realize
- abuse is repressed and sometimes later the individual experiences amnesia for the abuse
    - evokes coping efforts in parents in an attempt to block awareness of abuse
    - study is debatable: women could have lied due to embarrassment, normal forgetfulness, etc.

- critics blame a minority of therapists for using the power of suggestion to attribute al psychological problems to child abuse, implanting false memories
- important to remember that some cases are authentic
- experiments show it is easy to create memory illusions (false memories)
- many memories of abuse recovered:
    - under hypnosis: promotes distortions
    - dream interpretation: subjective
- rebuttals:
    - experiments deal with insignificant memories
    - implantation of entire multiple scenarios?

**In Search of the Memory Trace: Physiology of Memory**

The Biochemistry of Memory

- one study showed memory formation due to alterations in synaptic transmission at specific sites (performed on sea slugs)
- hormonal changes can either facilitate or impair memory
    - theory that hormones modulate activity in amygdala and neurotransmitter systems
    - other study suggests adequate protein synthesis necessary for memory formation

The Neural Circuitry of Memory

- may be possible to map out specific neural circuits that correspond to at least some types of specific memories
    - **long-term potentiation** (**LTP**): long-lasting increase in neural excitability at synapses along a specific neural pathway
    - memory formation may stimulate neural growth and emergence of new neural circuits (additional synapses)

Anatomy of Memory

- *hippocampal area* damaged first in Alzheimer's disease
    - explains memory loss
- many agree hippocampus and adjacent areas plays key role in **consolidation**: hypothetical process involving gradual conversion of information into durable memory codes stored in LTM
    - hippocampus does not store memories, memories widely distributed in cortex
- theorists who've been influenced by parallel distributed processing (PDP) suggest hippocampal area binds individual elements of a specific memory (organizing neural networks)
- recent research suggests amygdala seems to be critical to the formation of memories for learned fears
- central executive of working memory may be situated in prefrontal cortex

## Systems and Types of Memory

**1) Implicit versus Explicit Memory**:

- amnesiacs displayed long-term retention but they have no LTM (implicit memory)

**Implicit memory**: apparent when retention is exhibited on a task that does not require intentional remembering (unconscious and unaffected by age, drugs, amnesia, etc.)
**Explicit memory**: requires intentional remembering (conscious)
Reason?:
1. different cognitive processes encode and retrieve for either memories
2. either memories handled by independent memory systems

**2) Declarative versus Procedural Memory**:
**Declarative memory system**: handles factual information
**Procedural memory system**: houses memory for actions, skills, operations, and conditioned responses (some believe it to be connected to implicit memory because it is unconscious)

**3) Semantic versus Episodic Memory**:

- some amnesiacs forget only episodic or only semantic memories

**Episodic memory system**: made up chronological, or temporary dated, recollections of personal experiences (e.g. watching Star Wars)
**Semantic memory system**: contains general knowledge that is not tied to the time when the information was learned (e.g. remembering Christmas is on Dec. 25)

**4) Prospective versus Retrospective Memory**:

- influenced by the type of task: habitual or infrequent
- some require cues (time or event-based)

**Prospective memory**: remembering bearing to perform actions in the future
**Retrospective memory**: remembering bearing events from the past or previously learned information

## Featured Study: The Neuroscience of Time Travel

**Constructive Episodic Simulation hypothesis**: remembering past and simulating hte future should draw on similar kinds of information from episodic memory and utilize similar types of neural processes

Results

- brain imaging indicated considerable overlap in the brain regions that were active in remembering the past and imagining the future for the construction phase (thinking of an event) and elaboration phase (explaining the event)

**Personal Application: Improving Everyday Memory**

**Mnemonic devices**: methods used to increase the recall of information
- **overlearning**: continued rehearsal of material after apparent mastery
- **serial-position effect**: occurs when subjects show better recall for items at the beginning and end of a list than for items in the middle
- more effective recall in divided study rather than mass study
- reduce interference by allocating study for specific courses on separate days
- depth of processing more important than frequency of studying
- organized information is more easily memorized than non-organized
- narrative methods: make a story that includes all words in a list in proper order
- rhymes: e.g. “I before E except after C”
- **link method**: forming a mental image of items to be remembered as a way that links them together
- **method of loci**: involves taking imaginary walk along a familiar path where images of items to be remembered are associated with certain locations
- **keyword method** : associate a concrete word with an abstract word and generate an image to represent the concrete word

**Critical Thinking: Understanding the Fallibility of Eyewitness Accounts**

Inaccuracy
- reasons for eyewitness inaccuracies:
    - reconstruction distorted by schemas
    - source-monitoring errors (e.g. mixing up someone’s face with someone else)
    - distortions due to new information

**Hindsight Bias**: tendency to mould our interpretation of the past to fit how events actually turned out
**Overconfidence**: tendency to be overconfident about the reliability of their memory
- fuelled by failure to seek disconfirming evidence

# Chapter 8: Language and Thought

## Introduction

**Cognition**: mental processes involved in acquiring knowledge

### Language: Turning Thoughts into Words

**Language**: consists of symbols that convey meaning plus rules for combining those symbols that can be used to generate an infinite variety of messages

- language is *symbolic*: sounds represent objects, actions, events, ideas
- language is *semantic*: arbitrary words have similar meanings (e.g. pen, stylo, pluma)
- language is *generative*: limited symbols are combined to generate infinite messages
- language is *structured*: messages have structures that are governed by rules

**Structure of Language**

- human languages have hierarchical structure
- **phonemes**: smallest speech units in a language that can be distinguished perceptually
    - e.g. /p/ in pill
    - 40 in English language
- **morphemes**: smallest units of meaning in a language
    - e.g. 'unfriendly' has 3 morphemes: un (prefix), friend (word), ly (suffix)
    - approx. 50,000 in English language
- **semantics**: area of language concerned with understanding the meaning of words and word combinations
- *denotation*: dictionary definition of a word
- *connotation*: includes emotional overtones and secondary implications
- **syntax**: system of words that specify how words can be arranged into sentences (grammar)

Milestones in Language Development

- 3-month-old infants can distinguish phonemes from all world languages, whereas adults can't readily discriminate the phonemes
    - ability disappears between 4 months to 12 months
- *by 7.5 months*: infants begin to recognize common word forms
- *by 8 months*: many infants show first signs of understanding meanings of familiar words
- **1-5 months**: *reflexive communication* like crying, cooing, laughter
- **6-18 months**: *babbling*, variety of sounds that correspond to phonemes
    - origin?:

        - **1**. motor achievement: reflects brain's maturation in controlling the motor operations needed to eventually produce speech (byproduct of development)
        - **2**. key linguistic achievement: mechanism allowing infant to discover and produce "patterned structure of natural language"
- **10-13 months**: most children begin to utter sounds that correspond to words
- *by 18 months*: toddlers can say 3-30 words
    - toddlers can understand more words spoken by others than they can produce
    - generally, early words are nouns (concrete) because they're easier to encode than verbs
- **18-24 months**: *vocabulary spurt*
    - **fast-mapping**: process by which children map a word onto an underlying concept after 1 exposure (factor in vocabulary spurt)
    - **overextension**: child incorrectly uses a word to describe a wider set of objects or actions than it is mean to (~1 to 2½ )
        - e.g. using 'ball' for round objects such as an orange, moon, etc.
    - **underextension**: child incorrectly uses a word to describe a narrower set of objects or actions than it is mean to
        - e.g. child uses 'doll' to refer only to a single, favourite doll
- *end of 2nd year*: children begin to combine words into "telegraphic" sentences
    - **telegraphic speech**: consists mainly of content words; articles, prepositions, and other less critical words are omitted (not universal)
    - **mean length of utterance** (**MLU**): average length of youngsters' spoken statements (measured in morphemes)
- end of 3rd year: children can express complex ideas (e.g. plural or past tense)
    - **overregulations**: grammatical rules are incorrectly generalized to irregular cases where they do not apply
        - e.g. "The girl *goed* home"
    - children acquire grammatical skills gradually in small steps
- *school-age years*: children generate longer and more complicated sentences as they receive more formal training in written language
    - **metalinguistic awareness**: ability to reflect on the use of language
        - children learn to play with language (e.g. puns, jokes, sarcasm, etc.)

Janet Werker: studies language development in infants
- babies have perceptual biases that facilitate language acquisition
- *optimal periods* for different subsystems are involved in language acquisition

- e.g. facilities for foreign phonemes disappear, facilities tune to phonemes of native language

Laura-Ann Petitto: began working with chimps, teaching them American Sign Language
- recently examining an “island of tissue” in the brain that may trigger language development

**Bilingualism**: acquisition of 2 languages that use different speech sounds, vocabulary, and grammatical rules
- *some* studies show bilingual children have smaller vocabularies in each of their languages than monolingual children in their own language
- bilingual children have similar or slightly superior total vocabulary (when both languages’ vocabularies are combined) to monolingual children
- little empirical evidence of language disadvantage in bilingualism
- bilinguals may be slower in terms of *speed* of raw language-processing
- bilinguals scored somewhat *higher* than monolinguals on measures of cognitive tasks
- Ellen Bialystok examined effects of bilingualism on children’s cognition for many years
    - bilingualism associated with higher levels of controlled processing on attention tasks
    - bilingual children show an advantage on some aspects of metalinguistic awareness
    - bilingualism appears to have no negative effects on cognitive development
    - recently found that bilingualism helps attenuate age-related losses in cognition

Second Language Acquisition
- language more effectively acquired at a young age, especially 7
- **acculturation**: degree to which a person is socially and psychologically integrated into a new culture
    - greater culture acculturation: more rapid acquisition of new language
- other factors:
    - aptitude for language
    - *integrative motivation*: willingness to become a valued member of language community
    - positive attitude towards language
    - interest in the language

Can Animals Develop Language?
- researchers have trained chimps to use American Sign Language (ASL)
- Washoe: chimp acquired a sign vocabulary of about 160 words and was able to combine words into simple sentences

    - critics argue the chimps' vocabulary were byproducts of imitation and operant conditioning (instead of mastering rules of language)
- Sue Savage-Rumbaugh worked with bonobo pygmy chimpanzees
    - Kanzi: chimp acquired hundreds of words and has used them in thousands of combinations
    - Panbanisha: Kanzi's younger sister also shows many of her brother's feats
    - Kanzi's combinations seemed to follow rules of language and he understood 72% of 660 sentences that were spoken to him
    - humans are far superior to any animal in acquiring language
    - language is an innate human characteristic
- Steven Pinker argues human's talent for language is a product of natural selection
    - David Premack refutes by saying that small differences in language would influence reproductive fitness in primitive societies

Theories of Language Acquisition

*1) Behaviourist Theories*:

- Skinner argued children learn language through imitation, reinforcement, and other established principles of conditioning
- correct vocalizations are reinforced
- children learn syntax through imitation and reinforcement

*2) Nativist Theories*:

- parents may not engage much in the language shaping
    - e.g. parent will correct child if child is factually incorrect (not syntax)
- Noam Chomsky pointed out there are infinite number of sentences in a language
- e.g. '-ed', children will use it incorrectly but not after an adult has used it incorrectly
- humans equipped with **language acquisition device** (**LAD**): innate mechanism or process that facilitates the learning of language
    - reasoning:
        - children develop language rapidly and effortlessly
        - language unfolds at roughly the same age for most children

*3) Interactionist Theories*:

- assert biology and experience *both* make important contributions to language development
    - *cognitive theories* suggest language development is an important aspect of general cognitive development (depends on maturation and experience)
    - *social communication theories* emphasize functional value of interpersonal and social context in which language evolves

- *emergentist theories* argue neural circuits supply language that are not prewired but emerge gradually in response to language experience

Culture, Language, and Thought
Benjamin Lee Whorf advocates **linguistic relativity**: hypothesis that one's language determines the nature of one's thought

- e.g. English language has 1 word for 'snow', Inuit language has many for it
- critics argue that English has more words for 'snow' and that Inuit words for 'snow' could be assigned through causal observation rather than perceptually
- recent evidence supporting linguistic relativity:
  - different colour categories: blue and green are defined by 1 name in some African languages
  - subjects find it harder to discriminate blue from green, and vice versa

## Problem Solving: In Search of Solutions

Types of Problems

- **problem solving**: active efforts to discover what must be done to achieve a goal that is not readily attainable
- **insight**: sudden discovery of correct solution after incorrect attempts based on trial and error
- Jim Greeno proposed basic classes of problems:

**1**. *Problems of inducing structure*

- require people to discover relations among numbers, words, symbols, or ideas
- e.g. Merchant : Sell :: Customer : _____

**2**. *Problems of arrangement*

- require people to arrange parts of a problem in a way that satisfies some criterion
- e.g. Crossword

**3**. *Problems of transformation*

- require people to carry out a sequence of transformations in order to reach a specific goal
- e.g. water jug problem (3 pitchers of different amounts of water, try to get a given amount)

Barriers to Effective Problem Solving

**1**. *Irrelevant Information*

- often distract people
- people tend to assume numerical data is relevant

**2**. **Functional fixedness**: tendency to perceive an item only in its most common use

**3**. **Mental set**: people persist in using problem-solving strategies that have worked in the past
- people struggle when their strategy fails to work in certain scenarios
- explains why experts sometimes have trouble with problem-solving efforts in their area of expertise

**4**. *Unnecessary Constraints*
- assuming constraints that do not exist in the problem

Approaches to Problem Solving
- **problem space**: refers to the set of possible pathways to a solution considered by the problem solver

Using Algorithms and Heuristics
- **trial and error**: trying possible solutions and discarding those that in error until one works
- **algorithm**: methodical, step-by-step procedure for trying all possible alternatives in searching for a solution to a problem
    - guarantees solution
    - impractical when problem space is large
- **heuristics**: guiding principle or "rule of thumb" used in solving problems or making decisions
    - allows you to discard some alternatives, while pursuing selected alternatives that appear likely to lead to the solution
    - do not guarantee solution
- heuristics:
    - *Forming Subgoals*
        - breaking the problem into intermediate steps helps problem solving
    - *Working Backward*
    - *Searching for Analogies*
        - problems with similar solutions but structured differently
        - people fail to see superficial details, rather than the underlying structure
    - *Changing the Representation of the Problem*
        - problems can be represented in various way
        - best representation of a problem depends on the nature of the problem

Culture and Problem Solving
- **field dependence-independence**: tendency to rely primarily on external versus internal frames of reference when orienting themselves in space
- field dependent people tend to focus on total context of a problem, instead of identifying specifics or breaking it up
- field independent people tend to focus on specifics and reorganize component parts

- studies show field-independent people outperform field-dependent people on a variety of classic laboratory problems
- field independence encouraged in modern Western society and nomadic societies
- field dependence encouraged in sedentary agricultural societies and societies stressing conformity
- Richard Nisbett argued Easterners display *holistic cognitive style* and Westerners display *analytic cognitive style*
    - Easterners focus on the whole, Westerners focus on the parts

## Decision Making: Choices and Chances

**Decision making**: involves evaluating alternatives and making choices among them

- **theory of bounded rationality**: asserts that people tend to use simple strategies in decision making that focus on only a few facets of available options and often result in "irrational" decisions that are less than optimal (Herbert Simon)
- some theorists conclude that "normal adult human subjects do a singularly bad job at the business of reasoning, even when they are calm, clearheaded, and under no pressure to perform quickly"
- many decisions involve choices about preferences
- *additive strategy*:
    - listing influential attributes
    - generally used when there are few options
- *elimination by aspects strategy*:
    - assumes alternatives are eliminated by evaluating them on each attribute or aspect in turn
    - generally used when there are many options
- **risky decision making**: involves making choices under conditions of uncertainty
    - *expected value* is negative but balanced by *subjective utility* (e.g. dream of wealth)
    - sometimes the person doesn't know the actual probability (subjective *probability*)
- difficulties in choosing an option delay decisions, when acceptable alternatives are available
- people have  perplexing tendency to pursue additional information that doesn't influence their decision

Common Heuristics and Flaws

- in estimating probabilities, people often ignore information on the base rates of events
    - e.g. there are more salespersons than librarians
- studies on animals show they tend to make sound choices that approximate optimal decision making

- **availability heuristic**: involves basing estimated probability of an event on the ease with which relevant instances come to mind
    - e.g. thinking the letter J is appears more in the first position than the third position
- **representativeness heuristic**: involves basing the estimated probability of an event on how similar is it to the typical prototype of that event
    - e.g. tossing a coin numerous times, TTTT or THTH more probable?
        - each time, H or T has an equal chance of coming up
- **conjunction fallacy**: occurs when people estimate the odds of two uncertain events happening together are greater than the odds of either happening alone

Paradox: humans appear so dumb (we are prone to irrationality), while animals appear so smart
- argument 1: rationality inaccurately measured
- argument 2: cognitive psychologists have formulated problems poorly

Fast and Frugal Heuristics
- humans' reasoning depends on fast and frugal heuristics that are simple, which are effective most the time to be adaptive to real world
    - e.g. recognition heuristic: between 2 stimuli, the one that is more recognized has greater value
- *dual-process theories*: people depend on 2 very different modes of thinking when making decisions

**Featured Study: Babbling in the Manual Mode**

Discussion
- babbling is evident in deaf infants as manual babbling (their own language form)
- babbling is tied to language development capacity of infant

**Personal Application: Understanding Pitfalls in Reasoning about Decisions**

Pitfalls
- **gambler's fallacy** → belief that the odds of a chance event increase if the event hasn't occurred recently
- people tend to overestimate the improbable (e.g. flood, murder, etc.)
- **confirmation bias**: tendency to seek information that supports one's decisions and beliefs while ignoring disconfirming information
- **belief perseverance**: tendency to hang on to beliefs in the face of contradictory evidence
- putting too much confidence into estimates, beliefs and decisions (*overconfidence effect*)

- **framing**: refers to how decision issues are posed or how choices are structured

**Critical Thinking: Shaping Thought with Language "Only a Naïve Moron Would Believe That"**

**Semantic Slanting**: choosing words that create specific emotional responses
**Name-calling**: neutralizing or combat views by attributing views to unpopular groups

# Chapter 9: Intelligence and Psychological Testing

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## Key Concepts in Testing

**Psychological test**: standardized measure of a sample of a person's behaviour

Principle Types of Tests
1) **Mental Ability Tests**:
- **Intelligence tests**: measure general mental ability
- **Aptitude tests**: assess specific types of mental abilities
- **Achievement tests**: tests mastery and knowledge in specific areas of study

2) **Personality Tests**: measure various aspects of personality, including motives, interests, values and attitudes

**Standardization**: uniform procedures used in the administration and scoring of a test
- all subjects are given the same treatment

**Test norms**: provide information about where a score on a psychological test tanks in relation to other scores on that test
- sample of people that the norms are based on (*standardization group*)
- different norms for different societies (e.g. Canadian norm different from American)

**Percentile score**: percentage of people who score at or below the score one has obtained
**Reliability**: measurement of consistency of a test
- *test-retest reliability* compares subjects' scores after 2 administrations of a test
- **correlation coefficient**: numerical index of the degree of relationship between 2 variables, -1.00 to +1.00 (greater than 0.70 is good)

**Validity**: ability of a test to measure what it was designed to measure, as well as accuracy and usefulness of the inferences and decisions based on a test

- **Content validity**: degree to which the content of a test is representative of the domain it's supposed to cover
- **Criterion-related validity**: correlation of subjects' scores on a test with their scores on an independent criterion (another measure) of the trait assessed by the test
    - check validity by correlating scores with other tests for the same trait
- **Construct validity**: extent to which there is evidence that a test measures a particular hypothetical construct (measures for abstract qualities, e.g. intelligence, etc.)
    - usually looks at correlations between a series of studies and the trait

**Intelligence Testing History**

Francis Galton believed intelligence was passed on through genetic inheritance
- devised first intelligence tests dealing with sensory acuity
- invented concepts of *correlation* and *percentile scores*

Alfred Binet launched modern intelligence testing in 1905
- devised a scale to measure **mental age**: how the child displays mental ability typical of that chronological age
    - e.g. a mental age of 6 performed like the average 6-year-old

Stanford-Binet Intelligence Scale
- expanded on Binet's work, by incorporating a new scoring scheme, **intelligence quotient** (IQ): child's mental age divided by chronological age, multiplied by 100
    - IQ = Mental Age/Chronological Age x 100
- undergone several updates in the past

David Wechsler published an improved measure of intelligence for adults called the *Wechsler Adult Intelligence Scale* (WAIS)
- eventually extended it to children as well
- *innovations*:
    - less dependent on verbal ability (distinguished a verbal, nonverbal IQ and full IQ)
    - new scoring system, discarded IQ for system based on *normal distribution* and *standard deviation*
        - adopted by Stanford-Binet, but IQ term remained into present day

Intelligence Testing Today
- include individual (tailored and administered by psychologist) and group (can be administered to large numbers) tests

## Basic Questions about Intelligence Testing

Answers

- intelligence tests contain a diverse mixture of questions that require abstract reasoning
- **normal distribution**: bell-shaped curve that represents the pattern in which many characteristics are dispersed in the population
- **deviation IQ scores**: locate subjects precisely within the normal distribution, using the standard deviation as the unit of measure (introduced by Wechsler)
    - can be converted into percentile scores
- most modern tests set 100 as the mean and use 15 as the standard deviation
- intelligence tests try to test intellectual potential, not factual knowledge, but they really reflect both
- IQ tests are highly reliable (in the 0.90s correlation)
- IQ tests originally made to predict school performance
    - tests are valid in academic/verbal intelligence, but don't tap into practical and social intelligence
- IQ scores are correlated with occupational attainment but not specific occupational performance
    - prompted employers to issue personality tests to job applicants
- IQ tests not widely used in most non-Western cultures
    - used in Japan, but not China and India
    - problematic with respect to language due to cultural differences
    - different cultures value intelligence differently

## Extremes of Intelligence

**Mental retardation**: subaverage general mental ability (IQ < 70-75) accompanied by deficiencies in adaptive skills (everyday living skills, e.g. dressing oneself), originating before age 18

- *American Association on Mental* Retardation (AAMR) have changed cut-off line for mental retardation several times
- acknowledges that IQ (academic intelligence) is not the only important kind of learning
    - adaptive skills is a form of learning that is measured (subjective)
- 2-3% of school-age population is diagnosed as mentally retarded
- levels of mental retardation:
    - *mild* (IQ = 51-70)
        - vast majority - 85%
        - 6$^{th}$ grade education possible, special education is helpful
        - can be self-supportive in stable and supportive environment, may need help with stress
    - *moderate* (IQ = 36-50)
        - around 10%

        - 2nd to 4th grade education possible, special education is necessary
        - can be semi-independent in sheltered environment, needs help with mild stress
    - *severe* (IQ = 20-35)
        - limited speech, toilet habits
        - can contribute to self-support under total supervision
    - *profound* (IQ < 20)
        - little or no speech, not toilet-trained
        - relatively unresponsive to training
        - requires total care
- many organic conditions can cause retardation, but a specific organic cause can be identified in only 25% of the time
    - *down syndrome* is a distinctive condition associated with mild to severe retardation
        - extra chromosome
    - *fragile X syndrome* (FXS) leads to neural activity irrelevant to the context and task facing the individual
    - *phenylketournia* can lead to retardation if not treated in infancy
    - *hydrocephaly* can lead to retardation when excessive brospinal fluid destroys brain tissue
- origins for milder cases are unknown
- theorists believe environmental factors to be a causal agent in many cases
    - many retarded children come from lower socio-economic classes where a host of factors are involved
        - e.g. greater marital instability, inadequate nutrition, etc.

**Giftedness**

- in practice, efforts to identify gifted children heavily lies on IQ scores, not so much on other qualities like creativity, leadership, etc.
    - typical minimum IQ > 130
- Lewis Terman found that gifted children tend to be above average in social and emotional maturity, contrary to popular belief
- Ellen Winner asserts profoundly gifted children (IQ > 180) are often introverted and socially isolated
- gifted children tend to become successful adults, but few make genius-level contributions
    - geniuses have a combination of high intelligence, high creativity, and high motivation, high intelligence in gifted children alone doesn't foster genuine greatness
- "hidden gifted" are students with high IQ, but underachieve in school
    - Lupart and Pyryt found 21% of their gifted students were underachieving in school

- *drudge theory*: proposes that eminence depends on intensive training and monumental effort, but critics argue innate talent is also crucial in fostering eminence

## Heredity and Environment as Determinants of Intelligence

Evidence for Hereditary Influence

- *family studies* are inadequate for studying hereditary influence on intelligence because the family share genes and environment
- *twin studies* show identical twins are more similar in intelligence than fraternal twins
    - suggests intelligence is partly inherited
    - critics argue that identical twins (same gender) are treated the same and therefore show similar intelligence
        - however, strong correlation between identical twins reared apart
    - identical twins reared apart are more similar then fraternal twins reared together
- *adoption studies* show adopted children resemble their biological parents in intelligence
- **hereditability ratio**: estimate of the proportion of trait variability in a population that is determined by variations in genetic inheritance
    - estimates of hereditability of intelligence range from 50% to 80% (rest attributed to environmental factors)
    - have certain limitations
        - different gene pools in different groups
        - most research based on white, middle-class subjects

Evidence for Environmental Influence

- adoption studies find that adopted children show some IQ resemblance to their foster parents and to their adoptive siblings, where they live in the same environment
    - suggests environment has a role in intelligence
    - biological siblings are more similar in intelligence when reared together than when not, same for identical twins
- studies of environmental deprivation show that children raised in substandard conditions tend to exhibit a gradual decline in IQ as they get older
- studies of environmental enrichment show that children who are moved to improved conditions tend to exhibit increases in IQ (usually a noticeable 10-12 points)
- IQ scores correlated with quality of child's home and school environment
    - school attendance has a positive impact on IQ
- *Flynn effect*: IQ of industrialized world is steadily increasing
    - attributed to environmental factors since the world gene pool can't change so quickly

Interaction of Heredity and Environment

- Sandra Scarr suggests heredity sets limits of intelligence (maximum and minimum), environment determines your place within these limits
    - intelligence can't exceed bar inheritance placed when environment is ideal
    - intelligence can't dip below bar inheritance placed (except in extreme conditions)
    - **reaction range**: refer to these genetically determined limits on IQ (usually around 20-25 points)
        - children raised in enriched environments score higher within their range than children raised in deprived environments who score lower in their range
        - explains how poor IQ children can come from enriched environments and high IQ children can come from deprived environments
        - problem: no way to measure reaction range

Cultural Differences in IQ Scores

- in the US, minorities average IQ is lower than the average for whites (difference ranges from 3-15 points)
- Arthur Jensen and others argued cultural differences in IQ are largely due to heredity
    - believed hereditability of intelligence to be 80%
- J. Phillipe Rushton ranked races in terms of intelligence, social behaviours and physical attributes
        - suffered media and government backlash due to poor research and racial implications
    - Asians ranked most intelligent, most law abiding, hardest working, least sexually promiscuous, largest brain size
    - Blacks ranked on the opposite end
    - Whites ranked in between
- if hereditability of intelligence is high, group differences in average IQ could still be caused entirely (or in part) by environmental factors (genetics not totally ruled out)
- socioeconomic disadvantages contribute to cultural differences in IQ
    - lower-class children more likely to come from large families and single-parent homes, attend poorer quality schools, etc.
- vulnerability to negative stereotypes can undermine test performance in minority groups (e.g. racial, gender, etc.)
    - no-win situation:
        - do well on IQ test = raises suspicion
        - do bad on IQ test = acceptance of stereotypes
    - undermine emotional investment in school
    - gravity of IQ tests makes one's stereotype vulnerability particularly salient (noted), which disturbs cognition during tests

- some argue cultural bias are built into IQ tests considering it uses language and vocabulary that reflect the white, middle-class
    - evidence shows that cultural bias produces weak and inconsistent effects on IQ scores of minority examinees

**New Directions in the Assessment and Study of Intelligence**

Charles Spearman suggests new focus on specific mental ability rather than general mental ability

- **factor analysis**: correlations among many variables are analyzed to identify closely related clusters of variables
    - used to examine correlations among tests of many specific mental abilities
    - found that all cognitive abilities share an important core factor *g* for general mental ability
    - since, intelligence tests have tried to be designed to tap as much of *g* as possible

Thurstone and Guilford suggested intelligence involved multiple abilities, intelligence divided into 150 separate abilities

- little impact on intelligence testing

Cattell and Horn divided *g* into fluid and crystallized intelligence

- central to Stanford-Binet IQ test, which was broken into 15 subtests, hopefully in a direction that assess specific abilities
- **fluid intelligence**: reasoning ability, memory capacity, information processing speed
- **crystallized intelligence**: ability to apply acquired knowledge and skills in problem solving

Arthur Jensen modestly correlated (0.20-0.30s) *reaction time* (RT) with IQ scores

- believes in association between raw processing speed and intelligence → weak
- correlations of 0.40 have been found between *inspection time* and scores in fluid intelligence
- interest in biological indexes of intelligence have made relatively little progress

Robert Sternberg proposed *triarchic theory of human intelligence*

- consists of contextual, experiential and componential subtheories
    - *contextual subtheory* asserts that different cultures emphasize different types of intelligent behaviour
    - *experiential subtheory* explores relationships between experience and intelligence
        - ability to effectively deal with novelty (new tasks, demands, etc.)

        - ability to learn to handle familiar tasks automatically and effortlessly
    - *componential subtheory* describes 3 types of mental processes that intelligent thought depends on: meta-components, performance and knowledge components
- 3 facets of intelligence: practical, analytical and creative intelligence
    - 3 areas are uncorrelated but related to the componential subtheory

Howard Gardner argued there are 8 largely independent types of human intelligence

- logical mathematical, linguistic, musical, spatial, bodily-kinesthetic, interpersonal, intrapersonal, naturalist
- critics argue that his definition of intelligence has incorporated any valued human ability

**Emotional intelligence** (**EI**): consists of ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion and regulate emotion

- critics question whether this is really a form of intelligence

**Featured Study: Racial Stereotypes and Test Performance**

Results

- black students performed poorer on a test when their vulnerabilities were salient, but did just as well as white students when their vulnerabilities were not salient

**Personal Application**: *Understanding Creativity*
Discussion:

- **creativity**: generation of ideas that are original, novel and useful
- **convergent thinking**: one tries to narrow down a list of alternatives to converge on a single correct answer
- **divergent thinking**: one ties to expand the range of alternatives by generating many possible solutions
- creative tests are mediocre predictors of creative achievement
- despite rare exceptions, creative people usually excel in a single field
- may be a correlation between creativity and mental illness

**Critical Thinking: The Intelligence Debate, Appeals to Ignorance, and Reification**

*Fallacy*: mistake or error in the process of reasoning
*Appeal to ignorance*: misuse of general lack of knowledge or information on an issue

**Reification**: occurs when a hypothetical, abstract concept is given a name and then treated as though it were a concrete tangible object

# Chapter 10: Motivation and Emotion

## Motivational Theories and Concepts

**Motivation**: involves goal-directed behaviour
- street kids reject societal standards and goals, focusing on the short-term instead of the long-term
- several theories:
    - drive theories
    - incentive theories
    - evolutionary theories

**Drive Theories**: internal state of arousal motivates behaviour to reduce discomfort
- *push people to act (emphasis on internal biological factors)*
- most advocated by Clark Hull
- **homeostasis**: state of physiological equilibrium or stability
- **drive**: internal state of tension that *motivates* an organism to engage in activities that should reduce this tension (*drive reduction*)
    - ex. hunger (tension) motivates eating behaviour which will restore physical equilibrium and reduce the drive
- can't explain all cases
    - ex. thirst for knowledge
- can't explain motivation from non-discomforting state
    - ex. stopping for ice cream when you had no drive for it
    - incentive theories can

**Incentive Theories**: external stimuli regulate motivational states
- *pull people to act (emphasis on external environmental factors)*
- **incentive**: external goal that has the capacity to motivate behaviour
    - ex. juicy steak, a prize, friend's approval, etc.
    - some reduce drives, some may not
- **expectancy-value model**: motivation to pursue a particular course of action depends on 2 factors
    - **expectancy***:* likelihood of attaining incentive
    - **value**: how appealing incentive is

**Evolutionary Theories**: motivations present because they were evolutionarily adaptive (with regards to reproductive success), ex. affiliation, achievement, dominance, aggression, sex
- in hunter-gatherer societies:
    - *dominance motive*:

        - females may prefer dominant males
        - dominant males may poach females from subordinate males
        - dominant males could intimidate male rivals for sexual access
        - dominant males may have more access to resources

**Range and Diversity of Human Motives**: humans have a wide variety of motives

- most theories of on motivation distinguish between biological and social motives
- **biological motives**:
    - ex. hunger, thirst, sleep and rest, sex motive
    - all humans share, most deal with survival
    - limited in number (Madsen suggests 10-15)
- **social motives**:
    - ex. achievement, autonomy, affiliation, play motive
    - not all humans share, vary depending on individual's experience
    - unlimited in number from socialization and learning

## The Motivation of Hunger and Eating

### Biological Factors in Hunger Regulation

- Walter Cannon and A. L. Washburn theorized that stomach contractions caused hunger due to a correlation
    - theory discarded because people who've had their stomachs removed still experience hunger
- brain regulation:
    - lesion **lateral hypothalamus** (**LH**) → animals showed no hunger [think of leisoning LH = **L**acking **H**unger]
        - "tells you when you need to eat"
    - lesion **ventromedial nucleus of the hypothalamus** (**VMH**) → animals showed excessive hunger [think of leisoning VH = **V**ery **H**ungry]
        - "tells you when you've ate enough"
    - originally suggested LH and VMH were brain's on-off switches for hunger (dual-centres model)
    - recently:
        - **paraventricular nucleus** (**PVN**) of the hypothalamus plays a larger role in modulation of hunger
        - arcuate nucleus has group of neurons sensitive to incoming hunger signals and another group responding to satiety signals
    - scientists paying more attention to *neural circuits* running through hypothalamus than *anatomical structures*

        - neuropeptide Y, serotonin, GABA, ghrelin, orexins, endogenous cannabinoids important
        - increased **ghrelin** (hormone and neurotransmitter) associated with increased food intake
- glucose and digestive regulation:
    - **glucose**: simple sugar that is an important source of energy
    - **glucostatic theory**: fluctuations in blood glucose level monitored in brain by **glucostats**: neurons sensitive to glucose in the surrounding fluid
        - in turn modulate eating
    - after consuming food, cells in stomach send signals to brain to inhibit further eating
        - ex. vagus nerve carry satiety messages to brain
- hormonal regulation:
    - secretions of **insulin** (from pancreas) associated with increased hunger
        - mere sight or smell of food can stimulate secretion of insulin
    - **leptin** (produced by fat cells) provides information to the hypothalamus about body's fat stores
        - high fat levels generate high levels of leptin → leads to inhibition of eating
        - activates receptors in brain that inhibit neuropeptide Y, causing activity in PVN and subsequent inhibition of eating

**Environmental Factors in Hunger Regulation**

- food availability and palatability (pleasure factor) influences hunger
    - follows incentive theory (food can be incentive)
    - people will still eat tasty foods when full and overeat when there is an abundance of food (ex. buffets)
    - **sensory-specific satiety**: as one consumes a specific food, the incentive value declines
    - hunger can be triggered by environmental cues associated with eating
        - ex. pictures, written descriptions, video depictions, odours of attractive food
    - presence of others inhibits food intake, but under certain conditions food intake increases (depends on social factor of norms)
- learned preferences and habits:
    - humans show some innate food preferences
        - sweet taste present at birth
        - preference for high-fat foods partly genetic
        - salt preference emerged at 4 months
    - preferences are influenced more by **classical** and **observational** (mimicking) **learning**
        - explains why culture heavily determines food preference
- stress and eating:

    - stress can lead to increased eating in many people
    - common in chronic dieters
    - physiological arousal may stimulate eating
    - negative emotions evoked by stress may promote additional eating

**Roots of Obesity**

- **obesity**: condition of being overweight
    - elevates mortality risk
- survey results from Statistics Canada reveal the extent of obesity
    - used **body mass index** (**BMI**): individual's weight (kg) divided by height (m) squared
        - overweight = 25-29.9
        - obese = 30+
    - men more likely to go from normal to overweight
    - women more likely to go from overweight to obese
    - 1/3 of children (2-11) are overweight, half of those are obese
    - obese parents increased odds of having obese children
    - Canadians heading in the direction of the US, where 1 in 5 adults is obese
- evolutionists suggest humans overate in the past when food was available because there were food shortages
    - this tendency has not been lost in modern society where tasty, high-calorie food is in abundance
- moderate changes in diet and exercise are more helpful than harmful
- **genetic predisposition**: research suggests some people inherit a genetic vulnerability to obesity
- excessive eating and inadequate exercise:
    - energy intake from food consumption exceed their energy expenditure
    - in North America, more readily-available high-caloric food in malls, schools, etc. coupled with declining physical activity (ex. driving, more deskwork, etc.)
- **set-point theory**: body monitors fat-cell levels to keep them (and weight) fairly stable (buffer system)
    - worked to gain weight → decreased hunger, increased metabolism
        - "people who worked to gain weight have trouble keeping it"
    - worked to lose weight → increased hunger, decreased metabolism
        - "people who worked to lose weight have tendency to gain it back"
    - **settling point theory**: weight tends to drift around the level at which the constellation of factors that determine food consumption and energy expenditure achieves an equilibrium
        - more broad than set-point theory and suggests that long-term changes can change the settling point
- **dietary restraint**:
    - chronic dieters are usually restrained eaters

    - **restrained eaters**: go around hungry much of the time (thinking of food) and eat in excess when their cognitive control is disturbed
        - becomes disinhibited from control from stress, alcohol, feeling like a failure at a diet
    - high chance of increased tendency to overeat before a diet begins, so that the dieter savours the taste of good foods
    - restrained eaters tend to report a thinner ideal body size than unrestrained eaters due to media's portrayal of thinness
- **eating disorders**:
    - **anorexia nervosa**: disorder where one starves oneself, sometimes to death
        - *activity anorexia*: severe dieting and excessive exercise
    - **bulimia nervosa**: disorder where one alternates between purging and binge eating
    - overemphasis on pressure to be thin
    - associated people in sports and competition, especially women

## Sexual Motivation and Behaviour

### Sexual Desire

- sex is essential for the survival of a species, not individual survival
    - one can live without sex (unlike food)
- teens who have had sex earlier are more likely to have multiple sexual partners than those who begin later
    - girls with weak self-concepts at 13 more likely to engage in sex early than those with strong self-concepts
- sex without a condom appears to increase with age
- hormones are secreted in the gonads (ovaries in females, testes in males) → both are secreted in males and females but to different degrees
    - **estrogens**: principal class of gonadal hormones in females
    - **androgens**: principal class of gonadal hormones in males
    - secretion regulated by hypothalamus and pituitary gland
- in many species: females most sexually receptive before ovulation
    - **testosterone** (key androgen) stimulates sexual interest in castrated males
- hormone fluctuations have a smaller impact on sexual desire in humans
    - higher levels of testosterone in *both* sexes increases sexual activity
    - sexual offenders given drugs to lower their testosterone = some success
- erotic materials can stimulate sexual desire in many people
    - little evidence of an association between availability of erotica and incidence of sex crimes

### Evolutionary Analyses of Human Sexual Behaviour

- Robert Trivers' **parental investment theory**:

    - sex that makes smaller investment seeks mating opportunities with sex that makes larger investment
    - sex with the larger investment will tend to be more discriminating in selecting its partners
    - in humans (like other mammalian species), women invest 9 months and years to nourish offspring through breastfeeding, whereas males only invest very little
    - for **females**: makes larger investment
        - little or no incentive for mating with many males
        - maximize reproductive success by being selective, so choose men with good survival skills or ability to provide (good genes)
        - more conservative, less partners on average than men, less interest in uncommitted sex
        - want commitment from male as part of sex
        - female ancestors sought **providing** male (for materials and protection) and someone **willing to invest** in the children, ex. intelligence, income, social status
            - note: they unconsciously did
    - for **males**: makes smaller investment
        - must compete for women to maximize reproductive success
        - show more interest in sexual activity
        - think about and initiate sex more
            - reflected by greater interest in pornography
        - more likely to seek more variety in and more sexual partners
        - more willingness to engage in uncommitted sex
        - male ancestors sought **youthfulness** (indicative reproductive potential) and **attractiveness** (indicative of health and fertility)
            - note: they unconsciously did
- differences in mate selection found across different cultures and societies
- criticism:
    - reliance on self-report data
    - double standard: women worry more about how sexually permissive they are seen and so will downplay their sexual motivation
    - ugly picture of humans:
        - men are sexual predators
        - women are greedy materialists
    - doubts over evolutionary explanations, there can be other explanations
        - ex. women may look for income because their own economic potential has been severely limited virtually by gender discrimination in a culture
        - ex. female sexuality suppressed in the culture

**The Controversial Issue of Pornography**

- pornography stimulates sexual interest in many people
- men more likely than women to enjoy erotic material
    - may be due to prominence of female pornography and degrading image of how women are portrayed in pornography
- no correlation between availability of pornography and elevated rates of sex crimes
- pornography may create unrealistic expectations about sexual relationships and partner
    - become more liberal concerning premarital and extramarital sex
- *aggressive pornography* may increase aggressive behaviour in men towards women
- however, rape has remained unchanged
    - particularly common is *date rape*: forced intercourse on a date
- sexual assaults are declining somewhat, but the numbers are still frightening
    - 1999: 24,000 sexual assaults reported in Canada

**The Mystery of Sexual Orientation**

- **sexual orientation**: person's preference for emotional and sexual relationships with individuals of the same sex, the other sex or either sex
- **heterosexuals**: person seeks emotional-sexual relationships with members of the other sex
- **homosexuals**: person seeks emotional-sexual relationships with members of the same sex
- Alfred Kingsey views sexual orientation on a continuum with heterosexuality and homosexuality as the endpoints (7-point scale) as opposed to all-or-none

<u>Environmental Theories</u>:

- **Freudian theorists**: male becomes gay when raised by a weak, detached, ineffectual father and an overprotective, close-binding mother (no conclusive evidence)
- **Behavioural theorists**: homosexuality is a learned preference acquired when same-sex stimuli have been paired with arousal (no conclusive evidence)
- extremely feminine boys and masculine girls does predict subsequent homosexuality

<u>Biological Theories</u>:

- *original theory*: hormonal differences between homosexuals and heterosexuals (no conclusive evidence)
- evidence from twin studies suggest some genetic influence
- perhaps organizing effects of prenatal hormones on neurological development
    - ex. high androgen exposure in females found higher incidence of homosexuality

<u>Complications</u>:

- female sexuality more plastic (more malleable) than male sexuality

**Human Sexual Response**
- Masters & Johnson divide human sexual response into 4 stages
- research shows many sexual problems are psychological

**1) Excitement Phase**
- level of physical arousal escalates rapidly
- **vasocongestion**: engorgement of blood vessels
    - penile erection and swollen testes in males
    - swelling and hardening of the clitoris, expansion of the vaginal lips and vaginal lubrication in females

**2) Plateau Phase**
- physical arousal grows but at a slower pace
- further vasocongestion in females → clitoris withdraws under clitoral hood
- many men secrete a bit of fluid at the tip of the penis (may contain sperm)
- fluctuation in arousal is apparent in both sexes during foreplay

**3) Orgasm Phase**
- **orgasm**: sexual arousal reaches its peak intensity and is discharged in a series of muscular contractions that pulsate through the pelvic area
- woman can be *multi-orgasmic* if she experiences several climaxes in a brief time
- women are more likely to engage in intercourse without experiencing an orgasm
- lesbians reach orgasms faster than straight women

**4) Resolution Phase**
- physiological changes produced in arousal subside
- **refractory period**: time following orgasm during which males are largely unresponsive to further stimulation
    - varies from few minutes to a few hours
    - increases with age

## Achievement: In Search of Excellence

**Achievement Motive**: need to master difficult challenges, to outperform others and to meet high standards of excellence (desire to excel)
- David McClelland major achievement researcher
- **Thematic Apperception Test** (**TAT**): projective test used to measure individual differences in achievement needs
    - ambiguous scenes allow people to tell a story about the protagonist in the picture, which reveals their own motives and traits
- societal achievement motive correlated with societal progress and productivity
- people with high achievement motive tend to work harder and more persistently than others
    - more likely to delay gratification

    - more future-oriented
    - handle negative feedback about performance better
    - typically go into competitive careers where there are opportunities to excel
    - correlated with career success
    - tend to choose tasks of intermediate difficulty
- besides motivation to achieve success, John Atkinson proposed **situational factors** that impinge on achievement motive:
    - **probability** of success
    - **incentive** value of success
    - probability and incentive can be independent of one another
    - lower motivation due to unattainable probability:
        - ex. professor gives impossible exam
    - explains why high achievers choose moderate difficulty because it maximizes one's sense of accomplishment
- **fear of failure** can motivate people
    - therefore: emotion can cause motivation
    - motivation can cause emotion:
        - ex. motivation to win a contest may cause great happiness if you win

## The Elements of Emotional Experience

**Emotion**: involves 3 components
- subjective conscious experience (cognitive component)
- bodily arousal (physiological component)
- characteristic overt expressions (behavioural component)

**The Cognitive Component: Subjective Feelings**
- subjective feeling that are often intense
- emotions are automatic that are hard to regulate
- people evaluate their emotions as pleasant or unpleasant, but can be mixed too
- researchers tend to focus on negative emotions
    - there are more negative than positive emotions
    - negative emotions are more clearly differentiated and appear to be more powerful
    - psychology tends to focus on weakness and pathology rather than strengths
- new researchers in **positive psychology** movement are trying to advocate increased research on positive emotions

**The Physiological Component: Diffuse and Multifaceted**
- autonomic arousal:

    - emotions are accompanied by visceral arousal (heart rate, digestion, perspiration, etc.) caused by autonomous nervous system (**flight-or-fight response** largely regulated by adrenal hormones that radiate through the body)
        - hormonal changes play a role in emotional responses to stress and other emotions
    - **galvanic skin response** (**GSR**): increase in electrical conductivity of the skin that occurs when sweat glands increase their activity
        - used as a measure of emotion in many laboratory studies
    - **polygraph**: device that records autonomic fluctuations while a subject is questioned
        - monitors key indicators of autonomic arousal: heart rate, blood pressure, respiration rate, GSR
        - individual experiences emotion when lying, which produces noticeable changes in these physiological indicators
        - 85%-90% accuracy is questionable
            - not much research to support accuracy
            - sometimes accuses innocent people of lying because one can experience autonomic arousal when asked incriminating question
            - sometimes a person can lie without experiencing anxiety or autonomic arousal

- **affective neuroscience**: neurobiology of emotions
    - autonomic responses accompanying emotions ultimately controlled in the brain
    - hypothalamus, amygdala, adjacent structures in limbic long thought to be seat of emotions in the brain
    - Joseph LeDoux suggests **amygdala** lies at the core of complex set of neural circuits that process emotion
        - destroyed amygdala has lead to absence of fear in animals
        - from thalamus, projection of signals to:
            - **fast pathway** to amygdala: instant neural signals are triggered if an immediate threat is present (for life and death)
            - **slow pathway** to cortex: process and evaluate the situation
        - associated with fear, but possibly role in positive emotions too
    - other areas associated with emotion:
        - prefrontal cortex: voluntary control of emotions
        - cingulated cortex: pain-related emotional distress
        - mesolimbic dopamine pathway: pleasure from reward
        - right and left hemispheres: right plays larger role in perception of emotion whereas left mediates negative emotions

**The Behavioural Component: Nonverbal Expressiveness**

- emotions are expressed in body language or nonverbal behaviour
- people are reasonably skilled at deciphering emotions from others' facial expressions
    - at least **6 fundamental emotions**: happiness, sadness, anger, fear, surprise, disgust
        - occurs quickly and automatically
        - criticism: photos aren't representative of spectrum of facial expressions that represent the specific emotion
            - context is also important
- **facial feedback hypothesis**: facial muscles send signals to help brain recognize the emotion one is experiencing
    - people report imitating certain facial expressions associated with emotions led to consequent feelings of that emotion
    - facial expression that go with various emotions may be largely innate
        - ex. blind people can still smile, having never seen a smile

**Culture and the Elements of Emotion**

Cross-Cultural Similarities:

- Ekman and Friesen found cross-cultural agreement in identification of emotions based on facial expressions (even in societies unaccustomed to Western culture)
- similarities in cognitive and physiological components of emotion
    - see emotions in similar ways, ex. pleasant-unpleasant dimension

Cross-Cultural Differences:

- disparities in how emotions are categorized
    - Japanese culture emphasizes **socially engaging emotions** like sympathy and guilt
    - American culture emphasizes **socially disengaging emotions** like pride and anger
    - some societies lack words that describe Western emotions
        - ex. no word in Chinese for depression
- **display rules**: norms that regulate the appropriate expression of emotions, prescribing when and how, and to whom people can show various emotions
    - vary culture to culture, ex. Japanese people socialized to mask negative emotions in public

## Theories of Emotion

**1) James-Lange Theory**: Stimulus → Autonomic Response → Feeling

- conscious experience of emotion results from one's perception of autonomic arousal

    - e.g. running into a rattlesnake, the flight-or-fight response or visceral arousal allows you to perceive fear, not vice versa
- different patterns of autonomic activation leads to the experience of different emotions
    - in other words: *different* autonomic response = *different* emotion felt

**2) Canon-Bard Theory**: Stimulus → Cortical Activity → Autonomic Response + Feeling

- arousal can accompany no emotion and most emotions have identical autonomic arousal
- emotion occurs when the thalamus sends signals *simultaneously* to the cortex (creating conscious experience of emotion) and to the autonomic nervous system (creating visceral arousal)
- many modern theorists agree that emotions originate in subcortical brain structures

**3) Schachter's Two-Factor Theory**: Stimulus → Autonomic Arousal → Appraisal of Context → Feeling

- experience of emotion depends on 2 factors:
    - autonomic arousal
    - cognitive interpretation of that arousal
- one experiences visceral arousal and appraises the situation for the emotion to occur
- limitation problems
    - situations can't mould emotions in just any way at any time
    - individuals don't limit themselves to the immediate situation for appraisal

**4) Evolutionary Theories**

- human emotions are a product of evolution, found in higher brain areas of cortex
    - e.g. fear would aid our ancestors in survival
- emotions are innate reactions (adaptive) to certain stimuli that do not depend on cognitive processes
    - idea that emotion evolved before thought
- no general consensus on fundamental emotions, but that there are 8-10
    - agree that primary emotions **blend** and there are variations in **intensity**
    - leading theorists on it include: Silvan Tomkins, Caroll Izard, and Robert Plutchik

## Featured Study: Can Women Judge Men's Mate Potential in Just One Glance?

**Results & Discussion**

- study found women's attractiveness to men correlated with men's affinity for children and masculinity
- higher ratings of affinity for children led to higher estimates of long-term mate
- higher ratings of masculinity led to higher estimates of short-term mate

## Personal Application: Exploring the Ingredients of Happiness

**Subjective well-being**: individual's personal perception of their overall happiness and life satisfaction

- many common notions about happiness are inaccurate, ex. attractive people are happy people
- only a small minority of people place themselves below neutral
    - cluster towards positive end = actual picture is rosier

**Nonpredictive Factors of Happiness**

- *money*
    - dissatisfaction possible from things people can't afford
    - people more focused on wealth tend to work more and have less leisure time
    - money can help some feel better by providing a sense of control
- *age*
- *parenthood*
    - parents worry more and experience more marital problems, but no less or more happy than childless couples
- *intelligence*
- *physical attractiveness*

**Moderately Good Predictors of Happiness**

- *health*
    - but not by itself
- *social activity*: satisfaction in social relationships
- *religion*
    - can give sense of purpose or meaning to life
    - can help people accept setbacks
    - connects people to community
- *culture*
    - *relationship harmony* a significant factor of happiness of **collectivistic cultures** and not **individualistic cultures**

**Strong Predictors of Happiness**

- *love and marriage*
    - married people happier than those divorced or single
- *work*
- *personality*: inherited positive temperament

    - happiness has nothing to do with external circumstances

**Conclusions**

- subjective well-being determined not by objective reality but subjective feelings
- people evaluate what they have compared to others
- **affective forecasting**: efforts to predict one's emotional reactions to future events
    - people are bad at predicting what will make them happy
    - people tend to be inaccurate about duration and intensity of emotions after certain events
- people often adapt to their circumstances
    - **hedonic adaptation**: mental scale that people use to judge pleasantness-unpleasantness of their experiences shifts so that their neutral point or baseline for comparison changes
        - in other words, neutral point moves up during good events so subsequent good events don't really seem that great = "BAD"
        - neutral point moves down during bad events so subsequent bad events don't really seem that bad = "GOOD"

## Critical Thinking: Analyzing Arguments: Making Sense out of Controversy

**Anatomy of an Argument**

- **argument**: one or more premises that are used to provide support for a conclusion
- **premises**: reasons that are presented to persuade someone that a conclusion is true or probably true
- **assumptions**: premises for which no proof or evidence is offered
- **counterarguments**: reasons that take support away from the conclusion

**Common Fallacies**

- **irrelevant reasons**: reason doesn't provide support for an argument
- **circular reasoning**: premise and conclusion are restatements of each other
- **slippery slope**: if a certain event happens, things will spin out of control and worse events will follow
- **weak analogies**:
    - good analogies are when two concepts or events are similar in some way
- **false dichotomy**: a choice between two outcomes, whereby one is favourable and the other is obviously horrible (reality normally doesn't permit just 2 options)

**Evaluating the Strength of Arguments**

- look at the conclusion and supporting premises
    - does the conclusion follow the premises?
- what are the counterarguments?
- anything missing from argument?