I. MEMORY: the cognitive process of preserving information; the ability to access and use what has been learned.
   A. Encoding: involves forming a memory

   B. Storage: involves maintaining encoded information in memory over time.

   C. Retrieval: Involves recovering information from memory stores

   Metamemory: memory about how our memory system works.

II MULTI-STORE MODEL OF MEMORY: proposes that memory has 3 different kinds of memory stores

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

   B. Short-Term Memory [STM] (Working Memory): Limited capacity store that can maintain unrehearsed information for about 20 to 30 seconds.

   1) Maintenance Rehearsal: the process of repetitively verbalizing or thinking about the information

   2) Chunk: a group of familiar stimuli stored as a single unit.
C. **Long-Term Memory (LTM)**: an unlimited capacity store that can hold information over lengthy periods of time.

**Elaborative Rehearsal**: involves linking a stimulus to other information at the time of encoding

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**III LEVELS OF PROCESSING MODEL OF MEMORY**: proposes that deeper levels of processing result in longer-lasting memory codes.

**A. Structural Code**: a memory code that emphasizes the PHYSICAL STRUCTURE of the stimulus
- Initial, relatively SHALLOW PROCESSING

* WITH FURTHER PROCESSING

**B. Phonemic Code**: a memory code that emphasizes what a word sounds like

* WITH DEEPER PROCESSING

**C. Semantic Code**: a memory code that emphasizes the meaning of verbal input.
IV SEPARATE DIVISIONS OF MEMORY

A. Nondeclarative Memory (procedural memory): is memory for ACTIONS, SKILLS, & OPERATIONS.

B. Declarative: remembering the rules of tennis (scoring, rules..)

B₁. Semantic Memory: contains general knowledge that is not tied to the time when the information was learned.

B₂. Episodic Memory: is made up of CHRONOLOGICAL, or temporally dated, recollection of personal experiences

V. WHERE CAN WE FIND MEMORIES IN THE BRAIN?
   - Lashley

   - Memories - reusable pathways

   - Hippocampus:
• IMPROVING MEMORY: FACTORS AFFECTING RETRIEVAL •

I. ENCODING AND RETRIEVAL

A. Encoding Specificity Principle: states that the value of a retrieval cue depends on how well it corresponds to the memory code.

B. State-dependent Memory: improved recall that is attributed to being in the same physiological (emotional) state during encoding and subsequent retrieval.

II. STRATEGIES THAT GUIDE ENCODING:

A. Meaningfulness: the extent to which items elicit ASSOCIATIONS in one's memory

B. Mnemonic Devices: a memory aid that is based on encoding each item in a special way.

1) Narrative Chaining: a mnemonic device in which UNORGANIZED INFORMATION is weaved into a meaningful story.

2) Key Word Method (Peg): a useful mnemonic when one has to REMEMBER ITEMS IN A PARTICULAR ORDER

3) Method Of Loci: a mnemonic device that calls for linking the items on a list with a memorized list of places.

4) FORMING MENTAL IMAGES: more commonplace & interactive images are more useful than strange & bizarre ones.
C. Schema: is an organized cluster of knowledge about a particular object or sequence of events

III. AMOUNT AND DISTRIBUTION OF ENCODING PRACTICE
   A. Overlearning: rehearsal of information beyond what is needed to learn it.

   B. Testing Effect:

   C. Scheduling of Practice:
      1) Massed-Practice:

      2) Distributed-Practice:

IV. MEASURES OF THE PERSISTENCE OF MEMORY: the extent to which an item is available after various delays

   A. EXPLICIT (Direct measures of memory)
      1) Recall measure: requires subjects to reproduce information on their own without any cues

      2) Cued Recall: still required to reproduce information but given a cue

      3) Recognition: requires subjects to select previously learned information from an array of options
B. IMPLICIT (indirect measures of memory)
   Relearning: requires a subject to memorize information a second time to determine how much time or effort is saved by having learned it before.

V. INTERFERENCE AND RETRIEVAL

A. Interference Theory:
   1) Retroactive Interference: occurs when new information impairs the retention of previously learned information

   2) Proactive Interference: occurs when previously learned information interferes with the retention of new information.

B. Decay Theory:

OTHER MEMORY PHENOMENON

Serial-Order-Effect: learn and retain items at the beginning & end of the list.

A) Primacy Effect: the tendency to remember the first items

B) Recency Effect: the tendency to remember the last items
VI. OTHER MEMORY ISSUES:
A. Reconstructive Memory:

B. False Memories:

C. Repressed Memories: difficulty in retrieving information (trauma).
- Repressed memory is a clinical term not a memory term

D. Eyewitness Testimony:

1) Compromise Memory: blending of information to come up with one version of the event.

2) Misinformation Effect: postevent information biases the recall of an event.

SQ3R Method  (Self monitoring of reading comprehension):

Survey:
Question:
Read:
Recite:
Review:
Chapter 7: INTELLIGENCE & PROBLEM SOLVING

• PROBLEM SOLVING •

A. **Problem**: a situation in which there is a discrepancy between one’s current state and one’s desired, or goal state, with no clear way of getting from one to the other.

B. **Strategy**: a systematic plan for generating possible solutions that can be tested to see if they are correct

1) **Algorithm**: a mechanical, repetitive mathematical procedure for solving a problem.

2) **Heuristic**: is a strategy or guiding principle used in solving problems.

Working Backward:

C. **BARRIERS TO EFFECTIVE PROBLEM SOLVING**

1) **Mental Set** (fixation): indicating our persistence in applying strategies that have worked in the past but are not appropriate to the situation at hand.

2) **Functional Fixedness**: the inability to use a familiar object for an unfamiliar function.

D. **Availability Heuristic**: the strategy of assuming that how many memories of an event are available indicated how common the event actually is.
E. **Representativeness Heuristic**: is the tendency to assume that if an item is similar to members of a particular category, it is probably a member of that category itself.

F. **Positive Test Strategy**: the heuristic of sticking with an acceptable decision or solution, even if a better one might exist.

G. **DIFFERENT PROBLEM SOLVING TECHNIQUES**
   1) **Divergent Thinking**: we try to expand the range of alternatives by generating many possible solutions.

   2) **Convergent Thinking**: we try to narrow down a list of alternatives to converge on a single correct answer.

• **LANGUAGE** •

*Language*: is a collection of symbols, and rules for combining those symbols, that can be used to create an infinite variety of messages.

   1) Symbolic
   2) Generative
   3) Structured

Psycholinguistics:

I. **LANGUAGE AS A SOCIAL PROCESS**:

   A. **Semantics**: a set of rules for deriving meaning of words and sentences.

   B. **Pragmatics**: the study of how social context affects the meaning of linguistic events.
II. LANGUAGE ACQUISITION:

A. Critical Period: a period in which there is a “learning readiness”. Once the critical period has ended, it would be difficult if not impossible to learn.

B. Babbling: the production of speech phonemes that typically occur in rhythmic and repetitive patterns

• INTELLIGENCE •

Psychological Test: is a standardized measure of a SAMPLE of a person’s BEHAVIOR (that which we can measure)

IT IS IMPORTANT FOR PSYCHOLOGICAL TEST TO BE STANDARDIZED AND OBJECTIVE

A. Standardized: process of selecting items & assigning meaning to the scores

B. Objective: scoring of the test

C. Reliability: refers to the measurement consistency of a test

D. Validity (test against another test): refers to the ability of a test to measure WHAT it was designed to measure

Predictive Validity: the ability of a test's score to predict behavior in another setting.
Content Validity: refers to the degree to which the context of a test is REPRESENTATIVE of the domain it's suppose to cover.

E. Norms: the frequency at which particular scores occur

Intelligence: The capacity to understand the world and the resourcefulness to cope with its challenges.

Operational definition of Intelligence: that which an intelligence test measures.

I. THEORIES OF INTELLIGENCE:

A. Classic Models Of Intelligence
   1. Spearman's Monarchic Theory: His theory states that intelligence is made up of two things
      G-Factor: General intelligence
      S-Factor: Specific Intellectual Skills such as mechanical, musical, arithmetical, logical, spatial

   2. Thurstone's Primary Mental Abilities:
      * Thurstone thought that the assessment of SPECIFIC ABILITIES maybe more useful than assessment of general mental abilities
      PRIMARY MENTAL ABILITIES: each measure is separate and independently measurable. 1) Verbal Comprehension, 2) Number, 3) Spatial Relations, 4) Perceptual Speed, 5) Word Fluency, 6) Memory, 7) Inductive Reasoning
B. Contemporary Models of Intelligence

1. **Sternberg's Triarchic Model:**
   Intelligence is governed by three sets of mental processes
   
   a) Analytic (Componential):

   b) Creative (Experiential):

   c) Practical (Contextual):

2. **Howard Gardner’s Model**
   1. Verbal/Linguistic: 5. Body/Kinesthetic:
   2. Mathematical/Logical: 6. Intrapersonal:
   3. Spatial: 7. Interpersonal:
   4. Musical: (8) Naturalist:

II. Psychological Tests of Intelligence

A. **Stanford-Binet:** wrote the first practical test of general intelligence.

1) **CRYSTALLIZED:** represents skills needed for acquiring and using information about verbal and quantitative concepts to solve problems

2) **FLUID-ANALYTIC:** skills needed to solve figural or nonverbal information

3) **SHORT TERM MEMORY:** tests one's ability to hold information for short periods of time
B. Wechsler Test of Intelligence

WAIS-IV Wechsler Adult Intelligence Scale - Revised
appropriate for subjects between 16-74

WISC-IV Wechsler Intelligence Scale for Children - Revised
appropriate for subjects between 6-16

C. GROUP TESTS OF INTELLIGENCE:

III. CONTROVERSIES AND ISSUES IN INTELLIGENCE
   A. INFLUENCE OF HEREDITY AND ENVIRONMENT ON INTELLIGENCE

   B. GROUP DIFFERENCES IN IQ

   [Graph of two bell curves with labels indicating differences]

   C. GENDER DIFFERENCES AND IQ
      - Seems to be no difference in Global IQ
D. AGE DIFFERENCES AND IQ:

CROSS-SECTIONAL: IQ peaks in early twenties, stable for 20 years, then declines sharply

LONGITUDINAL: IQ scores rise until mid-fifties then gradual decline.

Fluid Intelligence: basic power of reasoning including the ability to perceive relationships, deal with unfamiliar problems, and gain new types of knowledge.

Crystallized Intelligence: acquired skills and knowledge in addition to the application of that knowledge to a specific context in a person's experience.

E. RACIAL AND ETHNIC DIFFERENCES AND IQ
I. GENETICS AND PSYCHOLOGY

**Gene:** DNA segments that serve as the key functional units in hereditary transmission

**Dominant Gene:** the gene that is expressed when paired genes are heterozygous (different)

**Recessive Gene:** a gene that is masked when paired genes are heterozygous

**Epigenetic Model:** the interactionist position in which development is influenced by one’s genetic programming and one’s experience.

**Plasticity:** the extent to which an organism can be shaped or molded by experience

II. PRENATAL DEVELOPMENT

**Prenatal Period:** The prenatal period is divide into three phases

a) **Germinal Stage:** (conception to about 2 weeks) Zygote
b) **Stage of the Embryo:** the prenatal development phase from 2 weeks to 8 weeks when vital organs and bodily systems begin to form.

c) **Stage of the Fetus:** prenatal developing organism from 8 weeks until birth

**Viability:** the extent to which the fetus is able to survive on its own.

III. ENVIRONMENTAL INFLUENCES
A. Nourishment:

   Water soluble:

   Fat soluble:

B. Smoking, Drinking, & Drugs

   Fetal Alcohol Syndrome (FAS): a condition afflicting babies of alcoholic mothers, characterized by mental retardation, slowed growth, and physical malformation

C. Maternal Stress

D. Influence of the Father
DEVELOPMENT IN CHILDHOOD

I. MOTOR DEVELOPMENT

1. NEONATE: the newborn child from birth through the first 2 weeks

2. Motor Development: refers to the progression of muscular coordination required for physical activities
   a) Cephalocaudal Sequencing: the head-to-foot direction of motor development
   b) Proximodistal Sequencing: is the center-outward direction of motor development

II. COGNITIVE DEVELOPMENT

A. STRUCTURAL-FUNCTIONAL APPROACH (Piaget):

1. TWO COMPLEMENTARY PROCESSES THAT ALTER THINKING:

   Schemas: a recurrent action pattern or mental structure involved in the acquisition and structuring of knowledge

   a) Adaptations: consists of two complimentary processes
      1) Assimilation: Interpreting new experiences in terms of mental structures already available without changing them.
      2) Accommodation: involves changing existing mental structures to explain new experiences.

   b) Equilibration: process of trying to maintain a balance between cognitive abilities and the demands of the environment.
2. STAGES OF DEVELOPMENT

a) **Sensorimotor Stage**: the period from birth to about age 2 when knowledge is based on sensations and physical actions.

**Object Permanence**: understanding that objects continue to exist when out of sight.

b) **Preoperational Stage**: the period from about age 2 to age 7, when thought is intuitive, inflexible, and focused on individual events.

c) **Concrete Operations Stage**: the period from about 7-11 years, when thought is flexible, rigorous, and logical, but only in regard to concrete symbols.

**Conservation**: term for understanding that changes in the physical appearance of objects do not alter their weight, mass or volume.

**Reversibility**: permits a child to mentally undo an action.

**Decentration**: allows the child to focus on more than one feature of a problem simultaneously.

d) **Formal Operations Stage**: (begins around 11 years) children begin to apply their operations to abstract concepts in addition to concrete objects.
B. THE INFORMATION PROCESSING APPROACH
   1) Development of Learning

   2) Development of Memory

   3) Development of Attention
      a) Scanning:
      b) Selectivity:

C. THEORY OF PSYCHOSOCIAL DEVELOPMENT (Erikson)
   * Each stage is assumed to bring a psychosocial crisis

1. Trust vs. Mistrust (first year of life):
   - Are biological needs met?

2. Autonomy Vs. Self-Doubt: (second and third year of life)
   - Toilet training
   - Personal responsibility (self-regulation)

3. Initiative vs. Guilt: (fourth to sixth years)
   - Challenge facing the child is to function socially within his/her family.

4. Competence vs. Inferiority: (6 through puberty)
   - Functioning socially is extended beyond the family to the broader social realm of the neighborhood and school.

ADOLESCENCE
(5) Identity vs. Role Confusion (Erikson)
   Significant social relationships: peer groups and outgroups
**Early Adulthood**

(6) **Intimacy vs. Isolation: (Erikson)**
Significant social relationships: ability to form close and lasting relationships and to make career commitments

**Middle Adulthood**

(7) **Generativity vs. Stagnation: (Erikson)**
Concern for family, society, and future generations

**Late Adulthood**

(8) **Ego-Integrity vs. Despair: (Erikson)**
A sense of fulfillment and satisfaction with one’s life; willingness to face death

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**E. Death and Dying:**

1) Denial:

2) Anger:

3) Bargaining:

4) Depression:

5) Acceptance:
F. Parenting Styles

Two Key factors to look at:
- Demandingness (control) of the parent
- Responsiveness or warmth of the parent

<table>
<thead>
<tr>
<th>Demandingness</th>
<th>Responsiveness</th>
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<tr>
<td>Low</td>
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a. Uninvolved (permissive-neglectful)
- Lack of control over child
- Parent is indifferent to child
- Lack of respond to the child’s needs

b. Indulgent (permissive):
- Place few demands on the child
- Let child make own decisions.

c. Authoritarian:
- Imposes rules
- Expects strict obedience
- Uses of physical/verbal punishment
- Usually not warm in the interactions

d. Authoritative:
- Set clear rules (willing to explain rules)
- Enforce them consistently
- Involve child in decision-making process