University of Algiers 2 Abdelkacem Saad Allah

Faculty of Social Sciences
Department of Psychology

Lectures on Introduction to General Psychology

Course intented for the first year Social Sciences students

Prepared by:

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الجمهوريـــــــة الجزائريـــة الديمقـــراطـــية الشعـبية
People's Democratic Republic of Algeria
وزارة التعليم العالي و البحث العلمي
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جـــــامعة الجزائـــــر 2
أبو القاسم سعـد اللـه
كـلية العلوم الاجتماعية
المجلس العلمي للكليـــة

Algiers University2
Abou EL Kacem Saadallah
Social Sciences College
Scientific Council of the Faculty

مستخرج من محضر اجتماع المجلس العلمي للكلية

وافق المجلس العلمي للكلية بجلسته المنعقد بتاريخ 2024/09/23 على مطبوعة بيداغوجية

للأستاذ(ة): **بركوش فايزة** قسم **علم النفس** الموسومة بـ:

« LECTURES ON INTRODUCTION TO GENERAL PSYCHOLOGY »

موجهة لطلبة السنة أولى جذع مشترك.

سلم هذا المستخرج بطلب من المعني (ة)لاستخدامه فيما يسمح به القانون.

العميد

رئيس المجلس العلمي

جامعة الجزائر -2- أبو القاسم سعد الله

كلية العلوم الاجتماعية

قسم علم النفس

مستخرج من محضر اجتماع اللجنة العلمية للقسم

اجتمعت اللجنة العلمية للقسم بتاريخ:11/ 09 /2024 وبعد الاطلاع على تقارير الخبرة الايجابية الخاصة بالمطبوعة البيداغوجية للأستاذة * بركوش فايزة * تحت عنوان: " Lectures on Introduction to General Psychology "، موجهة للطلبة السنة الأولى جذع مشترك للموسم الجامعي 2024/2023 المطلوبة ضمن ملف الترقية إلى مصف الأستاذية .

وافقت اللجنة على الطلب.

رئـــيس اللجنـــة العلميـــة

أ.د بوعمامة سماعين
رئيس اللجنة العلمية لقسم
علم النفس

رئـــيس القســـم

Teaching Module: Introduction to General Psychology

Coefficient : 2

Credits: 05

Weekly Hours: 1h30

Assessment Method: Continuous assessment + exam

Course Objectives:

Students will be able to:

- Define psychology and its major branches
- Describe the historical development of psychology as a scientific discipline
- Identify the key concepts and theories in psychology
- Explain the different research methods used in psychology
- Apply psychological principles to real-world issues and behaviors
- Develop critical thinking skills to evaluate psychological research and information

Prerequisites :

- A basic understanding of the nervous system and the brain, which are fundamental to understanding human behavior, is helpful.
- Critical and scientific thinking (The ability to analyze information objectively).
- Interpreting Research Findings: Scientific thinking allows you to evaluate the strength and limitations of research studies.

The program established according to the framework of the introductory module to general psychology (1st Year common core):

1- History and Development of Psychology
2- Research methods in psychology
3- Theories of school psychology :
   - 3-1- Stucturalism
   - 3-2- Functionalism
   - 3-3- Analytic psychology
   - 3-4- Gestalt psychology
   - 3-5- Behaviourism
   - 3-6- Cognitivism
   - 3-7- Humanistic theory
   - 3-8- Self-theory (Carl Rogers's)
4- Intelligence
5- Attention
6- Memory

TABLE OF CONTENT

Third Lecture:

Theories of school psychology

Fourth Lecture:

Intelligence

Fifth Lecture:

Attention

Sixth Lecture:

Memory

Preface:

This introductory course provides a comprehensive overview of the field of psychology, exploring the fundamental concepts, theories, and research methods that underpin our understanding of human behavior and mental processes. Students will gain insights into the diverse perspectives that have shaped the discipline, from the early philosophical inquiries into the nature of the mind to the contemporary scientific approaches.

General psychology offers valuable insights into human nature, fostering a deeper understanding of ourselves and others. This enhanced comprehension can significantly improve our interpersonal relationships and communication skills. Furthermore, the principles and concepts explored in general psychology have broad applications across numerous domains, including education, business, law, and more. By delving into the complexities of the human mind and behavior through the study of general psychology, we can gain a deeper appreciation for our own thoughts, feelings, and actions. This knowledge empowers us to make informed decisions, effectively solve problems, and ultimately enhance our overall well-being.

Psychology is an exciting field and the history of psychology offers the opportunity to make sense of how it has grown and developed. The history of psychology also provides perspective.

It is always a difficult question to ask, where to begin to tell the story of the history of psychology. Some would start with ancient Greece; others would look to a demarcation in the late 19th century when the science of psychology was formally proposed and instituted. These two perspectives, and all that is in between, are appropriate for describing a history of psychology.

Psychological theories are frameworks that attempt to explain various aspects of human behavior and mental processes. These theories provide a lens through which psychologists can interpret and understand different phenomena, such as personality, motivation, learning, and social interactions. There are numerous psychological theories, each with its unique perspectives and explanations. Some prominent theories include psychoanalytic theory, Behavioral theory, Cognitive theory, Humanistic theory…. We will go into detail about each theory in this course.

Psychologists test research questions using a variety of methods. Most research relies on either correlations or experiments. With correlations, researchers measure variables as they naturally occur in people and compute the degree to which two variables go together. With experiments, researchers actively make changes in one variable and watch for changes in another variable.

The brain is the most complex part of the human body. It is the center of consciousness and controls all voluntary and involuntary movement and bodily functions. (Kearns, Lee, 2015). In this Course handout we will learn more about important skills as: Intelligence, Attention and Memory.

Our exploration of psychology will encompass its historical development, various theoretical perspectives, research methodologies, and fundamental cognitive processes including intelligence, attention, and memory.

LECTURE 01:

HISTORY AND DEVELOPMENT OF PSYCHOLOGY

First Lecture:

History and Development of Psychology

If we cling to our ignorance of history, error crushed to earth, will rise again, and we will have to go on solving the same old problems again and again.

—Mary Henle (1976)-

Introduction:

The history of psychology is a captivating journey through humanity's attempts to unravel the workings of the human mind and behavior. From its philosophical roots in ancient Greece to its modern scientific developments, psychology has undergone a remarkable evolution, becoming enriched by diverse perspectives and approaches.

In this course, we will define psychology, provide a historical overview of psychology, discuss its development, explore its various domains, and examine the relationship between psychology and other disciplines.

1-What is Psychology ?

Psychology is the *scientific study of mind and behaviour*. The word "psychology" comes from the Greek words "psyche," meaning *life*, and "logos," meaning *explanation*. Psychology is a popular major for students, a popular topic in the public media, and a part of our everyday lives. (Stangor ,Walinga,2014,06)

The discipline of psychology is broadly divisible into two parts: a large profession of practitioners and a smaller but growing science of mind, brain, and social behaviour. The two have distinctive goals, training, and practices, but some psychologists integrate the two. (Mischel,2024)

Psychology is the scientific study of the mind and behavior, according to the American Psychological Association. Psychology is a multifaceted discipline and includes many sub-fields of study such areas as human development, sports, health, clinical, social behavior and cognitive processes.

It is an academic discipline of immense scope. Psychologists seek an understanding of the emergent properties of brains, and all the variety of phenomena linked to those emergent properties, joining this way the broader neuro-scientific group of researchers. As a social science, it aims to understand individuals and groups by establishing general principles and researching specific cases(Roberts,2021).

In this field, a professional practitioner or researcher is called a psychologist and can be classified as a social, behavioral, or cognitive scientist. Psychologists attempt to understand the role of mental functions in individual and social behavior, while also exploring the physiological and biological processes that underlie cognitive functions and behaviors (Roberts,2021).

2-A brief history of Psychology:

The word 'psychology' is derived from the Greek psyche (mind, soul or spirit) and logos (knowledge, discourse or study).

Literally, then, psychology is the 'study of the mind'. The emergence of psychology as a separate discipline is generally dated at 1879, when Wilhelm Wundt opened the first psychological laboratory at the University of Leipzig in Germany. Wundt and his co-workers were attempting to investigate 'the mind' through introspection (observing and analysing the structure of their own conscious mental processes) (Gross ,2020).

Germany is widely regarded as the homeland of scientific psychology (Ash, 2003). It is here that the earliest surviving work with the word, "psychology" in the title was published in 1590 (Goclenius, 1590). It was also here that the earliest work with the title, "History of Psychology" [Geschichte der Psychologie] was published in 1808 (Carus, 1808). Germany was also the home of significant figures like Helmholtz, Fechner and Wundt and a substantial literature on the history of psychology was published in German in the nineteenth century and in the years leading up to the First World War.(Brock,2019)

Interest in the history of psychology is as old as the discipline itself. Early textbook writers such as Wilhelm Wundt and William James acknowledged earlier contributions from disciplines such as physics, physiology, and philosophy. As noted, people discussed psychological topics centuries before psychology became a formal discipline. So, it's no surprise that early psychologists were interested in the history of psychological ideas even while the formal discipline was in its infancy. (Brett King ,and al , 2013, p 12)

Introspection's aim was to analyse conscious thought into its basic elements and perception into its constituent sensations, much as chemists analyse compounds into elements. This attempt to identify the structure of conscious thought is called structuralism. Wundt and his co-workers recorded and measured the results of their introspections under controlled conditions, using the same physical surroundings, the same 'stimulus' (such as a clicking metronome), the same verbal instructions to each participant, and so on. (Gross ,2020).

This emphasis on measurement and control marked the separation of the 'new psychology' from its parent discipline of philosophy.

Philosophers had discussed 'the mind' for thousands of years. For the first time, scientists (Wundt was a physiologist by training) applied some of scientific investigation's basic methods to the study of mental processes.

This was reflected in James's (1890) definition of psychology as:

The Science of Mental Life, both of its phenomena and of their conditions… The Phenomena are such things as we call feelings, desires, cognition, reasoning, decisions and the like (Gross ,2020).

3-How did psychology develop as a science?

Historical accounts of the development of scientific psychology place the origins of the discipline in Germany at about the middle of the nineteenth century. The ferment produced by British and continental philosophies of mind and the advances of research in sensory physiology provided the immediate context for the beginning of the new psychology. The pursuit of knowledge about mind and its processes has a history that is embedded in the history of philosophy. The late-eighteenth-century declaration that a true scientific study of the mind was not possible posed a challenge that was answered in the nineteenth century when the possibility of a scientific study of mind emerged within philosophy by the adoption of the experimental methods employed to study the physiology of the senses. The synergy of these nineteenth century developments gave impetus to the "new psychology" whose history embodies continued efforts to develop and maintain psychology as a scientific discipline and to extend the methods of science to an ever-widening field of inquiry within the discipline. (Freedheim , Weiner, 2003, p 01)

Beginning with Plato and Aristotle, people have contemplated how to gain understanding of the truth. Plato held that rationalism offers the clear path to truth,

whereas Aristotle espoused empiricism as the route to knowledge. Centuries later, Descartes extended Plato's rationalism, whereas Locke elaborated on Aristotle's empiricism. Kant offered a synthesis of these apparent opposites. Decades after Kant proposed his synthesis, Hegel observed how the history of ideas seems to progress through a dialectical process (Sternberg,2009,p30)

4-Psychology Emerges as a Separate Discipline

During the mid-1800s, a German physiologist named Wilhelm Wundt was using scientific research methods to investigate reaction times. His book, published in 1873, "Principles of Physiological Psychology," outlined many of the major connections between the science of physiology and the study of human thought and behavior.[2]

He later opened the world's first psychology lab in 1879 at the University of Leipzig. This event is generally considered the official start of psychology as a separate and distinct scientific discipline.

How did Wundt view psychology? He perceived the subject as the study of human consciousness and sought to apply experimental methods to studying internal mental processes. While his use of a process known as introspection is seen as unreliable and unscientific today, his early work in psychology helped set the stage for future experimental methods.

An estimated 17,000 students attended Wundt's psychology lectures, and hundreds more pursued degrees in psychology and studied in his psychology lab. While his influence dwindled as the field matured, his impact on psychology is unquestionable.(Kendi,2024)

5- Specialty Areas in Psychology

The enormous diversity of contemporary psychology as a scientific discipline is reflected in the following thumbnail descriptions of psychology's specialty areas.

1- **Clinical Psychology:** Clinical psychology integrates science, theory, and practice in order to understand, predict and relieve problems with adjustment, disability, and discomfort. It promotes adaption, adjustment, and personal development. It can help us to understand, prevent, and alleviate psychologically-caused distress or dysfunction, and promote an individual's well-being and personal development. (Roberts, 2021)
2- **Cognitive Psychology:** Cognitive psychology investigates internal mental processes, such as problem solving, memory, learning, and language. It

looks at how people think, perceive, communicate, remember, and learn. It is closely related to neuroscience, philosophy, and linguistics (Roberts, 2021) .

Cognitive psychology is the study of how people perceive, learn, remember, and think about information. (Sternberg,2009,p30)

3- **Developmental Psychology**: This is the scientific study of systematic psychological changes that a person experiences over the life span, often referred to as human development. It focuses not only on infants and young children but also teenagers, adults, and older people.
4- **Evolutionary Psychology:** Evolutionary psychology looks at how human behavior, for example language, has been affected by psychological adjustments during evolution. (Roberts, 2021)
5- **Forensic Psychology:** Forensic psychology involves applying psychology to criminal investigation and the law. A forensic psychologist practices psychology as a science within the criminal justice system and civil courts.
6- **Health Psychology:** Health psychology is probably the most recent development in this process of including psychology into an understanding of health.

Health psychology regards psychological factors not only as possible consequences of illness but as contributing to its aetiology. Health Psychologists considers both a direct and indirect association between psychology and health. The direct pathway is reflected in the physiological literature and is illustrated by research exploring the impact of stress on illnesses such as coronary heart disease and cancer.

Health psychology focuses on the indirect pathway between psychology, and health emphasizes the role that beliefs and behaviours play in health and illness.(Ogden,2004,p04)

7- **Neuropsychology:** Neuropsychology looks at the structure and function of the brain in relation to behaviors and psychological processes. A neuropsychology may be involved if a condition involves lesions in the brain, and assessments that involve recording electrical activity in the brain. (Roberts, 2021)
8- **Occupational Psychology:** Occupational or organizational psychologists are involved in assessing and making recommendations about the performance of people at work and in training. (Roberts, 2021)

9- Social psychology :

Social psychology is a discipline or subject area that uses scientific methods for studying the behavior of the individuals in social situations involving the presence of others (Mangal, Mangal, 2022).

Social psychology is a branch of psychology that deals specifically with the scientific study of the social behavior of the individuals rather than any other types of behavior such as abnormal behavior – the focus of abnormal psychology – or human behavior, in general, studied in general psychology.

It tells us that our thoughts, feelings and actions are influenced with the interactions and presence of others and vice versa. Proceeding further, it acquaints us with the way these are influenced in the presence of others in one or the other social situations. In other words, thus, social psychology may be found to look at human behavior as influenced by other people and the social context in which this occurs (Mangal, Mangal, 2022).

10- Positive psychology :

Positive psychology is the study of the conditions and processes that contribute to the flourishing or optimal functioning of people, groups, and institutions.

However, positive psychology does not imply that the rest of psychology is negative, although it is understandable that the name may imply that to some people. In fact, the large majority of the gross academic product of psychology is neutral, focusing on neither wellbeing nor distress. Positive psychology grew largely from the recognition of an imbalance in clinical psychology, in which most research does indeed focus on mental illness (Gable, Haidt,2015,p104)

6-Career Paths in Psychology :

Psychologists are scientists whose work contributes to every aspect of our lives. Careers in psychology can be found in countless fields, from health care and public service to education, business, and technology.

Here is a glimpse of the breadth of work that psychologists do.

Helping businesses

The science of psychology is redefining what makes a successful workplace and helping to shape the technology that makes our lives easier.

Helping people improve their lives

Psychological science is exploring how the mind works, evaluating how people learn, and facilitating peak human performance to help people make smarter choices in their daily lives.

Promoting health

Psychological science is unlocking the mysteries of how the brain works, helping people make healthy lifestyle choices, and improving the treatment of complex human problems.

Protecting the planet

Psychological science is working to change human behavior to restore our environment.

Serving communities

Psychological science is strengthening communities by combining clinical work and forensic evaluation to support the legal process.

Understanding the world around us

The science of psychology is helping people understand the world and improve our interactions with the environment and the people in our lives.

Working in schools

Psychological science is reexamining how people learn and helping facilitate peak performance in the classroom, on the playing field, and in other situations that require physical and mental execution. (American Psychology Association, 2013)

7-The Relation Between Psychology and Other Sciences:

Psychology can take a leadership role in helping different disciplines come together to address society's top priorities, including health care and environmental sustainability.

Psychology really is a hub science for interdisciplinary research," said Belar, pointing to a 2005 *Scientometrics* study by Kevin W. Boyack, PhD, and others. Using publication data to see where articles were being cited, the study showed that psychology was one of seven science hubs, along with such disciplines as physics, chemistry and medicine (Clay, 2011).

Psychology practice is also becoming more interdisciplinary, said Belar, although in this realm, "interprofessional" is the term used more often. For example, health-care reform emphasizes patient-centered care in which psychologists work as members of primary-care teams to improve care.

Also on the rise is interprofessional education, in which students from two or more disciplines learn from and with each other to improve collaboration and health outcomes (Clay, 2011).

Some exemples about the nexus between psychology and other fields:

- **Psychology and Arts & Humanities:**

It is reported that "both the arts and the humanities have substantive psychological significance in our lives" .In other words, these fields are tightly interconnected due to their common interest in human experience and overlapping objectives in improving the understanding of human society from its individual facets to the global social dynamics (PsychologyWriting, 2023).

- **Psychology and Natural Sciences :**

Natural sciences deal with the physical world, which not only directly impacts the human psyche but also serves as a basis for the existence of core functional enablers of human psychology, such as the human brain and its constituents. The field of psychology cannot exist without natural sciences as well as social sciences because, fundamentally, the human mind and behavior are the result of physical and social influences (PsychologyWriting, 2023).

- **Psychology and Behavioral Sciences :**

Behavioral sciences focus on how individuals act in the world, where observations and experiments are made to understand the common patterns of behavioral frameworks. It also heavily relies on both information or neural sciences and social or relational sciences. It is important to note that behavioral sciences do not solely focus on human behavior but also on other organisms, such as animals. The human mind, including thoughts and emotions, manifests itself in

actions, which constitute human behavior in the form of habits and intentional choices.(PsychologyWriting, 2023)

8- The Goals of Psychology

To Describe

Describing a behavior or cognition is the first goal of psychology. This can enable researchers to develop general laws of human behavior.

For example, by describing the response of dogs to various stimuli, Ivan Pavlov helped develop laws of learning known as classical conditioning theory. (Mcleod,2023)

To Explain

Once researchers have described general laws behavior, the next step is to explain how or why this trend occurs. Psychologists will propose theories which can explain a behavior. (Mcleod,2023)

To Change

Once psychology has described, explained and made predictions about behavior, changing or controlling a behavior can be attempted.

For example, interventions based on classical conditioning, such as systematic desensitization, have been used to treat people with anxiety disorders including phobias.(Mcleod,2023)

To Predict

Psychology aims to be able to predict future behavior from the findings of empirical research. If a prediction is not confirmed, then the explanation it is based on might need to be revised.

For example, classical conditioning predicts that if a person associates a negative outcome with a stimuli they may develop a phobia or aversion of the stimuli. (Mcleod,2023)

A major goal of psychology is to predict behavior by understanding its causes. Making predictions is difficult in part because people vary and respond differently in different situations. Individual differences are the variations among people on physical or psychological dimensions.

Because of the many individual difference variables that influence behavior, we cannot always predict who will become aggressive or who will perform best in graduate school or on the job. The predictions made by psychologists (and most other scientists) are only probabilistic. (Stangor ,Walinga,2014, p14)

Figure 1: The Goals of Psychology

Source: (Uddin,2024,p 04)

9- Difference between clinical psychologist and psychiatrist:

Many students wonder how clinical psychologists differ from psychiatrists. Both clinical psychologists and psychiatrists are trained in the diagnosis, treatment, causes, and prevention of psychological disorders. However, their training and credentials are different. The training that a clinical psychologist receives leads to a doctorate in clinical psychology, either a Ph.D. or Psy.D. Clinical psychologists have extensive training in the different types of psychotherapy.

In contrast, psychiatry is a medical specialty. Thus, a psychiatrist first obtains a medical degree, either an M.D. or D.O., followed by several years of specialized training in the treatment of mental disorders. Psychiatrists are more likely to emphasize the role of biological factors in psychological disorders. As physicians, psychiatrists can hospitalize people and order biomedical therapies, such as electroconvulsive therapy (ECT) or transcranial magnetic stimulation (TMS).

Psychiatrists can also prescribe medications to treat the symptoms of different psychological disorders.

Clinical psychologists are not medical doctors and cannot order medical treatments. (Hockenbury, Hockenbury, 2011, p14)

Conclusion:

The history of psychology is an intrinsically interesting subject, covering groundbreaking thinkers and a wealth of ideas about human and animal nature. From the ideas of the earliest Greeks about mental illness, to concepts of childhood in the Middle Ages, to the nineteenth-century vision of a new discipline called psychology—the story is a fascinating and worthwhile adventure. (Brett King ,Douglas Woody,Wayne, 2013)

The problems associated with defining psychology are not new. As noted by Leahy (1992), the field was actually founded on three distinct subject matters: (a) consciousness by thinkers such as Wundt and Ebbinghaus; (b) unconsciousness by thinkers such as Freud and Jung; and (c) adaptation by thinkers like Spencer and James. Of course, shortly after the turn of the century Watson (1913) rejected each of these perspectives, and during the behaviorist reign from the 1920s through the 1960s animal behavior was the proper subject matter of psychology. With the assent of cognitive and humanistic approaches in the past three decades, the focus has shifted back to the level of the human individual. (Henriques,2004, p 1208)

Discussion Questions: 

1- What is the scientific study of mind and behavior?
2- Can you explain the concept of psychology?
3- What were the key ideas of Wilhelm Wundt and how did he establish the first experimental psychology lab?
4- Explain how psychology changed from a philosophical to a scientific discipline.

LECTURE 02:

RESEARCH METHODS IN PSYCHOLOGY

Second Lecture:

Research methods in psychology

Introduction:

Research methods are generally divided into two categories: quantitative or qualitative. Quantitative research focuses on using numbers and statistics to answer questions about what is happening in a group and to what degree, and qualitative methods aim to describe events while digging deeper into the reasons behind why something is happening.

Common research methods in psychology include surveys, case studies, experimental studies, content analysis, meta-analysis, correlational research, quasi-experiments, naturalistic observation, structured observation and clinical interview (Eads, 2022) .

Research methods in psychology:

1-Experiments:

A method of studying psychological phenomena and processes. The experimental method in psychology attempts to account for the activities of animals (including humans) and the functional organization of mental processes by manipulating variables that may give rise to behaviour; it is primarily concerned with discovering laws that describe manipulable relationships. The term generally connotes all areas of psychology that use the experimental method.

These areas include the study of sensation and perception, learning and memory, motivation, and biological psychology. There are experimental branches in many other areas, however, including child psychology, clinical psychology, educational psychology, and social psychology. Usually the experimental psychologist deals with normal, intact organisms; in biological psychology, however, studies are often conducted with organisms modified by surgery, radiation, drug treatment, or long-standing deprivations of various kinds or with organisms that naturally present organic abnormalities or emotional disorders. (Britannica, 2024)

2-Experimental and quasi-experimental designs:

When researchers control aspects of the experimental situation by the purposive manipulation of an event, typically they do so to identify a cause-and-

effect relation between one or a few presumed causes and one or a few effects rather than to investigate a complex and comprehensive model.

Designs are called ***experimental*** when they involve purposive manipulation of different conditions within the study. In this case, a study is conducted to isolate and draw a direct link between one event (the cause) and another (the effect). In studies that employ random assignment of participants to conditions, both the introduction of the event and who is exposed to it are controlled by the researchers (or other external agents), who then leave the assignment of conditions to chance. This approach is the best we have to ensure that on average the groups will not differ before the purposive manipulation. Therefore, we can be most confident (but not completely confident) that any differences between the conditions that we have created were caused by the manipulation, rather than preexisting differences between the participants in one condition from those in another. (Cooper, Coutanche, and al, 2023, xxxiii)

Designs with purposive manipulations can also be ***quasi-experimental***. Here, the researchers (or some other external agents) control the introduction of the experimental manipulation but do not control precisely who may be exposed to it. In these designs, the researchers must find ways other than random assignment to equate participants in the various conditions so as to render less plausible the notion that preexisting differences between participants can explain any differences that they find on the outcome measures (the effects) (Cooper, Coutanche, and al, 2023, xxxiv)

The prefix **quasi** means "resembling." Thus **quasi-experimental** research is research that resembles experimental research but is not true experimental research. Although the independent variable is manipulated, participants are not randomly assigned to conditions or orders of conditions. (Crump, Rajiv, Jhangiani , 2017, p236).

Table 1: Terminology of experimental research

Hypothesis	A statement about cause and effect that can be tested.
Experiment	A well-controlled test of a hypothesis about cause and effect.

Variable	Something that can occur with different values and can be measured.
Independent variable	A variable that represents the hypothesized 'cause' that is precisely controlled by the experimenter and independent of what the participant does.
Dependent variable	A variable that represents the hypothesized 'effect' whose values ultimately depend on the value of the independent variable.
Experimental group	A group in which the hypothesized cause is present.
Control group	A group in which the hypothesized cause is absent.
Random assignment	A system for assigning participants to experimental and control groups so that each participant has an equal chance of being assigned to any group.
Measurement	A system for assigning numbers to different values of variables.
Statistics	Mathematical techniques for determining the certainty with which a sample of data can be used to draw generalizations or inferences.

Source: (Nolen-Hoeksema, Fredrickson ,2009, p 21).

3-Correlation research:

Correlational research is a type of non-experimental research in which the researcher measures two variables and assesses the statistical relationship (i.e., the correlation) between them with little or no effort to control extraneous variables. There are essentially two reasons that researchers interested in statistical relationships between variables would choose to conduct a correlational study rather than an experiment.

- The first is that they do not believe that the statistical relationship is a causal one. For example, a researcher might evaluate the validity of a brief extraversion test by administering it to a large group of participants along with a longer extraversion test that has already been shown to be valid. This researcher might then check to see whether participants' scores on the brief test are strongly correlated with their scores on the longer one. Neither test score is thought to cause the other, so there is no independent variable to manipulate. In fact, the terms independent variable and dependent variable do not apply to this kind of research.

- The other reason that researchers would choose to use a correlational study rather than an experiment is that the statistical relationship of interest is thought to be causal, but the researcher cannot manipulate the independent variable because it is impossible, impractical, or unethical.

For example, Allen Kanner and his colleagues thought that the number of "daily hassles" (e.g., rude salespeople, heavy traffic) that people experience affects the number of physical and psychological symptoms they have (Kanner et al., 1981). But because they could not manipulate the number of daily hassles their participants experienced, they had to settle for measuring the number of daily hassles—along with the number of symptoms—using self-report questionnaires. Although the strong positive relationship they found between these two variables is consistent with their idea that hassles cause symptoms, it is also consistent with the idea that symptoms cause hassles or that some third variable (e.g., neuroticism) causes both.(Crump, Rajiv, Jhangiani , 2017, p229).

Not all problems can be easily studied by using the experimental method. In many situations the investigator has no control over which participants go in which conditions. (Nolen-Hoeksema, Fredrickson ,2009, p 21).

For example, if we want to test the hypothesis that anorexic people are more sensitive to changes in taste than normal-weight people, we cannot select a group of normal-weight participants and require half of them to become anorexic! Rather, we select people who are already anorexic or already of normal weight and see if they also differ in taste sensitivity.

More generally, we can use the correlational method to determine whether some variable that is not under our control is associated – or correlated – with another variable of interest. (Nolen-Hoeksema, Fredrickson ,2009, p 21).

A correlation can be either + or - . The sign of the correlation indicates whether the two variables are **positively correlated**, meaning that the values of the two variables either increase together or decrease together, or **negatively correlated**, meaning that as the value of one variable increases, the value of the other decreases.

Exemple: Suppose that the number of times a student is absent from class correlates -0.40 with the final course grade (the more absences, the lower the grade). On the other hand, the correlation between the number of classes attended and the course grade would be +0.40. The strength of the relationship is the same, but the sign indicates whether we are looking at classes missed or classes attended. (Nolen-Hoeksema, Fredrickson ,2009, p 22).

4-Study case:

Case connotes a spatially delimited phenomenon (a unit) observed at a single point in time or over some period of time. It comprises the type of phenomenon that an inference attempts to explain. In a study that attempts to explain the behavior of individuals, cases are comprised of individuals, and so forth. Each case may provide a single observation or multiple (within-case) observation. (Gerring, 2007,p19).

An additional implication of the term "case study" is that the unit(s) under special focus is not perfectly representative of the population, or is at least questionable. Unit homogeneity across the sample and the population is not assured. If, for example, one is studying a single H20 molecule, it may be reasonable to assume that the behavior of that molecule is identical to that of all

other H20 molecules. Under the circumstances, one would not refer to such an investigation as a “case study,” regardless of how intensive the investigation of that single molecule might be.

In social science settings one rarely faces phenomena of such consistency, so this is not an issue of great practical significance. Nonetheless, intrinsic to the concept is an element of doubt about the bias that may be contained in a sample of one or several. (Gerring, 2007,p20).

Perhaps the central mistake in case formulation is to allow favored beliefs, often untested or tested and found to be inferior to other alternatives, to hold sway over assessment and treatment methods that have more scientific support. Theories can assist clinicians to select dimensions on which to focus, such as dreams, slips in speech, toileting experiences, and castration fears. Other accounts can help clinicians to select such clinical issues as details in one’s drawings of a house, or authenticity, or ability to act in a certain way in a psychodrama. (O’Donohue , Lilienfeld, xvii)

4-1- Clinical Observation:

Observation allows, indeed, to collect data on what individuals do in a natural environment and it gives access to what happens beyond the discourse, namely behaviors. (Guikas, Morin, et al., 2016)

To study the behaviors actually implemented, direct observation is essential. This data collection method "consists of being a witness to the social behaviors of individuals or groups in the very places of their activities or residences without modifying their ordinary course" (Bocquillon, Baco, et al, 2022).

4-1-1-Controlled observation:

As the term controlled observation suggests, this method gives researchers some degree of influence over the setting in which observations are conducted. Investigators using this research method try to standardize the setting for all participants, in many cases manipulating specific conditions to see how participants will be affected. In the smartphone example, for instance, the investigator might arrange for the smartphone to display different instructions to different people. The study would still be observational (because the researcher would not control who used the machine or when), but the researcher would be trying to channel the observed behavior in certain ways. (Galotti, 1999,p 16).

For example, social psychologists Roger Barker and Herbert Wright studied how a sample of children interacted with their daily environments. They observed the children go to school, play with friends, and complete daily chores, and learned a great deal about how children interact with their environments and how their environments shape their character. Similarly, anthropologist Jane Goodall studied the behavior of chimpanzees, taking careful notes on their tool making, family relationships, hunting, and social behavior. Her early work served as the basis for future research on chimpanzees and animal behavior in general. (Tambe,2022,p22)

4-1-2- Observation/ controlled observation:

The prominent philosopher of science, Sir Karl Popper (1965) once asked his students to conduct the following exercise:

> Twenty-five years ago I tried to bring home this point to a group of physics students in Vienna by beginning a lecture with the following instructions: "Take a pencil and paper; carefully observe, and write down what you have observed!" They asked, of course, what I wanted them to observe. Clearly the instruction "Observe!" is absurd . . . . ***Observation*** is always selective. It needs a chosen object, a defi nite task, an interest, a point of view, a problem. (O'Donohue , Lilienfeld, xvi)

4-1-3- Types of Observation:

1- **Observation without Intervention/Naturalistic Observation :**

Naturalistic observation is an approach to data collection that involves observing people's behavior in the environment in which it typically occurs.

Thus naturalistic observation is a type of field research (as opposed to a type of laboratory research). It could involve observing shoppers in a grocery store, children on a school playground, or psychiatric inpatients in their wards. Researchers engaged in naturalistic observation usually make their observations as unobtrusively as possible so that participants are often not aware that they are being studied.

Ethically, this method is considered to be acceptable if the participants remain anonymous and the behavior occurs in a public setting where people would not normally have an expectation of privacy.(Crump, Rajiv, Jhangiani , 2017, p231).

The goals of naturalistic observation are to describe behavior as it normally occurs and to examine relationships among variables.

• Naturalistic observation helps to establish the external validity of laboratory findings.

• When ethical and moral considerations prevent experimental control, naturalistic observation is an important research strategy(Tambe,2022,p22)

2-Observation with Intervention:

• Most psychological research uses observation with intervention.

• The three methods of observation with intervention are participant observation, structured observation, and the fi eld experiment.

• Whether ―undisguised‖ or ―disguised,‖ participant observation allows researchers to observe behaviors and situations that are not usually open to scientific observation.

• If individuals change their behavior when they know they are being observed (―reactivity‖), their behavior may no longer be representative of their normal behavior.

• Often used by clinical and developmental psychologists, structured observations are set up to record behaviors that may be difficult to observe using naturalistic observation.

• In a field experiment, researchers manipulate one or more independent variables in a natural setting to determine the effect on behavior.

(Tambe,2022,p22)

3-Structured Observation:

There are a variety of observational methods using intervention that are not easily categorized. These procedures differ from naturalistic observation because researchers intervene to exert some control over the events they are observing. The degree of intervention and control over events is less, however, than that seen in field experiments.(Tambe,2022,p22)

4-2-Clinical Interviews

4-2-1- Defining Clinical Interviewing:

> A skillfully conducted clinical interview is the cornerstone of psychological assessment. This interaction, typically a face-to-face meeting that lasts between 30 minutes and 2 hours, generates a tremendous amount of data for the clinician via both observation and direct questioning. Information obtained through observation during the clinical interview is considered qualitative or descriptive and can include impressions about cognition, attention, orientation, language, sensorimotor functioning, affect, insight, attitude toward assessment, acculturation, hygiene, interpersonal relations, and coping mechanisms, among other variables. In addition, the verbal exchange between patient and clinician yields information about current life circumstances, including the reason for referral and history of the presenting problem, as well as an account of developmental/medical/family history…(Gorgens,2017).

Clinical interviewing has been defined in many ways. Some prefer a narrow, straightforward definition:

> An interview is a controlled situation in which one person, the interviewer, asks a series of questions of another person, the respondent. (Sommers-Flanagan, Sommers-Flanagan,2009,p18)

Others are more ambiguous:

> An interview is an interaction between at least two persons. Each participant contributes to the process, and each influences the responses of the other. However, this characterization falls short of defining the process. Ordinary conversation is interactional, but surely interviewing goes beyond that. (Sommers-Flanagan, Sommers-Flanagan,2009,p18)

Others combine specificity with ambiguity:

> An interview represents a verbal and nonverbal dialogue between two participants, whose behaviors affect each other's style of communication, resulting in specific patterns of interaction. In the interview one participant who labels himself or herself as the " interviewer " attempts to achieve specific goals, while the other

participant generally assumes the role of " answering the questions. "(Sommers-Flanagan, Sommers-Flanagan,2009,p18)

In clinical interviews, the investigator tries to channel the process even more. The investigator begins by asking each participant a series of open-ended questions. The interviewer might ask the participant to think about a problem and describe his or her approaches to it. With the clinical interview method, however, instead of allowing the participant to respond freely, the interviewer follows up with another set of questions. Depending on the participant's responses, the interviewer may pursue one or another of many possible lines of questioning, trying to follow the participant's own thinking and experience while focusing on specific issues or questions (Galotti, 1999,p 16).

The fundamental goal of the clinical interview is to allow the patient to speak, to enable them to find their voice if they have difficulty doing so, so that they can say what they need to say, what they want to say, and what they are able to say in order to understand their psychological experience. (Chiland, 1983, pp. 2-4)

4-2-2- Levels of Interviewing Structure:

The term structure is not only used to describe an interview's internal process or sequence, but also to describe the directiveness of the approach used during a clinical interview. In this regard, the interpersonal process that constitutes the clinical interview may be relatively unstructured (patient directed) or highly structured (clinician directed).

The level of structure of a given clinical interview depends on a variety of contextual factors (e.g., interview goal, theoretical orientation, treatment setting, or practitioner preference). Clinical interviews are typically categorized as unstructured, semistructured, or structured. Unstructured Clinical Interviews In an unstructured clinical interview, interviewers provide little direction, allowing patients to take the lead and speak freely about topics they choose.

1-Unstructured Clinical Interviews:

In an unstructured clinical interview, interviewers provide little direction, allowing patients to take the lead and speak freely about topics they choose. An unstructured interview may intermittently include open or projective questions posed by the interviewer, followed by patient responses. During unstructured interviews, clinicians focus on tracking patients, usually using a variety of

nondirective listening skills, instead of using questions and other directive interviewing approaches to lead patients. For example, in an initial psychoanalytic clinical interview, the clinician might use free association, dream analysis, and/or free recall of childhood events as a means of collecting assessment information. (Sommers-Flanagan, Abeje Zeleke,2015,p05)

The unstructured clinical interview is a ubiquitous, time-honored, and significant contributor to the diagnostic and treatment processes in clinical psychology. In a sense, it is like a free-flowing conversation between the clinician and respondent, and there are no a priori parameters for the specific topics and relative depth of conversation. This unstructured approach provides ample opportunities for gathering general client information and a relatively rich description of the client's experience (rather than an exclusively stringent focus on the client's problems or symptoms). (Mueller, Segal,2015,01).

2- Semi-structured Clinical Interviews :

In keeping with Piaget's initial development of the semiclinical interview, a semistructured interview typically includes a predetermined set of questions followed by either unplanned questioning or a free response or exploration period. Semistructured interviews come in many forms and fulfill many different purposes.(Sommers-Flanagan, Abeje Zeleke,2015,p05)

3- Structured Clinical Interviews :

In contrast to unstructured and semistructured interviews, a structured clinical interview is a tightly managed protocol or process wherein clinicians ask a systematic series of predetermined questions, including follow-up questions. In this approach there is little or no opportunity for unplanned or spontaneous questioning by clinicians and little or no spontaneous exploration of diverse topics by patients. The purpose of a structured clinical interview is nearly always diagnostic. Training and supervision to conduct structured diagnostic interviews is often required to ensure diagnostic reliability. Examples of structured diagnostic interviews include the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), the Child Assessment Schedule, the Mini-Mental State Exam (MMSE), the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV), and the Alcohol Use Disorder and Associated Disabilities Interview Schedule– IV (AUDADIS-IV). These examples provide a sense of the range and specificity of published structured diagnostic interviews.(Sommers-Flanagan, Abeje Zeleke,2015,p05)

Structured interviews conform to a standardized list of questions (including follow-up questions), a uniform sequence of questioning, and systematized ratings of the client's responses.

The most common types of structured interview are those that focus on the psychiatric diagnostic process. In structured diagnostic interviews, the standardized questions are designed to measure the specific criteria for mental disorders as defined in the DSM. These essential elements of structured diagnostic interviews serve several important purposes. (Mueller, Segal,2015,01).

4-2-3- Factors of a good clinical interviewing:

A good clinical interviewing includes the following factors:

1. A positive and respectful professional relationship between interviewer and client is established.

2. The interviewer and client work collaboratively (more or less, depending on the situation) to establish and achieve mutually agreeable client goals.

3. In the context of a professional relationship, interviewer and client interact, both verbally and nonverbally, as the interviewer applies active - listening skills and psychological techniques to evaluate, understand, and help the client achieve goals.

4. The quality and quantity of interactions between interviewer and client are influenced by many factors, including interviewer and client culture, personality style, attitudes, and goals. (Sommers-Flanagan, Sommers-Flanagan,2009,p18-19)

4-3-Questionnaires, Instruments and Inventories:

Instruments and Inventories are questionnaires that have stood the test of time. That is, they were designed to measure particular attributes and have been demonstrated to do so with validity and reliability.

The questionnaire is more than simply a list of questions or forms to be completed. When properly constructed, a questionnaire can be used as a scientific instrument to obtain data from large numbers of individuals. Construction of a useful questionnaire that minimizes interfering problems requires experience, skill, thoughtfulness, and time. A major advantage of the questionnaire is that data

can be obtained on large numbers of participants quickly and relatively inexpensively.

Examples include personality tests, aptitude tests, and achievement tests. Personality tests measure some state or trait of an individual. Examples include the Minnesota Multiphasic Personality Inventory (MMPI), Beck Depression Inventory (BDI), California Psychological Inventory (CPI), and the Sixteen Personality Factors Questionnaire (16PF). Aptitude tests measure some skill or ability. Examples include the Stanford–Binet Intelligence Scale, the Wechsler Adult Intelligence Scale (WAIS-III), the Wechsler Intelligence Scale for Children (WISC-III), and the Graduate Record Examination (GRE). Achievement tests measure competence in a particular area. Examples include the Stanford Achievement tests that students take as they progress through K–12 grades in school; state licensing exams for teachers, counselors, lawyers, physicians and other professionals; and the major field achievement test that psychology majors at some universities take just prior to graduation. (Tambe,2022,p25-27)

5- Survey Research

Survey research is a quantitative and qualitative method with two important characteristics. First, the variables of interest are measured using self-reports. In essence, survey researchers ask their participants (who are often called respondents in survey research) to report directly on their own thoughts, feelings, and behaviors. Second, considerable attention is paid to the issue of sampling. In particular, survey researchers have a strong preference for large random samples because they provide the most accurate estimates of what is true in the population. In fact, survey research may be the only approach in psychology in which random sampling is routinely used. Beyond these two characteristics, almost anything goes in survey research. Surveys can be long or short. They can be conducted in person, by telephone, through the mail, or over the Internet. They can be about voting intentions, consumer preferences, social attitudes, health, or anything else that it is possible to ask people about and receive meaningful answers. Although survey data are often analyzed using statistics, there are many questions that lend themselves to more qualitative analysis.

Most survey research is non-experimental. It is used to describe single variables (e.g., the percentage of voters who prefer one presidential candidate or another, the prevalence of schizophrenia in the general population) and also to assess statistical relationships between variables (e.g., the relationship between income and health). But surveys can also be experimental. The study by Lerner

and her colleagues is a good example. Their use of self- report measures and a large national sample identifies their work as survey research. But their manipulation of an independent variable (anger vs. fear) to assess its effect on a dependent variable (risk judgments) also identifies their work as experimental.(Crump, Rajiv , Jhangiani ,2017)

Table 2: Research Methods to Reach the Goals of Psychology

Goals	Research Methods
Describe	Observational studies, case studies, correlational studies, surveys (interview, self-report inventories etc.)
Explain	Case studies, Experimentation and quasi-experimentation
Predict	Correlational studies
Modify	All the methods can be applicable to find out the problems and then…the final goal is to bring about positive changes in life. Psychotherapy is an example in this regard.

Source: (Uddin,2024,p10)

6- A Framework for Thinking About Research Ethics:

Three groups of people that are affected by scientific research: the research participants, the scientific community, and society more generally. The idea is that a thorough consideration of the ethics of any research project must take into account how each of the three core principles applies to each of the three groups of people.Here are based on the following three core principles:

1. **Respect for Persons**: This includes respecting the autonomy of research participants by ensuring free, informed, and ongoing consent as well as protecting those "incapable of exercising autonomy because of youth, cognitive impairment, other mental health issues or illness."

2. **Concern for Welfare**: This includes ensuring that participants are not exposed to unnecessary risks, considering participants' privacy and maintaining their confidentiality, as well as providing participants with "enough information to be able to adequately assess risks and potential benefits associated with their participation in the research."

3. **Justice**: This refers to the obligation to treat people fairly and equitably, including by considering the vulnerability of participants and ensuring that historically marginalized groups (including ethnocultural minorities) are not unjustly excluded from research opportunities.(Price, Jhangiani, Chiang , 2015,p 42-43).

Conclusion:

Psychology, as a discipline focused on the complex nature of human behavior and mental processes, relies on a diverse array of research methods. Each method offers unique strengths and limitations, necessitating a careful selection and combination to achieve robust findings.

The publication of research and theory is a fundamental aspect of science. Psychology, as the science of behavior, shares this emphasis on disseminating information via the publication process. Similarly, the publishing of advances in technique, process, and outcome of therapeutic interventions contributes to the clinical, or applied, side of psychology. (Roberts, Ilardi,2003,p 11).

Discussion Questions: 

4- What are the different types of observation?
5- What are the different types of interviews? When is each appropriate?
6- Quasi-experimental: How does it differ from an experiment?

LECTURE 03:

THEORIES OF SCHOOL PSYCHOLOGY

Third Lecture:

Theories of school psychology

Introduction:

Psychology, the scientific study of the mind and behavior, has evolved over centuries, giving rise to various theoretical perspectives. Each theory offers a unique lens through which to understand human thoughts, emotions, and actions.

Each theory has its own strengths and limitations, and many psychologists draw from multiple perspectives to understand the complexity of human behavior.

1-Structuralism: Psychology's First School of Thought (Early Psychology)

Structuralism was the first major school of thought in psychology. **Structuralism** seeks to understand the structure (configuration of elements) of the mind and its perceptions by analyzing those perceptions into their constituent components. Consider, for example, the perception of a flower. Structuralists would analyze this perception in terms of the constituent colors, geometric forms, size relations, and so on (Sternberg,2009,p 06).

A German psychologist whose ideas later would contribute to the development of structuralism was **Wilhelm Wundt** (1832-1920). Wundt is often viewed as the founder of experimental psychology. Wundt used a variety of methods in his research. One of these methods was introspection. Introspection is a looking inward at pieces of information passing through consciousness. An example is the sensations experienced when looking at a flower. In effect, we analyze our own perceptions.

Wundt advocated the study of sensory experiences through introspection. Wundt had many followers. One was an American student, Edward Titchener (1867-1927). Titchener (1910) helped bring structuralism to the United States. Other early psychologists criticized both the method (introspection) and the focus (elementary structures of sensation) of structuralism.(Sternberg,2009,p 06)

Edward B. Titchener, one of Wundt's most famous students, would go on to found psychology's first major school of thought. (Patanella, Titchener, 2011)

According to the structuralists, human consciousness could be broken down into smaller parts. Using a process known as introspection, trained subjects would attempt to break down their responses and reactions to the most basic sensation and perceptions.

While structuralism is notable for its emphasis on scientific research, its methods were unreliable, limiting, and subjective. When Titchener died in 1927, structuralism essentially died with him. (Kendra, 2024)

Figure 2.1: Wilhelm Wundt

(1832-1920)

Wilhelm Wundt was no great success in school, failing time and again and frequently finding himself subject to the ridicule of others. However, Wundt later showed that school performance does not always predict career success because he is considered to be among the most influential psychologists of all time.

Source: (Sternberg,2009,p 06).

2- The Functionalism of William James (Early Psychology):

In contrast to Wundt, who attempted to understand the nature of consciousness, William James and the other members of the school of functionalism aimed to understand why animals and humans have developed the particular psychological aspects that they currently possess . For James, one's thinking was relevant only to one's behaviour. As he put it in his psychology textbook, "My thinking is first and last and always for the sake of my doing" (In:Stangor, Wallinga, 2014,p19)

James and the other members of the functionalist school were influenced by Charles Darwin's (1809-1882) theory of natural selection, which proposed that the physical characteristics of animals and humans evolved because they were useful, or functional. The functionalists believed that Darwin's theory applied to psychological characteristics too. Just as some animals have developed strong muscles to allow them to run fast, the human brain, so functionalists thought, must have adapted to serve a particular function in human experience (Stangor, Wallinga, 2014,p19)

Psychology flourished in America during the mid- to late-1800s. William James emerged as one of the major American psychologists during this period and publishing his classic textbook, "The Principles of Psychology," established him as the father of American psychology.

His book soon became the standard text in psychology and his ideas eventually served as the basis for a new school of thought known as functionalism.

The focus of functionalism was about how behavior actually works to help people live in their environment. Functionalists utilized methods such as direct observation to study the human mind and behavior.(Kendra, 2024)

Functionalism seeks to understand what people do and why they do it. This principal question was in contrast to that of the structuralists, who had asked what the elementary contents (structures) of the human mind were. Functionalists held that the key to understanding the human mind and behavior was to study the processes of how and why the mind works as it does, rather than to study the structural contents and elements of the mind (Sternberg,2009,p 06).

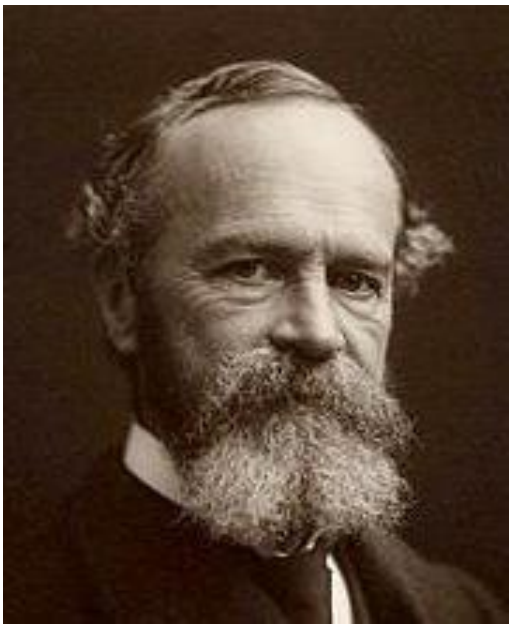


Figure 2.2:William James

(1842-1910)

Source : .(Harvard University,2024)

William James, philosopher and psychologist, founder of the psychological movement of functionalism. Was instrumental in establishing Harvard's psychology department, which at its inception was tied to the department of philosophy.
Initially trained in painting, James abandoned the arts and enrolled in Harvard in 1861 to study chemistry and anatomy

James oversaw Harvard's first doctorate in psychology, earned by G. Stanley Hall in 1878. Hall noted that James's course was, "up to the present time the only course in the country where students can be made familiar with the methods and results of recent German researches in physiological psychology" .(Harvard University,2024)

3- Psychodynamic Psychology

Perhaps the school of psychology that is most familiar to the general public is the psychodynamic approach to understanding behavior, which was championed by Sigmund Freud (1856–1939) and his followers. Psychodynamic psychology is an approach to understanding human behavior that focuses on the role of unconscious thoughts, feelings, and memories. Freud developed his theories about behavior through extensive analysis of the patients that he treated in his private clinical practice. Freud believed that many of the problems that his patients experienced, including anxiety, depression, and sexual dysfunction, were the result of the effects of painful childhood experiences that the person could no longer remember. (Stangor ,Walinga,2014, p26)

Freud's ideas were extended by other psychologists whom he influenced, including Carl Jung (1875–1961), Alfred Adler (1870–1937), Karen Horney (1855–1952), and Erik Erikson (1902– 1994). These and others who follow the psychodynamic approach believe that it is possible to help the patient if the unconscious drives can be remembered, particularly through a deep and thorough exploration of the person's early sexual experiences and current sexual desires. These explorations are revealed through talk therapy and dream analysis, in a process called psychoanalysis.

The founders of the school of psychodynamics were primarily practitioners who worked with individuals to help them understand and confront their psychological symptoms. Although they did not conduct much research on their ideas, and although later, more sophisticated tests of their theories have not always supported their proposals, psychodynamics has nevertheless had substantial impact on the field of psychology, and indeed on thinking about human behavior more generally.The importance of the unconscious in human behavior, the idea that early childhood experiences are critical, and the concept of therapy as a way of improving human lives are all ideas that are derived from the psychodynamic approach and that remain central to psychology. (Stangor ,Walinga,2014, p26)

3-1- Evolution of Theory and the Emergence of the Tripartite Personality:

Freud's personality theory (1923) saw the psyche structured into three parts (i.e., tripartite), the id, ego, and superego, all developing at different stages in our lives.

These are systems, not parts of the brain, or in any way physical, but rather hypothetical conceptualizations of important mental functions.(Mcleod,2024)

The Ego ,the Id and the superego is the last of Freud's major theoretical works, he had made an attempt to estimate the influence which these new discoveries must have upon our view of the unconscious.(Sigmund,1923,p04)

Sigmund Freud divided human consciousness into three levels of awareness: the conscious, preconscious, and unconscious. Each of these levels corresponds to and overlaps with Freud's ideas of the id, ego, and superego.

1-The conscious level consists of all those things we are aware of, including things that we know about ourselves and our surroundings.

2-The preconscious consists of those things we could pay conscious attention to if we so desired, and where many memories are stored for easy retrieval. Freud saw the preconscious as those thoughts that are unconscious at the particular moment in question, but that are not repressed and are therefore available for recall and easily capable of becoming conscious (e.g., the "tip of the tongue" effect).

3- The unconscious consists of those things that are outside of conscious awareness, including many memories, thoughts, and urges of which we are not aware. Much of what is stored in the unconscious is thought to be unpleasant or conflicting; for example, sexual impulses that are deemed "unacceptable." While these elements are stored out of our awareness, they are nevertheless thought to influence our behaviour.(Cummings, Sanders,2019, p 48)

The division of mental life into that which is conscious and unconscious suggests a topographical hypothesis , that mental life can be demarcated into psychic portions or regions. Unconsciousness is at once a quality that can be attributed to a repressed idea or impulse, and also a region or "province" (the "system Ucs") to where the idea is banished. Consciousness and its precursor ("preconsciousness") too, was formulated as a psychic province ("system Cs, Pcs"), and attributed to the workings of the ego. Psychic conflict, then, was a matter of unconscious ideas, emanating from the system Ucs, struggling against the repressive forces of the conscious ego. (Lapsley, Stey, 2012, p03).

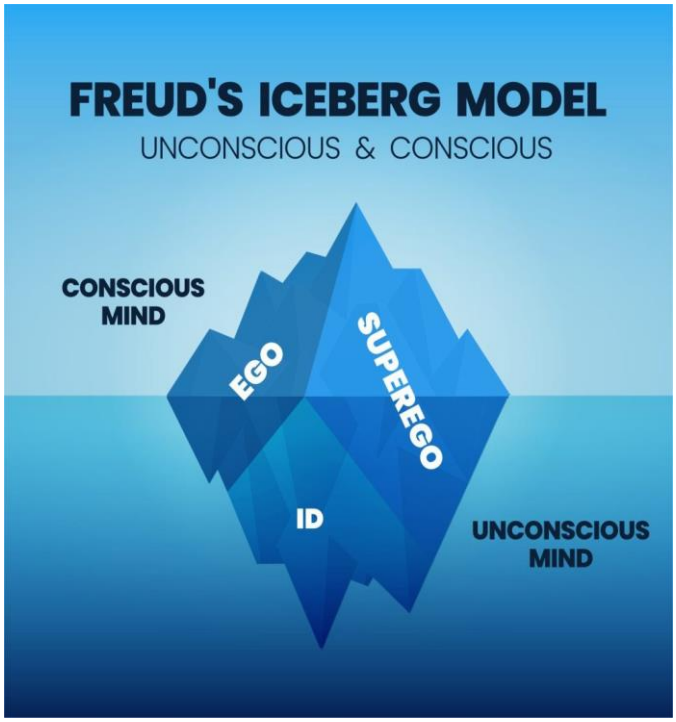


Figure 2.3: Freud's Iceberg Model.

Source : (Mcleod, 2024)

Freud's Iceberg Model of the Mind*: The conscious mind with the ego at its helm is the visible tip of the iceberg. Beneath the surface, the larger unconscious realm houses the primal instincts of the id and the moral compass of the superego, steering our actions and reactions in subtle and complex ways.* (Mcleod, 2024)

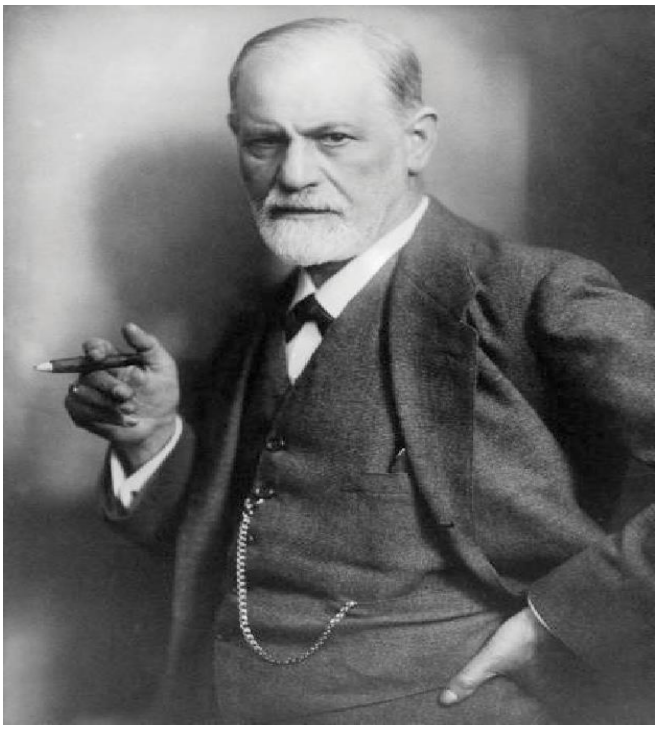


Figure 2.4: Sigmund FREUD

(1856- 1939)

Source: (Freud, 1916, p 06)

Born in Freiberg (Moravia) in 1856, Austrian by nationality, Sigmund FREUD died in exile in London in 1939.

After studying medicine at the University of Vienna, he went to Paris on a scholarship to attend Charcot's lectures at the Salpêtrière.

Back in Vienna, where he married and established himself as a specialist in nervous diseases, he initially practiced hypnosis before developing the method that would be called "Psychoanalysis."

He attracted many disciples and, although some of them parted ways with him (Adler and Jung), psychoanalytic circles became increasingly active, and the doctrine spread abroad. At the same time, Freud's publications multiplied, testifying to the richness of his creative thought, capable of addressing a wide variety of subjects. (Freud, 1916, p 06)

4-Behaviourism

The central idea in behaviorism can be stated simply: A science of behavior is possible. Behaviorists have diverse views about what this proposition means, and particularly about what science is and what behavior is, but every behaviorist agrees that there can be a science of behavior. (Braum,2016,p 03)

Emerging from the foundational work of Ivan Pavlov (1890) and Skinner (1930) on conditioning, this theoretical approach dominated psychological research throughout the first half of the 20th century. In essence, learning was reduced to the formation of a link between a stimulus and a behavioral response. (Briswalter ,Mehlinger, n.d, p04)

Pavlov (1849–1936) Ivan Pavlov was a physiologist and whilst studying the salivary glands of dogs noticed that they would salivate before the food reached their mouths. He called this a 'psychic secretion' and later coined the phrase 'conditional reflexes'. He went on to show how dogs could be taught to salivate on hearing a bell. He associated the bell with food by always ringing it when food was shown to the dog. This is classical conditioning. We should be aware that there are behaviours, habits or conventions of behaviour of learners that have been conditioned, and our actions may condition inappropriate as well as appropriate behaviours, such as the automatic lack of attention to the lesson the moment the bell rings. (Woolard,2010,p14)

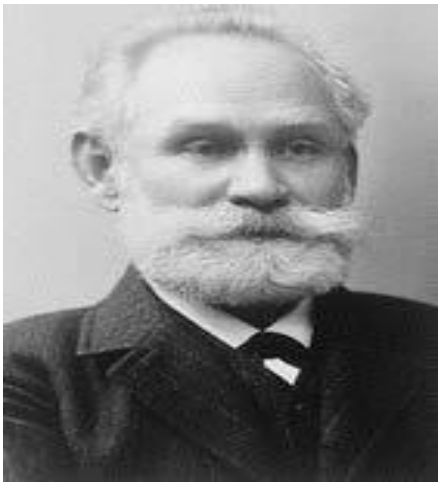


Figure 2.5: Ivan Petrovitch Pavlov

(1849-1936)

Source:(Bauchot, 2010)

Figure 2.6 : "The iconic Pavlov's dog, fitted with a fistula, as shown at the Pavlov Museum in Ryazan."

Source: (Bauchot, 2010)

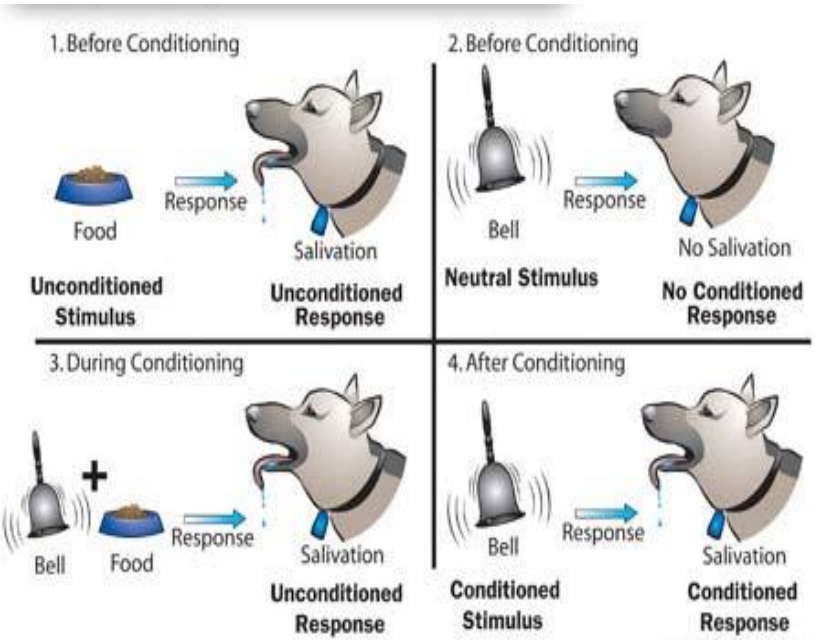


Figure 2.7: Schematic representation of Pavlovian conditioning

Source:(Bauchot, 2010)

Beginning in the 1930s, behaviourism flourished in the United States, with B.F. Skinner leading the way in demonstrating the power of operant conditioning through reinforcement. Behaviourists in university settings conducted experiments on the conditions controlling learning and "shaping" behaviour through reinforcement, usually working with laboratory animals such as rats and pigeons.

Skinner and his followers explicitly excluded mental life, viewing the human mind as an impenetrable "**black box**," open only to conjecture and speculative fictions. Their work showed that social behaviour is readily influenced by manipulating specific contingencies and by changing the consequences or reinforcement (rewards) to which behaviour leads in different situations. Changes in those consequences can modify behaviour in predictable stimulus-response (S-R) patterns. Likewise, a wide range of emotions, both positive and negative, may be acquired through processes of conditioning and can be modified by applying the same principles. (Mischel, 2024)

The Skinner Box is a chamber, often small, that is used to conduct operant conditioning research with animals. Within this chamber, there is usually a lever or key that an individual animal can operate to obtain a food or water source within the chamber as a reinforcer.

The chamber is connected to electronic equipment that records the animal's lever pressing or key pecking, allowing for the precise quantification of behavior. (Nickerson,2024)

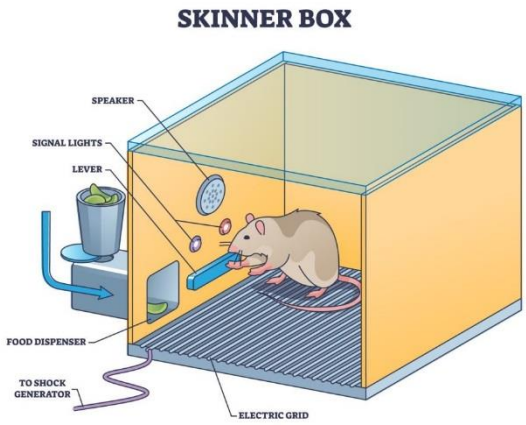


Figure 2.8 : Skinner Box

Source: (Nickerson,2024)

4-1-Watson and the Rise of Behaviorism

Watson (1878–1958) arrived at the University of Chicago in 1900 with $50 in his pocket. Fresh from Furman University in Greenville, South Carolina, where he had excelled in philosophy and psychology, an energetic Watson quickly formalized his plan of study: He would major in experimental psychology with James Angell (1869–1949), a Chicago functionalist, and Henry Donaldson (1857–1938), a neurologist who had developed the popular Wistar strain of

laboratory rats. He would do minors in philosophy and neurology. Watson was at once put off by introspectionist psychology. This was partly due to his aversion to interacting with human subjects and partly due to his own inability to perform under the conditions of introspection . (Pickren , Rutherford,2010, p 61)

Watson as the founder of behaviorism, this paper must be seen as the product not of Watson's independent thought but of the confluence of trends we have just outlined. It was a particularly polemical summary of a body of extant behaviorally oriented thinking that was percolating in many places at this time. Although Watson's ideas were not necessarily original, he did emerge as a prominent systematizer and popularizer of the behaviorist position.

In 1913, after giving a talk on the subject at Columbia University in New York City, Watson published ''Psychology as the Behaviorist Views It'' in his journal, the Psychological Review. The major line of argument in Watson's paper was as follows:

1. Human psychology has failed to live up to its natural science aspirations and has failed to address problems that vitally concern human interest.

2. The failure to replicate findings using the introspective method is a serious and irresolvable flaw in psychology's claims to have scientific method.

3. Consequently, one must dispense with consciousness and the introspective method if psychology is to achieve a scientific status and if it is to yield useful, practical findings.

4. The behavior of animals and man can be investigated without appeal to consciousness and must be viewed as being equally essential to a general understanding of behavior.

Watson used this argument to set forth a revised conceptualization of psychology, which came to be known as behaviorism. He argued that psychology ''as the behaviorist views it'' is a ''purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behavior. Introspection forms no essential part of its methods... . The behaviorist... recognizes no dividing line between man and brute. The behavior of man, with all of its refinement and complexity, forms only a part of the behaviorist's total scheme of investigation''? . (Pickren , Rutherford,2010, p 61)

5-Cognitivism:

Science is always influenced by the technology that surrounds it, and psychology is no exception. Thus it is no surprise that beginning in the 1960s, growing numbers of psychologists began to think about the brain and about human behavior in terms of the computer, which was being developed and becoming publicly available at that time. The analogy between the brain and the computer, although by no means perfect, provided part of the impetus for a new school of psychology called cognitive psychology (Stangor, 2010, 1.2.9).

Cognitive theory (cognitivism) is a field of psychology that studies mental processes, including perception, thinking, memory, and judgment. These actions correspond well to the processes that computers perform. Although cognitive psychology began in earnest in the 1960s, earlier psychologists had also taken a cognitive orientation. Some of the important contributors to cognitive psychology include the German psychologist Hermann Ebbinghaus (1850–1909), who studied the ability of people to remember lists of words under different conditions, and the English psychologist Sir Frederic Bartlett (1886–1969), who studied the cognitive and social processes of remembering. Bartlett created short stories that were in some ways logical but also contained some very unusual and unexpected events. Bartlett discovered that people found it very difficult to recall the stories exactly, even after being allowed to study them repeatedly, and he hypothesized that the stories were difficult to remember because they did not fit the participants' expectations about how stories should go. The idea that our memory is influenced by what we already know was also a major idea behind the cognitive-developmental stage model of Swiss psychologist Jean Piaget (1896–1980). Other important cognitive psychologists include Donald E. Broadbent (1926–1993), Daniel Kahneman (1934–), George Miller (1920–), Eleanor Rosch (1938–), and Amos Tversky (1937–1996) (Stangor, 2010, 1.2.9).

Thinking has a powerful influence on behavior, the cognitive approach provided a distinct alternative to behaviorism. According to cognitive psychologists, ignoring the mind itself will never be sufficient because people interpret the stimuli that they experience. For instance, when a boy turns to a girl on a date and says, "You are so beautiful," a behaviorist would probably see that as a reinforcing (positive) stimulus. And yet the girl might not be so easily fooled. She might try to understand why the boy is making this particular statement at this particular time and wonder if he might be attempting to influence her through the comment.

Cognitive psychologists maintain that when we take into consideration how stimuli are evaluated and interpreted, we understand behavior more deeply.

Cognitive approach remains enormously influential today, and it has guided research in such varied fields as language, problem solving, memory, intelligence, education, human development, social psychology, and psychotherapy. The cognitive revolution has been given even more life over the past decade as the result of recent advances in our ability to see the brain in action using neuroimaging techniques. Neuroimaging is the use of various techniques to provide pictures of the structure and function of the living brain. These images are used to diagnose brain disease and injury, but they also allow researchers to view information processing as it occurs in the brain, because the processing causes the involved area of the brain to increase metabolism and show up on the scan (Stangor, 2010, 1.2.9).

Figure 2.9: Hermann Ebbinghaus

(1850–1909)

Source: (Britanicca, 2024)

Hermann Ebbinghaus *(born January 24, 1850, Barmen, Rhenish Prussia [Germany]—died February 26, 1909, Germany) was a German psychologist who pioneered in the development of experimental methods for the measurement of rote learning and memory.* (Britanicca, 2024)

5-1-Cognitive Therapy (CT)

Standard Beckian CBT, also called cognitive therapy (CT), is based on the cognitive model, which links cognitions, emotions, and behaviors such that cognitions shape behaviors and emotions, and unrealistic cognitions can lead to inappropriate emotions and behaviors . CT is a structured or semi-structured, directive, active and short-term approach. Its clinical use is applied to several psychiatric disorders i.e., anxiety-, personality and eating-disorders, several situations of crises and disorders related to the use of psychoactive substances.

Cognitive Therapy's goals are to restructure the dysfunctional cognitions and give cognitive flexibility when assessing specific situations and to solve focal problems and mainly to provide patients with cognitive strategies to perceive and respond in a functional way to the real world .

Cognitive Therapy is considered to have results with issues related to depression and panic disorders, i.e. verbal and non-verbal communication skills, assertiveness, criticizing and receiving criticism, and in general saying no.(Theodoratou Andriopoulou , and al, 2014, p01)

6- Gestalt Psychology

Psychological Gestalt theory would maintain that the whole is something else or something different than the sum of its parts "The whole is greater than the sum of its parts".

(Upton, Janeka, 2014).

6-1-Gestalt ideas and origin of term:

As the name Gestalt (a German word that loosely translates to "configuration" or "shape") suggests, these psychologists' central assumption was that psychological phenomena could not be reduced to simple elements but rather needed to be analyzed and studied in their entirety (Galotti, 1999,p 09).

Every individual perceptual element has its own nature and characteristics, but the nature of individual elements alone cannot account for how a group of elements will be perceived. The essential point of Gestalt theory is that the perception of the whole pattern (or gestalt) cannot be explained from the sum of its parts.

Gestalt ideas were a reaction against prevailing reductionist approaches of the time and the ideas are often stated as; "*the whole is more than the sum of their parts"* (Köhler, 1920, pp.17). This is interesting as recent developments in Complex Systems also seek to take a more holistic approach to understanding systems at many scales and also use the expression "whole is greater than the sum of its parts" (Bar-Yam, 2004) (Chang, Nesbitt, and al, 2007).

The term gestalt, translated as "whole" or "configuration," referred to an organized entity that was different from the sum of its constituent parts. The term was initially introduced by Christian von Ehrenfels, who pointed out that a melody played in two different keys is recognized as such even though the notes in each case are different. He suggested that combinations of elements produced a "gestaltqualität," or whole-quality, that constituted a new element of consciousness. The use of the term by the triumvirate of Max Wertheimer, Kurt Koffka, and Wolfgang Köhler referred not to a new element but to the organized nature of conscious experience (Freedheim , Weiner, 2003, p 17) .

6-2-Development and principal of Gestalt therapy:

Gestalt psychology began in late nineteenth-century Germany in opposition to what was perceived as pervasive molecularism in psychology. The original Gestaltists were impressed with physics, not biology, and were perhaps inspired by the writings of the Scottish physicist James Clerk Maxwell. Many writers suggest that Gestalt views were actually absorbed into psychology and that the Gestaltist influence lies in whatever changes this caused in mainstream psychology .

Kurt Lewin is often treated as a Gestaltist, though it is clear that he was no such thing. Gestalt psychologists were basic researchers earnestly attempting to understand the ‘‘physics of the mind.’’ Lewin was an energetic applier and a student of topics that are often expressed in newspaper headlines—racial discrimination, industrial productivity, worker morale, and the like. He was responsible for many of the concepts that were used by social psychologists during the second half of the twentieth century (Malone, 2001,p421)

A response to the introspective analysis of consciousness advocated by Titchener and the behavioral analysis of J. B. Watson came in the form of an approach to psychology that arose in Germany at about the same time that behaviorism had arisen in the United States.

The gestalt psychologists opposed what they perceived to be artificial attempts to reduce experience or behavior to constituent parts and then to synthesize them again into organized wholes, and articulated their views in influential books (e.g., Köhler, 1929). Gestalt psychology was initiated by observations on apparent movement (Wertheimer, 1912), in which two lights located at some distance apart give rise to the experience of one light moving from one location to the other when the lights go on and off in sequence. The phenomena seemed incapable of explanation by introspective identification of sensory elements (Freedheim , Weiner, 2003, p 17).

The gestaltists proposed that the introspection appropriate to psychology was a description of experience, a naive introspection that described the experience without any attempt to subject it to analysis. Perceptual phenomena and conscious experience were not the only domains of gestalt theory; **Köhler’s research on chimpanzees** (Köhler, 1926) suggested that learning occurred not through trial and error but by **insight** that resulted from a perceptual reorganization that

produced a new way of seeing the problem to be solved (Freedheim , Weiner, 2003, p 17)

Insight learning is the abrupt realization of a problem's solution. Insight learning is not the result of trial and error, responding to an environmental stimulus, or the result of observing someone else attempting the problem. It is a completely cognitive experience that requires the ability to visualize the problem and the solution internally - in the mind's eye, so to speak - before initiating a behavioral response. (Ansari,2020)

6-3-Wolfgang Kohler's Experiment

In this experiment, Kohler hung a piece of fruit just out of reach of each chimp. He then provided the chimps with either two sticks or three boxes, then waited and watched. Kohler noticed that after the chimps realized they could not simply reach or jump up to retrieve the fruit, they stopped, had a seat, and thought about how they might solve the problem. Then after a few moments, the chimps stood up and proceeded to solve the problem. In the first scenario, the problem was solved by placing the smaller sticks into the longer stick to create one very long stick that could be used to knock down the hanging fruit. In the second scenario, the chimps would solve the problem by stacking the boxes on top of each other, which allowed them to climb up to the top of the stack of boxes and reach the fruit. Learning occurs in a variety of ways. Sometimes it is the result of direct observation; other times, it is the result of experience through personal interactions with the environment. Kohler called this newly observed type of learning insight learning. Based on these observations, Kohler's theory of insight learning became an early argument for the involvement of cognition, or thinking, in the process of learning. (Ansari,2020)

(i) Kohler s experiment on Sultan (Experiment with box)

Kohlar kept a monkey (named Sultan) hungry for some time, and then shut him in a large cage. He hung bananas from the ceiling, and kept a box on the floor of the cage, fast beneath. The monkey could not reach the banana. Another box was put in a corner of the cage. But Sultan could not get the idea of placing one box on the other and thus reaching the banana. Ultimately Kohlar gave demonstration of putting one box on the other. Sultan could now learn the whole situation. He used his intelligence and insight to put the two boxes one upon the other, stand on these and then reach the bananas. (Ansari,2020)

(ii) Experiment with two sticks

In another experiment Kohler kept two sticks in the cage. One end of the shorter sticks could be fitted in the one end of the longer sticks, so as to make them longer. The monkey did not get the idea of forming the two sticks through trial and error. When Kohlar gave a hint through putting his finger in the whole of the bigger stick, the monkey viewed the whole situation and performed the right task through understanding the insight.(Ansari,2020)

In summary, the Gestalt concept of insight was primarily intended to contrast learning processes that function on an organism's behavioral environment (such as restructuring a mental representation through cognitive trial-and-error) against those that are a function of frequency of co-occurrence in an organism's geographical environment (such as association by contingency through behavioral trial-and-error). Insightful learning processes were proposed to be qualitatively different than associative learning processes in that they did not require gradual and incremental attainment of new knowledge through overt trial-and-error. (Ash, Jee, Wiley,2012,p06)

Figure 2.10 : Sulton making a double-stick

Source : (https://pigeon.psy.tufts.edu/psych26/kohler.htm)

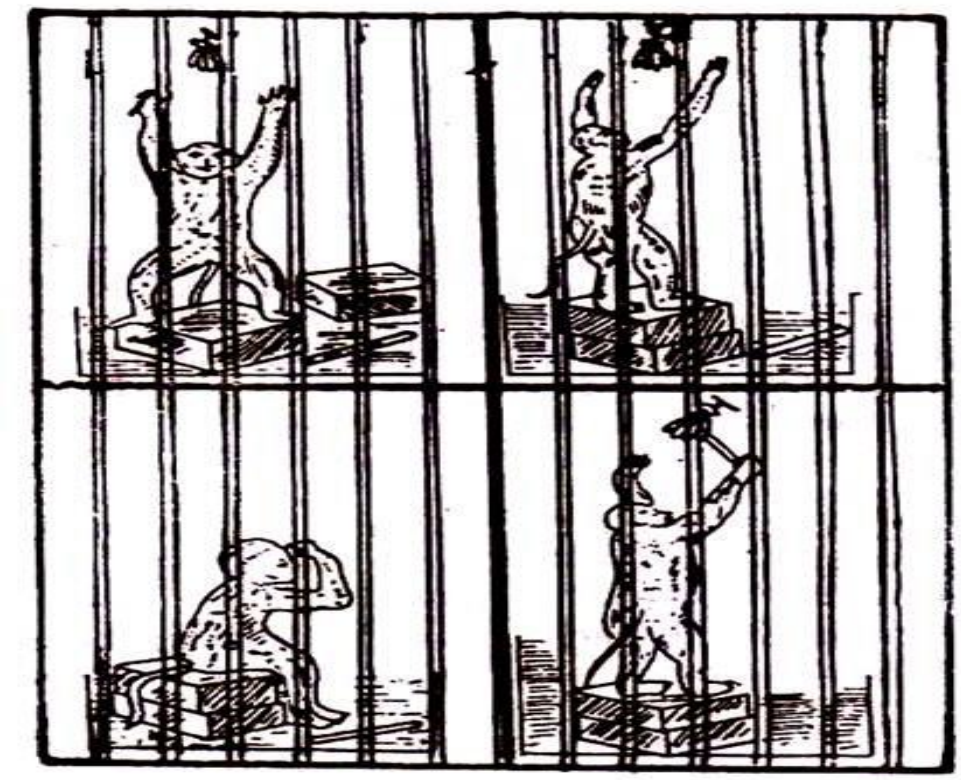


Fig. Kohler's experiment on chimpanzee.

Figure 2.11 : Kohler's experiment on chimpanzee

Source : (https://specialeducationnotes.co.in/Wolfgang%20Kohler.htm)

Figure 2.12: Köhler, Wolfgang (1887–1967)

Source : (https://nospensees.fr/wolfgang-kohler-intelligence-et-chimpanzes/)

Wolfgang Köhler was born in 1887 in Reval, Estonia, and grew up in Wolfenbüttel, Germany. Köhler studied philosophy, science, and psychology at the Universities of Tübingen, Bonn, and Berlin.

Wertheimer and Kurt Koffka from 1910 to 1913, working on the foundations of Gestalt theory. Köhler served as Director of the Anthropoid Institute of the Prussian Academy of Sciences in Tenerife (Canary Islands), where he conducted research with animals on insightful learning (Seel,2012) .

Neither Thorndike's trial-and-error explanations of learning nor behavioral analysis of organized goal-directed behavior seemed adequate to account for the behavior of the chimpanzees. The disagreement with the structural approach to mind and the behavioral approach to behavior derived from fundamentally different assumptions about the nature of science.

Titchener, and Watson as well, assumed that science proceeded by analysis, by breaking down chemical and material objects into the elements of which they are composed. The elemental analysis that Titchener perceived to be the hallmark of physics was a nineteenth-century model that had given way to analyses in terms of fields in which forces operated to determine organization of particles rather than particles or elements giving rise to organization (e.g., introducing a magnetic force placed among a random pattern of iron filings organizes the filings in terms of the directions of force). Field theory and the laws of organization were proposed to account for many phenomena, not only of perception and problem solving and learning, but of, for example, social behavior, child development, and thinking, and served to prompt research designed to test theories in these areas.(Freedheim , Weiner, 2003, p 17)

Gestalt psychologists, who studied mainly perception and problem solving, believed an observer did not construct a coherent perception from simple, elementary sensory aspects of an experience but instead apprehended the total structure of an experience as a whole (Galotti, 1999,p 09).

The Gestalt psychologists thus rejected structuralism, functionalism, and behaviorism as offering incomplete accounts of psychological and, in particular, cognitive experiences. They chose to study people's subjective experience of stimuli and to focus on how people use or impose structure and order on their experiences. They believed that the mind imposes its own structure and organization on stimuli and, in particular, organizes perceptions into wholes rather

than discrete parts. These wholes tend to simplify stimuli. Thus, when we hear a melody, we experience not a collection of individual sounds but rather larger and more organized units—melodic lines (Galotti, 1999,p 09).

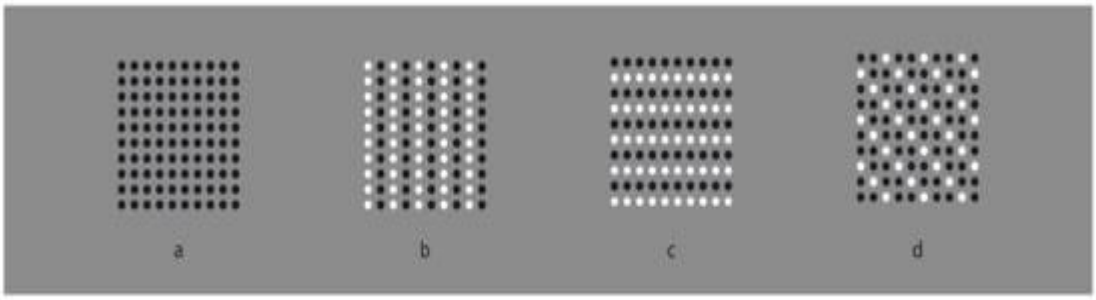
6-4-Gestalt Principles:

Gestalt Principles refer to a set of visual principles that work together to create meaningful perceptions in a visual scene. These principles include Proximity, Similarity, Dissimilarity, Continuity, Closure, Symmetry, Figure/Ground.

1- **Proximity**

Proximity The principle of Proximity states that elements which are close to each other will be grouped together (Wertheimer, 1923; Goldstein, 1999). With haptic perception, it is also possible to group elements into different groups if the elements are close to one another in location. For example, each character in Braille is made of a group of characters that are grouped together because they are close to one another (Chang, Nesbitt, and al, 2007).

Figure 2.13: The Gestalt principles of proximity



All else being equal, the closest and most-similar elements are grouped together creating an uniform square matrix (**a**), columns (**b**), rows (**c**) and oblique arrangements (**d**).

Source (Pinna, Porcheddu ,2022,p02)

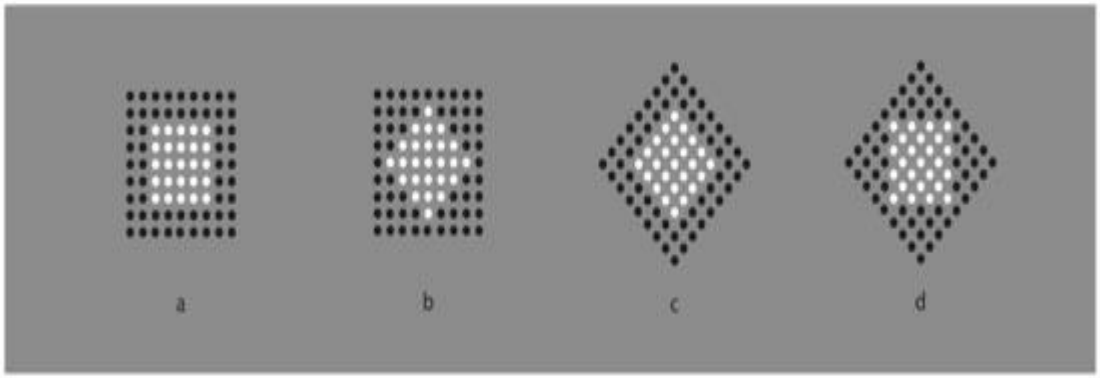
2. Similarity and Dissimilarity:

Similarity:

Elements will tend to be grouped together if their attributes are perceived as related (Wertheimer, 1923; Goldstein, 1999). For example, visual display elements will be grouped together if their lightness, hue, size, orientations or shape are closely related with each other.

With haptic perception, it is also possible to group similar shapes, forces, surface textures, weights and vibration. For example, visually disabled people are able to separate cutlery by the similarity in shapes; grouping knifes, forks and spoons into different groups.(Chang, Nesbitt, and al, 2007).

Figure 2.14: Homogeneous squares (**a**,**d**) and diamonds (**b**,**c**) clearly segregated from surrounding homogeneous black dots.



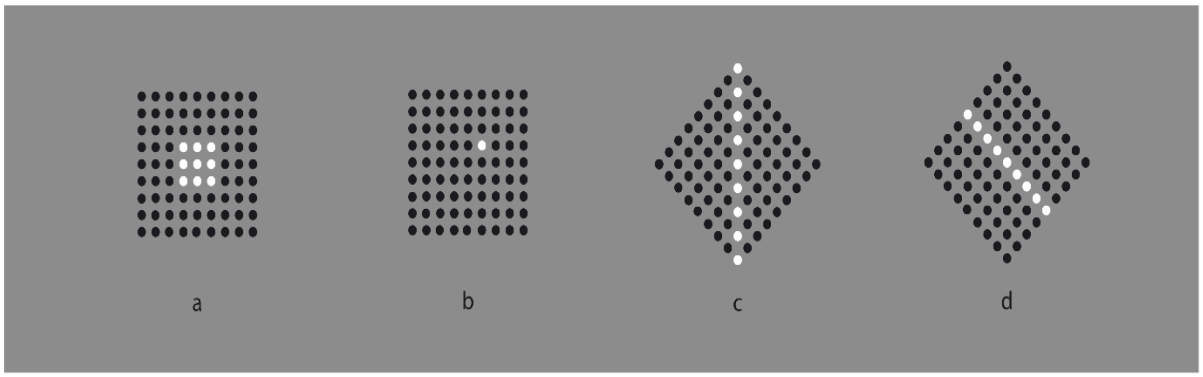
Source: (Pinna, Porcheddu ,2022,p03)

Dissimilarity:

Starting from the previous phenomenal descriptions, a first immediate note suggests that *dissimilarities* by reversed contrast are strong enough to break similar/equal proximities among columns and rows and to highlight one or the other arrangement. Conversely and at the same time, contrast *similarities* among dots are responsible for putting them together in distinct wholes. In layman's terms, dissimilarities could be responsible for creating segregation, distinction and separation between adjacent groups and similarities for putting the dots within each group together homogeneously. (Pinna, Porcheddu ,2022,p03)

Dissimilarity clearly induces segregation. On the other hand, the inner homogeneity among the elements of the adjacent regions is also related to the salience of the perceived segregation by imparting the surface/background scission.

Figure 2.15: A white surface (**a**) is reduced to a single dot (**b**), to a vertical or to an oblique line segment (**c**,**d**).



Source: (Pinna, Porcheddu ,2022,p03)

The principle of Continuity:

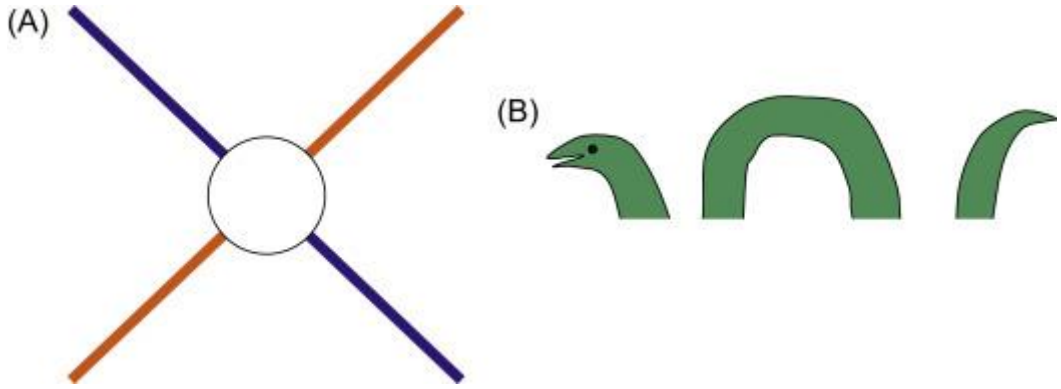
The principle of *Continuity,* states that when visual elements are aligned with each other, our visual perception is biased to perceive them as continuous forms rather than disconnected segments.

For example:

Fig. **2.16 A**, we automatically see two crossing lines—one blue and one orange. We don't see two separate orange segments and two separate blue ones, and we don't see a blue-and-orange V on top of an upside-down orange-and-blue V. (Johnson, 2010)

In Fig. **2.16 B**, due to the vertical alignment of the pieces and the fact that they are spaced to match the curvature of the visible pieces, we see a sea monster in water, not three pieces of one. If we misaligned the pieces or spaced the pieces further than the curvature suggests, the illusion of continuity would disappear. (Johnson, 2010)

Figure 2.16 A **Figure 2.16 B**



Source:(Johnson, 2010)

The principal of Closure:

According to the law of closure, we perceive elements as belonging to the same group if they seem to complete some entity.

Our brains often ignore contradictory information and fill in gaps in information.

In the image at the top of the page, you probably see the shape of a diamond. This is because, according to this Gestalt principle, your brain fills in the missing gaps in order to create a meaningful image.(Cherry,2024)

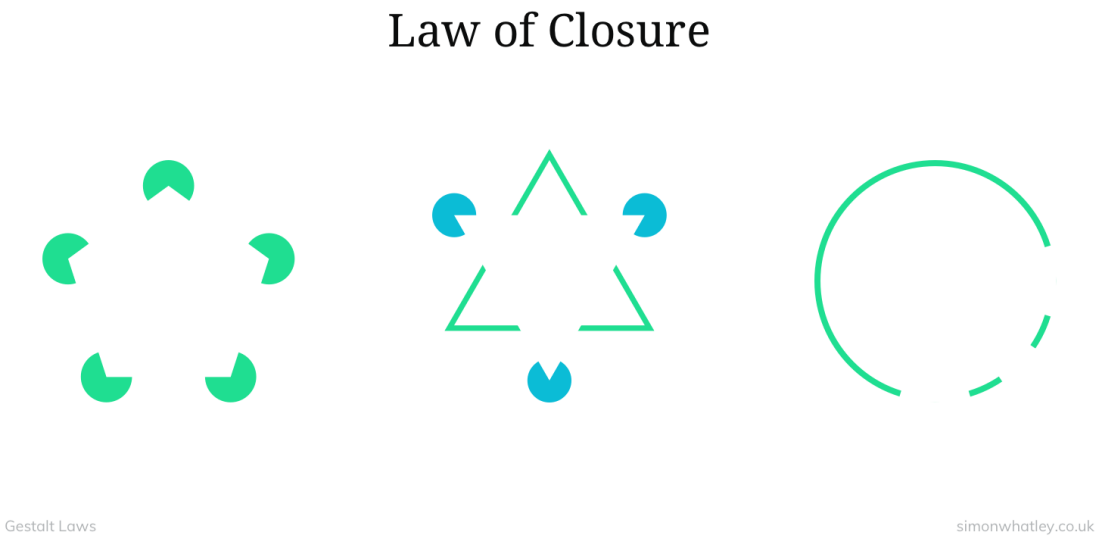


Figure 2.17: Principal of closure

Source : (https://www.simonwhatley.co.uk/writing/gestalt-principles-of-perception/)

The principle of Symmetry:

The Gestalt principle of *Symmetry*. It states that we tend to parse complex scenes in a way that reduces the complexity. The data in our visual field usually has more than one possible interpretation, but our vision automatically organizes and interprets the data so as to simplify it and give it symmetry. (Johnson, 2010)

For example:

We see the complex shape on the left of Figure 2.18 as two overlapping diamonds, not as two touching corner bricks or a pinch-waist octahedron with a square in its center. A pair of overlapping diamonds is simpler than the other two interpretations shown on the right of Figure 2.18: it has fewer sides and more symmetry than the other two interpretations. (Johnson, 2010)

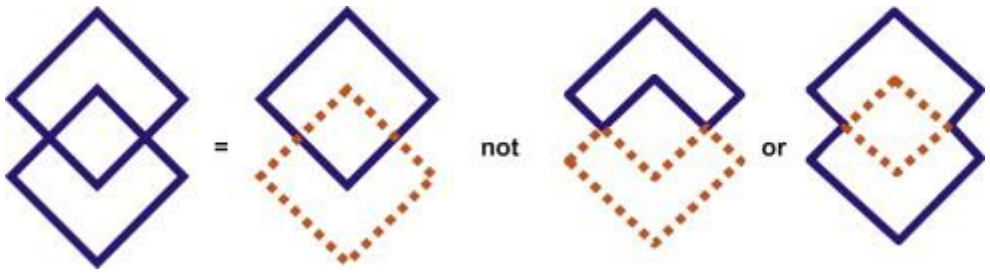


Figure 2.18: Symmetry: The human visual system tries to resolve complex scenes into combinations of simple, symmetrical shapes.

Source : (Johnson, 2010)

Gestalt Principle: Figure/Ground

Gestalt Principle: Figure/Ground describes how our visual system structures the data it receives is *Figure/Ground*. This principle states that our mind separates the visual field into the figure (the "foreground") and ground (the "background").

The foreground consists of those elements of a scene that are the object of our primary attention, and the background is everything else.

The Figure/Ground principle also specifies that the visual system's parsing of scenes into figure and ground is influenced by characteristics of the scene.

For example, when a small object or color patch overlaps a larger one, we tend to perceive the smaller object as the figure and the larger object as the ground (Johnson, 2010).

Figure/Ground is also often used to pop up information over other content. Content that was formerly the figure—the focus of the users' attention—temporarily becomes the *background* for new information, which appears briefly as the new *figure* . (Johnson, 2010).

Figure 2.19: Figure/Ground: When objects overlap, we see the smaller as figure on ground.

Source : (Johnson, 2010)

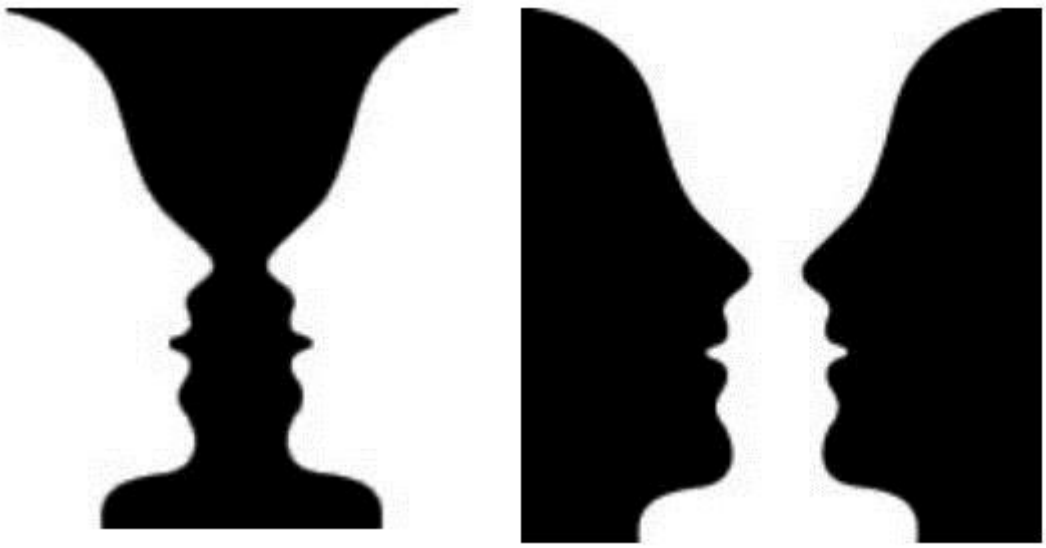


Figure 2.20: Figure/Ground: where one image can be viewed in two different ways.

Source :(https://www.researchgate.net/figure/Figure-Ground-Relationship_fig1_258128522)

6-5- Criticism of Gestalt Theory

One criticism of Gestalt theory is that it only provides an explanatory tool and cannot be used to predict the outcome of design. It may be that Complex Systems research will provide the necessary mathematical framework to overcome this problem (Chang, Nesbitt, and al, 2007).

7-Humanistic Theory

During the early 20th century, American psychology was dominated by behaviorism and psychoanalysis. However, some psychologists were uncomfortable with what they viewed as limited perspectives being so influential to the field. They objected to the pessimism and determinism (all actions driven by the unconscious) of Freud. They also disliked the reductionism, or simplifying nature, of behaviorism. Behaviorism is also deterministic at its core, because it sees human behavior as entirely determined by a combination of genetics and environment. Some psychologists began to form their own ideas that emphasized personal control, intentionality, and a true predisposition for "good" as important for our self-concept and our behavior. Thus, humanism emerged. Humanism is a perspective within psychology that emphasizes the potential for good that is innate to all humans. Two of the most well-known proponents of humanistic psychology are Abraham Maslow and Carl Rogers (Dumper , Jenkins , and al, 2019, p 20-21).

7-1-Maslow, Rogers, and Humanism

Abraham Maslow (1908–1970) was an American psychologist who is best known for proposing a hierarchy of human needs in motivating behavior.

People have biological, psychological and social aspects and therefore have various needs. These needs, which can vary from person to person, follow a hierarchical order that progresses from basic physiological needs towards social and psychological needs at a higher level. Maslow's Hierarchy of Needs Theory. (Aysa , Aydemir, Genç ,2017,p 215)

Maslow asserted that so long as basic needs necessary for survival were met (e.g., food, water, shelter), higher-level needs (e.g., social needs) would begin to motivate behavior. According to Maslow, the highest-level needs relate to selfactualization, a process by which we achieve our full potential. Obviously, the focus on the positive aspects of human nature that are characteristic of the humanistic perspective is evident. (Dumper , Jenkins , and al, 2019, p 20-21).

Humanistic psychologists rejected, on principle, the research approach based on reductionist experimentation in the tradition of the physical and biological sciences, because it missed the "whole" human being. Beginning with Maslow and Rogers, there was an insistence on a humanistic research program. This

program has been largely qualitative (not measurement-based), but there exist a number of quantitative research strains within humanistic psychology, including research on happiness, self-concept, meditation, and the outcomes of humanistic psychotherapy (Dumper , Jenkins , and al, 2019, p 20-21).

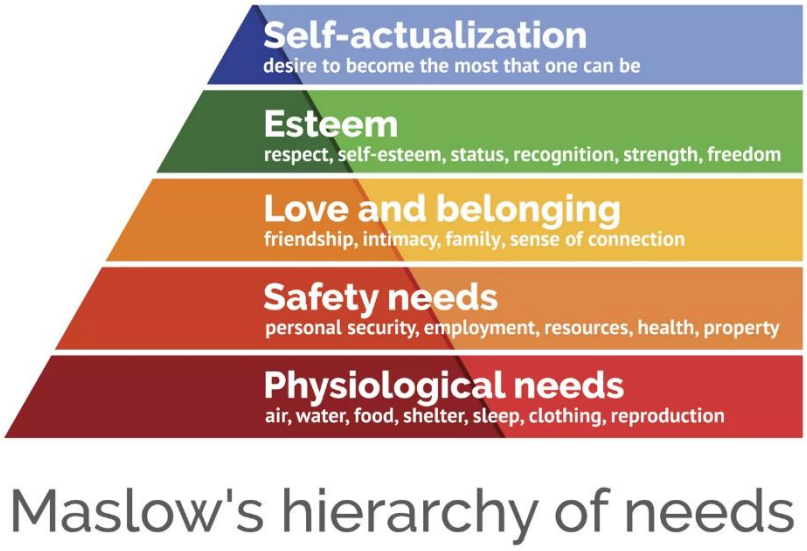


Figure 2.20: Maslow's Hierarchy of Needs

Source: (Hopper,2024)

Carl Rogers (1902–1987) was also an American psychologist who, like Maslow, emphasized the potential for good that exists within all people (Figure). Rogers used a therapeutic technique known as client-centered therapy in helping his clients deal with problematic issues that resulted in their seeking psychotherapy. Unlike a psychoanalytic approach in which the therapist plays an important role in interpreting what conscious behavior reveals about the unconscious mind, client-centered therapy involves the patient taking a lead role in the therapy session. Rogers believed that a therapist needed to display three features to maximize the effectiveness of this particular approach:

2- Unconditional positive regard, genuineness,
3- Empathy.
4- Unconditional positive regard refers to the fact that the therapist accepts their client for who they are, no matter what he or she might say. Provided these factors,

Rogers believed that people were more than capable of dealing with and working through their own issues. (Dumper , Jenkins , and al, 2019, p 22).

Figure 2.21: Carl Rogers

(1902-1987)

Source: (Brückner, Fabri, 2015, p 03).

Carl Rogers *, American psychologist, leading figure in humanistic psychology and founder of person-centered therapy. the "****third force****" in 20th century psychology, following psychoanalysis and behavior therapy. His person-centered approach has gained worldwide recognition as a fundamental strategy in counseling and psychotherapy, and has been adopted and further developed for various psychosocial intervention settings.* (Brückner, Fabri, 2015, p 03).

8-Self-theory (Carl Rogers's)

Introduction:

Humans have an innate ability to know what they need and what is essential for a fulfilling life. If this is the case, however, why do so many individuals suffer with psychological disorder and distress? The answer, according to Rogers, lies in the social environment in which an individual develops.

Thus, the fully functioning person is a term that describes the ideal condition in which actualization of the self is congruent with an individual's organismic experiences.

Rogers's view of the meaning of the good life was based on his conception of the fully functioning person (Proctor, Tweed, and al ,2015, p04).

8-1-The development of self-concept, positive regard and self-regard

Rogers asserts that, as the child grows, the actualizing tendency will lead to the differentiation and refinement of experience. As the child's awareness of his own being starts to unfold, and as a clearer picture of his/her functioning begins to develop, a so called sense of self begins to evolve. This process is, according to Rogers (1959), dynamic and greatly dependent upon individual perception of experience. It comprises perceived experiences of the individual's own being and functioning within his/her environment. One's own perception of experience is, therefore, a necessary condition for the development of the self-concept. Because the child begins to see him/herself as being important in the phenomenal world, individual awareness of the self becomes differentiated from the remainder of individual experiencing. (Peixoto, n.m, p 47)

There is a self within each person's existing phenomenal field. This concept is of such importance to Rogers that his theory is often referred to as «**self theory**».

But, according to Rogers (1959), individual perception of experience is also influenced by one's own need for positive regard. This is so because, as one's awareness of the self grows, it becomes important to determine how the self is being valued by others.

In Rogers theory, the need for positive regard constitutes a second motivational force which may compete with, or even override, the actualizing motive. Eventually, when positive regard from others becomes independent and incorporated into the self (e.g. the teacher thinks I'm smart, therefore «<'m smart») self-regard is experienced. In this case, the individual will come to evaluate the self after he perceives others as evaluating it. In Corsini's perspective, self-regard is «a learned sense of self based on ... [the person's] ... perception of the regard he has received from others ... [Self-regard] ... becomes a pervasive construct influencing the whole of the organism ... [lt] ... has a life of its own, independent of actual experiences of regard from others». (Peixoto, n.m, p 47)

8-2-Self-actualization :

Rogers believed people have an ability to heal themselves and work for personal growth, which in turn leads to self-actualization. Self-actualization which is an important concept in client-centered therapy refers to the tendency of all human beings to move forward, grow, and reach their full potential) . According to Rogers self-actualization is hindered by negative, unhealthy attitudes about the self.(Madhumathy,2018,p987

8-3-Carl Rogers Self Theory

The most important contribution of Rogers to personality science: his *self theory*. His main professional focus was the process of psychotherapy. Rogers committed himself to understanding how personality change can come about. The process of change or of becoming was his greatest concern.

Rogers' personality theory is basically focusing on the notion of self or self-concept. The self-concept is defined in a wide way as the individual`s tendency to act in ways which actualize himself, lead to his differentiation and a group of experiences, accordingly, are differentiated and symbolized in conscious awareness as self experiences, the sum of which establishes the individual`s self concept. In terms of his investigation on the concept of self, it is central to the client-centered theory of therapy and personality .(İsmail, Tekke,2015,p144)

To Rogers, healthy persons are individuals who can assimilate experiences into their self-structure . To some extent, they explained that individuals are open to experiences: a congruence between self and experience and in contrast, the neurotic ones do not fit organismic experience; they are in a position to deny

awareness of significant sensory and emotional experiences.(İsmail, Tekke,2015,p144)

8-4-The Structure of the Self-Concept in Rogers' Theory:

The Rogerian theory states that the self is composed of unique concepts. The self-concept includes three components:

***Self-worth (or self-esteem)* :**

What we think about ourselves. Rogers believed feelings of selfworth developed in early childhood and were formed from the interaction of the child with the mother and father. (Madhumathy,2018, p990)

Real-self (self-image):

Self-image – How we see ourselves, which is important to good psychological health. Selfimage includes the influence of our body image on inner personality. At a simple level, we might perceive ourselves as a good or bad person, beautiful or ugly. Self-image has an effect on how a person thinks feels and behaves in the world. (Madhumathy,2018, p990)

It includes the influence of our body image intrinsically. How we see ourselves, which is very important to good psychological health. In other words, we might perceive ourselves as a beautiful or ugly, good or bad person. Self-image has directly an affect on how a person feels, thinks and acts in the world. (İsmail, Tekke,2015,p145)

Ideal self:

Ideal self – This is the person who we would like to be. It consists of our goals and ambitions in life, and is dynamic – i.e. forever changing. The ideal self in childhood is not the ideal self in our teens or late twenties etc. (Madhumathy,2018, p990)

It briefly represents our strivings to achieve in our goals or ideals. In other words, it is our dynamic ambitions and goals. This may not be valid for childhood is not the ideal self in our teens or late twenties and so forth (McLeod, 2007). To the extent that our society is divergent from the actualizing tendency, and ‘we are forced to live with conditions of worth that are out of step with organismic valuing, and receive only conditional positive regard and self-regard, we develop instead an ideal self.

By ideal, Rogers (1961) suggested there are some things situated beyond our reachable that might result from the gap between the real self and the ideal self . In fact, this self is borne out of influences outside of us. It is the self that holds values absorbed from others; a culmination of all those things that we think we should be, and that we feel others think we should be. (İsmail, Tekke,2015,p145)

8-5-Rogers' Conceptualization of the Fully Functioning Person:

Specifically, Rogers (1959) noted several changes customarily associated with outcomes or results experienced by a person becoming more fully functioning, which are observed outside of the therapeutic relationship.

The following changes were hypothesized as being relatively permanent:

1. Being more congruent, open to experience, and less defensive

2. Having improved psychological adjustment

3. Having an increased degree of positive self-regard

4. Perceiving the locus of evaluation and the locus of choice as residing within oneself

5. Experiencing more acceptance of others (Proctor, Tweed, and al ,2015, p05).

Congruence: Congruence is the term used to describe a condition in therapy when a therapist "is what he is" in the psychotherapeutic relationship.

That is, in the relationship with the client, a therapist "is genuine and without 'front' or façade, openly being the feelings and attitudes which at that moment are flowing in him"–"a unified, or integrated, or congruent person". (Zeigler-Hill, Shackelford,2017,p01),

8-6-Consequences or results of the above changes:

a. More realistic, objective, extensional in perceptions, and more effective in problem solving

b. Less vulnerable to threat

c. More confident and self-directing

d. Values are determined by an OVP

e. Perceive others more realistically and accurately

f. Behaviors “owned” by the self are increased and those disowned as “not myself” are decreased.

g. Behavior is perceived as being more within control, socialized, mature, creative, uniquely adaptive to new situations and problems, and fully expressive of own purpose and values.(Proctor, Tweed, and al ,2015, p05)

Conclusion:

Essentially, Rogers believed that individuals have the capacity for positive growth and change when provided with a supportive environment. His theory has had a significant impact on psychotherapy and counseling.

Table 3: The Most Important Approaches (Schools) of Psychology

School of psychology	Description	Important contributors
Structuralism Wilhelm	Uses the method of introspection to identify the basic elements or "structures" of psychological experience	Wundt, Edward B. Titchener
Functionalism	Attempts to understand why animals and humans have developed the particular psychological aspects that they currently possess	William James
Psychodynamic	Focuses on the role of our unconscious thoughts, feelings, and memories and our early childhood experiences in determining behavior	Sigmund Freud, Carl Jung, Alfred Adler, Erik Erickson
Behaviorism	Based on the premise that it is not possible to objectively study the mind, and therefore that psychologists should limit their attention to the study of behavior itself .	John B. Watson, B. F. Skinner
Cognitive	The study of mental processes, including perception, thinking, memory, and judgments	Hermann Ebbinghaus, Sir Frederic Bartlett, Jean Piaget

Humanism	Humanism is a perspective within psychology that emphasizes the potential for good that is innate to all humans.	Maslow, Rogers
Self Theory	The primary aim of Carl Rogers' self theory is to understand and facilitate personal growth and development.	Rogers
Social-cultural	The study of how the social situations and the cultures in which people find themselves influence thinking and behavior	Fritz Heider, Leon Festinger, Stanley Schachter

Source: (Stangor ,Walinga,2014, p18)

General Conclusion :

Psychological theories are systems of ideas that attempt to explain various aspects of human thoughts, behaviors, and emotions. These theories are developed through research and observation, and they are used to make predictions about future human behaviors or events.

These are just a few of the major psychological theories that have shaped our understanding of the human mind and behavior. Each theory offers unique perspectives and insights, and many contemporary approaches incorporate elements from multiple theoretical frameworks.

Discussion Questions: 

1- What are the primary goals of psychological theories?
2- Whats does cognitive psychologist study?

3- When and how did the psychological school of behaviorism emerge?
4- Choose two of the fields of psychology discussed in this section and explain how they differ in their approaches to understanding behavior and the level of explanation at which they are focused.
5- How does the "real self" differ from the "ideal self"?
6- What is the role of unconditional positive regard in therapy?
7- Explain the concept of congruence in Rogers' theory.

LECTURE 04:

INTELLIGENCE

Fourth Lecture:

Intelligence

Introduction:

This introductory course provides a comprehensive overview of the fascinating field of intelligence. We will explore the various theories and perspectives on intelligence, examining both its cognitive and emotional aspects. The course will delve into the factors that influence intelligence, including genetics, environment. We will also discuss the measurement of intelligence.

1- Defining Intelligence:

"The word "intelligence" has its origins in Latin. It is derived from the Latin word "*intelligentia*," which is a combination of two Latin words:

1. "*Inter*," which means "between" or "among."

2. "*Legere*," which means "to choose," "to gather," or "to read."

So, "*intelligence"* in its Latin roots could be understood as the ability to choose or gather information between or among various sources or stimuli. Over time, the meaning of "*intelligence*" has evolved to refer to a broader range of mental abilities, including problem solving, learning, reasoning, and adapting to new situations." (Lock,2023, p02)

The word intelligence derives from the Latin "*intelligere*," meaning to understand or perceive. Problem-solving and cognitive development progress from establishing object permanence, causality, and symbolic thinking with concrete (hands-on) learning to abstract thinking and embedding of implicit (unconscious) to explicit memory development.(Malik , Marwah, 2023).

Howard Gardner, defines intelligence as an ability to solve problems or create products that are valued in at least one culture,

Helding , defines intelligence as a biopsychological potential.

(Ernawati, Tsurayya, an al ,2019,p 23)

Piaget's Definition of Intelligence: Intelligence constitutes the state of equilibrium towards which tend all the successive adaptions of a sensori-motor

and cognitive nature, as well as all assimilatory and accommodatory interactions between the organism and the environment.(Bowen,2023)

2- Difference between Human Intelligence and Artificial Intelligence (AI):

Artificial Intelligence (AI) is currently significant in several domains for its capacity to simulate human intelligence processes using technology, especially computer systems.

Overall, senior high school students commonly utilize artificial intelligence tools like Ask AI, ChatGPT, OpenAI, Perplexity, and other learning technologies to help them learn new information, understand teacher presentations, and memorize lessons. (Yang, 2024,p02)

A phenomenon where researchers tend to focus on benefits or positive aspects as opposed to the negatives. Nonetheless, of the challenges reported, four key areas emerged from our research: technology breakdowns, limited capabilities, fear, and standardising language.(Crompton , Edmett et al ,2023,p 16)

Human intelligence depends on 4 various stages, that is 1. Memory and learning 2. Visual perception 3. Auxiliary perception 4. Retrieval ability. All these 4 stages are nested with one another. (Shanthi, Narsimha, 2015, p30)

Difference between human intelligence and Artificial intelligence. Based on Artificial Intelligence ordinary people can improve their own human intelligence. So that common man can express his thoughts more clearly and coherently, and it can help them to select better choices. (Shanthi, Narsimha, 2015, p34)

3- Theories of Intelligence:

There are different theories about intelligence, none of which agreee with each other. Every approach to thinking comes up with it’s own different perspective and assumptions.

3-1- Faculty theory:

It is the oldest theory regarding the nature of intelligence and flourished during 18th and 19th century. According to this theory, mind is made up of different faculties like reasoning, memory, discrimination, imagination, etc. These faculties are independent of each other and can be developed by vigorous training. Faculty

Theory had been under criticism by experimental psychologists who disproved the existence of independent faculties in the brain. (Pal, Pal, et al, 2005, p182).

3-2-One factor/UNI factor theory:

It reduces all abilities to a single capacity of general intelligence or 'common sense'. This would imply that they are all perfectly correlated, and would make no allowance for the unevenness of people i.e. abilities along different lines. Since it goes against the common observation that ''an individual does possess different levels of different abilities and does not shine equally in all directions''—it has no ground to stand. (Pal, Pal, et al, 2005, p182).

3-3-Spearman's two-factor theory:

It was developed in 1904 by an English Psychologist, Charles Spearman, who proposed that intellectual abilites were comprised of two factors : one general ability or common ability known as 'G' factor and the other a group of specific abilities known as 'S' factor. 'G' factor is universal inborn ability. Greater 'G' in an individual leads to greater success in life. 'S' factor is acquired from the environment. It varies from activity to activity in the same individual. (Pal, Pal, et al, 2005, p182).

3-4-Thorndike's multifactor theory :

Thorndike believed that there was nothing like General Ability. Each mental activity requires an aggregate of different set of abilities. He distinguished the following four attributes of intelligence :

(a) Level—refers to the level of difficulty of a task that can be solved.

(b) Range—refers to a number of tasks at any given degree of difficulty.

(c) Area—means the total number of situations at each level to which the individual is able to respond.

(d) Speed—is the rapidity with which we can respond to the items.

3-5-Cattell's Fluid And Crystallized Theory :

The fluid aspect of this theory says that intelligence is a basic capacity due to genetic potentiality. While this is affected by the past and new expriences, the crystallized theory is a capacity resultant of experiences, learning and environment. (Pal, Pal, et al, 2005, p182).

3-6-The theory of Multiple Intelligences :

The theory of Multiple Intelligences was developed in 1983 by Dr. Howard Gardner, professor of education at Harvard University. This theory gives more accurately about the concept of intelligence and to address the question whether methods which claim to measure the human intelligence are truly scientific.

Multiple intelligence theory stated that every people have several intelligences which formed in blending intelligence. Usually, there is a dominant intelligence from those several intelligences. Therefore this potentially intelligence has to be improved.(Ma'mun,2012,p 132)

All human beings possess all different intelligences in varying degrees and each individual manifest varying levels of these intelligences and thus each person has a unique "*cognitive profile*", that is:

a. All human posses all different intelligences in varying amounts.

b. Each individual has a different composition;

c. Different intelligences are located in different areas of the brain and can either work independently or together;

d. By applying Multiple Intelligences we can improve education;d an

e. These intelligences may define human species .

(Ma'mun,2012,p 132)

Howard Gardner described intelligence from the pluralistic point of view rather than the unitary system. He described the intelligence as "*the ability to solve problems or create products that are valued within one or more cultural settings''* (Gardner, 1999:33). On the contrary of his contemporaries he claims that humans have more than only linguistic and mathematical intelligences. In his work Frames of Mind (Gardner, 1983) he describes seven intelligences and later on he added the eighth one . Nowadays the ninth, existential, intelligence has been added, however, there are many contradictions among psychologists concerning it.

(Çelik,2015,p25)

The eight intelligences are:

1- Linguistic Intelligence:

Involves sensitivity to spoken and written language. The ability to learn languages, and the capacity to use the language to accomplish certain goals.

2- Logical-Mathematical Intelligence

Involves the capacity to analyze problems logically, carry out mathematical operations, and investigate issues scientifically.

3- Spatial Intelligence

Features the potential to recognize and manipulate the patterns of wide space as well as the patterns of more confined areas.

4- Bodily-Kinesthetic

Intelligence entails the potential of using one's whole body or body parts to solve problems.

5- Musical Intelligence

Entails skills in the performance, composition, and appreciation of musical patterns.

6- Interpersonal Intelligence / Social Intelligence

denotes a person's capacity to understand the intentions, motivations, and desires of other people and, consequently, the ability to work effectively with others.

Goleman defined Social Intelligence as '*being intelligent not just about our relationships but also in them'*. Thus, Social Intelligence centres on people's interpersonal awareness and social facility, their ability or skill to deal with social relationshipseffectively, co-operate and collaborate with others, and create and participate in healthy, positive and caring social interactions (Gkonou , Mercer,2017, p06).

Social Intelligence is closely linked to '*interpersonal energy*', which is mainly drawn from participation in social interactions and groups. The authors draw on Baumeister and Leary's (1995: 497) 'need to belong' hypothesis, which postulates that '*human beings have a pervasive drive to form and maintain at least a minimum quantity of lasting, positive, and significant interpersonal relationships*.'(In: Gkonou , Mercer,2017, p06)

7- Intrapersonal Intelligence

Involves the capacity to understand oneself, to have an effective working model of one and to use such information effectively in regulating one's own life. (Çelik,2015,p25)

8- Naturalistic Intelligence

Is the ability to recognize and classify both the animal and plant kingdoms, to make other consequential distinctions in the natural world and to use this ability productively - such as in biological science, farming, and in hunting. (Çelik,2015,p25)

Christison and Armstrong gave examples of activities that fit each type of intelligence, those are:

1**) Linguistics Intelligence**: reading, writing, telling stories, playing a word game, notetaking, debates.

2**) Logical/mathematical Intelligence**: puzzles and games, logical, sequential presentations, classifications, and categorizations.

3**) Musical Intelligence:** singing, playing music, jazz, chants.

4) **Bodily/kinesthetic Intelligence**: hands-on activities, field trips, pantomime, dancing, gesturing.

5) **Spatial/visual Intelligence**: designing, visualizing, charts and grids, videos, drawing.

6**) Interpersonal Intelligence**: pairwork, project work, group problem-solving, leading, organizing, relating, and mediating.

7) **Intrapersonal Intelligence**: self-evaluation, journal keeping, options for homework, setting goals, meditating, dreaming, planning, and reflecting.

8) **Naturalist Intelligence**: gardening, caring for the earth, playing with pets, raising animals.(Fitriyani , Ma'mun,2022,p38)

Hoerr (2000, p.5) proposed that the Multiple Intelligence (MI) approach for education field focuses on student-center learning model in which all the teaching learning processes are adapted and modified to fit the students' need for learning. This concept believes that all students have the same value to have opportunities to develop their multiple

intelligence ability in maximum manner. These opportunities will help them to reach the success in their life based on their field expert. (Maret ,2018,p61)

3-7-Theory Of Emotional Intelligence :

Emotional Intelligence, is defined by Goleman (1998: 317) as 'the capacity for recognising our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships'.

Goleman discussed five key components of Emotional Intelligence:

a) Selfawareness, which means that individuals constantly endeavour to know themselves better by engaging in self-appraisals and critical reflection on their strengths and weaknesses, verbalising their emotions, welcoming feedback from others and treating failure as an impetus to self-improvement;

b) Self-regulation, which refers to the ability of individuals to manage their own emotions and behave in ways that are conducive to their own goal attainment;

c) Motivation, which encompasses a range of positive aspects such as hope, optimism and strong incentive to perform a task or participate in an activity;

d) Empathy, which reflects one's ability to share someone else's feelings by 'being in their shoes'; and

e) Social skills, which are indicative of people's willingness to take part in social interactions and their ability to handle interpersonal relationships.

Although the term Emotional Intelligence became widely known through Goleman's (1995) bestselling book Emotional intelligence: Why it can matter more than IQ, it was Salovey et al. who introduced and discussed EI within the field of psychology in the early 1990s. They explained that the term Emotional Intelligence: '…suggested to some that there might be other ways of being intelligent rather than those emphasized by standard IQ tests, that one might be able to develop these abilities, and that an emotional intelligence could be an important predictor of success in personal relationships, family functioning, and the workplace.' (Gkonou , Mercer,2017, p05).

Social Intelligence is closely linked to Emotional Intelligence ; however, there are notable differences between the two constructs. Goleman (2006) highlights that a useful way to distinguish between them is to think of Emotional

Intelligence as focusing on one-person psychology within an individual as opposed to the two-person psychology mirrored in Social Intelligence and stemming from social interactions and interpersonal relationships. (Gkonou , Mercer,2017, p05).

3-8- Information Processing Theories (A new theory of intelligence)

Intelligence is the periodicity of neural oscillation in the action potentials of the brain and central nervous system (CNS)

Although most intelligence researchers today probably accept that the general factor is to stay, they remain sharply divided on its explanation. These disagreements go well beyond a rejection of Spearman's specific suggestions that g is either mental energy or the eduction of relations and correlates. Spearman saw that he needed to provide a psychological or (better still) a neurobiological explanation of g. The two favorite paradigms for this program of research were inspection time (IT) and choice reaction time (RT). Aided by the new technologies of brain imaging, research on intelligence, working memory, and other so-called executive functions has begun to point to some of the brain structures common to them all.(Mackintosh,2011).

Operationally this hypothesizes that the typical standard psychometric measures of g are correlated with the oscillation rates of the brain and CNS as measured by various Reaction Time (RT) and Inspection Time (IT) paradigms. (See Jensen, 2006). But first a caution about possibly misleading inferences that could result from the seeming simplicity of this definitional theory, in which the term periodicity is absolutely more basic than any of the usual definitions of ‘intelligence.’ It decidedly should not be confused with Mental Age, IQ, the g factor, either fluid or crystallized intelligence, or any other psychometric test score, principal component, or factor score. Rather, the periodicity of the CNS is hypothesized as a psychophysically-derived measure.(Jensen,2011,p03)

4- The development stage of intelligence

In the piagetian theory of intelligence, the stages of intellectual development play an important role. Piaget defined four main stages:

1-The first stage, Sensorimotor (ages 0 to 2 years of age):

Is the time when children master two phenomena: causality and object permanence. Infants and toddlers use their sense and motor abilities to manipulate

their surroundings and learn about the environment. They understand a cause-and-effect relationship, like shaking a rattle may produce sound and may repeat it or how crying can make the parent(s) rush to give them attention. As the frontal lobe matures and memory develops, children in this age group can imagine what may happen without physically causing an effect; this is the emergence of thought and allows for the planning of actions. Object permanence emerges around six months of age. It is the concept that objects continue to exist even when they are not presently visible.

2-Second is the "Pre-operational" stage (ages 2 to 7 years):

When a child can use mental representations such as symbolic thought and language. Children in this age group learn to imitate and pretend to play. This stage is characterized by egocentrism, i.e., being unable to perceive that others can think differently than themselves, and everything (good or bad) somehow links to the self.

3-Third is the "Concrete Operational stage" (ages 7 to 11 years):

When the child uses logical operations when solving problems, including mastery of conservation and inductive reasoning.

4- **Finally, the Formal Operational stage (age 12 years and older):**

Suggests an adolescent can use logical operations with the ability to use abstractions. Adolescents can understand theories, hypothesize, and comprehend abstract ideas like love and justice. (Malik , Marwaha ,2023)

We call the last capability unification. The fourth stage appears due to the awareness by an individual his (or her) mental operations which he (or she) used during the prior stage of concrete mental operations. (Naidenova ,2001 , p214)

Once realizing the fact that an operation executed or carried on a pair of objects can be carried on any pair of analogous objects or on any subset of objects with the same properties an individual can be ready to release operations from a context, to control them and to consider them as subjects of mathematical, philosophical, aesthetic reflections.

The stages of intellectual development (it is better to say the spheres) are closely tight. All intellectual capabilities develop consecutively and in parallel with one another, although some of them can dominate the others at a certain stage.

During the sensory-motor stage when the cognitive structures of object, time and space are formed, in parallel with them, the concepts of causality and of goal appear too. Child begins to understand the causal links between an object and its properties as well as between the properties of object and the action he (or she) can make with it.

The achievement of the higher level of intellectual development does not mean stopping the development of the abilities appeared at the prior stages. On the contrary, these abilities continue to develop. For example, the motor activity becomes more sophisticated. (Naidenova , 2001 , p214-215)

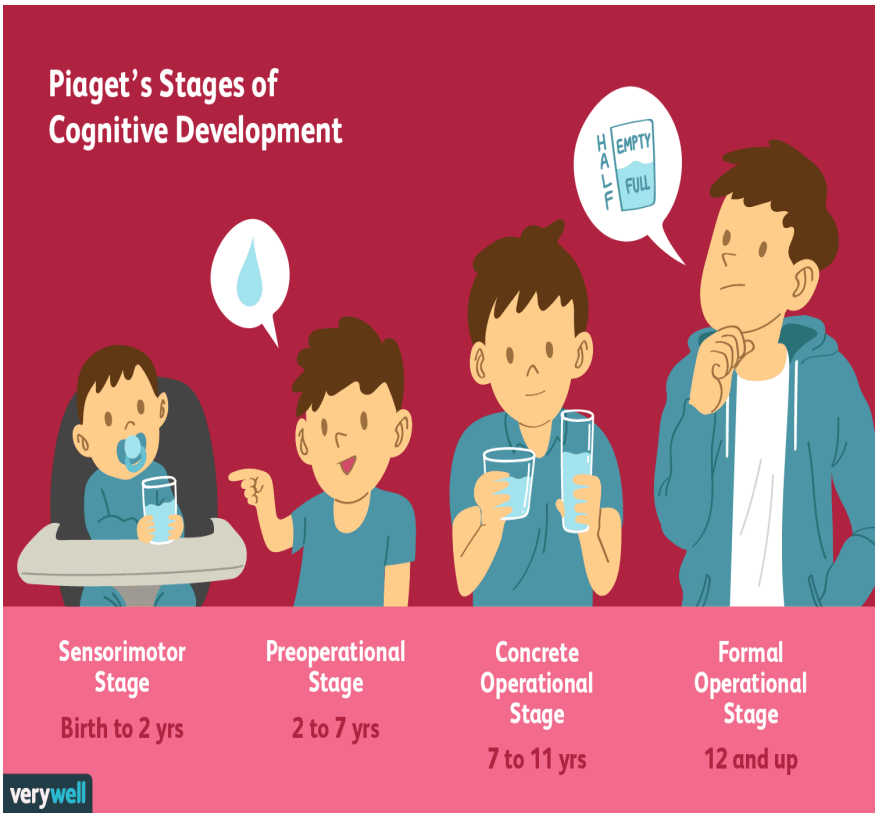


Figure 3.1 : Piaget's 4 Stages of Cognitive Development

Source : (https://www.verywellmind.com/piagets-stages-of-cognitive-development-2795457)

Figure 3.2: Jean Piaget

(1896 –1980)

William Fritz Piaget (August 9, 1896 – September 16, 1980) was a Swiss psychologist known for his work on child development.

Piaget's theory of cognitive and epistemological view are together called "genetic epistemology".

Source: (Bowen,2023)

5-Intelligence, Genetics and Environment

English scientist Francis Galton (1822-1911), a cousin of Charles Darwin, started the debate and controversy over heredity and the environment, better known as the "nature versus nurture" debate, more than a century ago. In 1865, Galton began to study heredity, primarily due to reading a book written by Darwin called Origin of Species. Galton then concentrated his efforts on studying human intelligence and its variations. He was a fervent believer in heredity, and that personal success was due to qualities that were passed down from parents to offspring through heredity.

In his lifetime, Galton made significant contributions to genetics and psychology, among other disciplines. He was a proponent of "nature" in the "nature versus nurture" debate, supporting the role of heredity. He eventually introduced the method of twin studies to help determine the different contributions of nature and nurture. His monumental work in psychology is entitled English *Men of Science: Their Nature and Nurture.*

But, *is intelligence a product of heredity or is it a product of the environment?* Human intelligence can be thought of as a very special ability that allows us to think abstractly, analyze, reason, plan and resolve problems using our

experience as we progress through life. hus, intelligence is not only a special ability to solve problems on an I.Q. test; rather it is primarily the ability to interpret and understand the unique and complex environment in which we live. Our intelligence tells us what we should do and what we should not do according to the dictates of our conscience and our moral codes, societal values (mores) and our wisdom. Given the above attributes at our disposal, we may ask ourselves: "Where does it all come from?" here are those who believe that genetics (nature) accounts for 80% to 100% of our overall intelligence, while others claim that genetics and environment (nurture) are equal (or "almost equal") partners in the ultimate determination of our mental abilities. "While genes have an impact on our behavior, the environment is still responsible for the behavioral variability between us."

Does the previous sentence ring true or is it a politically correct compromise of scientific fact?

Let's look at the facts:

first of all, genes encapsulate our evolutionary experience. Therefore, genetic-environmental interaction can be understood as our past environmental interactions with our present environmental interactions. that is, we are hard-wired (genetically) to interact with our environment.

Secondly, in the process of our development, our genes assume the presence of our environment. that is, we adapt ourselves (our genes) to our environment. As a consequence, human behavior only responds to things for which we were designed, much as an elevator responds with a movement up or down when an appropriate button is pushed. An elevator does not (usually) respond to a human voice command to go up or down (unless it was designed and programmed to do so).

The debate over whether intelligence is mostly hereditary or environmental has raged on fiercely for almost two centuries. The nature versus nurture debate has remained without a clear conclusion. Both camps have presented thoroughly convincing arguments and hypotheses.(Herbert,2012,02)

6-The intelligence quotient – IQ –

The intelligence quotient – IQ – was proposed in 1905 by the French Psychologists Alfred Binet and his assistant Theodore Simon, with the objective of measuring the "beautiful pure intelligence", that is, without intervention of

external factors. Their proposition was a consequence of a government commission assigned to study forms of ensuring adequate education to mentally handicapped children. (Falqueto, Lima, and al, 2001,p02).

Binet observed that these children worked out problems in a similar manner used by younger "normal" children. Therefore, he tested the possibility that the intelligence level might be directly related to age. The two scientists experimentally designed lists of questions for each age and abandoned those that had been wrongly answered by more than 25% of the "normal children". With this method they managed to build a set of questions well adapted to each age, every one expected to mirror the average knowledge dominated by the specific age stages. The supposition is that if one child properly answers the questions belonging to the eight year old set and fails with the nine year old set, then that child has a mental age of eight years. The quotient of the age thus obtained and the chronological age gives the decimal IQ of that child.

In a percent form:

IQ = 100 x (Mental age / Chronological age)

The Russian Psychologist L. S. Vygotsky separates two very distinct sets: one called "*really developed functions*" and the other "*potentially developed functions*", corresponding to abilities already dominated and others in a dormant stage, respectively. Clearly the IQ as defined by Binet gives only a socially and culturally biased measure of Vygotsky's "developed abilities" and a small hint, if any, to the "potential abilities". (Falqueto, Lima, and al, 2001,p02).

7-Measurement of Intelligence:

Intelligence has traditionally been measured by using Intelligent Quotient tests but those tests measure only one type of intelligence.(Arulselvi,2018 p102)

Efforts to measure intelligence have long been a part of psychology, and despite controversy over the meaning and scope of intelligence, an IQ score can provide meaningful data about a person's cognitive abilities if put within a conceptual framework that does not overstate its meaning or implications for the person. Intelligence tests are the most studied and, consequently, the most reliable, valid, and useful tests available for measuring specific cognitive abilities.(Braaten, Norman,2006,403)

The Stanford-Binet Intelligence Scale was first developed in 1905 by French psychologist Alfred Binet and his collaborator Theodore Simon to test the attention, memory, and verbal skill of schoolchildren and thereby measure their intelligence. It was revised in 1908 and 1911. In 1916, Stanford University psychologist Lewis Terman released the "Revised Stanford-Binet Scale." (The NIH Catalyst,2014, p20)

Alfred Binet was asked by the French Ministry of Education to design a formal test of intelligence that would help identify children who were unable to learn as quickly or as well as others, so they could be given remedial education. Eventually, he and colleague Théodore Simon came up with a test that not only distinguished between fast and slow learners but also between children of different age groups as well. (Brysbaert, Nicolas, 2024,p04)

The Stanford-Binet is one of the first examples of an adaptive test. Examiners use the information they have about an examinee to determine where to begin testing and administer only those items that are appropriate for that examinee…. One element of test structure that appears throughout the history of the Stanford-Binet is that of point scales and age scales. A point scale is the currently widespread arrangement of tests into subtests, with all items of a given type administered together. Age scales, long a part of the Stanford-Binet format…was used to provide a direct translation of the child's performance to mental age.

(The NIH Catalyst,2014, p20)

To identify children who were unable to profit from normal classroom instruction and needed special attention, Binet and Theodore Simon assembled a collection of tests, many of which had been developed by other investigators, and published the Binet-Simon Scale in 1905. … Binet and Simon also provided a detailed description of the testing procedure… Binet revised the 1905 test in order to assess the intellectual abilities of both normal children and those with learning problems. The revised version provided a procedure for estimating a child's mental age … Binet did not develop the concept of IQ (intelligence quotient). (Brysbaert, Nicolas, 2024,p04)

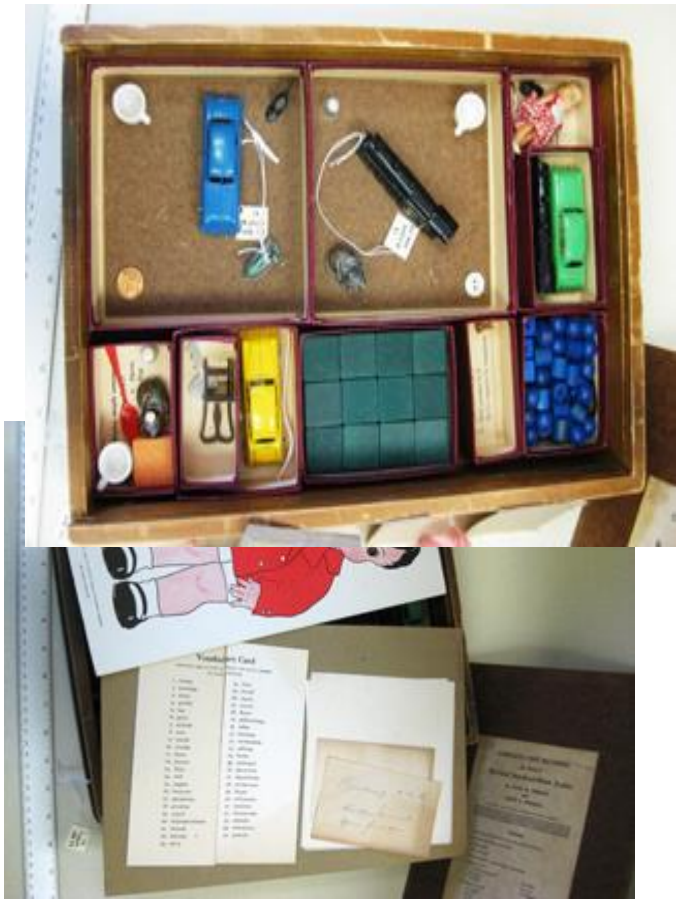
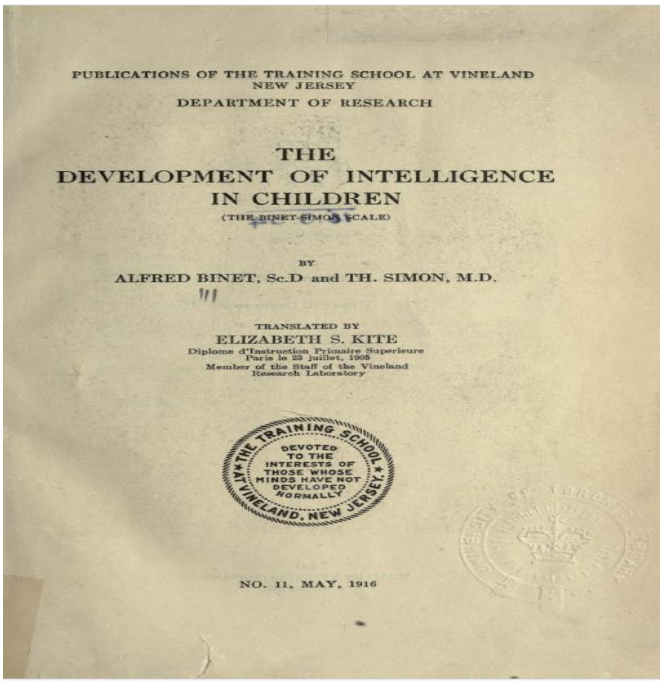


Figure 3.3: Intelligence Tests

This Houghton Mifflin test material was part of the "Form L Revised Stanford-Binet Scale," used by National Institute of Mental Health researchers in the 1950s to test the intelligence of children taking part in certain clinical studies.

Source : (The NIH Catalyst,2014, p20)



PUBLICATIONS OF THE TRAINING SCHOOL AT VINELAND
NEW JERSEY
DEPARTMENT OF RESEARCH

THE
DEVELOPMENT OF INTELLIGENCE
IN CHILDREN
(THE BINET-SIMON SCALE)

BY
ALFRED BINET, Sc.D and TH. SIMON, M.D.

TRANSLATED BY
ELIZABETH S. KITE
Diplome d'Instruction Primaire Superieure
Paris le 23 Juillet, 1908
Member of the Staff of the Vineland
Research Laboratory

THE TRAINING SCHOOL AT VINELAND, NEW JERSEY
DEVOTED TO THE INTERESTS OF THOSE WHOSE MINDS HAVE NOT DEVELOPED NORMALLY

NO. 11, MAY, 1916

Figure 3.4: First page of the 1916 English translation of Binet and Simon's

Source : (Brysbaert, Nicolas, 2024,p04)

8-Testing and Assessment of Intelligence:

Intelligence tests measure people's cognitive functioning, including (but not limited to) verbal, mathematical, and visuospatial reasoning, memory, attention, and language comprehension and production. These functions are important in many aspects of daily life ranging from academic and occupational performance to making day-to-day decisions. People who experience difficulties (or strengths) in one or more of these areas may seek out intelligence testing (or have someone seek testing on their behalf) to evaluate their cognitive functioning. The results of this testing may inform educational programming (e.g., specialized curricula) or, for marked cognitive problems, approaches to treatment (e.g., cognitive rehabilitation). Intelligence tests may also be useful in monitoring any changes in cognitive abilities over time (e.g., to see whether either neurological decline or treatment-related improvement is occurring). (Gallagher, Yalch, 2023)

One of the most commonly used intelligence tests is the *Wechsler Adult Intelligence Scale* .

The WAIS is a *battery* of cognitive and neuropsychological tests. A *battery* is a collection of several tests administered at one time. The current (fourth) edition of the WAIS (Wechsler, 2008) consists of ten sub-tests, which measure several different areas of cognitive functioning, including:

- verbal abilities (e.g., vocabulary and general knowledge),

- visuospatial reasoning (e.g., problem-solving ability),

- working memory (e.g., ability to hold information for short periods of time),

- processing speed (e.g., ability to complete simple tasks quickly).

Completing ten sub-tests provides sufficient information to generate a full *intelligence quotient* (IQ) score, a general estimate of intellectual functioning.

The original WAIS was a modification of the *Stanford-Binet Intelligence Scales* , one of the first intelligence test batteries. These and other common intelligence tests faced criticism for being *culturally biased*, that is, yielding different scores and predictive relevance for people of different racial and/or ethnic groups. (Gallagher, Yalch, 2023)

The Wechsler scales are the most widely used measures of intelligence, and have been translated, adapted, and standardized in dozens of countries around the world. Since first introduced in the Wechlser–Bellevue Intelligence Scale (WBIS), the Wechsler model has evolved substantially, but remains grounded in Dr. Wechsler's foundational definition of intelligence:

…the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his (or her) environment. (Wechsler, 1939, p. 3).(In : Weiss, Saklofske ,and al, 2016)

Intelligence scales For Infant/Children:

1-the *Bayley Scales of Infant and Toddler Development Wechsler Preschool and Primary Scale of Intelligence* – Fourth Edition (WIPPSI-IV) measures cognitive development in preschoolers and young children ages 2.6–7.7 years.

2- The W*echsler Intelligence Scale for Children* – Fifth Edition (WISC–V) measures a child's intellectual ability and is appropriate for children 6.0–16.11 years. The *Wechsler Adult Intelligence Scale* – Fourth Edition

(WAIS-IV) measures an adult's intellectual ability and is appropriate for persons 16.0–90.11 years .

3- The Stanford-Binet Intelligence Scales, Fifth Edition (SB5) is an individually administered measure of intelligence and cognitive abilities for persons 2–85 years and older. The SB5 is used to diagnose a wide variety of *developmental disabilities* and can be used as part of early childhood assessment, psychoeducational evaluations for special education services, and for later career development planning.(Bisconer, Ahsan,2017)

4- The Bayley Scales of Infant and Toddler Development, Third Edition (Bayley III) are used to assess the developmental status of children ages 1 month to 42 months. This assessment takes 30–90 min to administer depending on the age of the child. The scales measure the complete child in five areas: (a) Cognitive (visual preference, attention, memory, sensorimotor, exploration and manipulation, concept formation); (b) Motor (fine motor and gross motor subtests); (c) Language (receptive and expressive subtests); (d) Social-emotional (communicating needs, self-regulation using emotional signals); and (e) Adaptive *behavior* (communication, self-care, self-direction). Care-giver participation is encouraged and a care-giver report with recommendations is generated. The Bayley III *Screening Test* (provides cognitive, language, and motor domain scores and cut scores according to age. The assessment is useful in *pediatric* offices, daycare centers, and early intervention programs.(Bisconer, Ahsan,2017)

Figure 3.5: *Wechsler Intelligence Scale for Children - Fifth UK Edition*

Wechsler Intelligence Scale for Children® Fifth Edition (WISC®-V) is an intelligence test that measures a child's intellectual ability and 5 cognitive domains that impact performance.

Source :
(https://www.pearsonclinical.co.uk/store/ukassessments/en/Store/Professional-Assessments/Cognition-%26-Neuro/Gifted-%26-Talented/Wechsler-Intelligence-Scale-for-Children---Fifth-UK-Edition/p/P100009279.html)

Conclusion:

Intelligence is a complex and multifaceted concept that has been studied by psychologists, philosophers, and scientists for centuries. While there is no single definition of intelligence that is universally accepted, it is generally understood to involve the ability to learn, reason, problem-solve, and adapt to new situations.

There are many different theories of intelligence, each with its own strengths and weaknesses.

Intelligence is influenced by a variety of factors, including genetics, environment, and education. The study of intelligence has important implications for education, psychology, and society as a whole.

Discussion Questions: 

1- What is intelligence?
2- How is intelligence measured?
3- Is intelligence innate or acquired?
4- What is emotional intelligence ?
5- How can we promote intelligence development in children?

LECTURE 05 :

ATTENTION

Fifth Lecture:

Attention

Introduction:

Given the central role of attention plays in our ordinary lives, in public debates about mental health, in psychological and neuroscientific research, and in various central philosophical areas, getting clear on the nature of attention is important for anyone working in the philosophy of mind or the philosophy of psychology and the neurosciences.(Watzl,2011,p850)

1- Defining Attention:

Attention is a topic widely discussed publicly and widely studied scientifically. It has many definitions within and across multiple fields including psychology, neuroscience, and, most recently, machine learning.

As William James wrote at the dawn of experimental psychology, "*Everyone knows what attention is. It is the taking possession by the mind, in clear, and vivid form, of one out of what seems several simultaneously possible objects or trains of thought.*" Since James wrote this, many attempts have been made to more precisely define and quantify this process while also identifying the underlying mental and neural architectures that give rise to it.

The glut of different experimental approaches and conceptualizations to study what is spoken of as a single concept, however, has led to something of a backlash amongst researchers. As was claimed in the title of a recent article arguing for a more evolution-informed approach to the concept, "*No one knows what attention is*" (Hommel et al., 2019). Attention is certainly far from a clear or unified concept. Yet despite its many, vague, and sometimes conflicting definitions, there is a core quality of attention that is demonstrably of high importance to information processing in the brain and, increasingly, artificial systems.(Lindsay,2020,p 01).

On the one hand, attention is the interface between the vast amount of stimulation provided by our complex environment and the more limited set of information of which we are aware. In this sense, attention is a selection mechanism that serves to choose a particular source of stimulation, internal train of thoughts, or a specific course of action for priority processing, and is closely connected to consciousness. On the other hand, attention has been largely linked

to the voluntary and effortful control of action, as opposed to well-learned automatic behavior. Very often we do things automatically. For example, we can perform a quite complex motoric act such as running or biking while our attention is focused in a different activity, as for example appreciating the scene or having a conversation with a colleague.(Rueda, Pozuelos, and al, 2015,p184)

Attention has been identified as a complex construct in psychology which does not express a unitary concept but concerns a psychological phenomenon that interacts with all other cognitive processes, such as perception, memory, behavioral planning or actions, linguistic production, and spatial orientation . Attentional skills are a prerequisite for responding to daily environmental demands in that, through them, a person can select and integrate all the relevant information he/she perceives, coming from different sensory channels, and associate them with conceptually superior categories.(Tremolada, Taverna,2019).

2- The scientific "Discovery" of Attention:

In the nineteenth century "experimental psychology discovered attention." This, at least, is what Edward B. Titchener thought. Titchener was one of the most influential psychologists at the turn of the twentieth century, widely known as "the dean of experimental psychology in America." Many of his contemporaries would have agreed with him: attention was one of the most important topics of the new science of the mind. It was intensely studied by a growing group of psychologists, psychiatrists, and physiologists who wanted to understand the mind empirically and not through philosophical speculation. According to Titchener, we owe to the empirical community "the explicit formulation of the problem [of attention]; the recognition of its separate status and fundamental importance; [and] the realization that the doctrine of attention is the nerve of the whole psychological system." At the beginning of the twenty-first century, more than 100 years later, scientific interest in attention shows no signs of decline. Attention remains one of the biggest topics in contemporary cognitive and clinical neuroscience as well as in psychology and psychiatry. Just the last decade saw more than 10,000 articles with "attention" in the title; roughly 40,000 in the same ten years mention it as a keyword. (Watzl,2017,p13)

The scientific study of attention began in psychology, where careful behavioral experimentation can give rise to precise demonstrations of the tendencies and abilities of attention in different circumstances. Cognitive science and cognitive psychology aim to turn these observations into models of how mental processes could create such behavioral patterns. Many word models and

computational models have been created that posit different underlying mechanisms. (Lindsay,2020,p 02).

3- Information Processing and Attention:

It is apparent that attention takes many forms and has many roles. Specifying in detail the function of a particular aspect of attention requires an understanding of exactly what is involved in performing an act. That is, to specify the role of attention in performance, it is necessary to describe the course of information processing. For example, attention might act as a sort of amplifier, making processing of stimulus information in an attended region more efficient. That is, attention may affect perception by enhancing stimulus processing or by filtering out distracting information. Attention might also affect later stages of information processing.(Johnson, Proctor,2004).

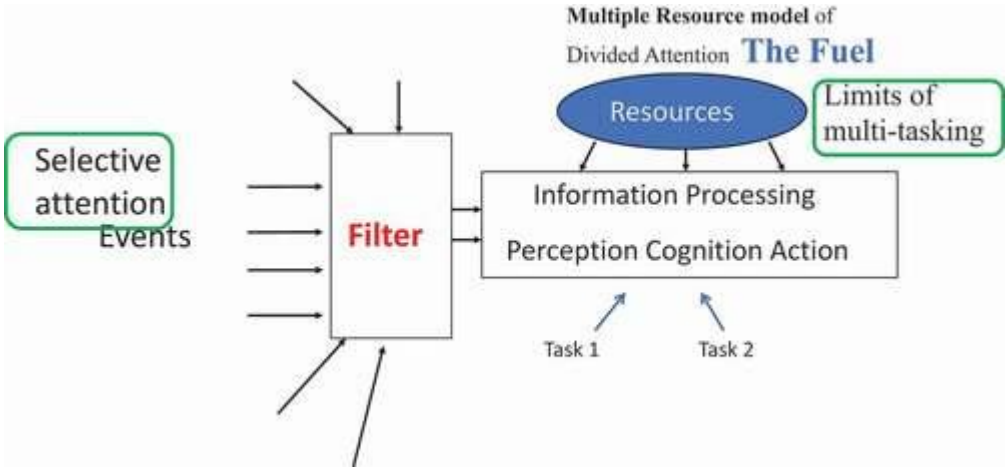


Figure 4: A descriptive information processing model, highlighting two forms of attention.

Source: (Wickens,2021).

4-Main Functions of Attention:

There are Four Main Functions of Attention

Table 4:

Function	Description	Examples
Vigilance and signal detection	On many occasions, we vigilantly try to detect whether we did or did not sense a signal. A particular target stimulus of interest. through vigilant attention to detecting signals, we are primed to rake speedy action when we do detect signal stimuli.	In a dark street, we may try to detect unwelcome sights or sounds: or following an earthquake, we may be wary of the smell of leaking gas or of smoke.
Selective attention	We constantly are making choices regarding the stimuli to which we will pay attention and the stimuli that we will ignore. By ignoring or at least deemphasizing some stimuli, we thereby highlight particularly salient stimuli . The concentrated focus of attention on particular informational stimuli enhances our ability to manipulate those stimuli for other cognitive processes. such as verbal	We may pay attention to reading a textbook or to listening to a lecture while ignoring ouch stilmuli as a nearby radio or television or latecomers to the lecture.

	comprehension or problem solving.	
Divided attention	We often manage to engage in more than one task at a time, and we shift our attentional resources to allocate them prudently as needed.	Experienced drivers easily can talk while driving under most circumstances. but If another vehicle seems to be swerving toward their car. they quickly switch all their attention away from talking and toward driving.
Search	We often engage In an active search for particular stimuli.	If we detect smoke (as a result of our Vigilance). we may engage in an active search for the source of the smoke. In addition, some of us arc constantly in search of missing keys. Sunglasses. and other Objects: my son often "searches'· for missing items the refrigerator (often with out much success- until someone else points them out to him).

Source: (Sternberg, 2009, p141).

5-Models for Attention:

There is considerable overlap between factorial models of attention, cognitive processing models of attention, and clinical models of attention. Most of the factor models include functions related to sustaining attention over time, capacity for information, shifting attention, as well as the detection and exclusion of off-target information. For example, in their factor model Mirsky, Anthoni, Duncan, Ahearn, and Kellam (1991), identify four factors for attention:

1) Focus-execution,

2) Maintenance,

3) Encoding, and

4) Shifting.

In a clinical model for attention, Mapou (1995) includes the following factors: attention activation, capacity, resistance to interference, and mental manipulation. Cognitive processing models incorporate the concepts of vigilance, selection, dual-task performance, and automaticity . According to the review of various models of attention, related to individuals with head injuries, attention maintenance, selection, capacity, and attention switching emerge as key theoretical concepts with a high degree of clinical relevance (Theofilidis ,Savvidis ,and al, 2023, p 40893)

These models serve the goal of allowing designers to identify and categorize forms of attentional errors, like failing to recognize the guidance algorithm failure of a self-driving car, or abandoning the altitude-monitoring task in a high-workload cockpit environment. Models can predict the likelihood of such errors, and principles can guide redesign or training to mitigate them. Given that this approach to understanding attention appears productive, there is a great need for further research to validate these predictive models in applied contexts.(Wickens, 2021).

6-The neurology of attention :

Before the advent of ‘brain mapping’, such as by fMRI, it was nevertheless possible to discover something of the part played by different regions of the brain, by observing the problems resulting from brain damage.

When a sense organ (eye, ear, etc.) receives a stimulus, the event eventually causes neurons to ‘fire’ (i.e. produce electrical discharges) in the receiving area of the brain.

The information is sent on from these first sites to other brain areas.With appropriate apparatus and techniques it is possible to record the electrical signals, using electrodes attached to the scalp. The electrical potentials recorded are called eventrelated potentials (ERPs), since they dependably follow the triggering sensory event. In fact a whole series of electrical changes are detected, first from the receiving brain areas, then later from subsequent sites. The timing of the ERPs gives a clue as to where in this sequence they are being generated. (Braisby, Gellatly,2005, p 64)

7-Attentional Measures

Sustained Attention to Response Task (SART):A computer-administered task in which 225 single digits are presented visually over 4.3 minutes. Each digit is presented for 250 ms followed by a 900-ms mask. Subjects are asked to respond by pressing the mouse for each digit, except on 25 occasions when the number 3 is presented. Here they are asked to withhold a response. The target digit is distributed randomly throughout the 225 trials. Subjects were instructed to give equal importance to accuracy and speed during the task.

Paced Auditory Serial Addition Task (PASAT): Sixty single digits are presented auditorily (one digit per 2 seconds). Subjects are instructed to add each digit to the one that comes before it and to give their answer out loud. A score representing the number of correct answers divided by the totaltime for each trialwas calculated.

Stroop Color-Word Test: Subjects are first presented with a “color” task, a series of 112 color names in four columns, printed in nonmatching colored ink, and instructed to read the words aloud as quickly and accurately as they can. The “color-word” task is then presented, in which the subject is instructed to say aloud the color of the ink that the word is printed in. Each task is timed and a “*Stroop effect*” calculated based on the difference in time for each task.(Farrin, Hull, 2003,p99)

8-The Role of Green Infrastructure in Attention Recovery:

Our capacity to pay attention—to employ top-down attention by directing our focus toward one idea or task while excluding from our consciousness a host of competing stimuli and thoughts—is key to every human achievement. But top-down attention is a limited resource that fatigues with use. Research demonstrates that having contact with nature, even in otherwise dense urban settings, can restore our ability to focus. Thus, access to natural elements in the form of parks, interconnected green corridors, street trees, rain gardens, green roofs, and green walls do more that provide attractive places for people to live, work, and play. They help people recover from the attentional fatigue that is part of everyday life. In doing so, these landscape elements help us achieve our goals in life. One implication of these findings is that we should redouble our efforts to ensure that we provide nature at every doorstep. (Sullivan, Li,2021)

Conclusion:

Attention is a complex cognitive process that plays a crucial role in our ability to interact with the world around us. It allows us to focus on specific stimuli, filter out distractions, and allocate limited mental resources to important tasks.

Discussion Questions:

1- What is attention, and why is it important?
2- What are the different types of attention?
3- How does attention influence our behavior?
4- What are some of the major theories of attention?
5- What are the main functions of Attention?

LECTURE 06:

MEMORY

Sixth Lecture:

Memory

The charm, one might say the genius of memory, is that

It is choosy, chancy, and temperamental.

Elizabeth Bowen

Introduction:

Memory (the 'ninth intelligence') is the process of storing and retrieving information in the brain. It is this process of memory that is central to our learning and thinking.

Human beings are continually learning throughout their lifetime. Only some of this massive volume information is selected and stored in the brain, and is available for recall later when required. Learning is the acquisition of new knowledge and memory is the retention of this knowledge. The combination of learning and memory, therefore, is the basis of all our knowledge and abilities. It is what enables us to consider the past, exist in the present and plan for the future. Its importance and power should not be underestimated.

Every part of our life relies to some extent on memory and is what enables us to walk, study, relax, communicate and play; in fact whatever function we perform, some sort of memory process is at work, there are many different types of intelligence, and people who have outstanding artistic, creative, sporting or practical prowess can all be highly successful, or occasionally geniuses, in their specific field without having a high measured IQ.

Having a good memory is yet another type of intelligence, and could result in high academic success, due to the ability to memorise facts, despite a lower than average IQ measurement.(Carter,2006,p 144)

1- Defining Memory:

Memory *refers to the processes that allow us to record, store, and later retrieve experiences and information*.

Memory adds richness and context to our lives, but even more fundamentally, it allows us to learn from experience and thus adapt to changing environments.

From an evolutionary standpoint, without the capacity to remember we would not have survived as a species. (Passer, Smith,2009)

Figure 5.1: Memory photo

Source : (Passer, Smith,2009,p250)

2- A Three-Stage Model of Memory

The model in **Figure 5.4** developed by Richard Atkinson and Richard Shiffrin (1968) and subsequently modified, depicts memory as having three major components:

1-Sensory Memory,

2-Working (Short-Term) Memory, and

3-Long-Term Memory.

Other models have been proposed, but this three-stage framework has been the most influential. (Passer, Smith,2009,p252)

1. Sensory Memory :

Information arriving from the environment is first placed into what was termed sensory store, which has the following characteristics.

First it is large – the sensory store pertaining to a given sense organ contained all the information impinging on that sense organ from the environment.

Second, it is transient. Information from sensory store decayed over a time period ranging from a few tenths of a second for visual sensory store to a few seconds for auditory sensory store.

Third, that small portion of information in sensory store that was attended to was transferred out of sensory store into the next major component of the system, short-term memory.

The information initially acquired from the environment via the sense organs is placed into a short-lasting memory called *Sensory Memory*. (Nolen-Hoeksema, Fredrickson, et al, 2009, p 273).

2. Short-Term Memory/ Working memory :

Sensory Memory contains an enormous amount of quickly decaying information. Only information that is attended to is transferred from sensory memory to the next memory store.

Short-Term Memory is, as just indicated, the next repository of information. Short-term memory has the following characteristics:

First, it can be roughly identified with consciousness; information in short-term memory is information that you are conscious of.

Second, information in short-term memory is readily accessible; it can be used as the foundation of making decisions or carrying out tasks in times on the order of seconds or less.

Third, all else being equal, information in short-term memory will decay – will be forgotten – over a period of approximately 20 seconds.

Fourth, information can be prevented from decaying if it is rehearsed, that is, repeated over and over, Fifth, information that is rehearsed, as just defined, or that undergoes other forms of processing, collectively known as elaboration (for example, being transformed into a suitable visual image) is transferred from short-term memory into the third repository of information, long-term store. (Nolen-Hoeksema, Fredrickson, et al, 2009, p 273).

In experimental psychology, much of the progress in understanding Short-Term Memory – STM- has followed from the development of computational models.(Norris,2017,p994)

Working memory refers to the memory used when actively engaged in thinking about a problem. It is very limited. Research suggests we are only able

to attend to 7 or as few as 4 pieces of information at a time (Miller, 1956; Cowan, 2000). Once the working memory limit is reached, learning is greatly diminished.

Working memory **encodes** information into **long term memory**, which is nearly unlimited. Long term memory is where we store information. When we need to recall information stored in long term memory, we retrieve that information back into working memory where we can actively work with it. We can think of working memory as a bottleneck or the rate-limiting step of memory. We can overload the working memory of our students when we present too much new information without an opportunity to consolidate it.(University of Minnesota,2024)

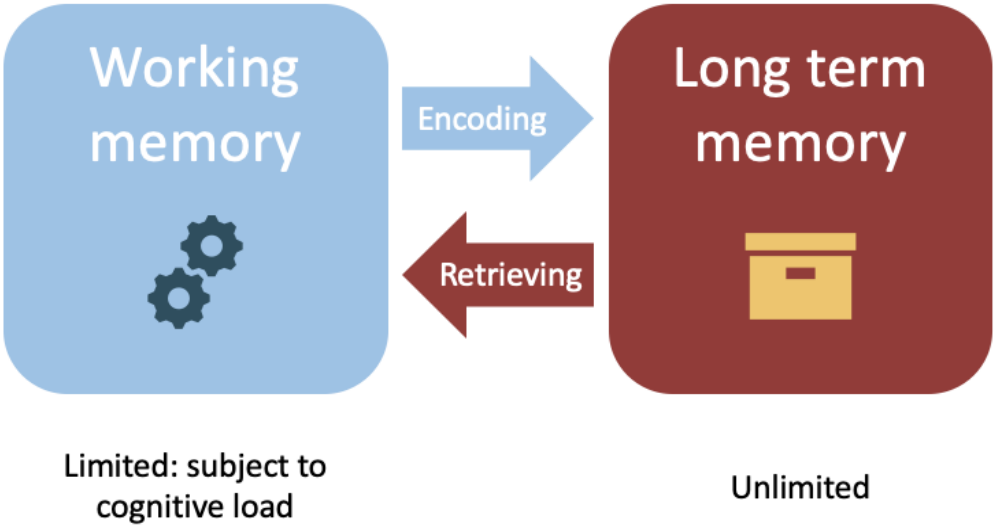


Figure 5.2: *adapted from Brunsman, 2022, shows that working memory, which is limited, encodes information into long term memory, which is nearly unlimited. When the information is needed, working memory retrieves it from long term memory.*

Source: (University of Minnesota, 2024)

3. Long-Term Memory:

There are several different types of memories, some of which are fleeting, and others that last a lifetime. Normally, when we talk about memory or remembering things, we are referring to explicit memory, which is consciously recalled. Explicit memories can be episodic, meaning that they relate to experiences or 'episodes' in your life (e.g., a particular holiday or the first time you were stung by a bee); or, they are semantic, relating to facts or general

knowledge (e.g., that the brain has about 90 billion neurons). Explicit memories are clearly affected by neurodegenerative diseases such as Alzheimer's disease. (Queensland Brain Institute, 2024)

Long-term memory is involved when information has to be retained for intervals as brief as a few minutes (such as a point made earlier in a conversation) or as long as a lifetime (such as an adult's childhood memories).

Long-term store is, as the name implies, the large repository of information in which is maintained all information that is generally available to us. Long-term store has the following characteristics:

First, as just indicated, information enters it via various kinds of elaborative processes, from short-term memory.

Second, the size of long-term store is, as far as is known, unlimited.

Third, information is acquired from long-term store via the process of retrieval and placed back into short-term memory where it can be manipulated and used to carry out the task at hand.(Nolen-Hoeksema, Fredrickson, et al, 2009, p 273).

Long-term memory refers to unlimited storage information to be maintained for long periods, even for life. There are two types of long-term memory: declarative or explicit memory and non-declarative or implicit memory.

Explicit memory refers to information that can be consciously evoked. There are two types of declarative memory: episodic memory and semantic memory. For its part, implicit memory encompasses all unconscious memories, such as certain abilities or skills. There are four types of implicit memory, including procedural, associative, non-associative, and priming. (Camina ,Güell,2017,p06)

A-Declarative/Explicit Memory

Explicit memory: Information or knowledge that can be consciously recollected; also called declarative memory.(Hockenbury, Hockenbury, 2011, p264)

Explicit memory refers to information that can be evoked consciously. There are two types of declarative memory: episodic memory and semantic memory. As shown below, episodic memory stores personal experiences and semantic memory stores information about facts. (Camina ,Güell,2017,p06)

1-Episodic Memory

Episodic memory involves the ability to learn, store, and retrieve information about unique personal experiences that occur in daily life. These memories typically include information about the time and place of an event, as well as detailed information about the event itself.

2- Semantic Memory

Human beings have the ability to represent concepts in language. This ability allows us not only to disseminate conceptual knowledge to others, but also to manipulate, associate, and combine these concepts.

Activities such as reasoning, planning for the future or reminiscing about the past depend on the activation of concepts stored in semantic memory.

B-Non-declarative/Implied Memory

Implicit memory: Information or knowledge that affects behavior or task performance but cannot be consciously recollected; also called *non declarative memory.* (Hockenbury, Hockenbury, 2011, p264)

As noted, long-term memory refers to unlimited information storage that can be maintained for long periods, even for life. There are two types of long-term memory: declarative or explicit memory and non-declarative or implied memory. Implicit memory encompasses all unconscious memories, as well as certain abilities or skills. There are four types of implicit memory: procedural, associative, non-associative, and priming. Each one is detailed below.

1-Procedural Memory: Habits and Skill

Procedural memory is the part of memory that participates in recalling motor and executive skills that are necessary to perform a task. It is an executive system that guides activity and usually works at an unconscious level. When necessary, procedural memories are retrieved automatically for use in the implementation of complex procedures related to motor and intellectual skills.(Camina ,Güell,2017,p08-09)

2-Associative Memory: Classical and Operant Conditioning

Associative memory refers to the storage and retrieval of information through association with other information. The acquisition of associative

memory is carried out with two types of conditioning: classical conditioning and operant conditioning. Classical conditioning is associative learning between stimuli and behavior. Meanwhile, operant conditioning is a form of learning in which new behaviors develop in terms of their consequences. Associationist philosophers have also worked with the latter model. (Camina ,Güell,2017,p10)

The close association between two stimuli over time causes classical conditioning: first a conditioned stimulus and then an unconditioned stimulus. While a conditioned stimulus does not automatically trigger a response, an unconditioned stimulus does just that. By repeating a conditioned stimulus over time before an unconditioned stimulus, a conditioned stimulus acquires characteristics that simulate being necessary for an unconditioned stimulus. Pavlov's Dog (Pavlov, 1927) is a clear example. The dog produces saliva when it detects the presence of food (unconditioned stimulus). If the sound of a bell goes off (conditioned stimulus) during the act of giving the dog food, the dog will associate the sound of the bell with the presence of food. In successively repeating this, the dog will associate the unconditioned stimulus with the conditioned stimulus, thus producing saliva when just hearing the bell.

Although Skinner is considered to be the originator of operant conditioning, his research drew upon Thorndike's law of effect. For operant conditioning, as has already been mentioned, positive consequences following a behavior promote its repetition. Conversely, if the behavior involves negative consequences, the behavior will be repeated less. Thorndike (1932) called this conditioning instrumental because it suggests that the behavior serves as a means to an end and emerges from trial and error. Skinner later coined the term that is now widely associated with this law of effect – reinforcement. (Camina ,Güell,2017,p10)

3-Non-associative Memory: Habituation and Sensitization

Non-associative memory is one of three types of non-declarative or implicit memory and refers to newly learned behavior through repeated exposure to an isolated stimulus.

Habituation, in this context, is linked to repetition. The repetition of a stimulus leads to a decrease in its response, which is known as habituation. Repeated exposure to a stimulus serves to stop responding to potentially important, but situationally irrelevant stimuli. (Camina ,Güell,2017,p10)

Unlike habituation, sensitization consists in an increase in response to a stimulus due to the repeated introduction thereof. Although the processes that

produce sensitization are the same as those that produce habituation, sensitization's effects are the opposite since it results in an increase of the original response.

4-Priming

Priming, the fourth modality of non-declarative or implicit memory, is an effect whereby exposure to certain stimuli influences the response given to stimuli presented later.

An exemple about context where this can be seen is in asking a participant to identify an image from a small fragment. The participant is shown a larger portion of the image over time, giving them the ability to identify the image at the end. The participant will take longer to identify the image if it is the first time he/she sees it. But if he/she already saw it in a previous trial, he/she takes less time. . (Camina ,Güell,2017,p10)

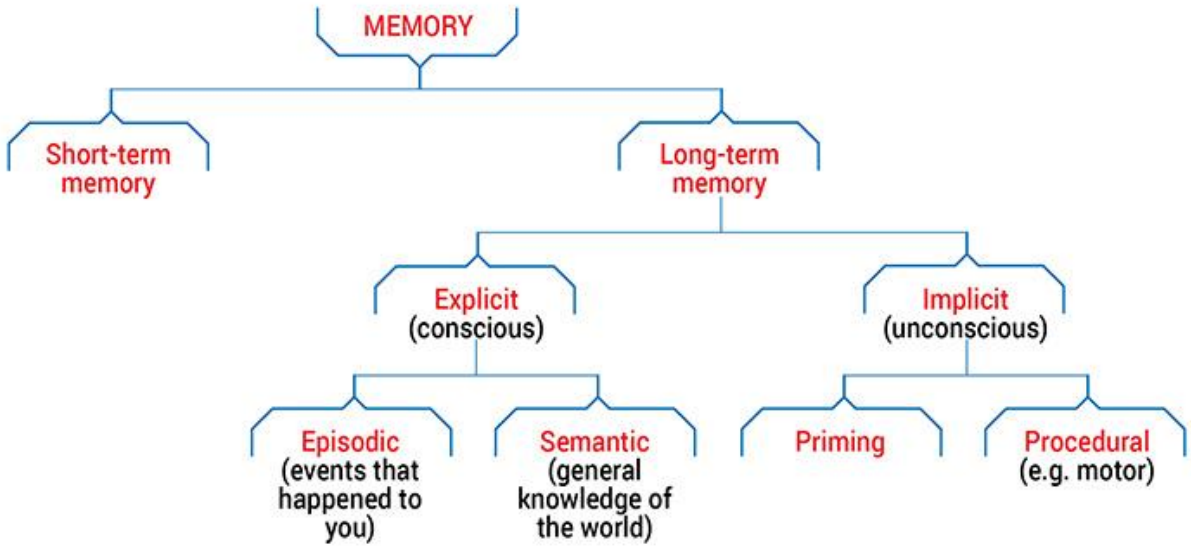


Figure 5.3: Types of Long-term memory

Source: (Queensland Brain Institute, 2024)

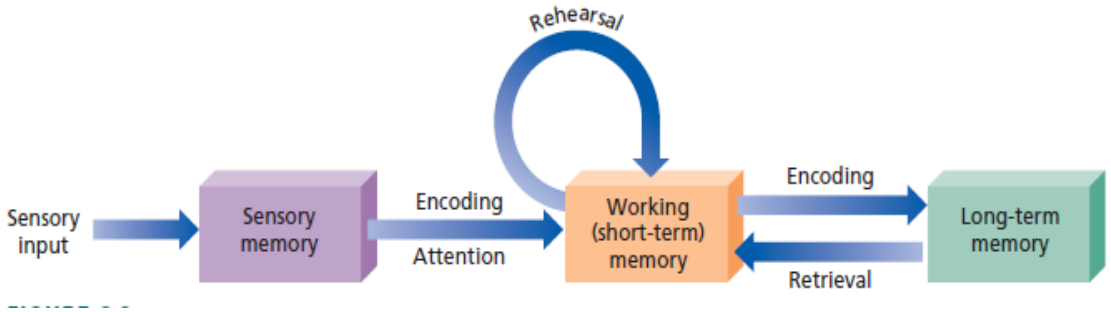


Figure 5.4: The three-stage model of memory

In this model, memory has three major components: *(1) sensory memory, which briefly holds incoming sensory information; (2) working (short-term) memory, which processes certain information received from sensory memory and information retrieved from long-term memory; and (3) long-term memory, which stores information for longer periods of time.*

Source : (Passer, Smith,2009,p253)

3-The short-term memory/long-term memory distinction:

If there is a difference between short- and long-term memory stores, there are two possible ways in which these stores may differ: in *duration*, and in *capacity*. A duration difference means that items in short-term storage decay from this sort of storage as a function of time. A capacity difference means that there is a limit in how many items short-term storage can hold.(Cowan, 2008).

It is difficult to infer from human behavior if training effects are stored in short or long-term memory. Even if someone appears superficially to be able to perform an action well, the effect of exercise will soon disappear if it is stored only in the short-term memory," (Kim, Ogawa, and al,2015)

4-Memory and Attention

Memory and Attention have many possible forms of interaction. If memory has a limited capacity, for example, it makes sense for the brain to be selective about what is allowed to enter it. In this way, the ability of attention to dynamically select a subset of total information is well-matched to the needs of

the memory system. In the other direction, deciding to recall a specific memory is a choice about how to deploy limited resources. Therefore, both memory encoding and retrieval can rely on attention. (Lindsay,2020,p08).

The role of attention in memory encoding appears quite strong. For information to be properly encoded into memory, it is best for it be the target of attention. When subjects are asked to memorize a list of words while simultaneously engaging in a secondary task that divides their attention, their ability to consciously recall those words later is impaired (though their ability to recognize the words as familiar is not so affected).

Many behavioral studies have explored the extent to which attention is needed for memory retrieval. For example, by asking subjects to simultaneously recall a list of previously memorized words and engage in a secondary task like card sorting, researchers can determine if memory retrieval pulls from the same limited pool of attentional resources as the task. Some such studies have found that retrieval is impaired by the co-occurrence of an attention-demanding task, suggesting it is an attention-dependent process. The exact findings, however, depend on the details of the memory and non-memory tasks used (Lindsay,2020,p08).

5-Memory and the Brain

Memories are not stored in just one part of the brain. Different types are stored across different, interconnected brain regions. For explicit memories – which are about events that happened to you (episodic), as well as general facts and information (semantic) – there are three important areas of the brain: the hippocampus, the neocortex and the amygdala. Implicit memories, such as motor memories, rely on the basal ganglia and cerebellum. Short-term working memory relies most heavily on the prefrontal cortex. (The University of queenland,2024)

Memories are laid down in our brains via chemical changes at the neuron level. (Robertson ,2002).

Explicit memory:

There are three areas of the brain involved in explicit memory: the hippocampus, the neo-cortex and the amygdala.

Hippocampus

The hippocampus, located in the brain's temporal lobe, is where episodic memories are formed and indexed for later access. Episodic memories are autobiographical memories from specific events in our lives, like the coffee we had with a friend last week. (The University of queenland,2024)

Neocortex

The neocortex is the largest part of the cerebral cortex, the sheet of neural tissue that forms the outside surface of the brain, distinctive in higher mammals for its wrinkly appearance. In humans, the neocortex is involved in higher functions such as sensory perception, generation of motor commands, spatial reasoning and language. Over time, information from certain memories that are temporarily stored in the hippocampus can be transferred to the neocortex as general knowledge – things like knowing that coffee provides a pick-me-up. Researchers think this transfer from hippocampus to neocortex happens as we sleep.

Amygdala

The amygdala, an almond-shaped structure in the brain's temporal lobe, attaches emotional significance to memories. This is particularly important because strong emotional memories (e.g. those associated with shame, joy, love or grief) are difficult to forget. The permanence of these memories suggests that interactions between the amygdala, hippocampus and neocortex are crucial in determining the 'stability' of a memory – that is, how effectively it is retained over time.

There's an additional aspect to the amygdala's involvement in memory. The amygdala doesn't just modify the strength and emotional content of memories; it also plays a key role in forming new memories specifically related to fear. Fearful memories are able to be formed after only a few repetitions. This makes 'fear learning' a popular way to investigate the mechanisms of memory formation, consolidation and recall. (The University of queenland,2024)

Implicit memory:

There are two areas of the brain involved in implicit memory: the basal ganglia and the cerebellum.

Basal ganglia

The basal ganglia are structures lying deep within the brain and are involved in a wide range of processes such as emotion; reward processing, habit formation, movement and learning. They are particularly involved in co-ordinating sequences of motor activity, as would be needed when playing a musical instrument, dancing or playing basketball. The basal ganglia are the regions most affected by Parkinson's disease. This is evident in the impaired movements of Parkinson's patients.(The University of queenland,2024)

Cerebellum

The cerebellum, a separate structure located at the rear base of the brain, is most important in fine motor control, the type that allows us to use chopsticks or press that piano key a fraction more softly. A well-studied example of cerebellar motor learning is the vestibulo-ocular reflex, which lets us maintain our gaze on a location as we rotate our heads.

Working memory :

Prefrontal cortex

The prefrontal cortex (PFC) is the part of the neocortex that sits at the very front of the brain. It is the most recent addition to the mammalian brain, and is involved in many complex cognitive functions. Human neuroimaging studies using magnetic resonance imaging (MRI) machines show that when people perform tasks requiring them to hold information in their short-term memory, such as the location of a flash of light, the PFC becomes active. There also seems to be a functional separation between left and right sides of the PFC: the left is more involved in verbal working memory while the right is more active in spatial working memory, such as remembering where the flash of light occurred. (The University of queenland,2024)

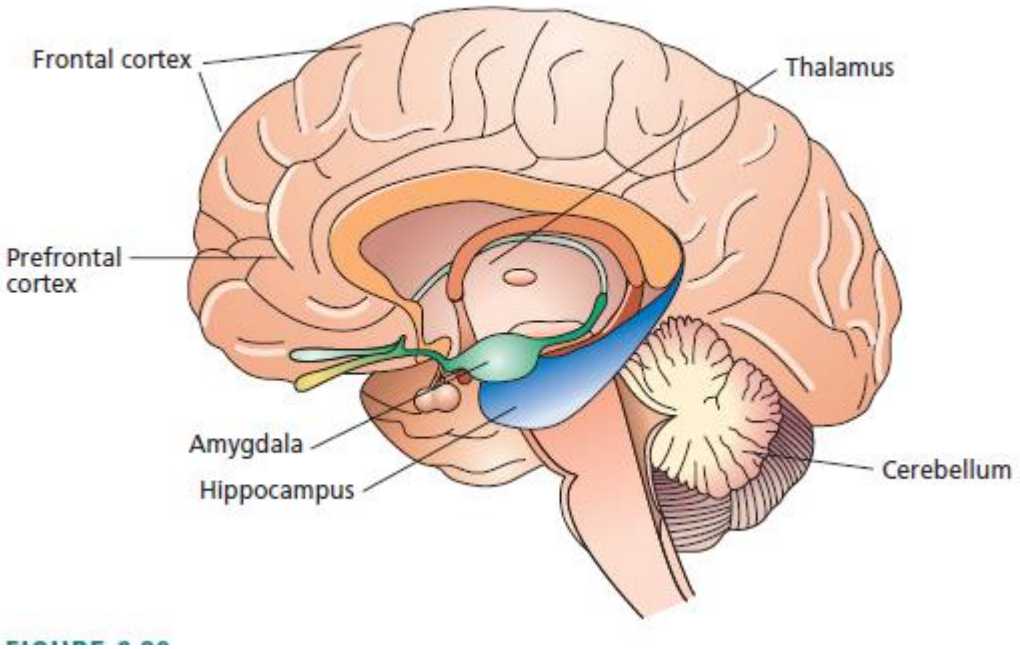


Figure 5.5: Some brain regions involved in memory. Many areas of the brain, such as the regions shown here, play key roles in memory.

Source: (Passer, Smith, 2009, p284)

Short-term and long-term memory are not the only forms in which the brain stores information. All the time that the five senses are operating, the brain is assembling and sorting perceptions of the outside world, directing some to conscious attention and collecting others into a set of perpetually updated mental representations. Although we may seldom be aware of the full extent of these mental representations, or examine them directly, nevertheless, they hold great importance for our thought processes and our ability to carry out the simplest planned action or predictive step, even something as elementary as following a fast-moving target with our eyes. These mental representations are the data on which we base cognition—our thoughts, ideas, and abstract mental processes.(Ackerman ,1992)

Conclusion:

Memory is a complex cognitive process that involves the encoding, storage, and retrieval of information. It plays a crucial role in our daily lives, allowing us to learn, remember, and make sense of the world around us.

If there is a difference between short- and long-term memory stores, there are two possible ways in which these stores may differ: in *duration*, and in *capacity*. A duration difference means that items in short-term storage decay from this sort of storage as a function of time. A capacity difference means that there is a limit in how many items short-term storage can hold.(Cowan, 2008).

Understanding the mechanisms of memory can help us to improve our memory skills and to develop strategies for treating memory disorders.

Discussion Questions: 

1-What are the three main stages of memory?

2-What are the different types of long-term memory?

3-What is the difference between short-term memory and long-term memory?

4-How does our brain organize and store memories?

5-What role does attention play in memory formation ?

Summary:

Psychology is the scientific study of mind and behavior. Most psychologists work in research laboratories, hospitals, and other field settings where they study the behavior of humans. Some psychologists are researchers and others are practitioners, but all psychologists use scientific methods to inform their work.

Despite the differences in their interests, areas of study, and approaches, all psychologists have one thing in common: They rely on scientific methods. *Research psychologists* use scientific methods to create new knowledge about the causes of behavior, whereas *psychologist-practitioners*, such as clinical, counseling, industrial-organizational, and school psychologists, use existing research to enhance the everyday life of others. The science of psychology is important for both researchers and practitioners .

The approaches that psychologists have used to assess the issues that interest them have changed dramatically over the history of psychology. Perhaps most importantly, the field has moved steadily from speculation about behavior toward a more objective and scientific approach as the technology available to study human behavior has improved (Stangor,2010).

All human behavior, thoughts, and feelings are produced by the actions of our brains, nerves, muscles, and glands.

The body is controlled by the nervous system, consisting of the central nervous system (CNS) and the peripheral nervous system (PNS) and the endocrine system, which is made up of glands that create and control hormones.

The frontal lobe is primarily responsible for thinking, planning, memory, and judgment.

Cognitive skills are mental abilities that allow us to process information, learn, and solve problems. These skills include:

Intelligence, The ability to acquire and apply knowledge and skills. It is often measured by intelligence tests but is a complex concept that encompasses various abilities.

Attention, The ability to focus on specific information and ignore distractions. It involves both sustained attention (maintaining focus over time) and selective attention (choosing what to focus on).

Memory, The ability to encode, store, and retrieve information. It includes short-term memory (for immediate recall) and long-term memory (for storing information over extended periods).

These cognitive skills are essential for learning, problem-solving, and overall success in life. They can be influenced by various factors, including genetics, education, and environmental experiences.

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