

The Development of Cognitive Psychology

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Introduction

This article is about the cognitive psychology and its historical and contemporary development. Cognitive psychology is considered as one of the influential fields of study in modern psychology. The term cognition is defined in Lexico Dictionary of Oxford, the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses (**Oxford Lexico, 2020**). Similarly, Encyclopedia of Britannica connotes it as the states and processes involved in knowing, which in their completeness include perception and judgment (**Britannica, 2020**). According to APA Dictionary of Psychology, cognition is the all forms of knowing and awareness, such as perceiving, conceiving, remembering, reasoning, judging, imaging, and problem solving (**VandenBos, 2015, p. 201**). Thus, the term cognition is used to refer for acquiring knowledge and understanding process of individual. These definitions demonstrate that the world cognition carry the meaning of certain system rather than single concept.

The concept of cognition is mostly used in the field of philosophy and psychology. Epistemology, the branch of philosophy particularly focuses on cognitive contents like knowledge and wisdom. Psychology of cognition studies on how people perceive, learn, remember, and think about information. Cognitive psychologists generally are interested in cognitive factors like intelligence, memory, attention, thoughts, perception, use of language and problem solving.

Historical Development

We need a skeleton about the early development of psychological concepts in order to understand the development of cognitive movement

in psychology. In this case, scholars focus on two main early approaches; philosophy and psychology. Philosophers have paid attention on the general nature of many aspects of the world such as existence, knowledge, values, reason, mind, and language. To some extent, they used introspection method, the examination inner ideas and experiences. To study the above concepts, philosopher focused on life- sustaining functions (brain, nervous system, and blood) in living organism using empirical methods **(Sternberg et al, 2012, p.06)**.

Philosophy of Aristotle and Plato have profoundly influenced on the development of psychology and as well as many other fields. Plato, the rationalist, who is interested in cognitive processes indicated that the source of knowledge is thinking and logical analysis. In opposition to Plato, the empiricist Aristotle argued that the root of knowledge is experience and observation **(Sternberg et al, 2012, p.06)**.

Later, French rationalist Rene Descartes's work regarding the philosophy led to rise rationalism. At the same time, John Lock developed the empirical ideas. Later, philosopher Immanuel Kant (1724-1804) dialectically synthesized the views of Descartes and Lock. He accepted the contribution of both ideas in order to achieve the reality. Today, the psychologists have accepted this synthetic approach **(Sternberg et al, 2012, p.07)**.

Considering the development of psychological thoughts, it seems to have grown in a dialectical way. At first, it has happened between structuralism and functionalism. Structuralism, which focused on the elements of mind like sensation (elements of perception) and affection (elements of emotions) using introspection method founded by Wilhelm wundt and expanded by Tichner, was the first major school of thought in psychology. Furthermore, they were interested in studying properties (quality, intensity, duration, clearness, size etc.) of these elements and how these elementary components work together to create the mind **(Sternberg et al, 2012, p.08)**.

Functionalism, founded by William James arose as the second school of psychology opposed to structuralism. Functionalism mainly concentrated on the process of thoughts rather than on its contents. Functionalists were motivated to analysis what people do and why they do it.

They studied the processes of how and why mind works as it does instead of studying structural contents and elements of the mind **(Sternberg et al, 2012, p.06)**.

Associationism is another approach which is closely related to cognitive contents of individual, has claimed that mental contents and events are associated with an one another. According to associationism, pairs of thoughts become associated based on the organism past experiences (**Stanford encyclopedia of philosophy, 2015**). In depth, perceived object remains on the mind when the object is unavailable (**Encyclopedia.com, 2020**). Moreover, learning occurs as a result of association of mental factors each other. Associationalist Herman Ebbinghaus (1850-1909) founded that the frequent repetition can fix mental associations more firmly in memory. Edward Lee Thorndike who is well known in the field of Behavioral psychology as well as in the field of Associationism held that the role of satisfaction is the key to forming associations. These ideas paved the way for the development of Behaviorism (**Sternberg et al, 2012, p.10**).

Behaviorism focuses only on the relation between observable behavior and environmental events or stimuli. John B Watson, father of radical behaviorism strongly rejected the concept of mind and its contents or mechanism. According to him, psychologists should focus only on the study of observable behaviors. Behaviorism may be considered an extreme version of associationism. However, behaviorism was criticized by psychologists over its mechanical view and many other ideas. First, although behavioral theory could be applied for some form of learning, it did not account for complex mental activities like language acquisition and problem solving. Second, more than understanding people's behavior, some psychologists wanted to know what was happening on the inside head. Third, most of the behavioral theories were build studying animal experiment rather than human (**Sternberg et al, 2012, p.11.12**).

Gestalt psychologists rejected the behaviorism and emphasized the importance of studying internal mental processes (perception). Kurt koffka, a gestalt psychologist charged that it was senseless to develop psychology without consciousness, as behaviorist had done, because that mean psychology was little more than a collection of animal research studies (**Sternberg et al, 2012, p.13**).

Emergence of Cognitive Psychology

Cognitive revolution took place in 1950s in response to behaviorism (**Sternberg et al, 2012, p.13**). Cognitivism is in part a synthesis earlier form of analysis such as behaviorism and gestaltism. Like behaviorism, it adopts

precise quantitative analysis to study how people learn and; like getaltnism, it emphasizes internal mental processes. From roughly the 1920s to 1950s, American psychology was dominated by behaviorism (Smith, 2015, p.2140). However, behaviorism gradually declined by the 1950 and cognitivism, model of mind based on the computer emerged as result of expansion of the internal and external factors. So far, psychological background and stream that led to the development of cognitive movement in psychology(cognitivism) has been discussed. Nevertheless, internal factors are not the only factors that opened the way to emerge of cognitivism. Many external factors such as computer and communication technology and linguistic development has influenced on the cognitivism. They are discussed as separated approaches.

Communication Research and the Information Processing Approach

New theories and concepts about the signal processing and communication emerged during period of World War 2 had profound impact on development of psychological thoughts. One of the important works was Shannon's information theory, which suggested that information was communicated by sending a signal through a sequence of transformation. It was thought that human perception and memory process happened in the same way. What we called cognition is a flow of information according to this theory. This is the main idea which empowered cognitive psychology from beginning to the present (Smith, 2015, p.2140).

Information processing psychologist Donald Broadbent who introduced the perception and communication method suggested that the information output from the perceptual system encountered a filter, which passed only information to which people were attending. The notion of dual memory (short term and long term) developed in the 1970 also derived from Broadbent's model (Smith, 2015, p.2140).

George miller and others work on the information theory had developed mathematical psychology, which has been frequently joined the information processing approach to provide precise claims about memory, attention, and related processes (Smith, 2015, p.2140.2141).

The Computer Modeling Approach

Development of digital computer and the concept of artificial intelligence had contributed to the emergence of cognitive psychology. It was assumed that the computer and human brain works in a similar way. Alan Newell, J.C Shaw

and Herb Simon had designed a computer program that could solve difficult logic problems, a domain previously thought to be the unique province of Humans. Furthermore, they studied the programs which displayed general problem -solving skills same as human problem-solving skills. This work result in the development of artificial intelligence as well. The idea of human information processing as sequence of computational processes operating on mental representations remains the foundation of modern cognitive psychology **(Smith, 2015, p.2141)**.

The Generative Linguistic Approach

Advancement of some aspects of linguistic such as psycholinguistic influenced the development of cognitive psychology. For an instance, two of Noam Chomsky's publications in the late 1950s had a profound impact on cognitive psychology. The first was his 1957 book synthetic structures, which focused on the mental structures needed to represent the kind of linguistic knowledge that any competent speaker of a language must have. Chomsky's second publication **(1959)** was a review of verbal behavior, in which he shattered behavioristic skinner's notion about the language and contributed to undermine the behavioral approach to psychology **(Smith, 2015, p.2141)**.

For decades, the term consciousness had been omitted from the introductory psychology text book. Psychologists used functioning of the brain instead of mentalistic terminologies. However, the term consciousness somehow came into play again in psychology. In 1977, the American psychologist published an article entitled behaviorism and the mind a call for a return to introspection. A few months earlier, the journal had published an article with the title of consciousness **(Schultz & Schultz, 2004, p.480)**.

Psychology was charged to the new direction and refocused on consciousness in terms of humanistic view rather than mechanical. Consciousness again became to a unique position in psychology. Mind and its underline mechanism were considered as a significant aspect of human personality. Thus, psychologists tended to redefine psychology as the science of behavior and mental processes instead of just studying behavior. Although, authority of behaviorism in psychology gradually declined with the influence of cognitive movement, it remains one of the fundamental schools in psychology until present. Today, both behavioral and consciousness view has similar weights in psychological thoughts **(Schultz & Schultz, 2004, p.480.481)**.

Founders of Cognitive Psychology

Like other school of thought, there was nothing any identifiable unique character as a founder of this field and as well as no specific theory or approach that led to the growth of cognitive psychology. It is meant that cognitive psychology has developed with the contribution of many theories and works of the scholars. They did not have any personal ambition to guide the new movement. Their effort was not to develop an approach but to redefine what actually psychology is. George Miller and Ulric Neisser are the two main characters who pioneered to develop cognitive psychology (**Schultz & Schultz, 2004, p.483.484**).

George Miller

George miller initially accepted the behavioral model because behaviorism was the major schools at that time. Later he was interested in language and communication and worked on it. In 1951, he published a landmark book on psycholinguistic, language and communication. After he studied information theory and computer-based model of the mind, his view of psychology became more cognitively oriented. In 1956, he published an article titled “the magical number seven, plus or minus two: in which he claimed that our conscious capacity for short term memory of numbers is limited to approximately seven “Chunks” of information.

That is all we are able to process at any given point. In this case, most importantly his finding directly dealt with conscious or cognitive experiences (**Schultz & Schultz, 2004, p.484.485**).

With Jerome Bruner (1915-), his colleague at Harvard Miller established a research center to investigate human mind. Researchers at this center focused on wide range of topics; language, memory, perception, formation of concept, thinking and developmental psychology. Many of these areas had been removed from the behavioristic glossary at that time. In addition to this contribution, Miller later launched a program for cognitive sciences at Princeton University (**Schultz & Schultz, 2004, p.485.486**).

Miller had been the president of APA inn 1969 and, he had won the distinguished scientific contribution award and the American psychological foundation gold medal award for life achievement in the application of sciences. In 1991, he was awarded the national medal of science. In 2003, he

was given the APA's outstanding lifetime contribution to psychology award (Schultz & Schultz, 2004, p.486).

Ulric Neisser (1928)

Ulric Neisser basically studied the physics and he was later interested in psychology with the influence of George Miller and Gestalt psychologist Kurt Kofka. He was also impressed by behaviorism, which was the major school of thought at the time, and Humanistic Psychology. However, finally he became a cognitive psychologist. In 1967, Neisser published a book called "Cognitive Psychology", which was a landmark book in the history of psychology, an attempt to define a new approach to the field. The book became extremely popular and Neisser was embarrassed to find himself designated the "father" of cognitive psychology (Schultz & Schultz, 2004, p.486.487).

According to Neisser, cognition is a collection of processes such as transformation, reduction, elaboration, storing, recovering, and using. Moreover, it is involved in everything a human being might possibly do. Thus, cognitive psychology primarily focuses on sensation, perception, imaging, memory, problem solving, thinking, and related mental activities (Schultz & Schultz, 2004, p.487).

Summary

The purpose of this paper was to investigate how cognitive psychology as a separate field of study developed across the various stages in the history of psychology. At first, the article made an introduction to cognitive psychology providing some general and specific definitions on cognition and its related concepts. Second, impact of philosophical and psychological ideas on cognitive psychology discussed focusing how it has developed in a dialectical way with the influence of structuralism and functionalism. Third, the article has indicated how outside discipline such as communication, computer science and linguistic had contributed to the development of cognitive psychology. Fourth, it has given a brief description regarding the pioneers of the field. Thus, this article has explored the historical and contemporary development of cognitive psychology. Finally, it can be concluded that although cognitive psychology has evolved over long period of time with the aid of many philosophical and psychological theories, it has been greatly affected by the modern scientific revival.

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