Cognitive Psychology

3rd Year LMD

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**Lecture 1 : Introduction to Cognitive Psychology**

**Introduction :**

Cognitive psychology, as the name suggests, is that branch of psychology that deals with cognitive mental processes. Sternberg (1999) defined Cognitive psychology as that which deals with how people perceive, learn, remember, and think about information.” This branch of psychology is concerned with how people acquire, store, transform, use and communicate language.

The cognitive psychologists study the various cognitive processes that make up this branch. These processes include attention, the process through which we focus on some stimulus; perception, the process through which we interpret sensory information; pattern recognition, the process through which we classify stimuli into known categories; and memory, the process through which information is stored for later retrieval, and so on. Thus, the work of cognitive psychologists is extended to a number of areas.

**History of Cognitive Psychology**

The roots of cognitive psychology can be traced back much further, and is intimately intertwined with the history of experimental psychology. This leads back to the time period when the empiricist, rationalist, and structuralist schools of thought which included philosophical works of Plato, Aristotle that dealt with the philosophy of mind, and also to the later works of Wundt, and Titchner involving introspection.

However, for some period, the behaviorist school of thought dominated all the others, and the focus was shifted from thought to behavior. Around the time between the 1950s and 1970s, the tide began to shift against behavioral psychology to focus on topics such as attention, memory and problem-solving. The formal discipline of “Cognitive Psychology” started in the mid-1900s during the cognitive revolution, and the term ‘cognitive psychology’ did not emerge until 1967. Dissatisfaction with behaviorism, World War II, and the growing technological advances in other fields such as computer sciences were a few major reasons behind the Cognitive revolution.

The mental processes regained their focus in psychology, and their measurement began in objective, quantifiable methods. In recent times, a number of different disciplines have started to come together and collaborate such as the fields of psychology, artificial intelligence, linguistics, philosophy, anthropology, and neuroscience, in order to gain a better insight into the field of cognitive psychology.

**Approaches to Cognitive Psychology**:

A number of different approaches have been proposed in order to better understand the field of cognitive psychology. Each of these approaches emphasizes a different aspect and highlight distinct features underlying the cognitive processes. Broadly, there are four major approaches that try to explain the various cognitive processes by highlighting the different important features. Theseapproaches are:

1. **Experimental Cognitive Psychology** :

This approach involves conducting tightly controlled experiments under laboratory conditions on healthy individuals. It generally includes experiments that designed in such a way that they might disrupt the cognitive processes and reveal their workings. The findings obtained through such experiments then lead to formulation of the theories, which in turn lead to testable claims. For example, a researcher wants to examine the effect of arousal on reaction time. He uses the experimental approach, and the reaction time is assessed through a machine where the buttons light up and the time to respond is measured. The arousal is also assessed through heart rate measurement, under the following conditions; after rest, after cognitive overload, after exercise, after caffeine, and after both exercise and caffeine. The results obtained through such experimental methods can thus lead to formulation of some theories, which later can be tested.

1. **Computational Cognitive Science**

This approach involves computational modeling through the recreation of some of the aspects of human cognition in the form of some computer program, or formula in order to predict behavior in novel situations. In other words, this approach basically involves creating computer based models of human cognitive functions, as well as some work on artificial intelligence.Usually, there are a number of ways in which a particular cognitive phenomenon can be modeled. However, there is a lack of a definite method for relating a computational model’s behavior to human behavior, and thus, It is extremely difficult, if not impossible, to take every cognitive factor into account when creating a model (e.g. Do models of language processing take into account the emotional connotations of particular sentences for particular individuals?).

1. **Cognitive Neuropsychology**-

This approach to cognition investigates the various cognitive processes by studying the people who have suffered brain damage, and to find out whether damage to a particular brain region would result in a specific cognitive impartment. For example, damage to region X disrupts ability Y, and the people who have lost ability Y also have problems with ability. Thus, such studies involving people with brain damages help us to make assertions regarding the healthy brain functions. However, such studies are difficult and cannot be manipulated according to the wishes of the researcher as it would be unethical to cause damage to a particular brain region of a person so that its role in a specific cognitive function can be observed. Also, if a person has suffered damage to several brain areas, then the interpretation of the resultant findings is difficult.

1. **Cognitive Neuroscience**

This approach has gained popularity over the past decade or so, and involves brain-imaging devices to study cognitive functions. This can help to discover where these processes occur in the brain, and when. In other words, this approach involves using brain imaging and brain anatomy to study ‘live’ cognitive functioning in healthy individuals. As the technology improves, these studies are becoming more influential and potentially useful.

**Application of Cognitive Psychology**

Cognitive psychology is that branch of psychology that deals with the study of higher level mental processes. Some of the areas in which this branch finds its application in the real world are listed as follows :

* Human Error
* Driving behavior
* Product design
* Visual behavior
* Object / face recognition
* Human-machine interaction