

1. **Give at least two specific examples of objects or behaviors that cognitive psychologists study.**

Cognitive Psychology is the scientific study of mental processes. These mental processes include remembering, attention, producing and understanding language, solving problems and making decisions. Simply put, cognitive psychology is the study of thought. In addition to the ones mentioned, two specific examples of behaviours that cognitive psychologists study are memory and learning.

2. **How do these subjects of study relate to what interaction design studies?**

The success of any application or device is dependent on it providing appropriate facilities for the task at hand in a manner that enables users to exploit them effectively.

Cognitive psychology focuses on the way humans process information, looking at how we treat information that comes in to the person (stimuli), and how this treatment leads to responses. In other words, cognitive psychologists are interested in the variables that mediate between stimulus/input and response/output. Cognitive psychology's subjects of study (perception, attention, language, memory and thinking) aid designers to produce design guidelines, formulate models to predict user response in specific instances and the development of design methods and evaluation techniques to improve the process of user-centered design.

For example, studies in memory reveal that in order to engage users, designers must make their content relevant, emotional, humorous, surprising or shocking. In terms of learning, people prefer learning by exploration. Interaction designers therefore need to support people in building a good mental model by a starting point that orients them and continuously encouraged exploration.

3. **Give at least two specific methods used by cognitive psychologists to study or learn about their subjects.**

Two widely used methods by cognitive psychologists to learn about their subjects are *case studies* and *chronometric methods*.

Case studies are intensive investigations of individuals, usually people of exceptional ability or people with some sort of deficit. One of the most famous case studies in cognitive psychology is Henry Gustav Molaison (1926-2008), until his death known only as HM. Following an operation on his brain in 1953 to relieve epilepsy HM was unable to form new memories. For the rest of his life HM took part in research studies designed to help understand the nature of memory. One finding that resulted from the study of HM was that he could learn new motor skills, but every time he did a previously-practiced task he thought he was doing it for the first time. Dr. Hellige mentioned during his talk case studies with split-brain patients and patients with localized brain injury.

Mental chronometry measures time-course of cognitive processes. Reaction times (RT) -time

between presentation of stimulus and person's response to that stimulus- provide an intuitively appealing indirect measure of brain function and efficiency. The time-honored procedure of RT has many variations – simple, choice, disjunctive, and associative, with regular or irregular foreperiod warning signals. For example, the “subtraction method” enables us to assess the amount of time needed to complete a cognitive operation by computing the RT-difference between two tasks that differ only in the addition of the cognitive operation we are interested in.

4. **How do these methods of study relate to how interaction design research is performed?**

The two methods of study mentioned before are of significant importance in interaction design research. In fact, for the first assignment of the course, the research team used reaction times to determine the learnability of different user interfaces on wearable devices.

Case studies, on the other hand, provide a really valuable tool to design interfaces accessible to everyone, while accounting for users with different capabilities.