





# Indian Institute of Technology Kanpur

In Collaboration  
with

• • •





National Program on Technology  
Enhanced Learning (NPTEL)

# Presents



Course Title:

# Basic Cognitive Processes

By: Dr. Ark Verma,  
Assistant Professor of Psychology,  
Department of Humanities & Social Sciences,  
IIT Kanpur



# Lecture 01 – Introduction to Cognitive Psychology

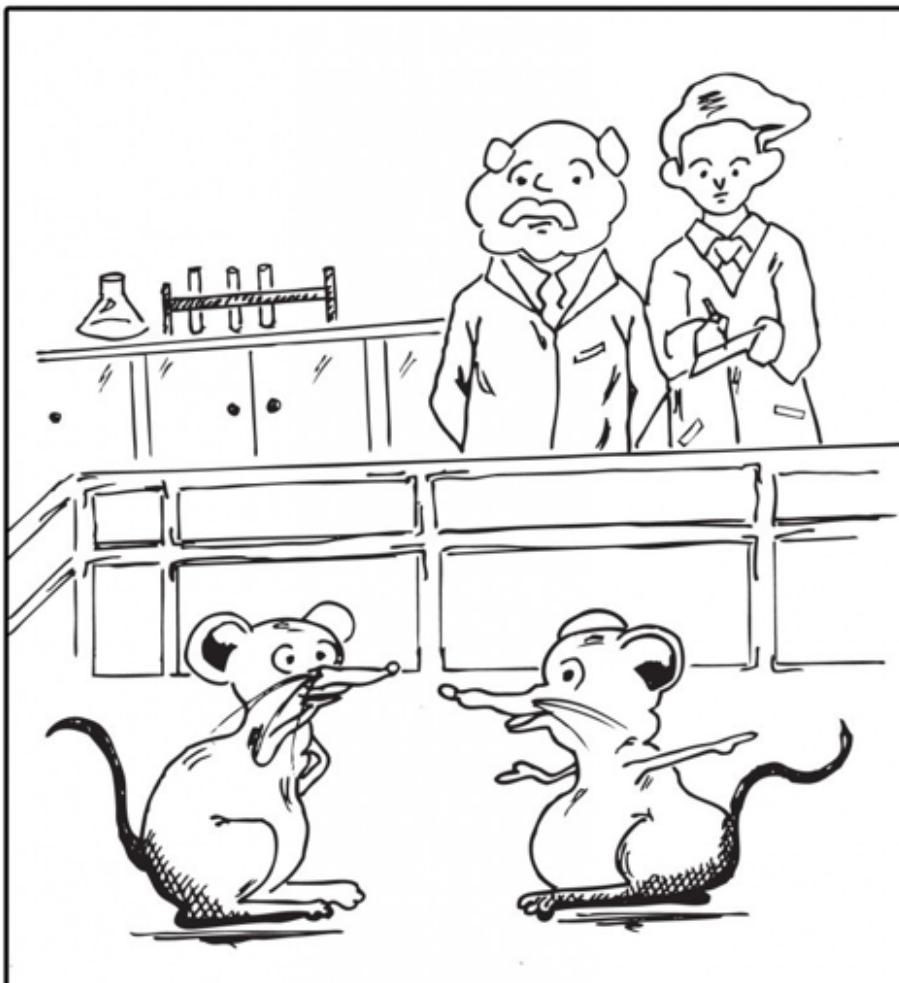
# A Preface...

- Before we get deeply involved with the topics in Cognitive Psychology, let us do a bit of background!!!
- What is Psychology?

WIP

work in progress

©2012 WhatisPsychology.biz



I'M TELLING YOU FILBERT, PRESS THE RED BUTTON AND THEY'LL DANCE AND GIVE US CHEESE EVERY TIME!

yes, I am studying psychology.

no, that doesn't mean i can read your mind.



\* IT WORKED! \*

# So, is Psychology just about Behaviour Modification?

- No, It's not!!!

What is the subject matter of  
Psychology?



- A science which studies **mental processes, experiences & behaviour** in different contexts.
  - *mental processes*: What goes on in the mind?
  - brain activity? or mental activity?
  - such as learning, remembering, perceiving, feeling, understanding.

- **Experiences:** *subjective feelings*
  - *What is your reality/awareness/soul?*
  - *What are you feeling at this point of time?*
  - *Normal/altered/active or passive?*

- **Behaviours:** responses or reactions to the events & actions in the world. Also spontaneous activity in order to achieve various goals or motives.
  - Simple or complex.
    - Most simple instance could just be a Stimulus (S) & a Response (R).
  - Overt or Covert

# Is Psychology a Science or just Common Sense?

- Common sense has problems!!!
  - E.g. Confirmation biases, stereotypes, availability heuristics etc.
- So, probably not common sense!
- 



Image reference: slideplayer.com/slide/3588230.

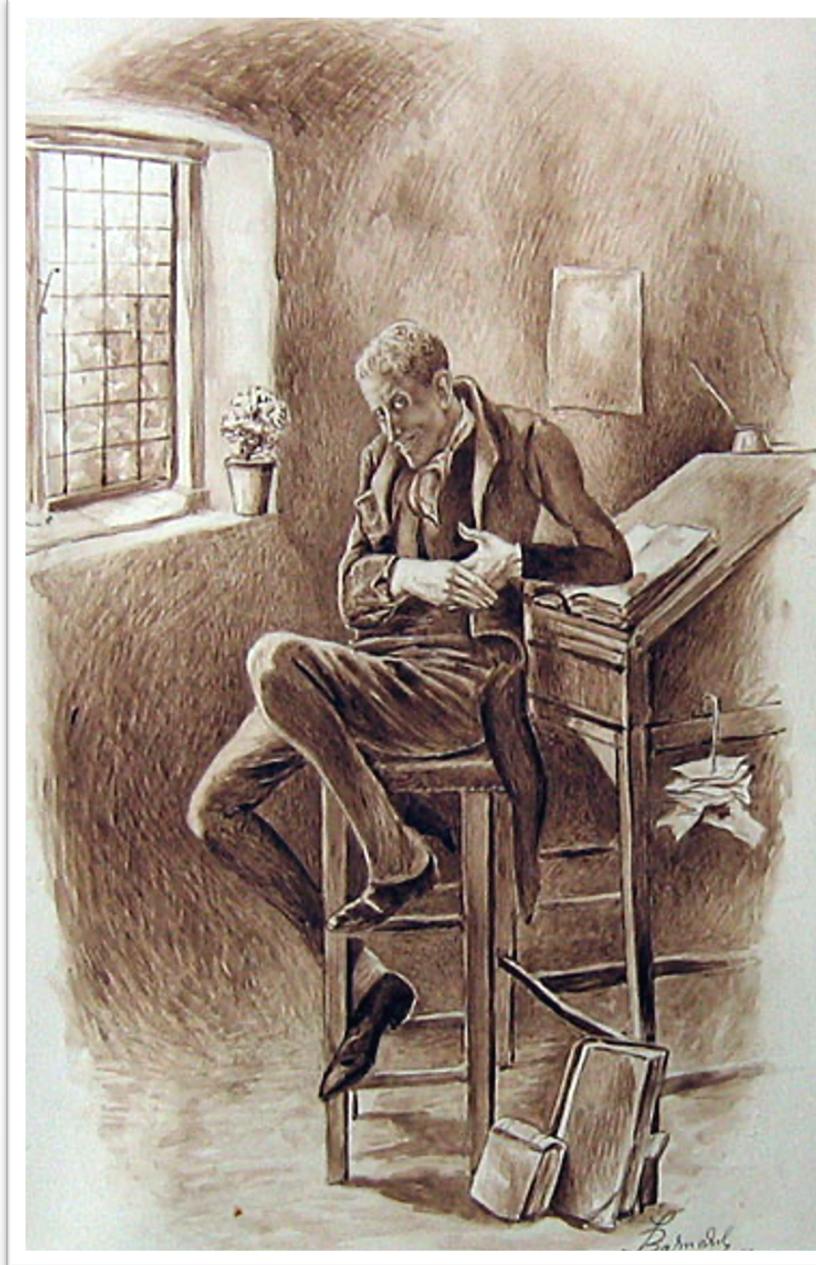


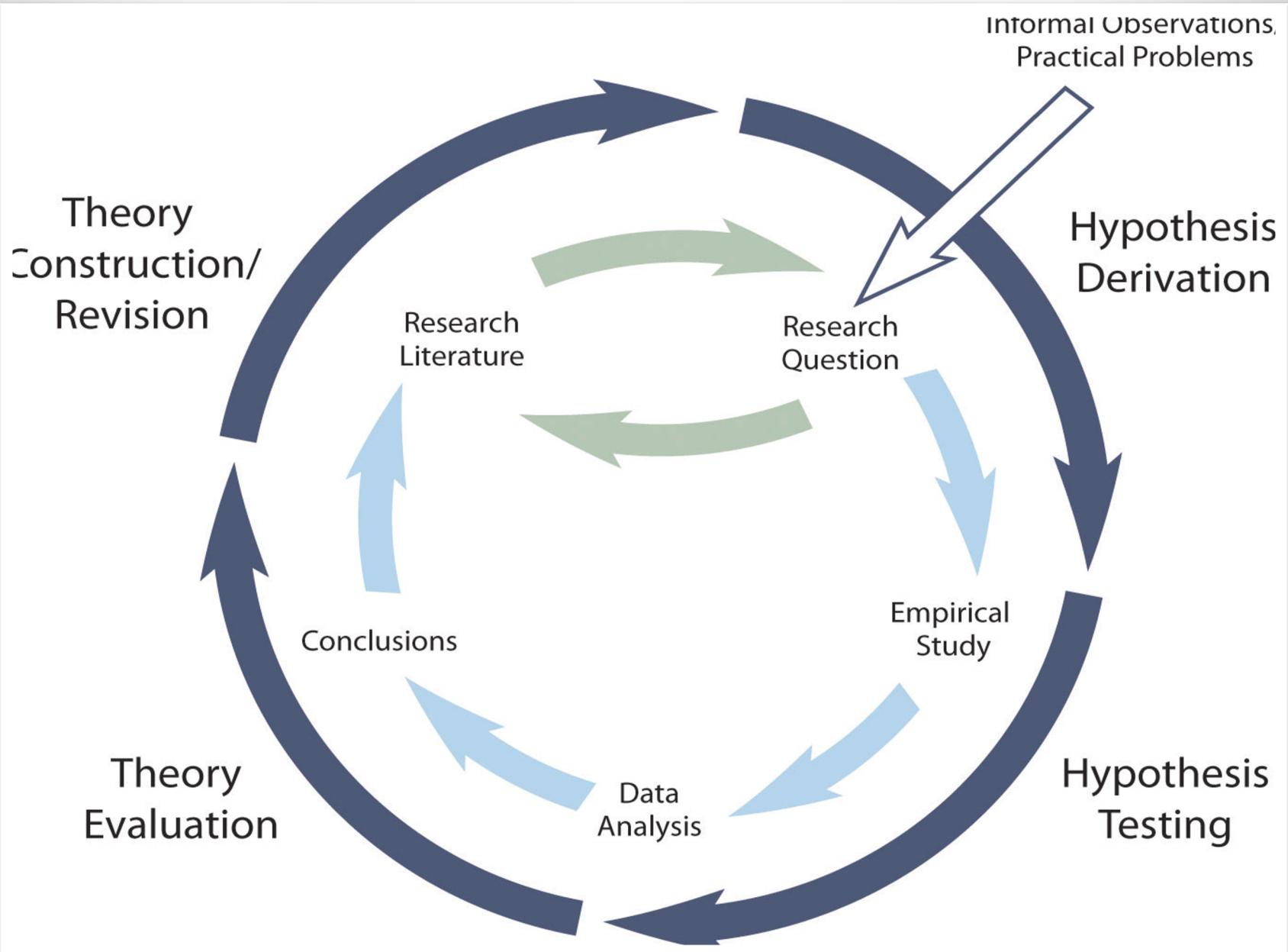
Image reference: Uriah Heep by Fred Barnard. Source: [bookdrum.com](http://bookdrum.com)

# How is Psychology structured as a discipline?

- As a discipline, psychology:
  - Seeks to understand and explain how the mind works & how the different mental processes lead to different behaviours.
  - Tries to minimise biases in explanations of behaviour and experience in various ways.
  - However, it also recognises the importance of subjectivity in some cases; though trying to develop a scientific understanding.

- Most notably, psychology draws from two streams of knowledge:
  - one, which makes use of the methods in physical & biological sciences and the other which uses the methods in social & cultural sciences in studying a variety of psychosocial phenomena.
  - in the first case, psychology focuses largely on biological principles to explain human behaviour.
  - in the other case, psychology focuses on how behavioural phenomena can be explained in terms of the interaction that takes place between the person & the social context.

- as a science:
  - psychology applies the “*scientific method*”.
  - emphasises *objectivity*.
  - uses what is called a “*hypothetico – deductive model*”.



- Image reference: catalog.flatworldknowledge.com

- finally, psychology attempts to understand *mind* & *behaviour!!!*
  - *What is Mind?*
  - *What are the functions of the Mind?*
  - *How does one study this concept called Mind?*

# What is Cognitive Psychology?



- Is the branch of psychology devoted to scientific study of the ‘mind’.

What is 'mind'?

- Let's try to construct a simple definition.
- Please note in the following instances, the use of the term:
  - “He was able to call to mind what he was doing on the day of the accident.” (The mind as involved in memory)
  - “If you put your mind to it, I’m sure you can solve that math problem.” (The mind as problem-solver)

- “I haven’t made up my mind yet” or “I’m of two minds about this.” (The mind as used to make decisions or consider possibilities)
- “He is of sound mind and body” or “When he talks about his encounter with aliens, it sounds like he is out of his mind.” (A healthy mind being associated with normal functioning, a nonfunctioning mind with abnormal functioning)

- So, what exactly we know about the mind?
  - *The mind creates and controls mental functions such as perception, attention, memory, emotions, language, deciding, thinking, and reasoning.*
- Also,
  - *The mind is a system that creates representations of the world so that we can act within it to achieve our goals.*

# What are mental functions?



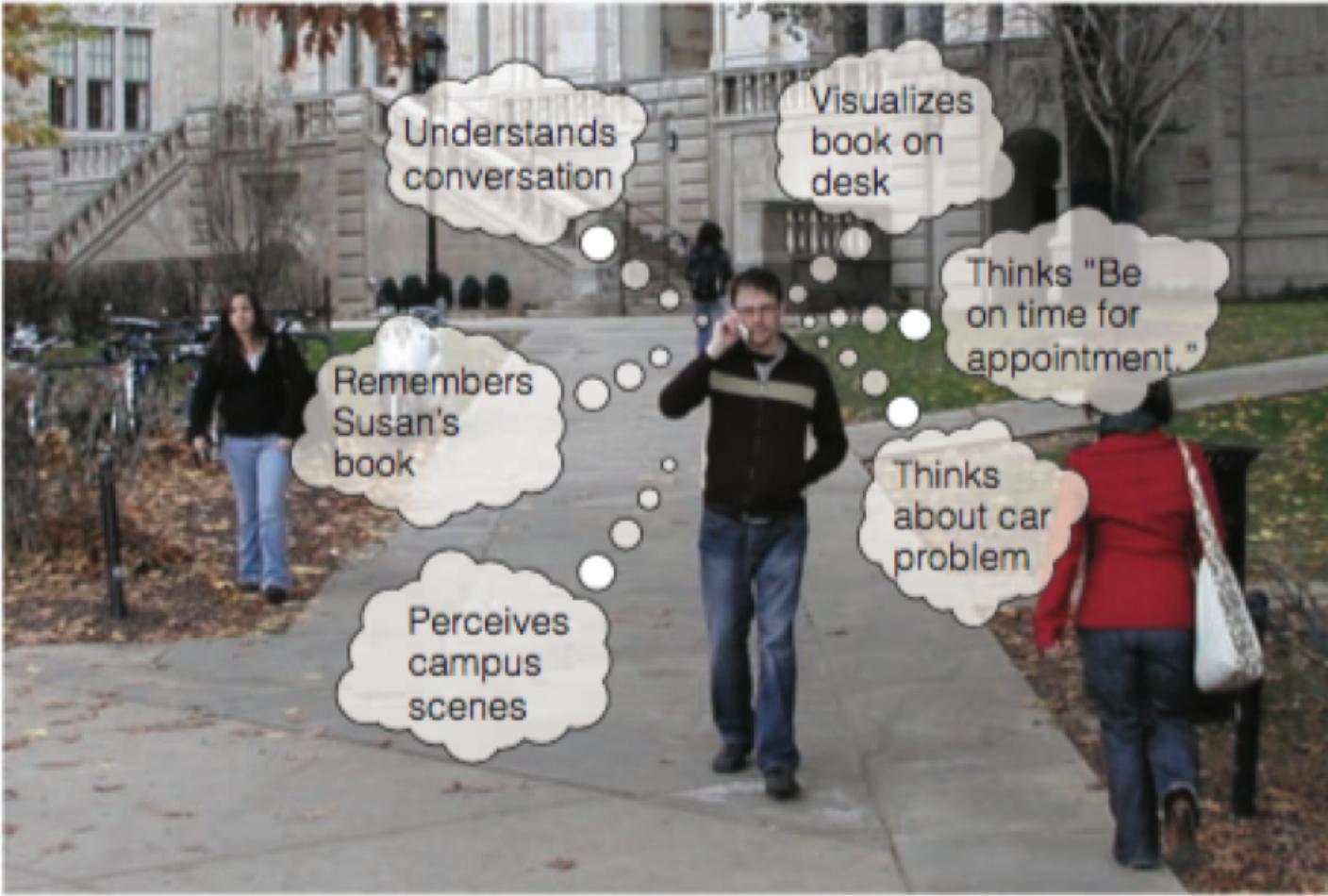
- To understand what these ‘mental functions’ refer to, let us take a practical example:

**A**S RAPHAEL IS WALKING ACROSS CAMPUS, TALKING TO SUSAN ON HIS CELL PHONE about meeting at the student union later this afternoon, he remembers that he left the book she had lent him at home (● Figure 1.1). “I can’t believe it,” he thinks, “I can see it sitting there on my desk, where I left it. I should have put it in my backpack last night when I was thinking about it.”

As he finishes his call with Susan and makes a mental note to be on time for their appointment, his thoughts shift to how he is going to survive after Wednesday when his car is scheduled to go into the shop. Renting a car offers the most mobility, but is expensive. Bumming rides from his roommate is cheap, but limiting. “Perhaps I’ll pick up a bus schedule at the student union,” he thinks, as he puts his cell phone in his pocket.

Entering his anthropology class, he remembers that an exam is coming up soon. Unfortunately, he still has a lot of reading to do, so he decides that he won’t be able to take Susan to the movies tonight, as they had planned, because he needs time to study. As the lecture begins, Raphael is anticipating, with some anxiety, his meeting with Susan.

- Text reference: Goldstein (2011) Cognitive Psychology, page: 4



Bruce Goldstein

● **FIGURE 1.1** What's happening in Raphael's mind as he walks across campus? Each of the "thought bubbles" corresponds to something in the story in the text.

- Image reference: Goldstein (2011) Cognitive Psychology, page: 4

- So, what all is Raphael doing?
- *Perceives* his environment - seeing people on campus walking around, hearing Susan talking on phone.
- *Pays attention* - to one thing after another - the person approaching his left, what Susan is saying, how much time is left for class.
- *Remembers* - something from the past - that he had told Susan, he was going to return her book today.
- *Distinguishes items in a category* - when he thinks about different possible forms of transportation - rental car, roommate's car, bus.

- *Visualises* the book on his desk the night before.
- *Understands & Produces language* as he talks to Susan.
- *Works to solve a problem* - as he thinks about how to get to places while his car is in the shop.
- *Makes a decision* - when he decides to postpone going to the movies with Susan so he can study.

- So, taking into account the earlier definition of Cognitive Psychology, of mind, & of mental functions; we can say that:
  - *Cognitive psychology* is the study of mental functions such as attention, learning, memory, mental imagery, language, problem solving & decision making.

# References:

- Goldstein, E. B. (2011) Cognitive Psychology: Connecting Mind, Research and Everyday Experience *Cengage Learning* 3<sup>rd</sup> Edition.