

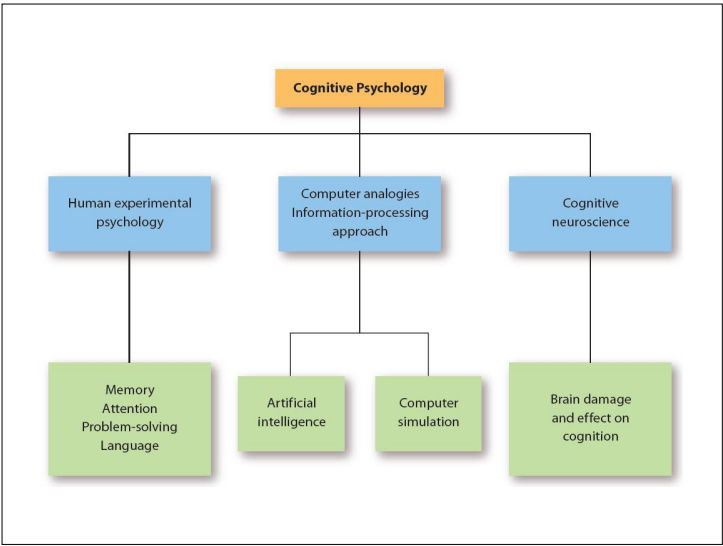
# Introduction to Cognitive Psychology

PSYC 313 - Lecture 1  
Dr. J. Nicol

## Cognitive Psychology

- The scientific study of information processing, specifically, how the mind encodes, stores, and uses information
- Aims to use objective measures of behaviour to scientifically test and build an understanding of how the mind works
- Tries to understand the rules and systematic processes by which the mind handles information — how it encodes, transforms, stores, interprets, and acts on it
- Focuses on the nature of mental representations (i.e., encoded and stored information about the environment)

*Cognition refers to all the processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used...including such terms as sensation, perception, imagery, retention, recall, problem solving, and thinking" (Neisser, 1967)*




---

---

---

---

---

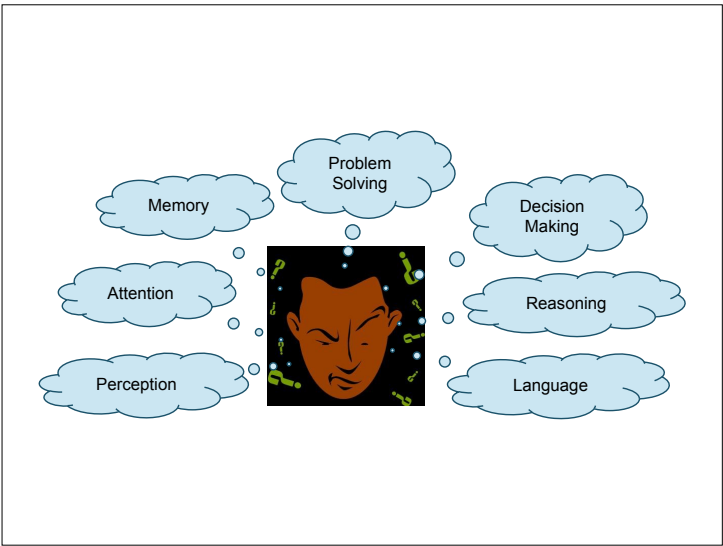
---

---

---

---

---




---

---

---

---

---

---



---

---

---

---

### Cognition at Multiple Levels

Levels of analysis	 Cruise control	 Reading
Computational	What is cruise control trying to compute and why?	What skills are involved in reading development?
Algorithmic	How does cruise control keep track of and adjust the car's speed?	How do changes in attention to words support reading development?
Implementational	What circuits enable the onboard computer to adjust the car's speed?	What areas of the brain become more involved as children become better readers?

Copyright © 2012 Oxford University Press. Figure 1.2. Left: © MK photography/Shutterstock.com. Right: © Samuel Borges Photography/Shutterstock.com.

---

---

---

---

---

---

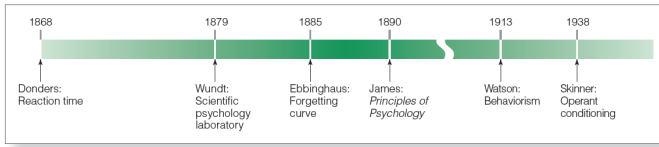
---

---

---

---

## Modern Precursors to Cognitive Psychology



---

---

---

---

---

---

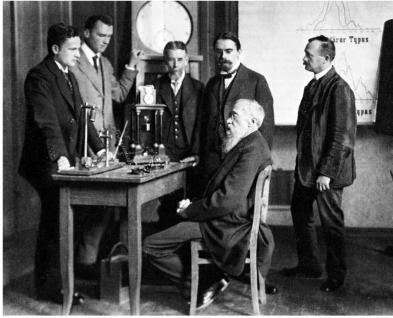
---

---

---

---

Wundt (1832-1920) is the father of experimental psychology



Center for the History of Psychology/University of Akron

He and his colleagues ran what is commonly referred to as the first psychology experiment in the lab they opened in Leipzig, Germany in 1879

---

---

---

---

---

---

---

---

---

---

## Structuralism and Introspection

- Conscious experience is determined by combining basic elements of experience called *sensations*
- Sought to uncover the most elemental building blocks of consciousness — the emphasis was on the **structural components** of mental life
- Relied on description of the components of conscious experience called **introspection** — a technique in which trained participants described their experiences and thought processes in response to exposure to specific stimuli

---

---

---

---

---

---

---

---

---

---

Ebbinghaus provided valuable insights into the role of repetition in memory and the rate at which forgetting occurs — known as the **forgetting curve**

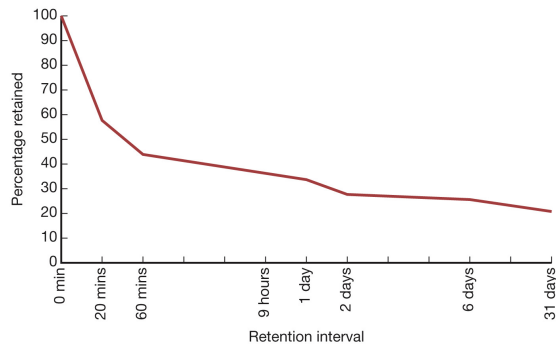


Figure 8.8  
Copyright © 2016 W. W. Norton & Company, Inc.

---

---

---

---

---

---

---

---

---

---

## Gestalt Psychology

- Refuted the notion that conscious experience could be understood through an examination of its building blocks
- Promoted the idea that even if we could observe such basic elements, such an approach could not provide insights into the nature of conscious experience
- Argued that conscious experience can't be understood as the sum of the basic perceptual units

---

---

---

---

---

---

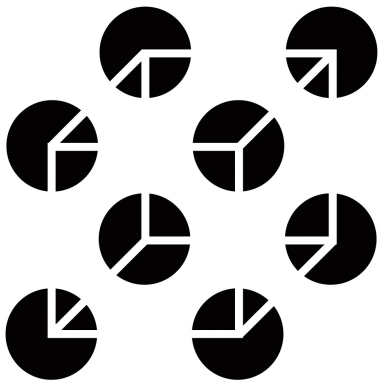
---

---

---

---

*"The whole is other than the sum of its parts"*



COGNITION 1e, Figure 1.3  
© 2012 Oxford University Press

After D. R. Bradley et al., 1976, *Nature*, 261: 77-78.

---

---

---

---

---

---

---

---

---

---

## Functionalism

- William James argued that the appropriate focus of a scientific psychology should be on the *functions* of the mind
- Functionalism emphasizes the utility mental processes
- This perspective is interested in what enabled an organism to engage with and successfully navigate the challenges of its environment

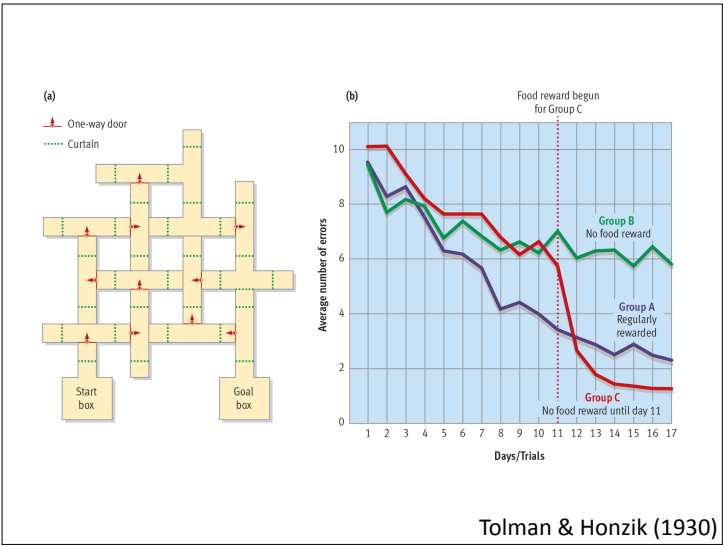
*John Watson (1878-1958) founded the approach to psychology called **behaviourism***



*Observable, quantifiable behaviour is the proper topic of psychology, not the fuzzy and unscientific concepts of thought, mind, and consciousness (Watson, 1913)*

## Behaviourism

- Argued that the inner workings of the mind could not be the focus of an objective science
- Outwardly observable behaviour was the most appropriate topic of research, to the general exclusion of relatively unobservable internal mental processes
- Responsible for some of the field's most robust and replicable research methods, and it introduced a new standard of experimental rigour and objectivity




---

---

---

---

---

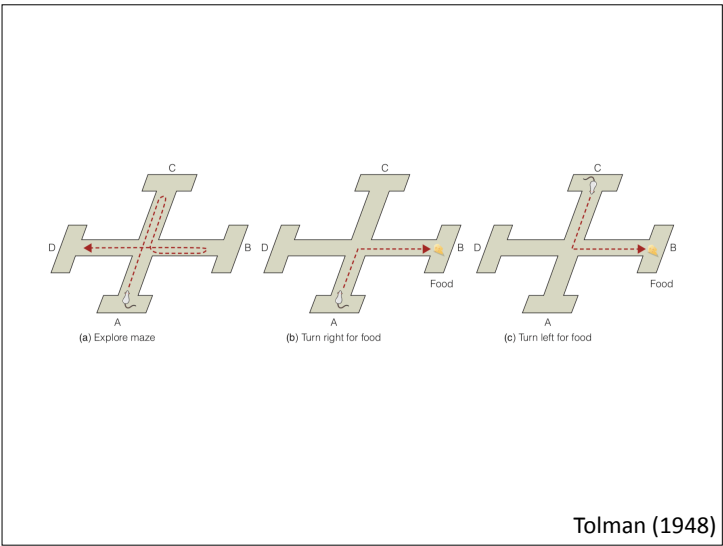
---

---

---

---

---




---

---

---

---

---

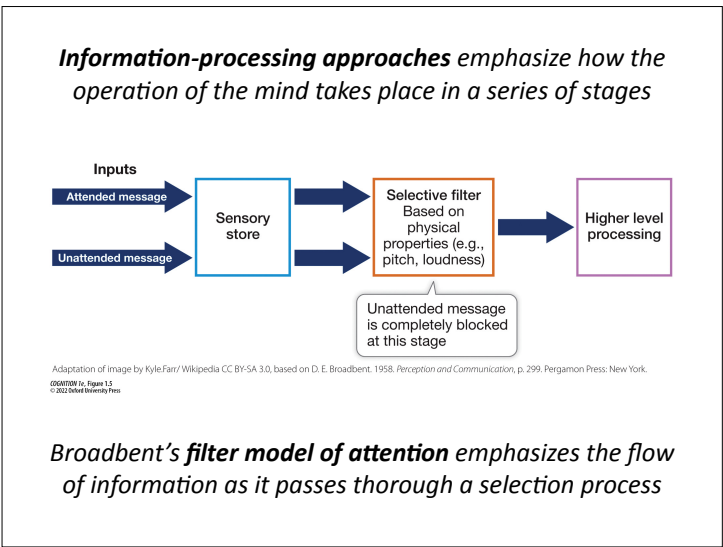
---

---

---

---

---




---

---

---

---

---

---

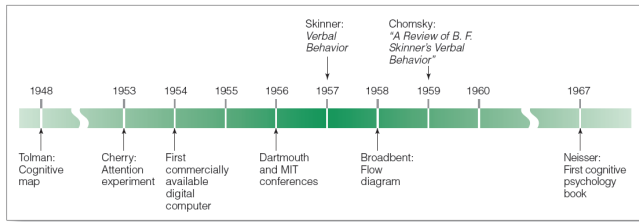
---

---

---

---

*The decade of the 1950s is generally recognized as the beginning of the “cognitive revolution”*



*The “Big Bang” of cognitive psychology occurred in 1956 following a Symposium on Information Theory held at MIT in Boston*

---

---

---

---

---

---

---

---

---

---