

ECPS6005: Cognition in Action

Introduction to the Module and historical overview

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1

Module aims

Develop a critical understanding of key theoretical assumptions and empirical research in applied cognition and their application to real-world issues.

2

Learning Outcomes:

- Upon successful completion of module, you should be able to:
 - demonstrate ability to integrate and apply multiple theories of cognitive psychology to real-life settings;
 - use evidence-based reasoning to critically evaluate competing theories in applied cognition research;
 - examine practical, theoretical, and ethical issues associated with the range of domains and methodologies in which applied cognition can be understood;
 - take responsibility for own learning and skill development; including effective personal planning, self-reflection and project management skills.

3

Core Texts



Groome and Eysenck – An Introduction to Applied Cognitive Psychology



Online E-book version of Groome and Eysenck – An Introduction to Applied Cognitive Psychology



Online E-book version of Eysenck and Keane – Cognitive Psychology: A student's handbook



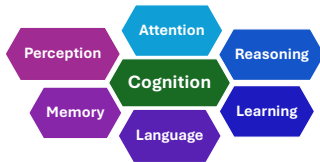
Smith, T. J., Henning, R. A., Wade, M. G., & Fisher, T. (2014). *Variability in human performance*. CRC Press. (Available as E-book through library system).

4

Brief Recap

• **Cognitive Psychology:** Scientific study of mind (and brain)

- “Mind” = workings of living brain.
- Determines and controls behaviour.
- Allows us to make sense of the world.
- Helps us decide what action to take when necessary.



Focuses on how brain processes information and mental processes involved in acquiring and making use of knowledge and experience gained from our senses.

5

• Cognitive processing typically studied in laboratory settings: **Basic research**

- Theoretical - practical applications of findings are incidental
- Conducted for sake of gaining understanding of cognition
- Highly controlled experiments (clear cause and effect)
- Only independent variable(s) allowed to vary
- Results interpreted in line with previous theories
- More predictions made - leads to more experiments



6

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Question slide

What are the criticisms of basic (lab) research?

7

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Showing Results

What are the criticisms of basic (lab) research?

RESULTS SLIDE

8

Basic (lab) research: critique

- Lacks ecological validity
- Results do not translate to real-world
- Ethical issues
- Some behaviour can only be studied in real-world
 - E.g., effects of trauma
- Typically, undergraduate psychology students
 - Restricts ability to generalise to wider population

9

Proponents of Embodied Cognition:

- Importance of recognising brain, body and environment in psychological.
- Cognition is for control of action, not just gaining knowledge
- Cognition itself is form of action, and type of behaviour performed in organism's environment.

10

- Gibson: Affordance of action
 - We perceive objects not in abstract mathematical or geometrical terms but in actions they support (afford)

E.g., instead of thinking....

“that stream looks about half a meter wide”....

you may judge whether you could jump over it.



11

Historical overview

- Impact of World War II:
 - Produced technological advancements
 - Operators had to learn new skills
 - E.g., radar/high-speed aircraft combat
- Resulted in need to understand cognitive capabilities/limitations in using new technology
- Cognitive Experimental psychologists called in to help understand:
 - Why pilots were crashing good aircrafts (Fitts & Jones, 1947).
 - Poor vigilance for enemy planes over the English Channel (Mackworth, 1948).
 - How learning theory could be used to better train military personnel (Melton, 1947).



12

Historical overview

• Impact of World War II:

- Broadbent: trained as a pilot - experienced cognitive problems encountered when dealing with two competing inputs
- Work on information-processing using dichotic listening task established basic limitations of human attention
- Used to make improvements to equipment design with goal of maximising operator performance

13

Applied Research

- Take results from lab studies and see if same results found in real life situations.
- Conducted outside the lab – field or observational work.
- Primarily goal-driven.
- Not so concerned with understanding basic cognitive processes.
- Road test theories in practical situations.

14

What are the criticisms of applied research?

15

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Results slide

What are the criticisms of applied research?

RESULTS SLIDE

16

Applied Research Critique

- Lack of control
 - Particularly over external variables that influence DV
 - Too many uncontrolled variables make it challenging to draw meaningful conclusions from results
 - Some argue theoretical underpinnings of cognition are not considered to extent they should be in applied research
- **However:** Could argue that until applied work is conducted, it is difficult to know what factors may affect a paradigm.
 - Thus, how would lab research know what variables to control?

17

Something in the Middle – Applied Lab work

- Looks at everyday cognition within a lab setting.
- Uses stricter experimental control than applied field but less than basic research.
- Important – why?
 - We need to understand mechanisms that underlie cognition whilst being aware of changes/influences from real-life impact on cognitive processes.

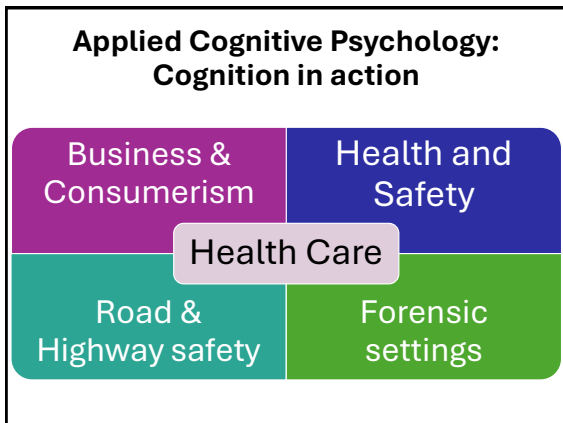
18

Applied Cognitive Psychology:

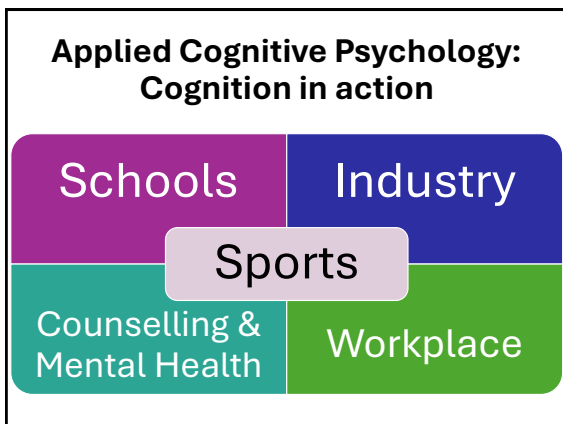
Cognition in action

- Aims of applied cognitive psychology:
 1. To produce solutions to real-world cognitive problems
 - By providing knowledge and insights that can be used in everyday practical terms
 2. To help inform and improve theoretical approaches to cognition
 - These can link back to guide future applied work

19



20



21