

COGNITION IN ACTION

LECTURE ONE: INTRODUCTION TO THE MODULE AND HISTORICAL OVERVIEW

Dr Kate Williams

1

MODULE AIMS

- To 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 this module, you should be able to:
 - demonstrate the 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

MODULE CONTENT

- Introduction to module, background and historical overview
- Memory in the real-world: Education, Eyewitness memory, etc.
- Cognition in Forensic settings: Line-ups, cognitive interviews, etc.
- Decision Making in the real-world: Effects on jury and judges
- Cognition and Clinical Application: Effect on clinician and patient
- Human Error and Cognitive failures in real-world settings
- Drugs and Cognition

4

CORE TEXTS

- See the Online Resource List (Leganto Reading List) on the Module Moodle page
- See links to additional e-books within the 'Weekly tiles' on the module Moodle page
- Key journal articles will also be posted within the 'Weekly tiles' on the module Moodle page

5

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).

6

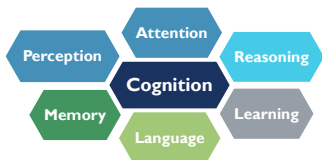
MODULE ASSESSMENTS

- One x 2,500 word written essay to demonstrate an in-depth critical evaluation of applied cognition.
- One x 2,500 word written case review briefing report.
 - Aim = apply knowledge of theory from cognitive psychology to explain behaviour in real-world, with subsequent suggestions for methods of intervention or changes to policy/practice.
 - Will be aimed at informing government/local health board/third sector organisation reviewers.

7

BACKGROUND

- **Cognitive Psychology:** Scientific study of the mind (and brain)
 - "Mind" = workings of a living brain.
 - The mind determines and controls behaviour.
 - Allows us to make sense of the world.
 - Helps us decide what action to take when necessary.



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

8

BACKGROUND

- Many cognitive process are now relatively well understood
 - N.B: higher-order cognitive processes
- However, these are typically studied in laboratory settings: **Basic research**
 - Very theoretical (practical applications of findings are incidental)
 - Conducted for sake of gaining understanding of how cognition works
 - Highly controlled experiments performed in lab (clear cause & effect)
 - Only the independent variable(s) are allowed to vary
 - Results interpreted in line with previous theories
 - More predictions are made, which leads to more experiments

9

BACKGROUND

- **Basic (lab) research: critique**
 - Lacks ecological validity: results do not translate to real-world
 - Ethical issues
 - Some behaviour can only be studied in the real-world
 - E.g., effects of trauma
 - Typically based on undergraduate psychology students
 - Restricts ability to generalise to wider population

10

BACKGROUND

- Basic research criticised for lack of applicability to real-world
- Some (e.g., Bartlett, 1932), pushed for cognitive psychology to make use of naturalistic experimental designs and test materials that resembled what we encounter in real-life settings.
- Proponents of **Embodied Cognition** noted the importance of recognising the brain, body and environment in the psychological.
 - Perception and cognition are for control of action, not just gaining knowledge
 - Perception and cognition are themselves considered forms of action, and as particular types of behaviour performed on the organisms environment.

11

BACKGROUND

- Gibson: Affordance of action
 - We perceive objects not in abstract mathematical or geometrical terms but in the actions they support (afford)
- Too much of psychology was focused on knowing 'that something', at the expense of knowing 'how something',

E.g., instead of thinking "that stream looks about 1m wide" you may judge whether you could jump over it.



12

HISTORICAL OVERVIEW

- Impact of World War II:
 - Produced technological advancements, so operators had to learn new skills
 - E.g., radar/high-speed aircraft combat
 - This brought need to understand cognitive capabilities and limitations in using this 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 Channel (Mackworth, 1948).
 - How learning theory could be used to better train military personnel (Melton, 1947).

13

HISTORICAL OVERVIEW

- Impact of World War II:
 - Broadbent: trained as a pilot and had experience of the cognitive problems encountered when dealing with two competing inputs
 - His work on information-processing using the dichotic listening task established the basic limitations of human attention
 - This was used to make improvements to equipment design with the goal of maximising operator performance

14

BACKGROUND

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

15

BACKGROUND

■ **Applied Research: Critique**

- Lack of control
 - Particularly over external variables that influence DV
 - Too many other 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?

16

APPLIED COGNITIVE PSYCHOLOGY: COGNITION IN ACTION

■ **Something in the Middle: Applied lab work**

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

17

APPLIED COGNITIVE PSYCHOLOGY: COGNITION IN ACTION

- Basic (lab) and applied (field) research can influence each other
- Best to conduct both on same cognitive phenomenon to compare findings
 - Where there is agreement between the two, we can be more confident in the outcome of results

18

APPLIED COGNITIVE PSYCHOLOGY: COGNITION IN ACTION

- Experimental lab Psychology concerned with **Experimental Control and Statistical Significance**.
- Applied Psychology concerned with **Practical Significance and acknowledgement of less control**.
- Along with theory, when designing tasks aimed at understanding cognition in real-world, consideration must be given to relevance of the task beyond the lab and should focus on context.

19

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 then link back to guide future applied work

20

APPLIED COGNITIVE PSYCHOLOGY: COGNITION IN ACTION



21

**APPLIED COGNITIVE PSYCHOLOGY:
COGNITION IN ACTION**

Schools

Industry

Sports

Counselling &
Mental Health

Workplace
