

PS3038 Cognition

Module Outline

2016/17, 1st semester

School of Psychology & Neuroscience

Instructor

Thomas Otto

to7@st-andrews.ac.uk



University of
St Andrews

FOUNDED
1413

Module Summary

The aim of this module is to develop an understanding of human cognitive processes. Topic areas covered include attention, memory, decision making, and reasoning. Emphasis will be placed on the development of the skill of critical evaluation of evidence and theory.



Lecture 1: Introduction to Cognition

What are cognitive functions? How is cognition studied? Introduction to mental chronometry as a key method, which we will meet throughout the module. Understanding the probabilistic nature of behavioural data.



Lecture 2: Attention

Experimental paradigms in attention research including the Posner paradigm, visual search, inattention blindness, and change blindness. Discussion of processing bottlenecks (e.g., psychological refractory period).



Lecture 3: Decision Making

Are human decisions optimal? Introduction to expected utility theory. Introduction to prospect theory. Application of expected utility theory to human motor behaviour.



Lecture 4: Memory and History Effects

What kind of memories do we have? Understanding history dependencies and why these make the brain a non-trivial machine. Discussion of paradigms investigating task- and modality-switch costs.



Lecture 5: Logic and Reasoning

Introduction to logic. Deductive and inductive reasoning. Demonstrating the use of logical operators in human decision making. Conclusion and summary of the module.

Lectures will be accompanied by practical classes, in which you will gain experience of the experimental methods used in cognitive research and in which research papers will be critically evaluated. As part of the lab classes, we will replicate studies by Egly et al. (1994) and Mamassian (2008). The first study demonstrates an object-based component in visual attention. The second study demonstrates overconfidence in human decision making as tested in an anticipatory motor task. The results from these experiments form the basis for the assignment (see below). Result files will be made available via Moodle and will be briefly presented in the lectures following the corresponding lab class.

Reading

The module can be prepared by background reading in general Psychology textbooks such as *Cognitive Psychology: Mind and Brain* (1st edition) by Edward E. Smith and Stephen M. Kosslyn (Pearson). A detailed reading list including week by week recommendations can be found on Moodle.

Dates

The module runs on **Thursdays** in **Semester Weeks 7-11** with the first session on **27th October, 2016**. The module provides two classes per week, lectures in the morning and one of the lab classes in the afternoon (assignment by surname, see Table 2). Please try to attend all classes (Table 1).

Teaching Material

Handouts of lecture slides will be provided on Moodle on Wednesday evenings before the corresponding lecture. You will also find instructions for the lab classes on Moodle. Please familiarize yourself with the respective document before each lab class.

Contact

Instructor: Thomas Otto
Email: to7@st-andrews.ac.uk
Phone: (01334) 46-2091
Office: 2.24 (School of Psychology & Neuroscience)

Office Hours

Wednesdays, 3-4pm (weeks 7-11)

Alternatively on appointment, please contact me by email.

Table 1: PS3038 Sessions

Week	Date	Lecture (9-11am)	Lab class (2-5pm)*
7	27 th October	Maths Lecture Theatre D	Seminar Room, Computer cluster (1.02, 1.06)
8	3 rd November	Maths Lecture Theatre D	Seminar Room, Computer cluster (1.02, 1.03, 1.06)
9	10 th November	Maths Lecture Theatre D	Seminar Room, Computer cluster (1.02, 1.03, 1.06)
10	17 th November	Maths Lecture Theatre D	Seminar Room, Computer cluster (1.02, 1.03, 1.06)
11	24 th November	Maths Lecture Theatre D	Seminar Room, Computer cluster (1.02, 1.03, 1.06)

*Labs/seminars will run in 1hour sessions that are organized in smaller groups of students (Table 2).

Table 2: Lab class groups

Lab class	Surnames
Group 1 (1pm)	A - Chu
Group 2 (2pm)	Cla - Hir
Group 3 (3pm)	Hon - N
Group 4 (4pm)	O - Z

Assessment

Assessment type:	100% continuous assessment
Due date:	5pm on 27th November 2016
Word limit:	1750 words
Feedback date:	25 th December 2016

Assignment

Write a research report on one of the two experiments that we replicated in the lab classes. Your report should contain *three* main sections:

[1] An introduction that presents the hypothesis of the replicated study in its conceptual context. It is expected that the introduction provides definitions of critical terms and concepts (e.g., space- and object-based attention, expected utility theory in decision making) as well as key aspects of the experimental paradigm (e.g., Posner's cuing task for attention, anticipatory motor task in decision making).

[2] A concise description of the results. It is expected that the result section focuses on those aspects of the results provided on Moodle that are relevant for the introduced hypothesis and that it presents, if eminent, differences compared to the original study.

[3] A critical discussion of the results, leading to a strong scientific argument. It is also expected that the results are discussed within the introduced conceptual context together with other recent evidence (the discussion should include at least one empirical study that was not covered during the lectures).

Reports should be submitted via MMS and must include the **Report Cover Sheet** provided on Moodle. Please make use of the **Checklist for Students** before submitting your report.

Learning aims

The aim of the research report is to train students in the introduction, presentation, and discussion of empirical evidence within a conceptual context (which are key skills relevant for final year projects). This includes [1] the introduction of a research question within a conceptual context and the description of how the question is addressed by an experimental paradigm, [2] the selection of relevant pieces of data to make particular claims with respect to the research question, [3] the critical evaluation of the selected empirical evidence within the outlined conceptual context, and [4] the clear presentation and evaluation of other empirical studies related to the research question. These aims will be repeatedly addressed by selecting appropriate examples during the lectures and lab classes. Especially relevant are the **Notes on Report Writing** to be presented at the end of each lecture.

Marking and Feedback

Your report will be assessed using the *Feedback Criteria* that can be found on Moodle (see Report Cover Sheet). Feedback will be provided within four weeks.

References

Egley, Driver, & Rafal (1994). Shifting Visual-Attention between Objects and Locations - Evidence from Normal and Parietal Lesion Subjects. *Journal of Experimental Psychology: General*, 123(2), 161-177.

Mamassian (2008). Overconfidence in an objective anticipatory motor task. *Psychological Science*, 19(6), 601-606.