Psychology 3001
Semester 1 Course Outlines 1998

Cognitive Psychology
History and Philosophy of Psychology I
Intelligence
Learning and Motivation
Measurement and Psychometrics
Perceptual Systems
Social Psychology
Theoretical Bases of Development
Lecturer
Dr Cyril Latimer

Differentiation of patterns
Sutcliffe’s differential concept formation theory; feature analysis; conditional and unconditional orders of prototypes and features; experimental implications of differentiation.

Eyemovement indices of pattern recognition processes
Eyemovement recording methods; contact lens methods; corneal reflection; electro-oculography (EOG); photo-electric methods. Restricted-viewing techniques, local and global processing, illustrative experimental results in character and geometric form recognition.

Connectionist models of pattern recognition
Single-layer perceptrons and the delta learning rule; the XOR problem; multi-layer architectures; back propagation of error and the generalised delta rule; the use of connectionist modeling in experimental investigations of pattern recognition.

Visual Attention
Visual attention in geometric form perception; attentional biases; theories of visual attention; the scanning hypothesis vs hemispheric specialisation accounts of attentional biases.

Symmetry Detection
Theories of symmetry detection; connectionist modeling of symmetry detection; the role of experience and task variables in symmetry detection.

Word Recognition
Models of reading and lexical access; early visual processing in word and character recognition.

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REFERENCES


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Tutorial Exercises. Enquiries: Dr. C.R. Latimer, Room 509 Griffith-Taylor
Blg. Ph: 9351-2481; email: cyril@psych.usyd.edu.au

Tutorial Exercise 1: Pattern Differentiation.
To be completed in tutorials on March 10 and 11

Construct a small set of spatial patterns like those exemplified in lectures and tutorials. The patterns can be alphanumerical characters, geometric figures, faces, etc., but ensure that your patterns are the same in some regions and different in others. It is pointless to make a set of patterns that differ from each other in all regions. Devise a simple feature analysis for your patterns and, on the basis of this feature analysis, compute the four orders of differentiation: unconditional orders of attributes and concepts; conditional orders of attributes and concepts. It is essential that you present your patterns, feature analysis and workings for the computation of the orders.

Tutorial Exercise 2: Categorisation in an Artificial Neural Network.
To be completed in tutorials on April 21 and 22.

Using the MacBrain program, construct a single-layer artificial neural network (an input layer and an output layer) to categorise the following three simple patterns in the manner explained in Tutorials 2. Your network must be able to recognise Patterns A and B as members of one class and Pattern C as a member of another class. You can achieve this in at least two ways: have a network with one output unit that is activated by Patterns A and B, but not Pattern C; have a network with two output units, one of which becomes active to Patterns A and B, but not pattern C, and have the other output unit become active to Pattern C, but not Patterns A and B.

Pattern A          Pattern B          Pattern C

This is the end of information on Cognitive.
PSYC3001 - History and Philosophy of Psychology I

Lecturers
Dr T McMullen (Coordinator)
Professor R Boakes

Historical Foundations
1. Scientific revolution and Descartes
2. British empiricism: Locke, Berkeley, Hume
3. Faculty Psychology
4. Neuroscience: Descartes to Helmholtz
5. Wundt and the founding of German psychology
6. Continental psychology after Wundt, including Binet and Gestalt psychology
7. Evolutionary theory
8. Psychology of adaptation, including James
9. Functionalism
10. Behaviourism
11. Applied psychology
12. Cognitive revolution

Prerequisites
1. Students intending to proceed to Psychology 4 would normally be expected to take both semesters of History and Philosophy of Psychology.
2. For students not intending to proceed to Psychology 4 this subject would normally be a prerequisite for the component offered in semester 2.

Text
PSYC3001 - Intelligence

Lecturer
Dr. Lazar Stankov (Mungo MacCallum Rm 5474)

Aims: To provide an overview and critical platform to evaluate recent studies of individual differences in human cognitive abilities.

Lecture Topics

Overview of structural theories of intelligence:
Lecture 2: Multiple factor theories: L. Thurstone and H. Gardner.
Lecture 4: A closer perspective on hierarchical theories: The discovery of broad auditory function.

Cognitive correlates of intelligence:
Lecture 5: Elementary cognitive processes and intelligence.
Lecture 6: Capacity theories of intelligence.
Lecture 7: The role of cognitive complexity in intelligence I.
Lecture 8: The role of cognitive complexity in intelligence II.

The role of mental speed in intelligence:
Lecture 9: Current status of the “neural efficiency hypothesis”.
Lecture 10: Mental speed and intelligence: Conceptual issues.

Studies on the borderline between personality and intelligence
Lecture 11: Correlations between personality and intelligence.
Lecture 12: Confidence judgements in studies of intelligence.
Lecture 13: Is there emotional intelligence?

Texts
There is no single text for this course. The following material (listed in order of importance) is available in the Closed Reserve section of Fisher Library:


Lecturers
Prof R.A.Boakes
Dr S Job

Aims of course:
1. To introduce the fundamental concepts and more important research findings of contemporary learning theory and selected approaches to motivation;
2. To examine the application of such fundamental research to issues such as drug tolerance, food choice, stress, health promotion and risk-taking;
3. To develop skills in reading primary sources in this area; and
4. To provide the opportunity for experience of planning and carrying out a research project.

Tutorial format:
Starting in Week 2 regular tutorial meetings will be held at which students will be able to choose whether to be involved in a research project or to write two essays. Groups decide on a topic, develop the design of the experiment and plan the details. (The tutorials start with the project design because essay writing is very familiar, whereas group research work is not and this allows students to determine whether they wish to be involved in the project). Selecting and designing the research should last until either Week 4 or 5. The experiment is then run. During this stage students may test subjects independently or work on a roster basis and tutorial meetings will be held to discuss progress at times that fit in with the experimental schedule. Collection of results should be complete by Week 9 in time for a tutorial on analysis of the data. The tutorial in Week 10 will be devoted to discussion on writing the report, which is to be handed in at the tutorial in Week 11. The marked reports will be handed back in Week 13.

You should allocate at least 24 hours of tutorial time to this work over the semester, in addition to independent reading. This format is designed to allow you to become involved from start to finish in a meaningful piece of research on learning or motivation that is more than a replication of previous experiments. The more you put into it, the more valuable it will be. Essays are made available for those less interested in research.

Limitations on available equipment will restrict the range of feasible experiments, but not to the extent that the choice of topics a group may come up with should be seriously limited. Projects both with rats and with human subjects will be available.

The tutorial program for students not choosing to submit a project report in this module will be outlined in week 2.

Collaboration vs independence: The project should be a team effort in which each member is expected to contribute the same amount of work towards developing the experiment, in terms of background reading and ideas on design and procedure, as well as towards the 'busy' work of actually carrying it out and analysing the data. Furthermore, there is likely to be considerable group discussion of what the results mean. On the other hand, writing a report has to be an individual effort, carried out independently of anyone else. Similar considerations apply to the essays, for which topics will be set in the tutorials.

Plagiarism: Please see the note on this on the Psychology 3 noticeboard. Whereas there are not likely to be major differences in the way that students from the same group write the Methods and Results sections in their reports, close similarity in the Introduction or Discussion sections will suggest that plagiarism may have taken place. In reports and essays you should also be careful to use your own words in writing and not 'borrow' even phrases or sentences from other works, even when these may seem to express your meaning better than
you could. Similarity of work will not be acceptable on the basis of claimed discussions, so please ensure that any discussions with other students are not sufficiently detailed as to allow significant similarity.

Final Examination
This consists of two essay questions are to be answered, one from Part 1 of the lecture course and one from Part 2.

Textbooks:
The main text for the Learning component of Psychology 2 is suitable for many of the topics covered by the first nine lectures:


Appropriate alternatives include:

Schwartz, B. Psychology of learning and motivation. New York: Norton (3rd ed: 1989), which presents the material from a Skinnerian perspective, but is particularly clear on the Recora-Wagner model. From the opposite, cognitive, viewpoint the following presents the basic ideas of associative learning in a way that some of you may find highly illuminating:


For a detailed treatment of some of the topics presented in Lectures 1-7 the following often still provides the best analysis:


Similarly detailed treatment of the topics covered in Lectures 8-9 is provided by


Reading from the above will need to be supplemented with journal articles, as listed for the lectures below and as appropriate for project topics. Copies of the lecture reading should be available in Special Reserve, Fisher Library.

Lectures: topics and reading.


Lecture 2: Learned Helplessness in the appetitive situation


Lecture 3: Attributional Style, Success and failure.


Lecture 4: Stress and food consumption


Lecture 5: Social learning in animals


Lecture 6: Fear in health promotion propaganda


Lecture 7: Optimism bias and contingency judgements


Lecture 8: Rescorla-Wagner model
See Mazur (1990, 1994), Ch.5; Schwartz (1989); Dickinson (1980).

Lecture 9: Conditioned inhibition.

Lecture 10: Contingency and context.

The recommended reading list for lectures 11 to 13 will be handed out later in the semester.
Introduction to Psychological Measurement
Concept of Measurement. Approaches to measurement in Psychology: operationism; representationism and the classical approach; distinction between quantitative and non-quantitative variables; extensive measurement; conjoint measurement. Unidimensional scaling: Thurstone's law of comparative judgement; unfolding; magnitude estimation; ranking.

Basic Psychometrics
Historical origins: The growth of psychological testing and the emergence of 'classical' test theory. The classical theory. A set of axioms and definitions, and some of their consequences; applications of the theory; problems with the interpretations of true score and error score; the different kinds of reliability; objective validity measurement theory and pragmatics. Item analysis and test construction. Distributions of test scores as functions of the distributions of item scores; item scoring formulae; correcting for omissions and for chance success.

Text

References
PSYC3001 - Perceptual Systems

Lecturers
Professor Ian Curthoys  231 Top South Badham, ph 93513570
Dr John Predebon  655 Mungo MacCallum, ph 93513321
Dr Rick van der Zwan  245 Top South Badham, ph 93516810

Many of the lecture topics represent aspects of research conducted in the Department. There will be 4 lectures from John Predebon (Part 1), 5 lectures from Rick van der Zwan (Part 2), and 4 lectures from Ian Curthoys (Part 3).

Dr Predebon's lectures (Part 1) cover selected current issues in visual perception mainly from a psychophysical perspective, although reference will be made to relevant neuropsychological findings.
Dr van der Zwan's lectures (Part 2) cover a range of visual phenomena from a neuroscientific perspective. The emphasis will be on understanding the neurophysiological correlates of perceptual phenomena, and the behaviours which arise from or are associated with those processes.
Prof Curthoys' lectures (Part 3) cover the reference frame by which perceptual judgments are made, and aspects of auditory physiology and perception.

Part 1 - Dr John Predebon
1. The 'what' versus 'how' functions of vision: The relationship between perception and visually directed action. Dissociations between perception and action; critique of the neurological and behavioural evidence.


3. The role of attentional processes in perception (e.g., attentional modulation of aftereffects and illusions; spatial attention and visual search).

Part 2 - Dr Rick van der Zwan
1. Integrating neurophysiology and behaviour: Examination of evidence which points to the substrates for consciousness.

2. Binocular rivalry: An examination of rivalry with emphasis on what it can tell us about perception and consciousness.

3. Development and plasticity: Examining the role of changes in structuring perceptual experience, especially post-natal development, learning, and recovery from injury. The role of neurotrophins in these processes.

4. Attention: What is attention and what can visual processing tell us about it?

5. Symmetry perception: The mechanisms of symmetry perception and their role in behaviour.

Part 3 - Prof Ian Curthoys
1. The frames of references for perceptual judgements; perceived orientation. The role of retinal orientation. Ocular torsion position. Vestibular visual interaction.

2. The physiological basis of hearing - how auditory physiology relates to auditory perception.

Text - There is no set text. References are to be provided.
PSYC3001 - Social Psychology

Lecturers
Dr Brian Crabbe (Coordinator)
Dr Alan Craddock

Social Cognition
The impact of social variables on perception; impression formation and theories of cognitive algebra; attribution theory; schema theory; heuristics; the impact of mood, emotion, temperament and personality on social cognition; examples of biases in thinking about social phenomena.

Social Skill
The measurement of social competence; a skills model of social performance; the acquisition of social skills; personal and situational influences on social skills; social skills in the workplace, the family and society; the effectiveness of training in social skills; the concept of social intelligence; strategic thinking in interpersonal encounters.

Social Motives

Altruism and helping behaviour
Altruism distinguished from helping behaviour; theories of helping behaviour; bystander intervention in emergencies; determinants of helping behaviour; reactions of the recipients of help.

Aggression
Theories of aggression - sociobiology, instinctual drives, frustration, social learning, agency theories; the role of aggression within a variety of institutions; the concept of social violence; the impact of violence in the media.

Recommended reference
PSYC3001 - Theoretical Bases of Development

Lecturers
Dr David Livesey (Coordinator)
Dr Pauline Howie
Dr Laurel Bornholt

1. Theoretical Issues in Developmental Psychology
Examination of major issues addressed by developmental theory; Nature/nuture;
Continuity/discontinuity in development; Age-stage relationships; Critical periods
in development.

2. Major Theoretical Approaches
An introduction to influential theories of development, discussing how the issues
raised in 1 (above) are addressed by these theories and how the theories are applied
in child rearing practice. Approaches to be examined include: Normative-descriptive
(Gesell); Learning and Social Learning (Skinner, Bandura); Stage Theories (Erikson,
Kohlberg), Ethological theories and Contextual theory (Vygotsky).

3. Theories of Cognitive Development
A critical evaluation of Piaget's theory of cognitive development. Information
processing approaches to the development of memory and other aspects of cognitive
development.

4. Development in Social Context
Children's social development is address from three perspectives:
(a) as a personality trait
(b) as interaction among peers and
(c) in the context of school and the family.

Recommended reading
edition, Pacific Grove, Ca, Brooks Cole

Freeman & Co.