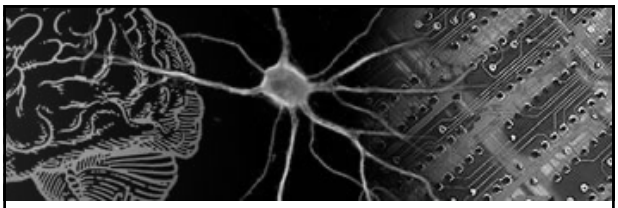


PSYC305-08A (HAM)

Applied Cognition & Neuroscience

Mātai hinengaro whaipainga
me te roro tāiao

Review for Test 2

Course Evaluation

Description of Test #2

Review of material for Test #2

Course Evaluation

TLDU ratings

2 parts:
1 page evaluation of the paper

1 page evaluation for each lecturer

(4 pages total)

do don't

Test #2 Thursday

11.00 – 1.00
LG.05

(worth 30% of course mark)

Composed of 3 parts:

Part 1 – Charlton lectures
Part 2 – Isler lectures
Part 3 – Perrone lectures

Part 1 – Charlton lectures (30%)

20 multi-choice questions (worth 1 point each)

1. According to your lecturer, which of the following office systems has the function of working memory?

   a. A library b. A desktop
   c. A filing cabinet d. An inbox

Choose 5 of 7 short answer questions (worth 2 points each)

Q1. List the four phases of the product development process.

_____ _____
_____ _____

Forensic Psychology

History: Lombroso, the McNaughton Rule, & Munsterberg
4 forensic psychological roles: clinical, actuarial, advisory, & experimental
Advisory: Police selection, personality & situational tests
Offender profiling – modus operandi & organised/ disorg.
Jury selection -- voir dire, traditional vs scientific approach, jury characteristics, judge & attorney characteristics
Polygraph testing – three stages, research into accuracy
Conducting interviews -- cognitive interview technique, repressed/recovered memory debate BPA vs APA

Forensic Psychology (cont.)

Five forensic psychology research areas
- 3 memory stages affecting eyewitness testimony: acquisition, retention & retrieval & factors for accuracy, stress, violence & weapon effects
- Eyewitness identifications – sequential line-up procedure, relative judgment strategy, face recognition vs recall, "Little Red Riding Hood Effect"
- Jury behaviour, three methods of study: interviews, archival, & simulations, advantages of each
- Influences: defendant demographics, witness testimony, order of evidence
- Jury decision-making: rational model & story model, judicial instructions

Consumer Product Design & Advertising

Anthropometry – "5 to 95" & resisting human error
Product Development Process, 4 phases & idea generation
Product requirements, Kano's 3 types of requirements
HAZOP & Reason's 3 levels of human error
Rasmussen's SRK decision-making model
Designing for human error; warnings, error resistance vs error tolerance; forcing functions & affordances
Experiential cognition & Norman's design principles
usability & preference, aesthetics & design,
2 Hedonomic principles, Jordan's 4 types of pleasure
Mapping & mental models, generative design process

Consumer Product Design & Advertising (cont.)

Origins: Scott, Watson & Resor
Consumer Processing Model (8 stages)
Attention attracting devices, source attractiveness & halo effects
Comprehension & understanding, signs & symbols
Agreement (informational ads) vs Hedonic Emotional Model (affective association)
Retention, retrieval, & memorability techniques, repetition vs wear-out, recall & recognition vs GSR, the Truth Effect, VALS & the Asch effect
Product placement, Exposure & False familiarity Effects explicit vs implicit success measures, Boomerang Effect

Knowledge Systems

Organisation systems (for written information):
- spatial methods (& their limitations)
- vertical file cabinets (& their advantages, hierarchical, flexible, etc)

Office design as a cognitive tool – HIP metaphor & tradeoffs
Alternative information systems & formats, memex, relational & associative methods, tree maps, etc.
Three future challenges
- Library – digital libraries, Wikipedia, search types
- Scholarship – data mining, simulation, & collaboratories
- Teaching – synchronous vs asynchronous teaching, (threaded discussion vs simultaneous chat), video links, class sizes, format & avatars

Part 2 – Robert Isler lectures

(30%)

10 multiple choice questions (1 point each)

11 short answer questions (1-3 points each)

- Emotion Regulation

Reading: Gross, Emotion Regulation

- Anxiety Disorders

Reading: LeDoux, Emotion, memory and the brain

- Physiology of Learning and Memory

Reading: Tsien, Building a brainier mouse

Recommended only: Read chapter 10: Emotion and chapter12: Learning and Memory in Carlson's Foundations of Physiological Psychology

Main Themes covered in Test2:

Physiology of emotion
Story of Phineas Gage
Today's researchers' understanding of emotion
Emotion regulation (definition)
Different types of emotion regulation
LeDoux theory and Anxiety Disorders
The role of the amygdala and hippocampus on PDST
Emotional memory vs Memory of emotion
Hebb rule
Long-term potentiation
NMDA receptors
Associative long-term potentiation
Tsien's research on Doogie mice

(The material on any video documentaries will not be tested!)

Part 3 – Perrone lectures (40%)

10 multi-choice questions (worth 1 point each)

8 short answer questions (worth 1-2 points each)

7 long answer questions (worth 2-5 points each)

Lect 13. Neuroscience: Visual Pathways

© Assoc Prof. John Perrone
Psychology Dept.
The University of Waikato

Central Visual Pathways

- Retinal ganglion cells
- Lateral geniculate nucleus
- Segregation of information
  - -Parvocellular neurons
  - -Magnocellular neurons
- Primary visual cortex (striate cortex)

Essential reading: Livingstone & Hubel article.
Extra reading: 6th Edition, pp 77-115 or 7th Ed pp 72-78
Physiology textbook: Carlson, Foundations of Physiological Psychology. Ch. 6)

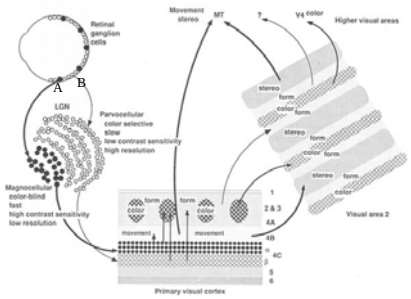


TABLE 8–1 Properties of parvocellular and magnocellular cells in the Lateral Geniculate Nucleus.

	Parvo	Magno*
Retinal input	Type B (or P)	Type A (or M)
Spatial summation	linear	M, linear. M, nonlinear
Field size	small	M, small. M, large
Response timing	sustained (for pure colors)	more transient
Layers in LGN	3, 4, 5, 6	1, 2
Axon conduction velocity	slow	fast
Sensitivity to contrast	poor	good, but saturates
Sensitivity to color	many cells	none
Projection to V1 (layers)	4A, 4Cβ	4Cα

*Magnocellular cells may be further subdivided as X-like (M_x) or Y-like (M_y), but most magnocellular properties apply to both subtypes (or they have not been separately tested).

Continuation of the magno and parvo subdivisions in visual area 1 (Primary visual cortex, V1)

Cells in magnocellular geniculate layers project to layer 4cα which then projects to 4B and then onto V2 and cortical area MT (Middle Temporal).

Magno ➡ 4cα ➡ 4B

Parvocellular project to different layers of V1 and then onto V2.

Parvo ➡ 4Cβ ➡ layers 2 and 3 (blobs and interblobs)

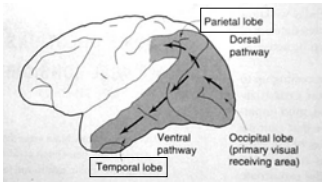
Neuroscience
Neurological disorders (Lect. 14)

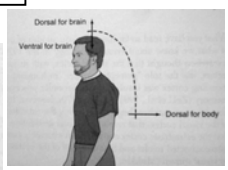
Topics:

1. Visual processing stream
   'what' and 'where'.
2. Specialized neural responding
3. Recognizing objects
4. Failures of object recognition
   •Visual Agnosias

Useful reading: Goldstein (6th Ed or 7th Ed. Chapter 4).
Some extra figures from: Gazzaniga, Ivry & Mangun. Cognitive Neuroscience. The Biology of the mind. (2nd Ed.).

1. Visual processing streams

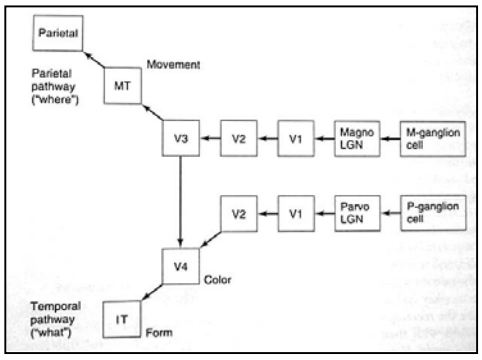




•The dorsal pathway is crucial for locating objects (the 'where' pathway).

•The ventral pathway is important for identifying objects (the 'what' pathway).

Dorsal fin



Simplified diagram of the visual pathways.

Illusions in the real world (Lect. 19)

Topics:

1.Outdoor illusions (overview)

2. Visit to Academy of Performing arts

Figures from:
Levine & Shefner, *Fundamentals of Sensation & Perception*
Kaufman & Rock. *Perception: Mechanisms and Models*
H. Ross, *Behaviour and Perception in Strange Environments*

Lecture 22: Cognition & Design

Topics:

1. Stereoscopic vision

2. Virtual Reality systems