Cognitive Psychology

Undergraduate Handbook

COGNITIVE PSYCHOLOGY

Official Module Title: Cognitive Psychology

Official Module Code: C8551

Module Organiser: This module is organised by Dr David Reby, who is a faculty member of the School of Psychology. You are welcome to direct queries about the module to him during his office hours (see times posted on his office door, or on Psychology Web Pages) in 2C10 (Pevensey 1 Building), by phone (x7334) or email (reby@sussex.ac.uk).

Type of Module: Cognitive Psychology is a compulsory second year module for all Psychology students. Visiting and Exchange students from other schools wishing to take the module should seek permission from the course convenor. The module is designed to be accessible for students who have not studied science beyond GCSE standard.

Module Aims and Objectives: The broad aim of this module is to give you an understanding of how people perceive, allocate attention, memorise and think, how vision, speech and hearing work and the way in which people use language. More specifically, the module aims:

- to enable you to demonstrate an up-to-date knowledge of the issues covered in Cognitive Psychology
- in written work, to give you further practice in comprehending, summarising and analysing technical material
- in the practicals and follow-up seminars to further your understanding of some of the concepts presented in the module through (a) conducting of experiments (including data collection and data analysis), (b) through reading of relevant original literature, and (c) writing about your findings in a written report (see below).

SUMMARY OF MODULE CONTENT AND STRUCTURE

The study of the mind predates modern scientific enquiry but cognitive psychology as a science began only recently, and remains a fascinating and rapidly expanding area. The modern cognitive psychologist studies the workings of the mind using methods derived from early work in experimental psychology, and also early work in artificial intelligence and neurology. This course covers a very broad range of exciting topics. You will start by reviewing the sensory systems with a special focus on vision, and voice and speech perception. We will then consider how attention relates to perception, action and consciousness. You will then go on to consider the psychology of language more generally, including how we read and recognise words, and the relationship between language and thought. This will be followed by a

number of lectures on the different types of memory, how memories are encoded and retrieved (or forgotten) and how memory breaks down in amnesia. The course concludes with a series of lectures that explore the complexities of human thought – covering issues such as how we reason and make decisions, and how we think creatively and solve problems.

The *Sensation and Perception* part will explore how humans sense and perceive the world around them. We will particularly focus on vision. We will discuss whether we see things as they really are, the effect of context and knowledge on visual perception, and how two people can see the same image differently. We will also discover how sensory information is processed at the retina and cortex, and how this gives rise to visual perception and visual illusions. A lecture on colour perception will illustrate the role of evolution, genes and environment on perception.

The *Speech* part will focus on human vocal communication. More specifically, we will see how sound is produced, how it can be described and how it is perceived. We will then see how the linguistic elements of speech (phonemes) are produced and organised in speech utterances, and what problems this raises for the perception of speech. We will also discuss the properties of the human voice and see how it conveys non-verbal information in speech communication. Finally we will review and evaluate the evidence available to the study of the evolution of speech.

The *Attention* section deals with one of the most intriguing puzzles of cognitive neuroscience: The behavioural and neuronal consequences of focusing our attention and of what grabs our attention to capture our awareness. We aim to introduce the notion of how much of our perception is a product of choice or selective attention. Consider the sensory smorgasbord you are served up moment to moment; not all of it can be consumed/processed so the act of selection is critical. We will investigate the nature of attention, the stages at which it can act, and the consequences of selective attention.

The *Language* part of the module goes a step further and investigates how people choose what to say or write, and how the understand and interpret language. Topics are the meaning of words and the question of how texts are comprehended and represented in memory. One lecture addresses how word reading occurs, how models of reading might explain this process and how it might go wrong (dyslexia). The final lecture is concerned with the relation between language and thinking.

The *Memory* part of the module will be aimed at providing you with a background to the major areas of current memory research. Throughout the lectures there will be two main themes; the types of memory that exist and how these are underpinned by different brain regions, and the theories proposed to explain how memories are encoded, stored and retrieved. By the end of these lectures you should have a good understanding of how memory works in the brain and several answers to the age-old question, “how can I improve my memory?”.

The *Thinking* part of the module focuses on the increasingly influential view that, of the variety of aspects of thinking, some can occur rapidly and with little or no apparent effort and others are time-consuming and difficult. Nobel Prize winner Danny Kahneman, among others, has championed the idea that two systems, with different properties, underlie these two types of thinking. We investigate these two systems, and how they are related, in the domains of problem solving and game playing, expertise and creativity, hypothesis testing, and judgement, risk and decision-making. Throughout, we consider the impact of the two types of thinking in everyday life, and the implications for questions about human rationality and irrationality.

READING LIST

The list below is indicative and only up–to-date at the time of the handbook publication.

Please refer to the module's ASPIRE list (link on Study Direct), for updated reading lists, including direct links to online articles, digitised book chapters and other library resources (ebooks and hard copies).

For this module the main reading to supplement the lectures is based around textbooks, as well as some original papers. There are many second level texts in Cognitive Psychology that cover the module material reasonably well (they also cover other aspects of Cognitive Psychology). Taking into account coverage, availability, price and other factors, the best text is:

Margaret Matlin (2004/2009). **Cognition** (6th/7th edition). John Wiley. (QZ 1000 Mat).

The book is part of the bundle you were advised to purchase in your first year. It includes a number of activities and examples, that you may find help to clarify some of the topics. The library also has 20+ copies of the sixth edition. In addition, there is currently one copy of the 5th edition of Matlin (published 2003, so probably not much different from the 6th), numerous copies of the 4th edition (1998), and two copies of the 7th edition (2009).

We are also recommending two other textbooks, which cover the content for the language, memory and thinking parts of the module well:

Nick Braisby & Angus Gellatly (2005). **Cognitive Psychology**. Oxford: Oxford University Press
(QZ 1000 Cog). (Memory: Chapters 8-9).

Mike Eysenck and Mark Keane (2010). **Cognitive Psychology: A Student's Handbook** (6th edition). Hove: Psychology Press (the library has copies of the previous, 5th edition at QZ 1000 Eys). (Language: Chapters 10-12; Thinking: Chapters 13-16).

The library has 15 copies of the first and 23 copies of the second.

GENERAL

Because of the number of students on the module, library copies of the main text soon disappear from the shelves. Other cognitive psychology texts, with similar coverage, which you could use as alternatives (e.g. to prepare for seminars) include:

Robert Solso (2001). **Cognitive Psychology**, (sixth edition). Boston: Allyn and Bacon (QZ 1000 Sol, 28 copies)
[seventh edition, Solso, MacLin and MacLin, now published]

Sternberg, R. (2003). **Cognitive Psychology** (3rd edition) Thompson Wadsworth. (QZ , 1010 Ste, 1 copy) [the latest edition, by Sternberg, Sternberg, and Mio, 2011 is the 6th]

Ashcraft, M. (2002). **Cognition** (3rd edition). Upper Saddle River, NJ: Prentice Hall. (QZ 1000 Ash, 6 copies) [the latest edition, by Ashcraft and Radvansky, 2009 is the 5th]

Medin, D., Ross, B. and Markman, A. (2004). **Cognitve Psychology** (4th edition). Hoboken, NJ: Wiley.
(QZ 1010 Med, 1 copy)

Quinlan, P. T. & Dyson, B. J. (2008). **Cognitive psychology**. Harlow: Pearson Education. (QZ 1010 QUI – 5 copies)

A more elementary text, with useful introductory material, is

Parkin, A. (2000). **Essential Cognitive Psychology.**
Hove: Psychology Press. (QZ 1000 Par, 38 copies)

SENSATION AND PERCEPTION

For an overview of general principles of sensation and perception, methods and approaches see:

Mather, G. (2006). **Foundations of Perception**. Psychology Press. (BF 311 MAT – 19 copies) – or 2nd edition, 2009. Chapter 1.

Sternberg, R.J. & Sternberg, K. (2009). **Cognition.** Belmont, CA: Wadsworth Cengage Learning. p.53-68, pdf on Study Direct.

For a clear and detailed read about vision, including an excellent chapter on colour vision:

Snowden, R., Thompson, P. & Troscianko, T. (2006). **Basic Vision: an introduction to visual perception.** First Edition. (QU 4592 SNO – 15 copies)

These texts are good general texts on sensation and perception:

Foley, H. J. & Matlin, M. W. (2010). **Sensation and perception**, Fifth Edition. Boston: Allyn & Bacon. (QZ 310 FOL – 12 copies)

Goldstein, E.B. (2007). **Sensation and Perception** (7th Edition). Belmont, CA: Wadsworth Cengage Leaning. (QU 4590 GOL)

Wolfe, J., Kluender, K.R. & Levi, D.M. (2005) **Sensation and Perception.** Massachusetts: Sinauer Associates. (QU 4590 SEN)

SPEECH AND HEARING

The Aspire online list contains a complete list of reading material (including journal articles) organised by lecture.

These two textbooks from the bundle have short sections that are relevant to this topic:

Klein, S.B. & Thorne, B.M. (2007). **Biological Psychology**, Worth Publishers. Chapter 7: p228-236.

Matlin, M.W. (2009). **Cognitive Psychology**. Wiley. Chapter 2: p55-61.

Two excellent sources for the first three lectures are:

Halliday, (1998). **The Senses and Communication**. Berlin: Springer. Chapter 3 (digitised resource available online).

Bernham, A. (2008): **Speech and Voice Science**. Plural Pub, San Diego. (QY 28 BEH – 20 copies available).

These perception textbooks also have useful sections on sound and hearing:

Foley, H. J. & Matlin, M. W. (2010). **Sensation and perception**, Fifth Edition. Boston: Allyn & Bacon. Chapter 9-12.

Mather, G. (2006). **Foundations of Perception**. Psychology Press. (BF 311 MAT) – or 2nd edition, 2009.

More advanced introductions to sound and hearing are found in:

Yost, W.E. (2007). **Fundamentals of Hearing: An Introduction** (5th edition). San Diego, CA: Academic Press. (QY 28 YOS – 11 copies)

An interesting and readable book that covers the production of voice is:

Titze, I (1994). **Principles of voice production.** Englewoods Cliffs, NJ: Prentice Hall. (QY 28 TIT – 4 copies)

On speech production, co-articulation and Categorical Perception:

Lieberman, P. and Sheila E. B. (1988). **Speech physiology, speech perception, and acoustic phonetics**. Cambridge Studies in Speech Science and Communication. Cambridge: Cambridge University Press. (QY 28 Lie – 2 copies).

And, finally, interesting discussions of speech and language evolution:

Christiansen, M. H. and Kirby, S. (2003) **Language Evolution**. Oxford: Oxford University Press. Available online or hard copy (P 116 LAN – 4 copies).

Fitch, W. T. (2010) **The Evolution of Language**. Cambridge: Cambridge University Press. Available as eBook or hardcopy (P 116 FIT, 5 copies).

ATTENTION

The Quinlan and Dyson chapter includes excellent empirically detailed experiments in the area which will add to your understanding of how research in attention is conducted and progressed.

Chapter 8, Quinlan, P. T. & Dyson, B. J. (2008). **Cognitive psychology**. Harlow: Pearson Education. (QZ 1010 QUI – 5 copies)

Gazzaniga, Ivry and Mangun make the interaction of mind and brain in the investigation of attention accessible without compromising on the intricacies.

Chapter 12, Attention & Consciousness in Gazzaniga, M, Ivry, R. B., Mangun, G. R. (2009) Cognitive Neuroscience: The Biology of the Mind

Reviews and classic papers written by stalwarts in the field that are both informative and exciting to read:

Lavie, N. (2010). Attention, Distraction and Cognitive Control under Load. *Current Directions in Psychological Science*, 19(3),

Treisman, A. & Gelade, G. (1980). A feature integration theory of attention. *Cognitive Psychology*, **12**, 97-136.

Tipper, S. P. (1985). The negative priming effect: Inhibitory priming by ignored objects. *Quarterly Journal of Experimental Psychology*, **37A**, 571-590.

Shapiro, K.L, Arnell, K.M., & Raymond, J.E. (1997). The attentional blink. *Trends in Cognitive Sciences*, **1(8)**, 291-296.

Klein, R. M. (2000). Inhibition of return. *Trends in Cognitive Sciences*, **4(4)**, 138-147.

LANGUAGE

An interesting introduction to language in general is:

Aitchison, J. (1998). **The Articulate Mammal** (4th edition). London: Routledge (P 106 Ait, 12 copies).

Two highly readable books about language are:

Ray Jackendoff (1993**). Patterns in the Mind**. New York: Harvester Wheatsheaf (P 37 Jac).

Steve Pinker (1994). **The Language Instinct**. London: Allen Lane/Penguin (P 106 Pin).

More standard textbook treatments of language can be found in:

Harley, T. (2001). **The psychology of language: From data to theory** (2nd Edition). Hove: Psychology Press. (P 37 Har, 15 copies). (The library also has copies of the 1st ed., 1995, which remains useful, and 1 copy of the 3rd ed., 2007. A 4th Edition is scheduled for Autumn 2012).

Whitney, P. (1998). **The psychology of language**. Boston: Houghton Mifflin. (P 37 Whi, 17 Copies)

Gleason, J. B., & Ratner, N. B. (1998). **Psycholinguistics** (2nd Edition). Forth Worth: Harcourt Brace. (P 38 Gle, 15 copies)

Carroll, D. W. (2004). **Psychology of language** (4th Ed.). Belmont, CA. Thomson/Wadsworth. (QZ 1070 Car, 6 copies) [There is a 5th edition, 2008]

Because language can also be studied using neuroscientific methods, the following very accessible, general introduction will be useful (introductory chapters and chapters 10 and 11):

Jamie Ward (2010). **The student's guide to cognitive neuroscience** (2nd Ed.). Hove: Psychology Press. (QZ 1000 WAR, 10 copies, and 7 of previous edition)

MEMORY

The best general introduction to the content of the lectures is chapter 10 of:

Quinlan, P. T. & Dyson, B. J. (2008). **Cognitive psychology**. Harlow: Pearson Education. (QZ 1010 QUI – 5 copies)

Lecture 1: Short-term and Working Memory

Short-term and Working memory is covered in all of the standard textbooks (e.g. Matlin) although a particularly good summary is chapter 9 of:

Nick Braisby & Angus Gellatly (2005). **Cognitive Psychology**. Oxford: Oxford University Press
(QZ 1000 Cog)

See also the journal article: Baddeley (2000) The episodic buffer: a new component of working memory? Trends Cogn Sci **4** 417-423

Lectures 2 & 3: Encoding into Long-Term Memory and Forgetting & Retrieval

A very good summary of these topics is chapter 8 of:

Nick Braisby & Angus Gellatly (2005). **Cognitive Psychology**. Oxford: Oxford University Press
(QZ 1000 Cog)

Also good is chapter 5 of:

Margaret Matlin (2004). **Cognition** (6th edition). John Wiley. (QZ 1000 Mat).

Lecture 4: Implicit Memory

Implicit memory is covered in most general memory chapters and also chapters on consciousness. The best place to start is chapter 8 (sections on procedural knowledge and implicit memory) and chapter 15 (section on implicit cognition)

Nick Braisby & Angus Gellatly (2005). **Cognitive Psychology**. Oxford: Oxford University Press
(QZ 1000 Cog)

THINKING

The chapters on Thinking in Matlin's **Cognition** text (chapters 11 and 12) provide a good introduction to the material covered in the course. Other Cognition/Cognitive Psychology texts also contain relevant material, but the fit to the course material varies from text to text.

A more advanced treatment of thinking can be found in:

Manktelow, K. (2012). **Thinking and reasoning**. Hove: Psychology Press.

Baron, J. (2000). **Thinking and deciding** (third edition). Cambridge: Cambridge University Press (QZ 1020 Bar, 14 copies) [the latest edition is the 4th, 2006]

Garnham, A. and Oakhill, J. (1994). **Thinking and reasoning**. Oxford: Blackwell (QZ 1020 Gar, 21 copies).

A recent book by one of the founders of the Heuristics and Biases approach to judgement, which figures centrally in the Thinking part of the module, is highly recommended.

Kahneman, D. (2011). **Thinking, fast and slow**. London: Allen Lane. (also available as a Penguin paperback)

Three other books that are well worth looking at are:

Sutherland, N. S. (2007) **Irrationality** (2nd revised edition). London: Pinter & Martin. (QZ 1000 Sut – 2 copies)

Gigerenzer, G. (2002). **Reckoning with risk.**
London: Allen Lane. (HN 230 GIG, 3 copies).

Gladwell, M. (2005) **Blink: The power of thinking without thinking**. London: Allen Lane (BF 315 GLA, one copy) (also available as a Penguin paperback)

TEACHING

There will be 2 lectures a week, on Monday afternoons, given by Dr Anna Franklin (AF: Sensation and Perception), Dr David Reby (DR: Sound and Speech), Dr Sophie Forster (SF: Attention), Dr Chris Bird (CB: Memory); Prof Jane Oakhill (JO: Language) and Prof. Alan Garnham (AG: Thinking).

Contact details for lecturers:

Dr Anna Franklin: Room 2B8 in PEV1, ✂ 8885

email anna.franklin@sussex.ac.uk

Dr David Reby: Room 2C10 in PEV1, ✂ 7334

email reby@sussex.ac.uk

Dr Sophie Forster:

Email s.forster@sussex.ac.uk

Dr Chris Bird: Room 1C10 in PEV1, ✂ 6816

email chris.bird@sussex.ac.uk

Prof Jane Oakhill: Room 2B3 in PEV 1, ✂ 8418

email j.oakhill@sussex.ac.uk

Prof Alan Garnham: Room 2B12 in PEV1, ✂ 8337

email a.garnham@sussex.ac.uk

The following Table shows the detailed teaching schedule. **Please note that the definitive source of timetabling information is Sussex Direct.**

TEACHING TIMETABLE			
Lecture	Time	Topic	Lecturer
1	Week 1	Re-Induction NO LECTURE	PC
2	Week 2	Introduction to sensation and perception	AF
3	Week 2	Vision: retinal and cortical processing	AF
4	Week 3	Colour perception	AF
5	Week 3	Sound production and perception	DR
6	Week 4	Speech production and perception	DR
7	Week 4	Categorical perception of speech sounds	DR
8	Week 5	Evolution of speech & language	DR
9	Week 5	Word meaning and concepts	JO
10	Week 6	Word reading and dyslexia	JO
11	Week 6	Text comprehension	JO
12	Week 7	Language and thought	JO
13	Week 7	Attention 1	SF
14	Week 8	Attention 2	SF
15	Week 8	Attention 3	SF
16	Week 9	Attention 4	SF
17	Week 9	Short term and working memory	CB
18	Week 10	Encoding in Long term memory	CB
19	Week 10	Forgetting and Retrieval	CB
20	Week 11	Implicit Memory	CB
21	Week 11	Two Thinking Systems; Judgement	AG
22	Week 12	Judgement (cont)	AG
23	Week 12	Decision Making	AG
24	Week 13	Decision Making (cont); Other Approaches	AG

PRACTICALS AND SEMINARS

You have been allocated to a seminar group, which will meet four times in the term. Seminars will be held in groups of 10 to 13, practicals in groups of 22 to 26 (two seminar groups together). Information about seminar groups and tutors will be available via Sussex Direct before the beginning of term.

The aim of the practicals (weeks 3 or 4 and 7 or 8) is to give you experience of studies in two areas of Cognitive Psychology: Speech and Language. You will also have an opportunity for guided reading of some research papers relevant to the practicals, and you should gain a better insight into, and understanding of the relevance of, the findings. The first session will be used to conduct the speech practical and the second for the language practical.

Each of the practicals will be followed by a seminar (in weeks 5 or 6 and 9 or 10). The seminars provide an opportunity to discuss in your group any residual issues relating to the practicals before you finalise the write-up and also an opportunity to discuss matters arising from the module more generally.

Details of the first practical will be provided in full in the first meeting in Week 3 or 4. It is obviously imperative that you attend the practicals and seminars, so that you have the background information and data on which to base your practical report. If there are legitimate circumstances (e.g. illness) for non-attendance at a seminar, you should be sure to let your seminar tutor know.

You will be required to write a report about each of the practicals. Details about the submission details will be provided on Sussex Direct, including time and date. The first practical report will be 1000 words in length, and it will count for 10% of the module mark. The second lab report will be 2000 words in length and be worth 20% of the module assessment.

Although you will be working in your seminar group on data collection, you must write up your practical report independently. Please be aware that the University takes plagiarism and collusion very seriously. Up to date information on the University regulations concerning plagiarism and collusion can be found at the following links: http://www.sussex.ac.uk/s3/?id=35 and http://www.sussex.ac.uk/academicoffice/plagiarism

Module Requirements and Assessment: As with other Sussex modules, all classes, lectures and seminars, are compulsory. During the module you must complete two practical reports, as mentioned above. The reports will be marked by the seminar tutors, and will contribute 30% to overall assessment on the module.

The other part of the assessment is a 2-hour unseen examination scheduled during the mid-year assessment period. The examination paper is divided into two sections. The first section consists of 40 multiple-choice questions. You

must attempt every question. The second section consists of a set of 8 essay questions, from which you should attempt two. A sample paper is available on the Teaching Pages for this module, but past papers are not available. You should write some practice essays to prepare for the exam, and some suggested titles are provided below.

The assessment criteria for both the practical reports and the unseen exam essays can be found at on the Psychology web pages, under “Examinations and Assessment”.

Practicals submission deadlines: See Sussex Direct.

Module Monitoring and Student Feedback: The module is monitored using a variety of formal and informal methods. Towards the end of the module, students are asked to complete an online module evaluation questionnaire. In addition, lecturers on the module encourage questions or feedback. A number of changes in teaching practice have been influenced by student feedback in the past.

PRACTICE ESSAYS AND OTHER STUDY IDEAS

As outlined above, essays are not required on this module. However, writing some practice essays will give you an invaluable opportunity to prepare material from the module in essay format in order to prepare you for the essay component of the unseen examination. So, we strongly suggest that you try some essays as you work your way through the module. It would be an excellent idea to organise yourselves into some small groups (perhaps, but not necessarily, seminar groups) and try marking and discussing each other’s essay. You should aim for essays of about 1500 words and we have provided some titles below. Note that the essay titles are mainly based on lecture material, but you should expect to use additional material from seminars and textbooks in order to produce a satisfactory answer.

These essays should be written with the following aims in mind:

- To help you understand better the core content presented in lectures
- To go into specific topics in greater depth than lectures
- To enhance your ability to précis and present key concepts in cognitive psychology
- To critically evaluate empirical evidence in light of cognitive theories

All of the recommended books have extensive bibliographies, through which you can trace primary literature, if you need them for essay work. Bear in mind that in an exam, an essay based solely on lecture and textbook material (so called "secondary sources") is unlikely to gain the very highest marks, so you should aim to supplement your reading with at least some primary sources.

- *SENSATION AND PERCEPTION essay topics:*
    - What is the contribution of bottom-up and top-down processing to visual perception?
    - What are the different retinal and cortical cell types involved in vision?
    - What are colour after-effects and how do they work?

- *SPEECH essay topics:*
    - What is the frequency of a sound and how is it perceived?
    - What is categorical perception?
    - What is co-articulation, how does it affect speech perception?
    - What are the key adaptations necessary for the evolution of human speech?

- *ATTENTION essay topics:*
    - What is *selective attention*? Give examples that bring out its breadth and range.
    - What type of stimuli are particularly likely to cause “bottom up” attentional capture?
    - Distinguish between *early* and *late* selection. How does perceptual load affect attentional selection?
    - Outline the relationship between attention and cognitive control.

- *LANGUAGE essay topics:*
    - Compare and contrast two accounts of word meaning.
    - What are mental models and what is their role in comprehension?
    - What is the role of inference in sentence and text comprehension?
    - Outline one model of word reading and the evidence that supports it

- Discuss the claim that the language we speak determines our thinking.

- *MEMORY essay topics:*
  - How useful is the addition of the episodic buffer to Baddeley's model of working memory?
  - Is it helpful to draw a distinction between short-term and long-term memory?
  - What has the study of amnesia revealed about the structure of long-term memory?
  - Outline the mechanisms that can lead to forgetting in long-term memory
  - How useful is the distinction between episodic and semantic memory?
  - Are memories ever truly "implicit"?
  - What type of memories can be formed in the absence of awareness?

- *THINKING essay topics:*
  - What are the characteristics of the two systems of human thought?
  - Describe the three original Kahneman and Tversky heuristics and illustrate their use in experimental situations and in everyday life?
  - What are the main biases in human judgement and how can they be explained?
  - Compare and contrast utilty theory and prospect theory
  - What are the main deviations from the predictions of utility theory in human decision making and how are they best explained?
  - How are the various strands of research on human thinking and reasoning related to one another?.

STUDY/DISCUSSION TOPICS

As well as writing some practice essays, you might find it useful to organise your reading around some particular topics. Again, getting together in groups to share notes and ideas on these topics is a good study strategy. For all questions that cognitive psychology addresses, you should try to keep in mind both the empirical evidence (What are the key observations? What do they tell us?), and the theories that have been proposed to explain them.

Below are some suggested topics with associated questions, but you could also come up with some of your own.

- *Visual illusions*
  - What do visual illusions tell us about vision?
  - How can receptive fields explain some visual illusions?

- *Individual differences in sensation and perception*
  - What is the evidence that individuals vary in how they sense and perceive the world?
  - What are potential sources for this variation?

- *The source filter theory of Speech production*
  - What is the fundamental frequency? What are formants?
  - How is verbal information encoded in speech sounds?

- *Categorical perception*
  - How can CP be evidenced experimentally?
  - Is it speech specific?
  - Is it innate or is it acquired?

- *Evolution of speech and language*
  - What are the anatomical prerequisites for the evolution of speech?
  - What is the gestural theory for the origin of speech?
  - Can we estimate when, how and why speech and language evolved?

- *Attentional capture*
  - What is the difference between “top down” and “bottom up” attentional capture?
  - How could attentional settings for the task we are performing inadvertently cause distraction? Give examples.
  - Is purely “bottom up” or “stimulus driven” attentional capture possible?

- *Individual differences in attention and cognitive control*
  - How does working memory capacity affect attention?
  - What do individual differences tell us about the relationship between attention, cognitive control and mind wandering?

- *Early versus late selection and Load Theory*
    - How does the *cocktail party effect* impact the *early* filtering account of attention?
    - How can Load Theory explain inattentional blindness?
    - What is the difference between cognitive load and perceptual load?

- *The "Theory Theory" (aka the Knowledge-Based theory) of word meaning.*
    - What does this theory attempt to explain that others did not?
    - What is the evidence for the "theory theory"
    - How is it linked to "psychological essentialism"?

- *Word reading and dyslexia*
    - How does the (English) writing system work?
    - What mechanisms can readers of English use to read words aloud?
    - What sorts of problems do dyslexics have with reading and how can these be accounted for by models of word recognition?

- *Inferences and non-literal meaning*
    - What different types of inference have been described?
    - Why are inferences needed in text and dismodule comprehension?
    - What evidence is there that readers make (some sorts of) inferences while they are reading?

- *Language and Thinking*
    - What is the Sapir-Whorf hypothesis?
    - Do we need language for complex thought?
    - Does the answer depend on the definitions of the concepts "language" and "thinking"?
    - What are the classical findings from studies addressing this issue?

- *Working memory*
    - Should working memory be considered as "memory" rather than "thinking"
    - Given that there are different components of working memory, is the concept useful?
    - What are the links between working memory and long-term memory? Which theoretical models address this?

- *Episodic memory and semantic memory*
    - How are these concepts defined? Is there any overlap?
    - Does neuropsychology support the distinction?
    - Can episodic memories become semantic in nature?

- *Memory retrieval*
    - How important is your current context for retrieving memories?
    - Why can memory retrieval fail?
    - Why is retrieving a memory not like playing back a video?
    - How would you implant a false memory in someone else?

- *The Nature of Thinking*
  - What are the two types of thinking?
  - How do they explain the existence of biases in thinking?
  - How can these biases be overcome?

- *Judgement*
  - What is the effect of the "law of small numbers" on the way we should make and assess judgments?
  - What are heuristics and what are the main heuristics that have been proposed for making judgements?
  - What are biases and what are the main biases that have been proposed in making judgements?
  - What factors affect whether people take base rates into account?
  - What is the conjunction fallacy?
  - What is regression to the mean and how is it explained?

- *Decision Making*

  - *How does the idea of belief-desire psychology map onto theories of decision making?*
  - *What are the facts about loss aversion and risk aversion for gains and losses?*
  - *What is the endowment effect and how is it explained?*
  - *What is mental accounting? What is framing?*
  - *Is it easier to make decisions when information is presented as frequencies rather than proportions or probabilities, and if so why?*

- *Rationality and Irrationality*
  - How can rationality be defined?
  - What do the various possible definitions have to say about whether people are irrational?
  - Is there a valid "in principle" argument that shows we must be rational?

- *Risk and Decision Making*
  - Why is it often difficult to make accurate judgements (of probability)?
  - What factors make it difficult to assess risk properly?
  - What other factors affect decision-making?
  - Why are quick decisions sometimes better than more considered ones, and what factors influence when they are?