Psychobiology of Cognitive Ageing and Dementia

Spring Term
Academic year 2013/14

Module Handbook
Module Overview

Official Module Title: Psychobiology of Cognitive Ageing and Dementia.
Official Module Code: C8833

Contact Hours and Teaching Methods

Type of Module: Psychobiology of Cognitive Ageing and Dementia is a third year option taken by Psychology (BSc, MSc) students. It is available to Psychology with North American Studies (PSYCHNAS), Neuroscience (NS) students and Visiting and Exchange students from any School providing that they have an appropriate academic background (e.g. The equivalent of a second year core module in Brain and Behaviour).

Module convenor: Professor Jennifer Rusted. You are welcome to direct queries concerning the module to Jenny Rusted during her office hours (Mondays, Fridays, 9.30 – 10.30) in Pevensey 1 room 2B21, by phone (extn 8325) or by e-mail: j.rusted@sussex.ac.uk.

Module Aims and Objectives:
This module will examine cognitive processes in older adulthood, the psychobiology of normal and abnormal ageing processes. It will describe the clinical and functional consequences of age-related changes in cognitive performance, and it will describe the risk and protective factors associated with the more common organic dementias. It will examine current treatment options and future treatment possibilities, considering both drug and psychotherapeutic options.

Objectives:
By the end of the module, if you have attended the lectures, read the key papers listed and covered the material provided in seminars, you should be able to
- demonstrate knowledge of normal and abnormal changes in cognitive processes in older adults.
- understand what neurobiological changes are associated with dementias.
- understand how physical brain changes relate to cognitive changes in normal and abnormal ageing.
- critically discuss explanations for the causes of dementia and alternative approaches to the treatment.
- produce work that demonstrates your critical evaluation of psychological studies, your ability to extract and summarise relevant material from original texts, and your oral presentation and essay writing skills.

Summary of Module Content and Structure: Using lectures and student-led seminars, we will review cognitive changes associated with healthy and pathological ageing. We will consider the neurobiology of abnormal ageing, and the cognitive and functional consequences. We will consider risk factors and protective factors associated with normal and abnormal cognitive ageing.
Finally, we will examine current and future treatment options for the dementias. Lectures will be delivered by Prof Jenny Rusted. There will be four seminars on this module. The seminars will be student-led seminars and will be structured to encourage critical evaluation of clinical issues and current research. The seminars will take place in weeks 3, 6, 9 and 12.

PDFs of powerpoint slides for the lectures will be available on Study Direct shortly in advance of the lectures. These will be linked to suggested additional readings, and materials for seminar and coursework preparation.

MODULE ASSESSMENT
This module is assessed by coursework (25%) and unseen examination (75%).

Assessed coursework
There are TWO components to the assessed coursework:

- All students are required to complete a group MEDIA presentation and a group POSTER presentation (worth in total 25% of your final mark). The poster topics and groups will be determined in the first seminar. (Learning outcome tested: public dissemination of science; understanding and critical evaluation of current concepts and/or theoretical models in cognitive ageing and dementia; ability to extract and summarise relevant material from original texts, writing skills, oral skills, presentation skills, group working skills).

Unseen Examination
The final 75% of your mark will derive from a 2 hour unseen examination in the Summer term. Details of the exam format will be provided on Study Direct, along with a sample paper.

The assessment criteria for poster presentations are displayed on the school teaching pages. Assessment criteria for the Media presentation are as for an oral presentation.

Coursework Deadlines are posted on Sussex Direct.

Where and what to Submit:

Media Presentation
This is an in-seminar group presentation in week 6, details of which are provided on page 11 of this handbook.

Poster presentation
You must complete as a group a POSTER presentation, using Powerpoint. You will present your poster in your week 12 seminar meeting. Your tutor will give your poster, and your poster presentation a mark using criteria set out in the Psychology BSc marking scheme. Your individual mark will be adjusted to include peer-assessed weighting of your individual contribution to the poster production.

NB: There are no alternatives to group posters; individual submissions are not permitted.

PRIOR TO YOUR SEMINAR, AND IN ACCORDANCE WITH THE DEADLINES LISTED ON SUSSEX DIRECT, EACH GROUP must upload a final version of the POSTER AND THE BIBLIOGRAPHY for their poster on to the study direct site. UNLESS THESE WEB SUBMISSIONS ARE COMPLETE, YOU WILL NOT BE ALLOWED TO PRESENT YOUR POSTER FOR MARKING. Peer assessments will be completed in the week 12 seminar.
Late submissions: PLEASE NOTE - there are no alternative opportunities for presentation of your posters outside of the assigned seminar session. Absentees and submission failures will be dealt with through MEC where applicable. NB: MEC outcomes will always be decided after the deadline has passed: you must be sure that you have a good case if you are going to take this route. THERE IS NO PROVISION OTHER THAN MEC FOR RECEIVING CREDIT FOR MISSING THIS ASSESSMENT.

http://www.sussex.ac.uk/studentlifecentre/mitigation

Very Important Note: Appropriately completing and submitting formally assessed work is your responsibility. Definitive guidelines on this are provided in the ‘Handbook for Candidates’ available on the web or via school offices. If you are in any doubt about the rules concerning submissions check with the school office.

FEEDBACK on module material

Feedback on understanding of key concepts and of the reading material will be provided through seminar discussions, review of short answer questions, and through your poster work.

Module Monitoring and Student Feedback

The module will be monitored using a variety of formal and informal methods. At the end of the module, students will be asked to complete an online module evaluation questionnaire. During the module, constructive feedback on lecture/seminar organization and content can be directed to the module convenor, Jenny Rusted. The feedback allows us to update the module content and structure for subsequent years.
Teaching Arrangements

Times and Locations
There will be ONE lecture a week. **Please see Study Direct for the time and location.** There will also be a total of FOUR seminars for each group, 1hr 50 mins each. These will take place in weeks 3, 6, 9 and 12. You will be allocated to a seminar group; **The seminar times and locations for the seminar groups are available on Sussex Direct.**

Weekly Teaching Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Seminar</th>
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<tbody>
<tr>
<td>1</td>
<td>Cognitive ageing: what changes with age?</td>
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<tr>
<td>2</td>
<td>Cognitive ageing: protective factors</td>
<td></td>
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<tr>
<td>3</td>
<td>Mild Cognitive Impairment</td>
<td>Seminar: Your interests</td>
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<tr>
<td>4</td>
<td>Risk factors for dementia</td>
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<td>5</td>
<td>Apolipoprotein E across the lifespan</td>
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<tr>
<td>6</td>
<td>Dementia Pathology I</td>
<td>Seminar: Dementia in the news</td>
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<tr>
<td>7</td>
<td>Dementia Pathology II</td>
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<tr>
<td>8</td>
<td>Dementia Pathology: biomarkers</td>
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<tr>
<td>9</td>
<td>Diagnosing dementia</td>
<td>Seminar: SHORT ANSWER feedback</td>
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<td>10</td>
<td>Dementia Treatments I</td>
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<tr>
<td>11</td>
<td><strong>Dementia Treatments II</strong></td>
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| 12 | Revision Q&A | **Seminar:**  
Seminar:  
Poster presentations |
| 13 | NO LECTURE |   |

**Seminar Groups**

You will find your allocated seminar group on your Sussex Direct site. These allocations are **not** random and are based on many factors including your other timetabling commitments. Every effort is made to make the allocations as convenient as possible for the majority of people. We would appreciate your co-operation in accepting the group to which you have been allocated. Allocations are constrained by a number of factors; students will not be allowed to turn up and attend the wrong group.
Seminars

The seminars include your coursework contribution (worth 25% of your final mark) and an opportunity to RECEIVE FEEDBACK on your understanding of the course material that you need for the unseen examination, through short answer questions work.

The seminars are structured such that you have ample time to do the necessary preparatory work before each seminar. The quality of the seminar depends largely on whether you do this work.

For the coursework components, the first requires you to consider 1) how scientific material relevant to this course is presented in the media, and 2) how you can present, in poster format, a digest of a series of academic papers on a topic relevant to this course. The second component requires you a) to explore current research papers relevant to this module and b) to compile, working in a small group, a poster that will inform your fellow students on a relevant module topic.

Please come to seminars well prepared.

Please be supportive of each other during seminar presentations and discussions. Please try to listen actively and provide constructive criticism and discussion of points raised. Seminars are a lot more interesting if everyone gets involved.
Seminar One

**Student-selected papers: Choosing a topic for your poster**

For the first seminar, your individual task is to browse journal articles in the area of Psychobiology of Cognitive Ageing and Dementia and select a paper that interests you.

Read the paper, and arrive at the seminar with a 5 minute summary of the paper: title rationale, methods, outcome, and WHY IT INTERESTS YOU.

From these presentations, you will be assigned to a group to work on a GROUP POSTER PRESENTATION in an area related to that topic. To ensure that this work aids and develops material useful to the examination, your paper should be selected from one of the following areas:

- Protective and/or risk factors for dementia
- Diagnostic issues in dementia
- Approaches to treatment of dementia
- Understanding the pathology of dementia
Researching and producing your Powerpoint Poster

This group poster presentation is the first of two coursework components. The poster will contribute 80% of your coursework mark (remember - your coursework in total is worth 25% of your final mark). The poster is a GROUP submission, and will be presented by you and your group in the week 12 seminar meeting. As described on page 8, the topic for your poster presentation, and the group you will be working with, will be decided in Seminar 1. The development of the material will be determined in discussion between group members in meetings that you organize with your group members over the subsequent weeks. You will have 9 weeks in total to work on your group presentation.

This is a GROUP assignment –

IT IS YOUR RESPONSIBILITY TO MAKE CONTACT WITH YOUR ASSIGNED GROUP, TO BE AVAILABLE FOR GROUP WORK AND TO PROVIDE AN APPROPRIATE CONTRIBUTION TO THE GROUP PRESENTATION. FAILURE TO DO SO WITHIN A REASONABLE TIME FRAME WILL JEOPARDISE YOUR INDIVIDUAL MARK FOR THIS ASSIGNMENT.

For the purposes of this assignment, students NOT working as part of their assigned group by WEEK 9 will be considered not to be making an appropriate contribution, and will receive a ZERO for this component of the coursework. Any appeals will have to be lodged through MEC and will not be a matter for the course convenor.

You will work in groups of 4. You will be assigned to groups based on your paper selection in seminar 1. Then, through discussion, your group will define the question to tackle in the poster. This should be a question compatible with evaluation through journal articles that are empirical in nature.

Using search engines and careful selection, you will, as a group, develop a core of 16 RECENT (ie. post 1995*) papers that are relevant to your question.

*NB: You may in some cases need to include influential older or ‘classic’ papers in your reading.

Your question will provide the TITLE of your poster.

As a group, you will compile a poster that summarises:
  a. The contextual background to your question
  b. Your methods for selection of the papers used to address the question
  c. The results of your review of the empirical evidence you have read
  d. Your critical evaluation and conclusions.

Pay particular attention to getting the question focused enough to be compatible with a poster presentation. The four bullet points will be the sections of the poster that you will construct, as a team, over a period of 9 weeks.
Preparing Your Posters

YOU MUST USE THE TEMPLATE FROM THE MODULE WEBSITE TO CREATE YOUR POSTER - YOU MUST USE A FONT SIZE OF AT LEAST 24

FOR THE PRESENTATION, SET PAGE SIZE OPTION TO 119 / 84 cm (size A0)

Planning and Layout
You should produce your poster using PowerPoint. For effective use of this space, consider organizing text and illustrations using a grid plan. Arrange materials in columns rather than rows.

Title
The banner, at the top of the poster, should include title and authors.

Text
An introduction should be placed at the upper left and a conclusion at the lower right. There is no need for an abstract. Minimize narrative, and write concisely. Figure legends can be used, for example, to describe concisely not only the content of the figure but also the conclusions that are derived. Details of methodology should be brief. Numbered or bulleted lists are effective ways to convey a series of points. Do not set entire paragraphs in uppercase (all capitals) or boldface type.

Illustrations
Figures should use clear graphics. Colour can be effective if used sparingly; use saturated dark colours on white or pale backgrounds and rich, light colours on dark backgrounds. A figure should illustrate no more than one or two major points. The main points should be clear without extended viewing. Each figure or table should have a heading of one or two lines stating the "take-home" message.

Remember, you are constructing a poster that describes a review of empirical evidence. You can include figures or tables where appropriate, but composites or summary tables may represent better the point you wish to make.

Bibliography
You must upload the full and complete bibliography from which you have constructed the poster as part of this assignment. Each member of the group should upload the bibliography independently: this will show that all members of the group have agreed the completed bibliography. SEE SUSSEX DIRECT FOR THE DEADLINE FOR UPLOADING YOUR BIBLIOGRAPHY.
This seminar will link (broadly) with your poster presentation topic and will contribute 20% of your coursework mark (remember your coursework in total is worth 25% of your final mark for this module). The purpose of this short assignment is to demonstrate an understanding of the way in which scientific developments in our understanding of issues around dementia is presented in the media – what stories get the press interested, how that information is summarized, how effectively it is used to educate the public, the use of emotional valance (positive/negative stories) in engaging the public, veracity of the material, clarity of the science behind it etc etc.

Researching and producing your presentation

Access items online and prepare a critique for your audience relating to the media material you have identified. Prepare this as an oral presentation with contributions from each of the group members. Discuss in advance the points you want to make and how you will make them. You should provide the audience with access to your media articles, onscreen, and talk to each of your points against this backdrop. Each group will have a maximum of 15 minutes to talk about the material and to take questions.

You can chose from four options:

- Compare and contrast two newspaper articles on the same topic
- Contrast two styles of media presentation
- Compare and contrast two reports of the same article
- Critique a single media article (with ref to the original scientific article from which it derived)
Seminar Three
Short answer work to provide you with feedback on your understanding of module material

To help you gauge your understanding of the module material, and to provide a preparatory basis for exam revision, for this seminar you should prepare **ONE OR TWO SHORT ANSWER QUESTIONS** from the material we have covered in the lectures, and your reading of the supplementary papers.

I have provided a list of topics below. Prepare between 400 and 500 words, beginning with a DEFINITION of the topic, and followed by a description of how this topic relates to the module content that you are studying. Include specific references (2-5) that you have read in compiling the short answer. Include connections that you can make to other topics on the module. Write the answer as if you were writing a short essay on the topic.

NB. These short answers can use quite different material and go in different directions, but please remember that the aim of the module is to integrate brain and behaviour so try to have something of each in your answer.

**Eg. Outline for a Short answer question on Cognitive Reserve**
Cognitive reserve (CR) definition (eg Stern et al, 2005). Links to notion that it protects against progressive cognitive decline (eg Whalley et al, 2004). Link to factors that determine cognitive reserve (eg Whalley et al, 2004). Link to fMRI studies that show differential compensatory response in older adults with different levels of CR (ref Scarmeas et al, 2003).

...and so on.

SHORT ANSWER TOPICS (or you can provide your own)

- Executive function
- Cognitive flexibility
- Task switching paradigms
- Mild cognitive impairment
- Compensation
- Cognitive Reserve
- Beta amyloid
- Neurofibrillary tangles
- Atrophy
- Frontal lobes
- White matter hyperintensities
- Temporal lobe atrophy
- Apolipoprotein E
- Hippocampal damage
- Biomarkers for dementia
Seminar Four

**Poster Presentations**

In this seminar, we will listen to and discuss your posters. Through this process, you will all develop a deeper understanding of key concepts and theoretical developments.

**Poster Presentations**

You must upload a final version of your poster and your poster bibliography by the deadline indicated on Study Direct. In addition, you must present your poster to your seminar group in week 12. The full group who worked on the poster should be involved in some capacity in the presentation, but you can elect to have 'lead' presenters, again based on a group decision. The presentation should walk the listeners through the poster material and on to your conclusions. It can be used to flag particular issues, debates, positions that have influenced the final poster content, or to elaborate content. You should avoid simply standing up front and READING your poster – time will be allowed for the audience to read the poster in advance of your presentation, so it will be entirely redundant and will not attract good marks.

Your group poster will be marked by the module convenor. Quality of the oral presentation will contribute 10% of the final mark. The poster itself will contribute 90% of the mark. This composite mark will provide the basis for the calculation of the raw poster mark. Final individual marks will be weighted according to the peer assessment of individuals’ contribution to the finished poster. The peer assessment sheet will be provided for completion at the start of the seminar, and before the poster presentation. An example can be viewed on the teaching page for this module.

**Peer Assessment**

EACH of you will be asked to complete for EACH MEMBER of your group, a peer assessment of that individual’s contribution to the poster.

For each person in your group, you will be asked the same 4 questions
1. Rate this student’s contribution to: Planning meetings/conceptual development of the poster
2. Rate this student’s contribution to: Collection and preparation of material for the poster
3. Rate this student’s contribution to: Timely delivery of material for inclusion in the poster
4. Rate this student’s contribution to: Practical work in formatting and collating the poster

FOR EACH OF YOU, the group mark for the poster will then be adjusted to include a composite peer-assessed weighting of your contribution to the poster production.

Individual marks on Study Direct will therefore be your personal weighted mark (group mark adjusted for peer-rating).

PLEASE NOTE that the scheme is designed to penalise non-contribution, but there is no value to be gained from OVER-contributing – this is a group exercise!
Revision Guidance
Past paper Questions For Essay Plans

Listed below are 6 questions from previous examination papers. Part of your revision might be to prepare outline plans for the questions listed below. Try to ensure that you have material that can be used flexibly and takes advantage of links between topics.

- What factors are known to affect cognitive ageing? Are factors associated normal and pathological ageing the same or different?

- Describe three genetic abnormalities that may increase risk for developing Alzheimer type dementia, and the possible mechanisms through which they act.

- Compare and contrast the diagnostic tools used for Alzheimer-type dementia with one other dementia, with particular emphasis on diagnostic specificity.

- What treatments offer the best potential if you are already suffering from dementia, and how effective are they likely to be? Support your argument with empirical evidence.

- What treatments are being considered for the prevention of Alzheimer-type dementia? How do they work?