Course Syllabus: Psychology 683 C, “Working Memory”
Fall 2002: Th 12:30-3:20; 579 Eberhart Building

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Course Description

In this seminar we will discuss historical conceptions of immediate memory, but we will focus primarily on the roles of immediate-memory processes in complex cognition and intellectual ability. We will be reading research articles (both theoretical and empirical) that cover such topics as the nature of working-memory limitations; the measurement of short-term and working-memory capacity; the causes of short-term forgetting; normal individual differences in working-memory capacity; the relation of working memory to long-term memory; the relation of working-memory capacity to general intelligence and “executive function”; the domain generality vs. domain specificity of working-memory processes; developmental changes in working-memory capacity; the biology of working-memory capacity and its relation to psychopathology.

Grades & Requirements

As this is a graduate seminar, my assumption is that you are interested in learning about this topic, that you will accordingly come to class well prepared for discussion, and that you will dutifully complete all required assignments for the course. The idea is that we will be learning together about a topic that interests me greatly, and that I hope will come to interest you, too. This is a seminar, and not a lecture, so my hope is to have spirited, collegial discussion that is led by you, the students. Although I must give each of you a grade in this course, the purpose of the course is not evaluative, nor is it to ensure that you have mastered some corpus of knowledge. Rather, I see the purpose of this course as engaging you (and me) in a dynamic exploration of an important research area within cognitive psychology. It will, I hope, feel more like fun than work, although there will be work to do. As far as I’m concerned, you will earn an ‘A’ in this class unless you disabuse me of my assumptions above. To be explicit, here are my expectations:

1) You will attend every class meeting (barring an emergency) and you will come to each class meeting well prepared to discuss the reading materials.

2) As a “Ticket For Admission” (TFA) to each class meeting, you will write a brief (1-page, single-spaced) “reaction paper” about the readings assigned for that meeting, and you will email a copy to me and to the two discussion leaders for that class session. The TFAs MUST be emailed by 5 pm on the Wednesday before class. THE TFA IS NOT A SUMMARY OF THE READINGS; assume that the discussion leaders and I have read the articles. The TFA should be a critical reaction to any aspect of the reading. It may be a focused criticism of one or more of the experiments in the readings. It may be a principled evaluation of some theme or idea that runs through multiple readings. It may be an experiment proposal that would improve upon, or answer a question raised by, one or more of the readings. It may be an argument for or against some conclusion(s) drawn by a reading. It may be a discussion of a specific link between a reading and your area of expertise. It may be something else entirely, but it must reflect a critical, thoughtful response to the specific readings assigned.

3) For each class session, two students will take the roles of discussion leader, and so each of you will serve as discussion leader twice this semester: once as the “reporter” and once as the “critic” (for sports fans, these roles map roughly onto the “play-by-play” announcer and the “color commentator,” respectively).
The primary job of the reporter will be to begin discussion of each article assigned for the session by providing a 5-minute summary. It is important not to prepare much more than 5 minutes because we all will have read the paper; moreover, longer summaries will leave insufficient time for us to discuss each article. On the other hand, this is not a 30-second summary, either. You should aim to succinctly and eloquently summarize and explain the motivation/background for the paper, the methods and results (for empirical articles), the main conclusions and lingering questions. You may choose to use hand-outs or overheads if helpful, but they are not required. Note that the reporter will serve throughout the class session as the main “expert” on the day’s readings and may be looked to for confirmation of particular details, findings, conclusions, etc. The reporter should also have read, very carefully, the TFAs from each student in order to address questions or confusions.

The primary job of the critic will be to have at his or her ready a number of questions, comments, ideas, praises, and/or criticisms of each paper that the class should attempt to entertain. Moreover, the critic should have read, very carefully, the TFAs from each student and attempt to incorporate their criticisms and ideas into the class discussion. Finally, the critic should be prepared to act as the secondary “expert” on the day’s readings throughout the session.

The “primary” jobs of each discussant are just that – you should also be prepared to provide additional pertinent summary information and/or commentary regardless of which role you are assigned for any given day.

*Discussants are NOT required to write a TFA for their presentation day.*

4) Due the last day of class, you must turn in a research proposal that is relevant to the topics and readings of this course (although I expect that reading beyond the course syllabus will be necessary to do an adequate job). You will briefly review the literature relevant to a particular question, and then you will propose a series of studies to address the question. I encourage you to find a way to link your proposal to your own research interests. Just be sure that in doing so you are grounding the proposal in the topics of this course.

The format of your paper should follow that of a short NIH grant proposal such as “B-START” “NRSA” awards:

This proposal should be well formulated and presented in sufficient detail that it can be evaluated for its scientific merit. Include sufficient information to permit an effective review without reviewers having to refer to the literature or any previous application. Brevity and clarity in the presentation are considered indicative of an applicant’s approach and ability to conduct a superior project. Sections (1) through (4) of this item are not to exceed 10 pages excluding all tables, figures, and references. Follow this format:

1. **Specific Aims.** State the specific purposes of the research proposal and the hypotheses to be tested. This should be no more than a few paragraphs.
2. **Background and Significance.** Sketch briefly the background to the proposal. State concisely the importance of the research described in this application by relating the specific aims to broad, long-term objectives. This should be no more than a few pages.
3. **Research Design and Methods.** Provide a description of your research design and the procedures to be used to accomplish the specific aims, of the tentative sequence for the investigation, of the statistical procedures by which the data will be analyzed, and of any potential experimental difficulties (these should be discussed together with alternative approaches that could achieve the desired aims).

Paths to earning a B or C in this course: Unexcused absences, late reaction papers, inadequate participation in class sessions, inadequate performance as discussant, inadequate final paper.

Paths to earning an F in this course: Unexcused absence when assigned to be a discussant, failure to complete final paper.
**Schedule of Topics and Readings** *(italicized articles are available as pdfs on-line through library)*

Week 1: Syllabus & Introductory Comments

Week 2: Conceptions of Immediate Memory I: Short-Term Memory

  Miller (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review, 63*, 81-97.
  ***or see: http://psychclassics.yorku.ca/Miller/***

Week 3: Conceptions of Immediate Memory II: The Working Memory Model


Week 4: Conceptions of Immediate Memory III: Process-Oriented Views


Week 5: Phonological Loop / Verbal Rehearsal / Verbal Memory Span

Week 6: Visuospatial Sketchpad / Spatial Rehearsal / Spatial Memory Span


Week 7: Measurement of WM Capacity I: Basic Issues


Week 8: Measurement of WM Capacity II: Latent Variable Approaches


Week 9: WM Capacity and Controlled Retrieval from LTM


Week 10: What does WM Capacity really reflect?


Week 11: Long-Term WM / Expertise / Strategies


Week 12: WM and Language


Week 13: WM for Verbal and Spatial Information: Domain-general or domain-specific?


Week 14: Development of WM


Week 15: Working Memory, Brain, and Psychopathology