University of Waterloo
Department of Psychology
PSYCH 398
Research in Memory
Winter 2014
10:30-12:20 MW, HH334

Instructor and T.A. Information

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Office Hours	Wednesday 12:30-2:30 (or by appointment)

Please contact the instructor and TA using the email address provided above. If we need to contact you, then we will do so using your official uWaterloo address. Students are responsible for all e-mail that is sent to the official uWaterloo email address. Check e-mail regularly for important and time sensitive messages.

Course Description

The goal of the course is to introduce students to the theoretical and practical aspects of memory research. Readings will focus on important topics in memory research with an emphasis on the wide variety of methods being applied in the search for a deeper understanding of human memory and on learning how to critically evaluate research.

Course Goals and Learning Outcomes

Upon completion of this course, students should be able to:

A. Demonstrate knowledge of major concepts, theories, and empirical findings in memory research.
B. Demonstrate the ability to comprehend primary source articles in memory research. This will involve the ability to understand research methods, interpret basic statistics, and understand experimental logic
C. Demonstrate the ability to understand basic and applied research and how research in memory contributes to both of these scientific enterprises
D. Demonstrate the ability to think critically and communicate effectively about research in memory

Required Text

There is no textbook for this course.

Readings Available on LEARN

Readings for the course will consist of primary source material (i.e., journal articles, chapters). While the number of pages of text required each week may not be high, reading primary source material is typically much more challenging than textbooks so you should be prepared to read papers more than once. All readings are available on LEARN.

Course Requirements and Assessment

Assessment	Weighting
Quizzes	50%
Article Presentation	12.5%
Written Assignment	12.5%
Poster Presentation	12.5%
Participation	12.5%
Research Experience (BONUS)	4%
Total	100%

Quizzes (50%)

There will be 9 quizzes in the course. These quizzes will correspond to the readings for the previous week. Each quiz is worth an equal portion of your grade. Your worst quiz will not contribute to your grade. Quizzes will be multiple-choice and short answer. The quizzes are timed, with only 15 minutes available for each. The quizzes will be taken in class and quiz dates are listed below. When completing multiple-choice questions you must choose the best answer for each question, even though the other answers may have some qualities of a correct answer.

Quiz 1: January 13th
Quiz 2: January 20th
Quiz 3: January 27th
Quiz 4: February 3rd
Quiz 5: February 10th
Quiz 6: February 24th
Quiz 7: March 3rd
Quiz 8: March 10th
Quiz 9: March 17th

Article Presentation (12.5%)

The course will center on student presentations of articles and associated discussion thus it is critical that you prepare your presentation with great care. The article presentation component of the course will consist of an approximately 30 minute PowerPoint presentation of a research paper in class.

There should be enough detail that your audience can understand:
(1) the motivation for the investigation described in the article (i.e., why did they do it?)

(2) the nature of the experiments discussed/reported and their relation to the motivation for the research presented in the article (i.e., why did they do it the way they did it?)
(3) the predictions (if available)
(4) the results including relevant information about the statistics provided (if available please SHOW us the data in the presentation; what did they find?)
(5) how the authors interpreted their results and the general conclusions that they drew

Furthermore, students will be expected to go beyond the paper in some meaningful respect in order to aid students in understanding their article (e.g., showing data from a related study, showing a video to help illustrate a concept or tool etc.). The student presenter will be considered the "expert" on that article and as such should be able to answer questions from other students and the instructor during their presentation. If you are unclear on any aspect of the article you have been assigned, then you need to discuss it with the TA or instructor BEFORE class. Your presentation slides are due 1 week before your presentation for review by the TA or instructor. A copy of your slides will be provided to other students.

Written Assignment (12.5%)

Research in memory is motivated by both applied and theoretical goals. One applied area of memory research that has particularly important implications for students is research investigating the best way to study in order to maximize long term retention. This is an area of research that takes the basic goal of understanding memory and applies it to a particular context (i.e., studying). In your research paper you will summarize recent research (specific articles below) on this issue and propose a novel experiment, using your own ideas, that meangingfully extends this research. The papers you will draw from are included below (i.e., under the Target Articles heading).

These papers will consist of two components:
a) Summary. Summarize the research in the 5 target articles and what each means with respect to how students should study in order to maximize learning and long term retention. This summary should demonstrate clearly that you understand the material presented.

b) Proposed Experiment. Using your summary as a starting point, generate a novel experiment that extends this research in a meaningful way. Describe your experiment with sufficient methodological and theoretical detail for a good understanding of the experiment you propose, how it relates to the research you have summarized, and what new knowledge your experiment would create. You are encouraged to discsuss your idea with the instructor or TA.

Requirements
The paper must be at least 8 pages and no longer than 9 pages
The description of the proposed experiment should be at least 2 pages
You must use 12 point Times New Roman font, double spaced, 2.5 cm margins
Use APA. You must cite the 5 articles below correctly and any other source you draw from
Please submit to the electronic drop box on LEARN on or before midnight February 10th 2014.
You are responsible for keeping a copy of the final version of your paper.

Target Articles for Written Assignment (all must be cited and summarized in your paper)
(1) Rohrer, D. & Pashler, H. (2010). Recent research on human learning challenges conventional instructional strategies. Educational Researcher , 39, 406-412.
(2) Roediger, H. L., & Karpicke, J. D. (2006). Test-enhanced learning: Taking memory tests improves long-term retention. Psychological Science, 17, 249-255.
(3) Seabrook, R., Brown, G. D. A., & Solity, J. E. (2005). Distributed and massed practice: From laboratory to classroom. Applied Cognitive Psychology, 19, 107-122.
(4) Rohrer, D., & Taylor, K. (2007). The shuffling of mathematics practice problems boosts learning. Instructional Science, 35, 481-498.
(5) Rohrer, D., Taylor, K., Pashler, H., Wixted, J., & Cepeda, N. J. (2005). The effect of overlearning on long-term retention. Applied Cognitive Psychology, 19, 361-374.

Poster Presentation (12.5%)

The poster presentation component of the course will consist of the presentation of a research paper in the form of a poster. Poster presentations constitute an important avenue for the communication of research. You may choose the paper you wish to present with the requirment that your paper address an issue in memory research within one of the following three domains (1) neuroscience of memory (2) applied memory research or (3) exceptional memory. Please email me the paper you want to present before March 3rd so that I can okay it. You will be marked both on content and your presentation. If you are not presenting, then you are expected to attend the poster session and to visit your classmates' posters. All posters are due Mar. 17th. Students will present their posters in one of three poster sessions on the last three days of the course (Mar. 19th, Mar. 24th and Mar. 26th). Your presentation date will be assigned to you. Further information about how to prepare a poster will be provided in class.

Participation (12.5%)

This class is based on an open exchange of ideas. It is absolutely essential that you come prepared to discuss the readings. Your participation mark will be determined by the quantity and quality of your contributions to the class. This will include, but is not limited to, asking questions, answering questions, participating in discussion, attending class, attending end of term poster sessions, and paying attention to your classmate's presentations.

Research Experience (4% bonus)

Further information available on LEARN and below on this syllabus.

Course Outline

Week - Date	Topic	Readings Due
Week 1 - 06-Jan	Organizational Meeting	None
Week 1 - 08-Jan	The Fallible Nature of Memory	Loftus, E. F., & Pickrell, J. E. (1995). The formation of false memories. Psychiatric Annals, 25, 720-725. Presented by: Evan Wade, K. A., Garry, M., Read, J. D., & Lindsay, D. S. (2002). A picture is worth a thousand lies: Using false photographs to create false childhood memories. Psychonomic Bulletin & Review, 9, 597-603. Presented by: Evan
Week 2 - 13-Jan	The Fallible Nature of Memory	Ceci, S. J., Loftus, E. F., Leichtman, M. D., & Bruck, M. (1994). The possible role of source misattributions in the creation of false beliefs among preschoolers. International Journal of Clinical and Experimental Hypnosis, 42, 304-320. Presented by: Talarico, J.M. & Rubin, D.C. (2003). Confidence, not consistency, characterizes flashbulb memories. Psychological Science, 14, 455–461. Presented by:
Week 2 - 15-Jan	The Fallible Nature of Memory: The False Memory Debate	Loftus, E. (1995). Remembering dangerously: recovered memory. Skeptical Inquirer, 19. Presented by: Williams, L. M., (1994). Recall of childhood trauma: A prospective study of women's memories of child sexual abuse. Journal of Clinical and Consulting Psychology, 62, 1167-1176. Loftus, E. F., Garry, M., & Feldman, J. (1994). Forgetting sexual trauma: What does it mean when 38% forget? Journal of Clinical and Consulting Psychology, 62, 1177-1181. Williams, L. M., (1994). What does it mean to forget child sexual abuse? A reply to Loftus, Garry, and Feldman (1994). Journal of Clinical and Consulting Psychology, 62, 1182-1185. Presented by:

Week - Date	Topic	Readings Due
Week 3 - 20-Jan	Enhancing Retention	Roediger, H. L., & Karpicke, J. D. (2006). Test-enhanced learning: Taking memory tests improves long-term retention. Psychological Science, 17, 249-255. Presented by: Karpicke, J. D., Butler, A.C., & Roediger, H. L. (2009). Metacognitive strategies in student learning: Do students practice retrieval when they study on their own? Memory, 17, 471-479. Presented by:
Week 3 - 22-Jan	Enhancing Retention	Rohrer, D., Taylor, K., Pashler, H., Wixted, J., & Cepeda, N. J. (2005). The effect of overlearning on long-term retention. Applied Cognitive Psychology, 19, 361-374. Presented by: Morris, P. E., Fritz, C. O., Jackson, L., Nichol, E., & Roberts, E. (2005). Strategies for learning proper names: Expanding retrieval practice, meaning and imagery. Applied Cognitive Psychology, 19, 779-798. Presented by:
Week 4 - 27-Jan	Memory Systems: Selective Interference	Glanzer, M., & Cunitz, A. R. (1966). Two storage mechanisms in free recall. Journal of Verbal Learning and Verbal Behavior, 5, 351-360. Presented by: Quinn, J. G. (1996). Irrelevant pictures in visual working memory. The Quarterly Journal of Experimental Psychology: Section A, 49, 200-215. Presented by:
Week 4 - 29-Jan	Memory Systems: Individual Differences	Engle, R. W., Tuholski, S. W., Laughlin, J. E., & Conway, A. R. (1999). Working memory, short-term memory, and general fluid intelligence: A latent-variable approach. Journal of Experimental Psychology: General, 128, 309-331. Presented by: Evan
Week 5 - 03-Feb	Memory Systems: Cognitive Neuropsychology	Corkin, S. (1984). Lasting consequences of bilateral medial temporal lobectomy: Clinical course and experimental findings in HM. Seminars in Neurology, 4, 249-259. Presented by: Tulving, E., Schachter, D. L., McLachlan, D. R., & Moscovitch, M. (1988). Priming of semantic

Week - Date	Topic	Readings Due
		autobiographical knowledge: A case study of retrograde amnesia. Brain & Cognition, 8, 3-20. Presented by:
Week 5 - 05-Feb	Memory Systems: Cognitive Neuropsychology	Eldridge, L. L., Masterman, D., & Knowlton, B. J. (2002). Intact implicit habit learning in Alzheimer's disease. Behavioral Neuroscience, 116, 722-726. Presented by: Knowlton, B. J., Squire, L. R., Paulsen, J. S., Swerdlow, N. R., & Swenson, M. (1996). Dissociations within nondeclarative memory in Huntington's disease. Neuropsychology, 10, 538-548. Presented by:
Week 6 - 10-Feb	Consolidation and the Neuroscience of Memory	Squire, L. R., & Zola-Morgan, S. (1991). The medial temporal lobe memory system. Science, 253, 1380-1386. Presented by: Zola-Morgan, S. M., & Squire, L. R. (1990). The primate hippocampal formation: Evidence for a time-limited role in memory storage. Science, 250, 288-290. Presented by:
Week 6 - 12-Feb	Consolidation and the Neuroscience of Memory	Rudoy, J. D., Voss, J. L., Westerberg, C. E., & Paller, K. A. (2009). Strengthening individual memories by reactivating them during sleep. Science, 326, 1079-1079. Presented by: Schiller, D., Monfils, M. H., Raio, C. M., Johnson, D. C., LeDoux, J. E., & Phelps, E. A. (2009). Preventing the return of fear in humans using reconsolidation update mechanisms. Nature, 463, 49-53. Presented by:
Week 7 - 17-Feb	Reading Week	No Readings
Week 7 - 19-Feb	Reading Week	No Readings
Week 8 - 24-Feb	Memory Across the Lifespan	Conway, M. A., Wang, Q., Hanyu, K., & Haque, S. (2005). A cross-cultural investigation of autobiographical memory on the universality and cultural variation of the reminiscence bump. Journal of Cross-Cultural Psychology, 36, 739-749. Presented by:

Week - Date	Topic	Readings Due
Week 8 - 26-Feb	Memory Across the Lifespan	Usher, J., & Neisser, U. (1993). Childhood amnesia and the beginings of memory for four early life events. Journal of Experimental Psychology: General, 122, 155-165. Presented by: Newcombe, N., & Fox, N. A. (1994). Infantile amnesia: Through a glass darkly. Child Development, 65, 31-40. Presented by:
Week 9 - 03-Mar	Encoding and Retrieval	Morris, C. D., Bransford, J. D., & Franks, J. J. (1977). Levels of processing versus transfer appropriate processing. Journal of Verbal Learning and Verbal Behavior, 16, 519-533. Presented by: Tanya
Week 9 - 05-Mar	Encoding and Retrieval	Godden, D. R., & Baddeley, A. D. (1975). Context-dependent memory in two natural environments: On land and underwater. British Journal of psychology, 66, 325-331. Presented by: Engelkamp, J., Zimmer, H. D., Mohr, G., & Sellen, O. (1994). Memory of self-performed tasks: Self-performing during recognition. Memory & Cognition, 22, 34-39. Presented by:
Week 10- 10-Mar	Extending Memory	Sparrow, B., Liu, J., & Wegner, D. M. (2011). Google effects on memory: Cognitive consequences of having information at our fingertips. Science, 333, 776-778. Presented by: Wegner, D. M., Erber, R., & Raymond, P. (1991). Transactive memory in close relationships. Journal of Personality and Social Psychology, 61, 923-929. Presented by:
Week 10 - 12-Mar	Extending Memory	Basden, B. H., Basden, D. R., & Henry, S. (2000). Costs and benefits of collaborative remembering. Applied Cognitive Psychology, 14, 497-507. Presented by: Wright, D. B., & Klumpp, A. (2004). Collaborative inhibition is due to the product, not the process, of recalling in groups. Psychonomic Bulletin & Review, 11, 1080-1083. Presented by:

Week - Date	Topic	Readings Due
Week 11 - 17-Mar	Quiz 8	Summary Lecture [Evan]
Week 11 - 19-Mar	Poster Presentations	No Reading
Week 12 - 24-Mar	Poster Presentations	No Reading
Week 12 - 26-Mar	Poster Presentations	No Reading

Late Work

Students requesting accommodation for course requirements (assignments, midterm tests, final exams, etc.) due to illness should do the following:

• seek medical treatment as soon as possible and obtain a completed uWaterloo Verification of Illness Form: http://uwaterloo.ca/health-services/student-medical-clinic/services/verification-illness

• submit that form to the instructor within 48 hours.

• (preferably) inform the instructor by the due date for the course requirement that you will be unable to meet the deadline and that documentation will be forthcoming.

In the case of a missed final exam, the instructor and student will negotiate an extension for the final exam which will typically be written as soon as possible, but no later than the next offering of the course.

In the case of a missed assignment deadline or midterm test, the instructor will either:

1. waive the course component and re-weight remaining term work as he/she deems fit according to circumstances and the goals of the course, or
2. provide an extension.

In the case of bereavement, the instructor will provide similar accommodations to those for illness. Appropriate documentation to support the request will be required.

Students who are experiencing extenuating circumstances should also inform their academic advisors regarding their personal difficulties.

Electronic Device Policy

Please limit the use of electronic devices in class to course related activities (e.g., taking notes).

Attendance Policy

You are expected to attend all classes. Your attendance will contribute to your participation grade.

Institutional-required statements for undergraduate course outlines approved by Senate Undergraduate Council, April 14, 2009

The Official Version of the Course Outline

If there is a discrepancy between the hard copy outline *(i.e., if students were provided with a hard copy at the first class)* and the outline posted on LEARN, the outline on LEARN will be deemed the official version. Outlines on LEARN may change as instructors develop a course, but they become final as of the first class meeting for the term.

Accommodations for Students with Disabilities

The AccessAbility Services Office, located in Needles Hall Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AccessAbility Services Office at the beginning of each academic term.
Disability Services

Concerns About the Course or Instructor (Informal Stage)

We in the Psychology Department take great pride in the high quality of our program and our instructors. Though infrequent, we know that students occasionally find themselves in situations of conflict with their instructors over course policies or grade assessments. If such a conflict arises, the Associate Chair for Undergraduate Studies (*Myra Fernandes from July 1, 2012 through June 30, 2014*) is available for consultation and to mediate a resolution between the student and instructor. Contact information is as follows:

Myra Fernandes
Email: mafernan@uwaterloo.ca
Ph 519-888-4567 ext 32142

A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. See Policy 70 and 71 below for further details.

Academic Integrity, Academic Offenses, Grievance, and Appeals

To protect course integrity, as well as to provide appropriate guidance to students, course outlines in the Faculty of Arts must include the following note on avoidance of academic offenses:

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Further details: **Office of Academic Integrity**]

Discipline: A student is expected to know what constitutes academic integrity [**Office of Academic Integrity**] , to avoid committing academic offenses, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about 'rules' for group work/collaboration should seek guidance from the course instructor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 - Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline **Policy 71**.

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4 **Policy 70**.

Appeals: A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals **Policy 72**.

Faculty of Arts - Student Support - Ethical Behaviour
Art - Ethical Behaviour Website

Academic Integrity Office: **Office of Academic Integrity**

Research Experience Marks

Research Experiences Group (REG) Guidelines for Psychology Undergraduate Courses

Experiential learning is considered an integral part of the undergraduate program in Psychology. Research participation is one example of this, article review is another. A number of undergraduate courses have been expanded to include opportunities for Psychology students to earn grades while gaining research experience.

Since experiential learning is highly valued in the Department of Psychology, students may earn a "bonus" grade of up to 4% in this course through research experience. Course work will make up 100% of the final mark and a "bonus" of up to 4% may be earned and will be added to the final grade if/as needed to bring your final grade up to 100%.

The two options for earning research experience grades (participation in research and article review) are described below. Students may complete any combination of these options to earn research experience grades.

Option 1: Participation in Psychology Research

Research participation is coordinated by the Research Experiences Group (REG). Psychology students may volunteer as research participants in lab and/or online (web-based) studies conducted by students and faculty in the Department of Psychology. Participation enables students to learn first-hand about psychology research and related concepts. Many students report that participation in research is both an educational and interesting experience. Please be assured that all Psychology studies have undergone prior ethics review and clearance through the Office of Research Ethics.
Educational focus of participation in research

To maximize the educational benefits of participating in research, students will receive feedback information following their participation in each study detailing the following elements:
- Purpose or objectives of the study
- Dependent and independent variables
- Expected results
- References for at least two related research articles
- Provisions to ensure confidentiality of data
- Contact information of the researcher should the student have further questions about the study
- Contact information for the Director of the Office of Research Ethics should the student wish to learn more about the general ethical issues surrounding research with human participants, or specific questions or concerns about the study in which s/he participated.

Participation in LAB studies is worth 0.5 participation credits (grade percentage points) for each 30-minutes of participation. Participation in ONLINE studies is worth .25 credits for each 15-minutes of participation. Researchers will record student's participation and will advise the course instructor of the total credits earned by each student at the end of the term.

How to participate?

Study scheduling, participation and grade assignment is managed using the SONA online system. All students enrolled in this course have been set up with a SONA account. You must get started early in the term.

For instructions on how to log in to your SONA account and for a list of important dates and deadlines please, as soon as possible go to:
SONA Information

*** Please do not ask the Course Instructor or REG Coordinator for information unless you have first thoroughly read the information provided on this website.***

More information about the REG program is available at:
Research Experiences Group

Option 2: Article Review as an alternative to participation in research

Students are not required to participate in research, and not all students want to do so. As an alternative, students may opt to gain research experience by writing short reviews (1½ to 2 pages) of research articles relevant to the course (i.e., journal articles pertaining to research in memory).

You must contact your TA to get approval for the article you have chosen before writing the review. Each review article counts as one percentage point. To receive credit, you must follow specific guidelines. The article review must:

- Be submitted before the last day of lectures (please see: Important Dates). Late submissions will NOT be accepted under ANY circumstances.
- Be typed
- Fully identify the title, author(s), source and date of the article. A copy of the article must be attached.
- Identify the psychological concepts in the article and indicate the pages in the textbook that are applicable. Critically evaluate the application or treatment of those concepts in the article. If inappropriate or incorrect, identify the error and its implications for the validity of the article. You may find, for example, misleading headings, faulty research procedures, alternative explanations that are ignored, failures to distinguish factual findings from opinions, faulty statements of cause-effect relations, errors in reasoning, etc. Provide examples whenever possible.
- Clearly evaluate the application or treatment of those concepts in the article.
- Keep a copy of your review in the unlikely event we misplace the original.