PSY372H1 F (Fall): Human Memory

Sidney Smith Hall 2125, Wednesdays 2:00 PM – 5:00 PM

Fall 2021

Instructor: Aedan Li, MA, PhD Candidate in Psychology (Cognitive Neuroscience)

Office Hours: Make an appointment (https://calendly.com/aedanli/office-hours)

Teaching Assistant: Juliana Adema

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DO YOU HAVE A QUESTION?

Questions on course content should be raised during lecture time, on the discussion board on Quercus, or during office hours. Please use email **ONLY** for emergencies (e.g., illness). Neither the instructor nor the TA will be able to respond to emails regarding course content or logistics.

Course Team:

Aedan is a PhD Candidate in Psychology (Cognitive Neuroscience) based in the Memory & Perception Lab at the University of Toronto. He received his B.Sc. in Psychology at the University of Toronto Scarborough and his M.A. in Psychology at the University of Toronto. He uses behavioural and neuroimaging methods to study multimodal integration, such as how we perceive and remember experiences from our different senses.

Juliana is a Ph.D. student in Psychology conducting research at Mack Lab at the University of Toronto. She received her B.A. in Psychology at University of Ottawa, her M.A. in Philosophy at University of Ottawa, and her M.A. in Psychology at University of Toronto. Her current research is focused on attentional guidance, which she studies using computational modelling and experimental methods.

1. Course Description and Objectives

PSY372H, Human Memory, aims to provide a comprehensive research-oriented overview of the history, methodology, theories, and contentious issues in the study of human memory. The course draws on a core textbook, scientific articles, lectures, interactive discussions, and student writing to discuss and critique current research related to the investigation of human memory.

Learning Objectives: In taking this course, you should:

1) Gain new knowledge about the scientific study of human memory, from both historical and current perspectives.

2) Become an informed consumer of research in psychological science by learning to translate between data and theory while considering the limitations to any approach.

3) Practice your critical thinking and writing skills.

2. Course Requirements

Midterm (30% of grade) and Final Exam (30% of grade)

The midterm and final exam are currently scheduled to be completed in-person (location TBA). You will have approximately 2.5 hours to complete the midterm and final exam.

Although the emphasis will be on material covered during lectures, the exams may contain any material from the class lectures, textbook, or the assigned articles. As the lectures will always cover some information not contained in the texts (and vice versa), it is important that you both attend the lectures and do the readings. The tests are non-cumulative. However, some questions will require integration of material covered across the course, so don't forget what you've learned!

Paper discussions 1 and 2 (15% of grade, 7.5% each):

Before the first discussion activity, we will assign each student to a paper discussion group that will meet in-person during class time. Twice throughout the term you will read an article and discuss it in your small group. The outcome of this discussion will be a short, written assignment using the QALMRI method. It will be submitted individually but it should be informed by your group discussion. More information will be provided during lecture.

1. Step 1 – Draft responses (worth 1.5 pt. of overall 7.5 pt. mark): You will individually read the paper and write a draft of your responses to the QALMRI questions. These will be marked for completion, within reason. You do not need to worry about writing full sentences at this point; the goal is for you to think critically about the assigned paper on your own and make notes to yourself so you can contribute to the group discussion. If your responses indicate you have read the paper and thought critically about it, you will receive full points for this step.

2. Step 2 – Discuss with your group: Bring your draft responses (as well as any questions you might have) to your group and discuss. All group members need to participate in the discussion. Be sure that you use this time to clear up any confusion you have about the paper.

3. Step 3 – Refine your responses (worth 6 pts. of overall 7.5 pt. mark): Submit an updated version of the assignment on Quercus that has your refined responses, refined to consider what you learned during your group discussion. The content of your assignments across group members may be similar, but you must write your own individual responses. In addition, your responses do not have to reflect the thoughts of your group members (e.g., if your group did not reach consensus or you have a different opinion). This assignment will be marked for both quality of content and writing style; although short, this is a formal writing assignment and so you should use complete sentences. A brief feedback survey will be required when assignments are submitted and those who did not participate in the group discussion will lose points.

Thought paper (25% of grade):

The thought paper is focused on critically evaluating empirical research. The thought paper will be based on the topic of reconsolidation (see "Critical Topics" articles for an introduction to the topic). You should focus on a recently published empirical article (i.e., not reviews or books) that was published in the **last 4 years**. For quality control, the primary article must be from a journal that is indexed on PubMed. You may select a study that was conducted in either humans or non-human animals. You should choose one article as the focus of your paper, but you should cite a **minimum of 4** additional articles to back up any claims you make. There are no restrictions on these articles. For full marks, references will go beyond articles assigned for class.

The thought papers should include:

1. A **summary** of the primary article and how it relates to assigned topic. This should include a brief and concise description of the article. When describing a study, you should focus its rationale, aims, methods, results, and conclusions. No more than one full page is recommended.

2. A **commentary** or **critique** of the article that expresses *your thoughts* on the topic, not just a regurgitation of a given study's findings. This section is more open-ended and may involve: (i) relating the findings to other research articles, (ii) linking it to a "real-life" situation and/or discussing of the scientific implications for the real world, (iii) describing what you found particularly interesting, (iv) stating whether you were convinced by the results, or (v) describing any limitations of the studies. It does not have to be a negative commentary: you may discuss strengths and/or weaknesses of the study. Finally, we expect you to **propose a direction for future research**, as this is an excellent way to situate the current study in the broader literature and demonstrate a deep understanding of the issues at stake.

The evaluation of this section of the thought paper will be based on your understanding of the issues covered in the article, your ability to articulate your thoughts on the article, your ability to synthesize the findings with other information, and the depth in which you evaluate the article. Prior to the thought paper deadline, there will be a lecture which includes a discussion of effective scientific writing.

Formatting: Your paper should be approximately 2000 words (~8 pages). Please use 12-point font, double spacing, and 1inch margins. Include a minimum of 5 references. All references should be listed using APA style (7th edition). Please name your file using the following convention: **PSY372_2021F_<lastname>_<firstname>_paper.pdf**, where <lastname> should be replaced with your last name and <firstname> should be replaced with your first name.

Submission of thought papers and paper discussions: Normally, students will be required to submit their course essays to the University's plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the tool's reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of this tool are described on the Centre for Teaching Support & Innovation web site (https://uoft.me/pdt-faq).

3. Provisional Course Overview

Date	Topic	Reading	Assignment
September 15 Week 1	**Lecture 1:** Course overview; Overview & History of Memory Research; Neuroscience of Memory	Chapters 1-2	
September 22 Week 2	**Lecture 2:** Methods in Memory Research; Sensory and Short-Term Memory; Working Memory	Chapters 3-5; Conway et al., 2001	
September 29 Week 3	**Lecture 3:** Episodic Memory: Past & Future; QALMRI Method	Chapter 7; Karpicke & Roediger, 2008; QALMRI instructions	*Draft* paper discussion 1 (due October 6 at 2 PM)
October 6 Week 4	**Paper discussion 1 (QALMRI)**	Karpicke & Roediger, 2008	*Final* paper discussion 1 (due October 13, at 2 PM)
October 13 Week 5	**Lecture 4:** Nondeclarative Memory; Semantic Memory	Chapters 6 and 9	
October 20 Week 6	**Midterm Exam**		**Midterm Exam: Location TBA**
October 27 Week 7	**Lecture 5:** Failures of Memory; Autobiographical Memory	Chapters 8, 12, 13	
November 3 Week 8	**Lecture 6:** Amnesia and Memory Disorders	Chapter 18; Barense et al., 2012	
November 10 Week 9	**Reading Week**		*Draft* paper discussion 2 (due November 17 at 2 PM)
November 17 Week 10	**Paper discussion 2 (QALMRI)**	Hassabis et al., 2007	*Final* paper discussion 2 (due November 24 at 2 PM)
November 24 Week 11	**Lecture 7:** Critical Topics in Modern Memory Research	See "Required Readings"	
December 1 Week 12	**Lecture 8:** Guest lecture: Memory Across the Lifespan: Aging and development; Tips for effective scientific writing	Chapters 16-17; Biss et al., 2013; Gopen & Swan, 1990 (optional)	**Thought paper (due December 8 at 2 PM)**
December 8 Week 13	**Lecture 9:** Memory and the Law; Metamemory	Chapters 14-15	
Final assessment period	**Final Exam**		**Final Exam: Location TBA**

4. Required Readings

Textbook:

Radvansky, G.A. (2017). Human Memory, 3rd Edition. Taylor & Francis: Routledge.

Available as a FREE eBook; see Library Course Reserves link:

https://ebookcentral-proquest-com.myaccess.library.utoronto.ca/lib/utoronto/detail.action?docID=4825146

Assigned Articles (on course website under "Files"):

Lecture 2: Short-Term and Working Memory:

Conway, A. R., Cowan, N. & Bunting, M.F. (2001). The cocktail party phenomenon revisited: The importance of working memory capacity. *Psychonomic Bulletin & Review, 8*(2): 331-335.

Paper discussion 1 (Due October 6, 2 PM):

Karpicke, J. D., & Roediger, H. L. (2008). The critical importance of retrieval for learning. *Science*, *319*(5865), 966-968.

Paper discussion 2 (Due November 17, 2 PM):

Hassabis, D., Kumaran, D., Vann, S. D., & Maguire, E. A. (2007). Patients with hippocampal amnesia cannot imagine new experiences. *Proceedings of the National Academy of Sciences, 104*(5), 1726-1731

Lecture 7: Critical Topics in Modern Memory Research

Reconsolidation:

Brunet, A., Orr, S. P., Tremblay, J., Robertson, K., Nader, K., & Pitman, R. K. (2008). Effect of post-retrieval propranolol on psychophysiologic responding during subsequent script-driven traumatic imagery in post-traumatic stress disorder. *J Psychiatr Res, 42*(6), 503-506.

Nader, K., & Hardt, O. (2009). A single standard for memory: the case for reconsolidation. *Nat Rev Neurosci, 10*(3), 224-234.

Insights from single-cell recording:

Ekstrom, A. D., Kahana, M. J., Caplan, J. B., Fields, T. A., Isham, E. A., Newman, E. L., et al. (2003). Cellular networks underlying human spatial navigation. *Nature, 425*(6954), 184-188.

Quiroga, R. Q., Reddy, L., Kreiman, G., Koch, C., & Fried, I. (2005). Invariant visual representation by single neurons in the human brain. *Nature, 435*(7045), 1102-1107.

Episodic-like memory in animals:

Clayton, N. S., & Dickinson, A. (1998). Episodic-like memory during cache recovery by scrub jays. *Nature*, 395(6699), 272-274.

Eacott, M. J., & Norman, G. (2004). Integrated memory for object, place, and context in rats: a possible model of episodic-like memory? *J Neurosci, 24*(8), 1948-1953.

Lecture 8:

Memory across the lifespan:

Biss, R.K., Ngo, K.W.J., Hasher, L., Campbell, K.L., & Rowe, G. (2013). Distraction can reduce age-related forgetting. *Psychological Science, 24*(4):448-455.

Effective scientific writing (optional, but a helpful resource):

Gopen, G.D., & Swan, J.A. (1990). The science of scientific writing. *American Scientist, 78*(6), 550-558.

Please note that this outline is subject to change depending on the needs of the class (we may need additional time to cover a topic). Any changes to the syllabus will be announced in class one week before.

5. Course Policies

COURSE WEBSITE, LECTURES AND MEETINGS, COMMUNICATION POLICIES:

Quercus Information, including expectations for students to check: This course uses the University's learning management system, Quercus, to post information about the course. This includes posting readings and other materials required to complete class activities and course assignments, as well as sharing important announcements and updates. The site is dynamic and new information and resources will be posted regularly as we move through the term, so please make it a habit to log in to the site on a regular, even daily, basis. To access the course website, go to the U of T Quercus log-in page at https://q.utoronto.ca. Once you have logged in to Quercus using your UTORid and password, you should see the link or 'card' for PSY372 Human Memory. You may need to scroll through other cards to find this. Click on the PSY372 Human Memory link to open our course area, view the latest announcements and access your course resources. There are Quercus help guides for students that you can access by clicking on the '?' icon in the left side column.

SPECIAL NOTE ABOUT GRADES POSTED ONLINE: Please also note that any grades posted are for your information only, so you can view and track your progress through the course. No grades are considered official, including any posted in Quercus at any point in the term, until they have been formally approved and posted on ROSI at the end of the course. Please contact me as soon as possible if you think there is an error in any grade posted on Quercus.

Course materials: Course materials are provided for the exclusive use of enrolled students. Do not share them with others. I do not want to discover that a student has put any of my materials into the public domain, has sold my materials, or has given my materials to a person or company that is using them to earn money. The University will support me in asserting and pursuing my rights, and my copyrights, in such matters.

Notice of video recording and sharing: This course, including your participation, may be recorded on video and may be available to students in the course for viewing remotely. Course videos and materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation and are protected by copyright. In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose without the explicit permission of the instructor. For questions about recording and use of videos in which you appear, please contact your instructor.

Communication: Emails to the instructor and/or TA are ONLY for genuine emergencies (e.g., illness). Please ask any content-related or logistical questions in the following ways: (1) During lecture; or (2) by scheduling an individual appointment to meet with the instructor (book here: https://calendly.com/aedanli/office-hours). Neither the instructor nor the teaching assistant will be able to respond to emails regarding course content.

Harassment and Discrimination: The University of Toronto is a diverse community and is committed to providing an environment free of any form of harassment, misconduct, or discrimination. In this course, I seek to foster a civil, respectful, and open-minded climate in which we can all work together to develop a better understanding of key questions and debates through meaningful dialogue. As such, I expect all involved with this course to refrain from behaviours that intimidate, humiliate, or demean persons or groups or that undermine their security or self-esteem based on traits related to race, religion, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, sexual orientation, gender identity, gender expression, age, marital status, family status, disability, receipt of public assistance or record of offences.

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Prerequisites: It is your responsibility to ensure you meet all prerequisites listed in the Psychology section of the A&S Calendar. Unfortunately, waivers cannot be granted and if you lack any prerequisites, you will be removed.

MISSED OR LATE ASSESSMENTS:

Missed exams: All exams will be conducted in-person. There will be no make-up tests. If you are unable to attend class on the test day and you have a legitimate excuse, the student's marking scheme will be reweighted entirely by the instructor's discretion. This will be based on the student's performance and the class averages for the remaining elements. Legitimate excuses include a documented family emergency, or a documented severe illness making it impossible to take the test. (See below for the mechanisms for reporting this.) Contact me as soon as you are aware of the conflict and (ideally) before the day of the test to determine the best course of action. I must receive any documentation within one calendar week of the test. An unexcused missed test will receive a mark of zero.

Specific medical circumstances: If you become ill and it affects your ability to do your academic work, consult me right away. In addition to advising me of your situation, missed work due to illness should be declared through the ACRON online absence declaration. For more information, please see http://www.illnessverification.utoronto.ca. If you suffer an acute injury (e.g., a concussion or broken hand), you should register with Accessibility Services as soon as possible.

Accommodation for personal reasons: There may be times when you are unable to complete course work on time due to non-medical reasons. If you have concerns, speak to me. It is also a very good idea to speak with an advisor in your College Registrar's office; they can support you in requesting extensions or accommodations, and importantly, connect you with other resources on campus for help with your situation. If you require accommodation for personal reasons, this must also be declared via the ACORN online absence declaration form. For more information, please see http://www.illnessverification.utoronto.ca.

Late thought paper or paper discussion: Assignments must be submitted by their specified due date. Except in the case of an emergency (see above), late assignments will be marked down 10% per day. Appropriate documentation is required in all emergency situations. Unless you have a documented emergency, no extensions will be given.

GRADING

FAS Grading guidelines (http://www.writing.utoronto.ca/advice/general/grading-policy):

    A+ Outstanding performance, exceeding even the A described below.
    A Exceptional performance: strong evidence of original thinking; good organization, capacity to analyze and synthesize; superior grasp of subject matter with sound critical evaluations; evidence of extensive knowledge base.
    B Good performance: evidence of grasp of subject matter; some evidence of critical capacity and analytic ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.
    C Intellectually adequate performance: student who is profiting from her or his university experience; understanding of the subject matter and ability to develop solutions to simple problems in the material.
    D Minimally acceptable performance: some evidence of familiarity with subject matter and some evidence that critical and analytic skills have been developed.
    F Inadequate performance: little evidence of even superficial understanding of the subject matter; weakness in critical and analytic skills; with limited or irrelevant use of literature.

Please note that this outline is subject to change depending on the needs of the class (we may need additional time to cover a topic). Any changes to the syllabus will be announced in class one week before.

Contesting a grade: All requests for a re-grade must be submitted **in writing** within 1 week of the first day the test or assignment is available for student viewing. Only requests that include adequate written justification of an error in the original grading will be considered. A legitimate request will result in the entire test or assignment being re-graded. Your overall grade may be raised, lowered, or it may stay the same. If there has been an error in our arithmetic, please let us know and we will immediately recalculate your grade (no written request necessary). Negotiations for extra marks once final grades are in will not be considered. *Arbitrary requests for grade increases will not be entertained (e.g., "I need to get into grad school, so could you please change my grade from a B+ to an A-?"). If I did this for one person, I would need to do it for everyone in the class. Please do not ask for special treatment –* **it is unfair to your classmates***.*

Academic dishonesty and plagiarism: Academic integrity will be taken seriously in this course. In accordance with the University of Toronto's Code of Behaviour on Academic Matters, the following are offences:

- To use someone else's ideas or words in one's own work without acknowledging in a citation that those ideas/words are not one's own.
- To include false, misleading, or concocted citations in one's work.
- To obtain unauthorized assistance on any assignment or to provide unauthorized assistance to another student.
- To use or possess an unauthorized aid in any test or exam.
- To submit work for credit in more than one course without permission of the instructor.
- To falsify or alter any documentation required by the University (e.g., doctors' notes).

Speak to me for advice on anything that you find unclear. To learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at http://writing.utoronto.ca/. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see http://www.artsci.utoronto.ca/osai and https://www.academicintegrity.utoronto.ca/.

6. ADDITIONAL RESOURCES

Writing: As a student here at the University of Toronto, you are expected to write well. The university provides its students with several resources to help them improve their writing, including one-on-one appointments with writing instructors, free workshops, and English Language Support. For more information on campus writing centres and activities, please visit http://writing.utoronto.ca/.

Mental health and well-being: As a student, you may experience challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation, financial concerns, family worries and so forth. These factors may affect your academic performance and/or reduce your ability to participate fully in daily activities. Everyone feels stressed now and then – it is a normal part of university life. Some days are better than others, and there is no wrong time to reach out. There are resources for every situation and every level of stress.

There are many helpful resources available through your College Registrar or through Student Life (http://studentlife.utoronto.ca and http://www.studentlife.utoronto.ca/feeling-distressed). An important part of the University experience is learning how and when to ask for help. Please take the time to inform yourself of available resources.

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