From lab to life: how cognition research affects everything you do
PSYC UN3211 (4 points)
Syllabus for Fall 2023

Course Information

Day: Thursdays
Time: 2:10-4:00pm
Location:

Instructor Information

Name: Manasi Jayakumar
Pronouns: she/her/hers
Email: manasi.jayakumar@columbia.edu
Student Drop-in Hours: Thurs, 4-6 pm (or Office Hours)

Course Description

How do we study smarter and not harder? How can we learn better from mistakes? How does stress affect our attention, learning, and memory? Is scrolling through TikTok on our phones while watching a video recording of a lecture a good thing? What does stress do to our cognition and the brain? Do brain training apps really work? These are the kinds of questions we aim to answer in the class **UN3211- From lab to life: how cognition research affects everything you do.**

The goal of the class is twofold: to understand 1) how laboratory research in cognitive psychology and neuroscience can be applied to everyday life, and 2) how observations and research from an applied setting can contribute to our understanding of cognitive processes.

Given the applied and interdisciplinary nature of this content, this seminar course will be heavily discussion-based. We will discuss primary literature on various topics of cognition and bring it into the real world with applied research. Topics will include the application of research on perception, attention, memory, learning, and metacognition to real-world settings such as education, driving, health and well-being, law, media, and society.

Prerequisites

This is a seminar course in the Psychology Department directed toward upper-level undergraduate students. Prerequisites include Science of Psychology (PSYC UN1001) and **one of** Cognitive Neuroscience (PSYC UN2430), Cognition: Basic Processes (PSYC UN2210), Cognition: Memory & Stress (UN2220), or equivalent introductory courses in psychology and cognitive neuroscience, and the instructor's permission. Students with other backgrounds, who think they have the appropriate preparation and motivation are asked to reach out to the instructor for permission to register.

Role in the Psychology curriculum

The course is designed to give advanced undergraduates in the Psychology Department a deeper understanding of current applied research in cognitive psychology and neuroscience. It fulfills the following degree requirements.

- For the Psychology major in Columbia College and in the School of General Studies, this class will meet the **Group I** requirement and/or the **seminar** requirement.
- For the Psychology concentration in Columbia College and in the School of General Studies, this class will fulfill the **Group 1** requirement.
- For the Psychology Post-Baccalaureate Certificate program, this class will meet the **Group I** requirement.
- For the Neuroscience and Behavior joint major, this class will fulfill the **P5** requirement.

Course Objectives

Through this course, you will be able to:

- interpret and summarize applied research in cognitive psychology and neuroscience by reading assigned empirical and review papers;
- evaluate and synthesize information from multiple sources and communicate this to your peers;
- plan, conduct, and organize an in-depth literature review for a topic of interest in applied cognitive psychology and neuroscience.

Course Readings:

There is no textbook required for this course.

Every week, students will be assigned 2-3 readings relevant to the topic of the week. Readings will comprise empirical articles, literature reviews, or commentaries in the fields of cognitive psychology and/or cognitive neuroscience. The readings are listed in the Schedule below. All readings will be posted in PDF form on Canvas. Course readings are subject to change pending new research.

Grading Criteria

Course Component	Assessment	Grading %	Deadlines
Reading Completion	Reading Response	20%	Submit by 10 pm the day before the class for every class period (see pg 5 for further details) *Exception: You do not have to submit a reading response for Week 1 and before your assigned presentations*
Preparation and participation	Effective preparation, participation and engagement	20%	Every class period (see pg 6)
Student presentations	First (short) presentation	5%	During the assigned class period in Weeks 2 through 7 (see pg 7)
	Pre-meeting for 2nd presentation	5%	At least 1 week before the assigned second presentation (see pg 8)
	Second (long) Presentation	20%	During the assigned class period from Week 8 onwards (see pg 8)
Final Paper	Proposal	5%	Due Week 9 (Nov 2; see pg 9)
	Road Map	5%	Due Week 12 (Nov 20; see pg 9)
	Final paper	20%	Due the last day of reading period (Dec 14; see pg 10)

Course schedule

<table>
<tr><th>Week</th><th>Topic</th><th>Assessments</th></tr>
<tr><td>Sept 7
(Week 1)</td><td>Introduction
How to read papers</td><td>Pre-course survey (ungraded)
(no assigned reading or reading response due)</td></tr>
<tr><td>Sept 14
(Week 2)</td><td>Memory encoding and retrieval in education</td><td rowspan="7">In the first half of the semester, each student will:
Present on an empirical research paper during one class period (~5 min short presentation)
Submit reading response by 10pm the night before the class (excluding the class period of your short presentation)
Come prepared to class and actively participate in discussions
Complete a self-reflection on your participation by Oct 12 (ungraded)</td></tr>
<tr><td>Sept 21
(Week 3)</td><td>Metacognition and learning in education</td></tr>
<tr><td>Sept 28
(Week 4)</td><td>Mind-wandering in the classroom</td></tr>
<tr><td>Oct 5
(Week 5)</td><td>Media-multitasking and its effect on cognition</td></tr>
<tr><td>Oct 12
(Week 6)</td><td>Driving: interaction between various cognitive processes</td></tr>
<tr><td>Oct 19
(Week 7)</td><td>Stress and Cognition</td></tr>
<tr><td colspan="3">Midterm grades with feedback released</td></tr>
<tr><td>Oct 26
(Week 8)</td><td>Depression and Cognition</td><td rowspan="8">In the second half of the semester, each student will:
Share their slides and meet with me <u>at least one week</u> prior to their second presentation
Present on one empirical research paper (10-15 mins long presentation) and lead the discussion for that class period
Submit a proposal for the final paper by Nov 2
Submit a road map for the final paper by Nov 20.</td></tr>
<tr><td>Nov 2
(Week 9)</td><td>Cognition in the aging adult</td></tr>
<tr><td>Nov 9
(Week 10)</td><td>Memory and the law</td></tr>
<tr><td>Nov 16
(Week 11)</td><td>Enhancing cognition: brain training and brain stimulation</td></tr>
<tr><td>Nov 23
(Week 12)</td><td>No class (Thanksgiving break)
No reading response due</td></tr>
<tr><td>Nov 30
(Week 13)</td><td>Memory for Salient Events</td></tr>
<tr><td>Dec 7
(Week 14)</td><td>Music, Movies, & Cognition</td></tr>
<tr><td colspan="3">Each student will submit a final paper (8-10 pages) by the last day of the reading period (Dec 14)</td></tr>
</table>

Assignment Descriptions

Pre-course survey

In the first class session, students will be asked to fill out a pre-course survey that will contain questions about their educational background, courses they have taken in psychology and neuroscience, their familiarity with reading research articles, and their prior experience with research on cognition. While this survey is ungraded, it will help me ensure that I can structure content, discussions, and assessments to reflect the range of perspectives and experiences being brought into this classroom.

Reading Response

All students will read the assigned articles and submit a short reading response to CourseWorks by 10 pm the night before the class period. These are short (300-500 words) responses that should demonstrate a thorough reading and understanding of the week's papers. It should show you are thinking carefully about the topics at hand. Remember, some papers may be more difficult to understand than others, and you might have to read them again to understand them.

The goal of these reading responses is to help you keep current on course topics. The reading responses also help me to understand where students may have had difficulty with the readings and which topics students were most intrigued by and, therefore, help me guide discussions during class time.

Although they don't need to be perfectly crafted examples of scientific prose, they should be clearly written, with appropriate attention to grammar, spelling, etc. Once you write a draft, please read back through what you've written before submitting it to Canvas. The content and focus of your posts can vary quite widely:

- You might discuss something you found interesting in the readings;
- You might ask any theoretical or empirical questions that arose during your readings;
- You might identify a connection between a theory or method discussed in the current paper and one used in another reading or another week;
- You could offer a substantive critique of a paper's methods or its interpretations of the result.

You will submit only 10 reading responses:

5 between Weeks 2 through Week 7 before midterms, and
5 after the midterms (Week 8 through the last class period of the semester)

As there are 12 weeks of presentations (Week 2 onwards) and only 20% of your final grade is counted from reading responses, <u>you do not have to submit reading</u>

responses if you are presenting the next day. However, you should still read all the papers assigned for that class period, including the one in your presentation.

As the goal of these assignments is to keep you up to speed and to help guide my teaching and our class discussions, the reading responses will be graded on a complete/incomplete basis. Each reading response will receive points based on these criteria:

2% - Completed before 10 pm the night before class
1% - Completed after the deadline, but before class,
0% - Incomplete as of the beginning of class

Preparation and participation

As a seminar course, this class relies heavily on discussions. In the first class of the semester, we will discuss what participation can look like and create community guidelines for discussion. Once this is agreed upon by all participants, I will add this to our syllabus. We will remind ourselves of these guidelines throughout the semester. While we all aim to support and participate in constructive ways, there may be times when we (me included) make mistakes. In such situations, we will call back to our community guidelines.

To ensure that everyone is accountable for thoroughly engaging with the readings and presentations, your active participation during class will contribute to your final grade. There are different ways of participating and engaging constructively in classroom discussions. Generally speaking, effective participation and engagement could include:

- Asking insightful or clarifying questions;
- Connecting the reading to other readings you've done either for this course or for any other purposes;
- Drawing parallels and/or contrasts between findings from different readings;
- Offering thoughtful critiques of the research methodology and/or interpretation and providing suggestions for how it might be improved;
- Bringing in outside sources that contribute to the findings, or the way they are interpreted and applied;
- Actively listening to classmates and responding to their ideas.

Participation is an essential component of this course and of your grade, and you are expected to attend and actively engage in each class period. Unexcused absences will count against your participation grade (please see Excused Absence on pg 11 for more details).

In a lot of discussions, you will find that there are no clear right or wrong answers - just different ways of making arguments for/against a finding. However, they may be some of you who find it difficult to participate regularly in class discussions. If you are

concerned about your ability to contribute to class discussions or if your style of participation doesn't match the above, please see me during drop-in hours by Week 2 (i.e. by Sept 14, 2023).

Ungraded Self-Reflection

Since it can be worrying to not receive any feedback or grades on participation until the end of the semester, you will complete a quick self-reflection on your participation in Week 6 of the semester (Oct 12). I will read your reflection, and provide my feedback on whether you meet the participation criteria and if there's anything you can do to better engage in the class discussions. If you improve your participation in response to this feedback, I will weigh that more strongly toward your final participation grade.

Student presentations

Each one of you will be responsible for 2 presentations and 1 meeting with me as part of the process.

You will be assigned to present once in the first half of the semester (between Week 2 through Week 7) and a second presentation in the second half of the semester (between Week 8 through the end of the semester). The first, short presentation is designed to prepare you for the second, long presentation.

Prior to the 2nd presentation, you must meet with me (at least 1 week prior) to discuss your understanding of the paper and your approach. This pre-meeting is required and counts as part of your grade. A meeting before the first presentation is not required: however, you are encouraged to meet with me atleast 1 week prior. Further details are given below for each of the components.

First presentation

You will be assigned to present one of the empirical papers from the reading list on the syllabus for that week (in Weeks 2 through 7). Through the first presentation, you will be able to learn to interpret and summarize a research paper.

You should prepare to give a short 5-minute presentation on the article. This will briefly cover the research question, the primary methods used in the study, the primary findings, and how it relates to the research question. Detailed requirements for the presentation will be discussed during the first class meeting. These can also be found in Appendix A.

You are encouraged to meet with me atleast one week prior to your presentation (along with any slides you have). However, this meeting is optional (not mandatory) and there will be no grades assigned to this meeting.

Pre-meeting for the Second Presentation

You will share your slides and meet with me at least one week prior to your second presentation. I will provide feedback on the presentation and can help with any questions you may have. This will help you in your preparation for the second presentation so that you can lead the discussion, and answer any of your peers' questions in class.

For this meeting with me, you will create slides for the second presentation based on your assigned article. Since this pre-meeting is for you to be well-prepared for your 2nd presentation, this will be graded on a complete/incomplete basis. You will be assessed for completion of the slides based on the guidelines for the 2nd presentation, but not the aesthetics or professionalism.

You will receive points based on the criteria below:

- 5% = Slides completed, slides shared, and pre-meeting completed at least one week prior to the presentation.
- 3% = Slides completed, slides shared, or pre-meeting completed within 0-6 days before the presentation.
- 0% = No slides completed or shared, and no pre-meeting completed.

Second Presentation

You will be assigned to present one of the empirical papers from the reading list on the syllabus in Weeks 8 through the last day of class and lead the discussion. Through the second presentation, you will learn to evaluate and synthesize information from multiple sources (e.g., relating the empirical paper to the review paper, or to other course readings), and communicate this to your peers.

You should prepare to give a 10-to-15-minute presentation where you'll walk us through your assigned article, describe the methods and results, highlight any strengths or weaknesses of the study design, and give your thoughts on the meaning and importance of the findings. You should also include 2-3 questions that can spark discussion and compare and contrast the paper with other course readings for the week. Appendix A contains more details about the final presentation.

Final Paper

The Final Paper will be the primary written assessment for this class. The final paper will be approximately 8-10 double-spaced pages in length (excluding references) and will be on a topic of your choice. The paper should integrate and synthesize information from multiple domains of cognition research in everyday life. Your paper can take one of these two forms: 1) how three different cognitive processes can be applied to one area of application, or 2) how one cognitive process can be applied to three different areas of application (more information given below). Through this paper, you will learn to plan, conduct, and organize an in-depth literature review on a topic of your choice. For some of you, this may be your first time writing this type of paper. Thus, to provide a scaffold for everyone through the early stages of planning, there will be two other assessments: a Proposal, and a Road Map (described below).

I will discuss the assignments and guidelines for each in the first class. Detailed requirements are described in Appendix B.

Proposal:

By Week 9 (Nov 2, 2023), you will be asked to submit a short paragraph about your intended topic for the final paper, with at least 3 relevant references you plan to use. I will provide feedback on your proposal regarding the scope of the topic, potential details you can focus on, and other sources you could use, etc.

Since this assignment is to ensure you are on the right track with respect to topic selection, this assignment will be graded based on these three requirements:

1. completed by the due date,
2. meets topic requirements (i.e. 3 cognitive processes applied to one field or one cognitive process applied to three fields), and
3. includes at least 3 relevant references.

This assignment will thus be graded as follows:

- 5% = Meets all 3 requirements
- 3% = Meets at least 2 requirements
- 2% = Meets one requirement only
- 0% = No proposal submitted or does not meet even one requirement.

Road Map:

By Week 12 of the semester (Nov 20), you will be asked to submit a Road Map assignment. This can be in any format and at any level of detail that works best for your writing process. Some examples of this could be:

- A sparse outline of the final paper with some section headings and a broad overview of what key ideas or themes you plan to cover in each section (including relevant references).
- A more detailed outline with section headings, and a bulleted list of points you plan to cover (including relevant references).
- A plan of how you intend to tackle each section of your paper (for e.g. I plan to work on Topic 1 by Week 7, Topic 2 by Week 8, etc.)

However, this submission cannot be limited to just what was presented in the proposal (or an abstract of similar length). The idea is to make sure you have thought carefully about your topic well in advance of the deadline. Again, I will give some suggestions and feedback on the road map so that it can help you write a good final paper.

This assignment will be graded based on these requirements:

1. complete by the due date,
2. extends on the proposal
3. includes at least 6 relevant references
4. at least 3 references (of the required 6) must be those not specified in the reading list/syllabus.

This assignment will thus be graded as follows:

- 5% = Meets all 4 requirements
- 4% = Meets at least 3 requirements
- 3% = Meets at least 2 requirements
- 2% = Meets one requirement only
- 0% = No road map submitted or does not meet even one requirement.

Final Paper:

As mentioned above, the final paper, due the last day of the reading period, can be in one of these two forms:

1. A paper integrating research on three different cognitive processes to one applied field. For e.g., How can research on attention, learning, and memory be applied to education?
2. A paper integrating research in three applied fields for one cognitive process. For e.g., How does memory research apply to education, law, and clinical psychology?

You may choose any of the cognitive processes and applications. Cognitive processes can include attention, learning, memory, language, problem-solving, curiosity, etc. Applications can be those discussed in class or any other

application in everyday life. However, your paper must go beyond what was covered in the assigned readings. Detailed requirements for the final paper are described in Appendix B.

Course Policies

Class attendance

Attendance is expected for every class period. You cannot get full points for participation without attendance.

Excused Absence:
In order to have an excused absence (e.g. if you're sick or have a personal emergency), please email me before 10 am the day of the class you will miss.

Late submission and extensions

Reading responses: No submissions will be accepted for reading responses once the class has begun, as the reading responses will be used to guide discussions in class. Points for reading responses for that class period will be awarded 0. The only exception is a 48-hour extension for excused absences (see **Excused Absence** for more details).

Student presentations: It's generally not possible to offer extensions on student presentations, since the class meeting in question is built around that presentation. But if you know at least two weeks in advance that your scheduled day for presenting is going to pose some problems, please get in touch with me ASAP. With enough advance notice, we can usually find another student willing to switch weeks, but we do need to know far enough out for that student to have enough time to prepare and to update everyone about the change in readings.

Student preparation and participation: Class attendance and participation are expected for every class period. Without prior approval before the class, class participation points for the missed class will be marked as 0 (see **Excused Absence** for more details).

Proposal and Road map for Final Paper: Late submissions for the proposal and the road map will be graded per the criteria mentioned above. However, if you know in advance that you might need an extension for the proposal and the road map, please contact me and we can likely work out an extension.

Final Paper: For the final paper, late submissions will be awarded a 10% reduction in grade for each day that it is late (counted as 24 hours from the time of the deadline). If your final exam schedule would make it particularly difficult to submit your paper by this due date, please contact me at least two weeks beforehand to discuss an extension. I am generally happy to arrange extensions, but only for those who consult with me before the due date, so plan ahead! Any requests for extensions after the deadline has passed will not be entertained.

Extra Credit

There is **no extra credit** for this course.

Academic Integrity

Academic integrity means presenting only your own work for your presentations and assignment(s). This means that all of your work, including your class presentation, must be in your own words. You cannot copy and paste text from articles, book chapters, or AI-generated passages into your presentation or your written assignments. Everything you present or write must be in your own words (with appropriate citations).

Taking credit for the work of others is a serious violation of the academic community, and this will result in cheating or plagiarizing. If this is the case, the student will receive a zero for that assignment and will be reported to the University. Detailed Information on what constitutes a violation of academic integrity (along with examples) can be found in Columbia's Undergraduate Guide to Academic Integrity: http://www.college.columbia.edu/academics/academicintegrity

That said, if you have any questions about how to appropriately cite another's work or build upon someone else's ideas, please feel free to contact me. This can sometimes be challenging when you haven't yet had a lot of experience with it. I am happy to help in advance of a deadline to ensure that you are abiding by the principles of academic integrity.

Academic Support Services

There are many resources available to help and support you in your academic journey.

For those enrolled in Columbia College and/or SEAS, the Writing Center is a great place to start if you need some assistance with writing the final paper: https://www.college.columbia.edu/core/uwp/writing-center

For those enrolled in the School of General Studies, please check the Academic Resource Center for academic support:

https://www.gs.columbia.edu/content/academic-resource-center

Additionally, the Columbia Libraries can help all students find academic sources, or help with reference management, etc:
https://library.columbia.edu/index.html

Accommodations for students with disabilities

Students with special needs who may require classroom/assignment accommodations should make an appointment to see me as soon as possible, at least by the end of the second week of class. If you have not already done so, stop by the Office of Disability Services (ODS) on the 7th floor of Lerner Hall to register for support services. ODS often requires two weeks to process an application, so please contact them as soon as you can, preferably before the course begins. The procedures for registering with ODS can be found at https://www.health.columbia.edu/services/ods.

Class Etiquette and Conduct

Please turn off or silence your cell phones during class. Laptops are fine to use, but please respect your classmates and instructor by refraining from non-class-related activities. Please refrain from multi-tasking during class (we will explore the negative effects of multitasking in Weeks 5 and 6).

Commitment to inclusive teaching practices

My primary aim in this course is to co-create an inclusive learning environment with you all to support a diversity of perspectives, opinions, and experiences. The diversity of perspectives and experiences that participants bring into the classroom will be foundational to our classroom discussions. Therefore, I aim to create a safe space where every participant can openly share their thoughts, push their own boundaries, challenge themselves, and grow as individuals.

The readings in this course were also chosen to reflect the views of authors with diverse perspectives and backgrounds. Similarly, the course structure and assessments were created keeping in mind the possibility of students coming in with diverse educational experiences in the past. I invite you all to also think about this diversity as you chose papers for your own reading or the final essay.

While I intend to do the best I can to ensure a safe and inclusive learning environment, I recognize that I am human with my own biases and flaws. I am open to feedback, and I commit to understanding and working on my own biases and prejudices to prevent these from jeopardizing our inclusive and safe environment. Please reach out to me with any concerns or suggestions you may have to better address the diverse needs of the classroom.

Email Policy

You are welcome to email at manasi.jayakumar@columbia.edu with any questions or concerns, or to set up appointments if you cannot make it to the Student Drop-In Hours (see below). I aim to respond to emails within 24-48 hours on weekdays (Monday-Friday, 10 am-6 pm). Please note that I will not respond to any emails over the weekends or university holidays. This means that any email received on Friday after 6 pm will be answered only on Monday.

Student Drop-In Hours

I encourage all of you to join the "Student Drop-In Hours" (aka Office Hours) as often as you can. This can be a great way to clarify any questions you have about the content or assessments. You can attend the drop-in hours even if you do not have a question. Stop by to just say hello, talk about careers, ask questions about research and academia, or just vent about the weather!

If you would like to set up an appointment with me outside of these Drop-In hours, please email me at manasi.jayakumar@columbida.edu (see email policy above).

Wellness

Life can sometimes be difficult. Many of us have periods in which our mental and/or physical health and well-being suffer, especially during these difficult and uncertain times. I urge each of you to take care of yourself, and each other in the classroom and beyond. Please prioritize your health and well-being (both mental and physical), and know that there are many resources available to you throughout the university (detailed below).

https://www.health.columbia.edu/content/counseling-and-psychological-services
https://blogs.cuit.columbia.edu/nightline/
https://universitylife.columbia.edu/student-resources-directory#!#health

If there is anything I can do to help, please do not hesitate to reach out. If you see others struggling, please point them to these resources, or encourage them to reach out for help.

Tentative Course Readings

Week 2: Memory encoding and retrieval in education

- Roediger, H. L., & Pyc, M. A. (2012). Inexpensive techniques to improve education: Applying cognitive psychology to enhance educational practice. *Journal of Applied Research in Memory and Cognition*, 1(4), 242–248. https://doi.org/10.1016/j.jarmac.2012.09.002 *(7 pages of reading)*
- Butler, A. C. (2010). Repeated testing produces superior transfer of learning relative to repeated studying. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 36(5), 1118–1133. https://doi.org/10.1037/a0019902 *(16 pages of reading)*
- Taylor, K., & Rohrer, D. (2010). The effects of interleaved practice. *Applied Cognitive Psychology*, 24(6), 837–848. https://doi.org/10.1002/acp.1598 *(12 pages of reading)*

Week 3: Metacognition and Learning in education

- Kornell, N., & Metcalfe, J. (2006). Study efficacy and the region of proximal learning framework. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 32(3), 609–622. https://doi.org/10.1037/0278-7393.32.3.609 *(14 pages of reading)*
- Metcalfe, J., & Kornell, N. (2007). Principles of cognitive science in education: The effects of generation, errors, and feedback. *Psychonomic Bulletin & Review*, 14(2), 225–229. https://doi.org/10.3758/BF03194056 *(5 pages of reading)*
- Metcalfe, J. (2017). Learning from Errors. *Annual Review of Psychology*, 68(1), 465–489. https://doi.org/10.1146/annurev-psych-010416-044022 (*25 pages of reading*)

Week 4: Mind-wandering in the classroom

- Dias da Silva, M. R., Postma, M., & Faber, M. (2022). Windows to the mind: Neurophysiological indicators of mind wandering across tasks. In N. Dario & L. Tateo (Eds.), *New Perspectives on Mind-Wandering* (pp. 123–142). Springer International Publishing. https://doi.org/10.1007/978-3-031-06955-0_7 *(14 pages of reading)*
- Wammes, J. D., Seli, P., Cheyne, J. A., Boucher, P. O., & Smilek, D. (2016). Mind wandering during lectures II: Relation to academic performance. *Scholarship of Teaching and Learning in Psychology*, 2(1), 33–48. https://doi.org/10.1037/stl0000055 *(14 pages of reading)*
- Garlitch, S. M., & Wahlheim, C. N. (2020). The role of attentional fluctuation during study in recollecting episodic changes at test. *Memory & Cognition*, 48(5), 800–814. https://doi.org/10.3758/s13421-020-01018-4 *(13 pages of reading)*

Week 5: Media multitasking and its effect on cognition

- Uncapher, M. R., & Wagner, A. D. (2018). Minds and brains of media multitaskers: Current findings and future directions. *Proceedings of the National Academy of Sciences*, 115(40), 9889–9896. https://doi.org/10.1073/pnas.1611612115 *(8 pages of reading)*
- Wammes, J. D., Ralph, B. C. W., Mills, C., Bosch, N., Duncan, T. L., & Smilek, D. (2019). Disengagement during lectures: Media multitasking and mind wandering in university classrooms. *Computers & Education*, 132, 76–89. https://doi.org/10.1016/j.compedu.2018.12.007 *(14 pages of reading)*
- Madore, K. P., Khazenzon, A. M., Backes, C. W., Jiang, J., Uncapher, M. R., Norcia, A. M., & Wagner, A. D. (2020). Memory failure predicted by attention lapsing and media multitasking. *Nature*, 587(7832), 87–91. https://doi.org/10.1038/s41586-020-2870-z *(20 pages of reading)*

Week 6: Driving: interaction between various cognitive processes

- Konishi, M., Berberian, B., de Gardelle, V., & Sackur, J. (2021). Multitasking costs on metacognition in a triple-task paradigm. *Psychonomic Bulletin & Review*, 28(6), 2075–2084. https://doi.org/10.3758/s13423-021-01967-0 *(10 pages of reading)*
- Levy, J., & Pashler, H. (2008). Task prioritisation in multitasking during driving: Opportunity to abort a concurrent task does not insulate braking responses from dual-task slowing. *Applied Cognitive Psychology*, 22(4), 507–525. https://doi.org/10.1002/acp.1378 (18 pages of reading)

Week 7: Stress and Cognition

- Sandi, C. (2013). Stress and cognition. WIREs Cognitive Science, 4(3), 245–261. https://doi.org/10.1002/wcs.1222 *(11 pages of reading)*
- Ritchey, M., McCullough, A. M., Ranganath, C., & Yonelinas, A. P. (2017). Stress as a mnemonic filter: Interactions between medial temporal lobe encoding processes and post-encoding stress. Hippocampus, 27(1), 77–88. https://doi.org/10.1002/hipo.22674 *(11 pages of reading)*
- Peavy, G. M., Salmon, D. P., Jacobson, M. W., Hervey, A., Gamst, A. C., Wolfson, T., Patterson, T. L., Goldman, S., Mills, P. J., Khandrika, S., & Galasko, D. (2009). Effects of chronic stress on memory decline in cognitively normal and mildly impaired older adults. American Journal of Psychiatry, 166(12), 1384–1391. https://doi.org/10.1176/appi.ajp.2009.09040461 *(8 pages of reading)*

Week 8: Depression and Cognition

- Hammar, Å. (2009). Cognitive functioning in major depression – a summary. *Frontiers in Human Neuroscience*, 3. https://doi.org/10.3389/neuro.09.026.2009 *(7 pages of readings)*
- Hitchcock, C., Newby, J., Timm, E., Howard, R. M., Golden, A. M., Kuyken, W., & Dalgleish, T. (2020). Memory category fluency, memory specificity, and the fading affect bias for positive and negative autobiographical events: Performance on a good day–bad day task in healthy and depressed individuals. *Journal of Experimental Psychology: General*, 149(1), 198. *(8 pages of reading)*
- Wadlinger, H. A., & Isaacowitz, D. M. (2008). Looking happy: The experimental manipulation of a positive visual attention bias. *Emotion*, 8(1), 121–126. https://doi.org/10.1037/1528-3542.8.1.121 *(6 pages of reading)*

Week 9: Cognition in the aging adult

- Campbell, K. L., Lustig, C., & Hasher, L. (2020). Aging and inhibition: Introduction to the special issue. Psychology and Aging, 35(5), 605–613. https://doi.org/10.1037/pag0000564 *(8 pages of reading)*
- Martin, C. B., Hong, B., Newsome, R. N., Savel, K., Meade, M. E., Xia, A., ... & Barense, M. D. (2022). A smartphone intervention that enhances real-world memory and promotes differentiation of hippocampal activity in older adults. Proceedings of the National Academy of Sciences, 119(51), e2214285119. *(11 pages of reading)*
- Frank, D. J., Nara, B., Zavagnin, M., Touron, D. R., & Kane, M. J. (2015). Validating older adults' reports of less mind-wandering: An examination of eye movements and dispositional influences. Psychology and Aging, 30(2), 266. (*12 pages of reading)*

Week 10: Memory and the law

- Laney, C. and Loftus, E.F. (2018). Current Directions in False Memory Research. In Diversity in Harmony – Insights from Psychology (eds K. Shigemasu, S. Kuwano, T. Sato and T. Matsuzawa). https://doi.org/10.1002/9781119362081.ch18 *(11 pages of reading)*
- Blake, A. B., Nazarian, M., & Castel, A. D. (2015). Rapid Communication: The Apple of the mind's eye: Everyday attention, metamemory, and reconstructive memory for the Apple logo. *Quarterly Journal of Experimental Psychology*, 68(5), 858–865. https://doi.org/10.1080/17470218.2014.1002798 *(7 pages of reading)*
- Clark-Foos, A., Brewer, G., & Marsh, R. L. (2015). Judging the reality of others' memories. *Memory*, 23(3), 427–436. https://doi.org/10.1080/09658211.2014.893364 *(9 pages of reading)*

Week 11a: Enhancing cognition: brain training

- Owen, A. M., Hampshire, A., Grahn, J. A., Stenton, R., Dajani, S., Burns, A. S., Howard, R. J., & Ballard, C. G. (2010). Putting brain training to the test. Nature, 465(7299), 775–778. https://doi.org/10.1038/nature09042 *(4 pages of reading)*
- Nouchi, R., Taki, Y., Takeuchi, H., Hashizume, H., Akitsuki, Y., Shigemune, Y., Sekiguchi, A., Kotozaki, Y., Tsukiura, T., Yomogida, Y., & Kawashima, R. (2012). Brain training game improves executive functions and processing speed in the elderly: A randomized controlled trial. PLoS ONE, 7(1), e29676. https://doi.org/10.1371/journal.pone.0029676 *(9 pages of reading)*
- Sala, G., & Gobet, F. (2019). Cognitive training does not enhance general cognition. Trends in Cognitive Sciences, 23(1), 9–20. https://doi.org/10.1016/j.tics.2018.10.004 *(10 pages of reading)*

Week 11b: Enhancing cognition: brain stimulation

- Kadosh, R. C., Levy, N., O'Shea, J., Shea, N., & Savulescu, J. (2012). The neuroethics of non-invasive brain stimulation. Current Biology, 22(4), R108–R111. https://doi.org/10.1016/j.cub.2012.01.013 *(4 pages of reading)*
- Wexler, A., & Reiner, P. B. (2019). Oversight of direct-to-consumer neurotechnologies. Science, 363(6424), 234–235. https://doi.org/10.1126/science.aav0223 (*5 pages of reading)*
- Mankin, E. A., & Fried, I. (2020). Modulation of human memory by deep brain stimulation of the entorhinal-hippocampal circuitry. Neuron, 106(2), 218–235. https://doi.org/10.1016/j.neuron.2020.02.024 *(16 pages of reading)*

Week 13: Memory for Salient Events

- Hirst, W., & Phelps, E. A. (2016). Flashbulb memories. *Current Directions in Psychological Science*, 25(1), 36-41. *(6 pages of reading)*
- Talarico, J. M., & Rubin, D. C. (2003). Confidence, not consistency, characterizes flashbulb memories. Psychological Science, 14(5), 455–461. https://doi.org/10.1111/1467-9280.02453 *(6 pages of reading)*
- Hirst, W., Phelps, E. A., Buckner, R. L., Budson, A. E., Cuc, A., Gabrieli, J. D. E., Johnson, M. K., Lustig, C., Lyle, K. B., Mather, M., Meksin, R., Mitchell, K. J., Ochsner, K. N., Schacter, D. L., Simons, J. S., & Vaidya, C. J. (2009). Long-term memory for the terrorist attack of September 11: Flashbulb memories, event memories, and the factors that influence their retention. Journal of Experimental Psychology: General, 138(2), 161–176. https://doi.org/10.1037/a0015527 *(14 pages of reading)*

Week 14: Music, Movies, & Cognition

- Sonkusare, S., Breakspear, M., & Guo, C. (2019). Naturalistic stimuli in neuroscience: Critically acclaimed. Trends in Cognitive Sciences, 23(8), 699–714. https://doi.org/10.1016/j.tics.2019.05.004 *(13 pages of reading)*
- Chen, J., Leong, Y. C., Honey, C. J., Yong, C. H., Norman, K. A., & Hasson, U. (2017). Shared memories reveal shared structure in neural activity across individuals. Nature Neuroscience, 20(1), 115–125. https://doi.org/10.1038/nn.4450 *(10 pages of reading)*
- Warren, J. (2008). How does the brain process music? Clinical Medicine, 8(1), 32–36. https://doi.org/10.7861/clinmedicine.8-1-32 *(5 pages of reading)*

Appendix A
Detailed requirements for the presentation

Each student will briefly present twice during the semester. The first shorter presentation is designed to help you prepare for the second, long presentation.

First presentation

You will be assigned to present one of the empirical papers from the reading list in Weeks 2 through 7.

You should prepare to give a short 5-minute presentation on the article. Your job is to just explain the overall takeaways from the paper, with some additional information for discussion.

Your 5-minute presentation should cover:

- What is the main question the researchers are trying to answer?
- What is the main method they use? Include a figure from the paper if there is one.
- What do they find? Include the main figure of results from the paper. What does it mean for their question?

You should use only 3 slides for this (excluding the title slide). The title slide should include the name of the paper, the name(s) of the author(s), and the year of publication.

Your slides should add to, not distract from, your presentation. That means you should avoid big blocks of text unless there's something with precise wording that it's important we all see (e.g., task instructions given if it's relevant to the findings). You should know the material you're presenting well enough that you aren't reading verbatim off of your slides, though it's of course fine to refer to the slides to stay on track. And you should proofread your slides just as you would for the final paper.

Second presentation

You will be assigned to present one of the empirical papers from the reading list in Week 8 through the last day of class. There may be two students per day.

In addition to presenting on the paper, your job as presenters is to be our "resident expert" on the readings for this week, so while you can assume everyone has read the paper, your presentation should help to clarify any particularly tricky methods or results from the paper, and address any questions that your fellow students have. I'll be there to help you with this both as you prepare your presentation and during class, but it's your show!

Your 10-to-15-minute presentation should briefly cover:

1. The question being asked
2. A recap of the study's methods and results (including any relevant figures like for the first presentation)
3. The interpretation and the importance of the findings
4. A critical assessment of the work in the context of other course materials
5. Questions to spark our discussion

Note that you did points 1 and 2 above as part of your first presentation. Now, it is your turn to lead the discussion (with points 3-5) as you've seen me do through the first half of the semester. Please also read the pre-meeting section below for a more detailed run-through of what each of these means.

Aim to have 10 or 15 minutes of material, but expect lots of interruptions throughout (e.g., clarifying questions, the group making connections to other readings, etc.). With these interruptions and the early discussion they spark, the presentation tends to take approximately the first hour of class, with more general discussion following.

Your presentation should involve slides both to structure the presentation and to provide visual aids for the group. I'll assume that you plan to run the slides off of your own laptop unless you let me know otherwise. (I'm happy to provide my laptop for presentations if you need it).

Unlike the first presentation, this second presentation is not meant to be just a series of summaries or a step through each figure in a paper. You must discuss the article(s), of course, but this discussion should be in the service of putting together a coherent presentation around the topic for that week. Do not just jump from figure to figure. Make sure that there is a narrative in your presentation. Think about how to transition from topic to topic to help lead the class through the 'story' you want to tell. That means you must make sure to set up the big questions, why that research or that finding is important, what the results mean, and their bigger implications.

With respect to discussion questions in your presentation: go for questions aimed at getting students' thoughts, opinions, criticisms, concerns, or interpretations of specific issues discussed in the papers. Asking questions relating the paper to topics we covered in other weeks can also be a good starting point for engaging in discussions. What doesn't work well is just putting up a figure and asking the class if someone can explain it; that is your job as a presenter. The goal of class discussion is to get other students' thoughts, feelings, criticisms, and so on, not to ask them to present basic concepts. In other words, it is your job to explain the basic concepts in order to set up discussion questions for the class, and the goal of the discussion questions is to

gather opinions, criticisms, and so on. Also, more targeted questions are better at eliciting answers than more vague ones.

Pre-meeting for the second presentation

Schedule a meeting with me for atleast one week before your class presentation. Before this meeting, you will share your slides with me. During the meeting, I will provide feedback on the presentation, and can help you with any difficulties you are having.

This pre-meeting will help you prepare for your second presentation so that you can lead the discussion, and answer any of your peers' questions in class. For this meeting with me, you will create slides on your assigned article following the guidelines for the second presentation (as given below).

Since this is being assessed on the completion of slides (not the aesthetics or professionalism), you should have the following atleast:

- Title slide
- Introduction slide (which introduces the narrative of the research question)
- Methods slide(s): an overview of the main methods in the paper including the most important figure
- Results slide(s): The main results from the paper including figures from the results.
- Interpretation and importance of the finding: What does the result mean 1) in terms of the research question? and 2) in terms of the field as a whole. Why is it important?
- How does it relate to the review paper or book chapter from the course readings?
- Questions and comments that can spark our discussion.

Appendix B
Detailed requirements for the Final Paper

Formatting requirements:

- 8.5” by 11” paper, 1” margins, 11- or 12-point font, double-spaced
- 8-10 pages in length (excluding title page, and references)
- Follow APA 7 formatting guidelines for references and in-text citations.
- Include a title page as per APA 7 formatting

Topic:

The final paper can be in one of these two forms:

1. A paper integrating research on three different cognitive processes to one applied field (for e.g., How can research on attention, learning, and memory be applied to education?)
2. A paper integrating research on one cognitive process across three applied fields (for e.g., How does memory research apply to education, law, and clinical psychology)

You may choose any of the cognitive processes including (but not limited to) attention, learning, memory, language, problem-solving, curiosity, etc. Applications can be those discussed in class. However, your paper must go beyond what was covered in the assigned readings.

Readings and references:

To do a good job on the final paper, you must do research beyond the papers discussed in class: find new peer-reviewed articles that touch on the same topic (if you’re stuck, a good place to look is in the references of articles that you read, or use Google Scholar to find articles that cited your article). Because this paper is about whole areas of research, you should read several articles carefully, and make sure to cite them: the expectation is to read and cite at least 10 articles, at least 5 of which must be articles that were not on the syllabus.

For a free, online version of APA 7 formatting guidelines, you can use the Purdue Online Writing Lab (OWL) website:
https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_style_introduction.html

Requirements for Proposal and Road Map

Proposal:

Submit a short paragraph (approximately 300 words) about your intended topic for the final paper, with atleast 3 relevant references you plan to use.

Road Map:

The road map can be in any format, and at any level of detail that works best for your writing process. The only requirement for the road map is that you include atleast 6 relevant references, only 3 of which can be from the class readings. The other 3 must come from readings that you have been researching specifically for the paper (see the Readings and References section above).
Some examples of this could be:

- A sparse outline of the final paper with some section headings and a broad overview of what key ideas or themes you plan to cover in each section (including relevant references).
- A more detailed outline with section headings, and a bulleted list of points you plan to cover (including relevant references).
- A plan of how you intend to tackle each section of your paper (for e.g. I plan to work on Topic 1 by Week 7, Topic 2 by Week 8, etc.). Make sure to include relevant references.