

SYLLABUS

Memory and the Brain

PSYC 421 – F2022 (on campus)

Weekly discussion times: Wed 13:00-14:30 EST; Fri 11:30-13:00 EST

Location: Macintosh-Corry Room A309

Instructor: Dr. Jeff Wammes

Contact: jeffrey.wammes@queensu.ca

Office hours: Wed 14:30-15:30 EST, or by appointment

1.0 Land Acknowledgment

I will begin this syllabus by acknowledging that Queen's is situated on traditional Anishinaabe and Haudenosaunee territory. We are grateful to be able to live, learn and teach on these lands. By acknowledging this traditional territory, we recognize its history and its significance for the Indigenous Peoples who lived and continue to live, upon it.

2.0 Diversity and Inclusion

In this class, it is my goal to ensure that students have a great learning experience. For this to happen, consistent with the university code, offensive statements that violate university code will not be tolerated. Every student in this class must abide by these policies (i.e. do not make offensive statements); there will be **no tolerance** for any language that targets equity-deserving groups, including but not limited to comments that are racist, homophobic, transphobic, ableist or ageist. The diversity of experiences that students bring to this class are a resource, strength and benefit. With this, **students in this class are encouraged to speak up and participate** during class meetings and provide perspectives from their own lived experiences (e.g., of minoritization or oppression).

3.0 Course Summary

In this course you will gain an in-depth understanding of the literature studying memory from multiple methods and theoretical perspectives. You will learn about research exploring the mechanisms that allow us to learn, store, retrieve and update memories. Along the way, you will gain hands-on skills in experimental design.

4.0 Learning Outcomes

In this course, you will learn to:

- Comprehend and paraphrase the literature surrounding human memory, covering multiple approaches and theoretical perspectives.
- Interpret primary literature detailing how we store, retrieve and update memories as a result of new information.
- Assess and critique current experimental literature and generate ideas for future experiments.
- Gain critical competency in conceptualizing experiments and designing them using online tools.
- Communicate, discuss, and moderate discussions about the merit and contributions of primary empirical literature

5.0 Weekly Structure of the Course

Each week (after the first one) will go in-depth about a given focal area within research in human memory, supported by up to four papers. Content will be posted for each week by the preceding Wednesday morning.

- Before the start of **each week**, an update about the events of the week will be posted, and there will be often be a short introduction posted to the topic, with some relevant background.
- On **some programming weeks** (indicated [in a later section](#)), there will also be a file posted, which contains the necessary program and stimuli to run an online experiment, sometimes with a problem that needs to be fixed.
- **Every Wednesday** (by 13:00 EST), a short [response \(see details in a later section\)](#) is due. This is either a response to both of the papers for the week, and – if it's a programming week - a reflection on your experience viewing, fixing, or eventually trying out an experiment.
- **Every Wednesday** (13:00-14:30 EST) **and Friday** (11:30-13:00 EST) we will meet synchronously (in Macintosh-Corry room A309) to discuss the papers for the week. Each student will act as [discussion leader \(see details in a](#)

[later section](#)) and a discussion assistant (see details in a later section) *once in a semester*. All other students are expected to [participate \(see details in a later section\)](#).

- **Every Friday or Monday** (by 23:59 EST), the discussion assistant will post a short (< 5min) video [summary of the discussion \(see details in a later section\)](#) of their assigned paper. If your paper was presented on Wednesday, yours is due on Friday evening, and if it was presented on Friday, it is due by Monday evening. *NOTE: Each student will fill this role only once in a semester.*
- **(optional)** If you feel you did not get a chance to discuss the paper or make a point that you intended to during the synchronous sessions, you can post a FlipGrid video either responding to the discussion assistant's video, or simply providing your own thoughts. This will be considered in evaluating your participation grade. For each week, these will be considered if posted before the following Friday at noon EST (e.g. if the paper was presented on Wednesday Sep 21 or Friday Sep 23, you have until Friday Sep 30 to post).

6.0 Reading Materials (see later section for full list)

There is no textbook. Instead, you will read up to 4 papers each week related to the week's topic ([see full list in a later section](#)). Links that were functional at time of posting are provided for all, but if they do not work, all of these papers should be searchable online using your research skills. Try [Google Scholar](#), [PubMed](#), plain old [Google](#) (or similar) search, or from the author's laboratory website. If you have difficulty, please reach out to your peers on the discussion board on OnQ, which the instructor will also monitor.

7.0 Assessment Summary (see below for details)

Responses	15%
Discussion Leader	25%
Participation	15%
Discussion Assistant	15%
Final Project	30%

8.0 Grading

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale:

Grade	Numerical Range	Grade Point Equivalent
A+	90 - 100	4.3
A	85 - 89	4.0
A-	80 - 84	3.7
B+	77 - 79	3.3
B	73 - 76	3.0
B-	70 - 72	2.7
C+	67 - 69	2.3
C	63 - 66	2.0
C-	60 - 62	1.7
D+	57 - 59	1.3
D	53 - 56	1.0
D-	50 - 52	0.7
F	49 and below	0.0

9.0 Assessments

Note: Assignments in this course have been designed with flexibility for academic consideration for all students. This means that "Short term Requests for Academic Consideration" (submitted through the Faculty of Arts and Science portal without documentation) are not needed and long-term requests will be handled on a case-by-case basis if

needed. Details on grace periods, dropping low scores, and alternative options for assignments are included in each assessment below.

9.1 Responses [15%]

Each week (**by Wednesdays at 13:00 EST**), you will need to submit a response via OnQ (unless you are the discussion leader for the week). The purpose of these responses is to ensure that you have read the papers and/or done the programming exercise for the week and thought about them. The response should clearly indicate that you have thought about the topic, the papers and their findings *beyond* the surface level. In other words, it **should not** contain a summary of the findings, but it **should** contain some reflection on the broader significance of the paper or topic. For example, it could include a potential area of improvement you noticed, an unresolved question, a follow-up experiment idea, or an insight as to how it connects to other papers (in the course or otherwise).

If it **is not** a Programming Week, your Response will simply be about the topic and papers. If it **is** a Programming week, a lab.js experiment file will have been posted during the prior week, with some details about what to do with it. This may involve exploring the task design, finding and making small changes, or running yourself through the final version of the experiment. In these weeks, you should incorporate into your Response a brief description of the steps you took, or some reflection on your experience with the task.

The Responses should be less than 300 words, except when they are in programming weeks, where they *can* be (but need not be) up to 500 words. If any student would prefer to make an infographic slide, a short video (< 3 min) or a short audio recording (< 3 min), that is also acceptable. *NOTE: This is not required or preferred, but simply included as an option to give students more alternatives to express their thoughts.*

Your 8 best grades out of 11 total Responses will be counted. Automatic extensions of one day will be allowed for these Responses.

9.2 Discussion Leader [25%]

Live sessions are on Wednesdays and Fridays, and we will cover all of the papers presented for the week. These sessions will take place in Macintosh-Corry Room A309. If you are a Discussion Leader for the week (see Presentation Schedule), you are responsible for creating a presentation outlining the most important parts of your assigned paper and facilitating a discussion about it. The purpose of acting as discussion leader is to practice your ability to synthesize and explain to others the purpose and critical findings of primary literature (Learning Goals 1 and 2). The course is built around these presentations and discussions, so it is important to be prepared. Your presentation **should** summarize at a high level what the purpose of the study was (including some basic background), the experimental design and predictions, the findings, and the results. In some journals (e.g. *Science*), the description of the method is written up in a separate “Supplementary Information”, or “Supporting Online Material” document. You can assume that all of your peers have read the paper, but your responsibility is to be the ‘expert’ on this paper. During and after your presentation, you will be expected to take on the task of acting as a moderator for the group discussion. In general, these should be very freely flowing and involve your peers and the instructor bringing up questions or concerns about the paper. You should be prepared to answer these questions. However, in your role as discussion leader, it is your job to be prepared with discussion points to provoke conversation if it is lacking. Don’t worry – you will also have a designated colleague who is assigned as the discussion assistant who has the same role as you in guiding the discussion!

Each paper will be allocated approximately 40 minutes. The presentation should be Powerpoint, Keynote, or Google Slides, and the **slides should be submitted to the instructor prior to the live session**. Alongside your slides, you will also be asked to upload a list of 3 potential discussion questions. You are encouraged to discuss these questions with the discussion assistant for your paper, and it is okay if they overlap. Anticipate a lot of discussion, including interruptions. What this means is that your planned, uninterrupted presentation **should not** take up the entire allocated time, but rather, only about 15 minutes (i.e. allow time for questions and discussion).

Some of these papers are complex! The instructor *expects* questions and clarifications. However, these must be asked well before the presentation approaches. If you are the Discussion Leader for the week, you can expect replies to questions within 24 hours of sending them via email.

9.3 Participation [15%]

This class involves communicating with your peers. First and foremost, in line with university policy, there will be **no tolerance** for any language that targets equity-deserving groups, including but not limited to comments that are racist, homophobic, transphobic, ableist or ageist. Having said that, participation is very important in any seminar class, and even more critical with complex papers. We will need to talk through some of the details to better understand them! This course is meant for the sharing of ideas, and we will want to hear your perspectives. As an added bonus, speaking up in class makes the class more interesting and exciting! The instructor, the discussion leader, and the discussion assistant will moderate, and you will be graded on the basis of your contributions to our weekly group meetings (and optional FlipGrid comments). Note that this is not a situation where you **must** say a certain number of things every class. Too often this type of requirement forces people to provide input when they would not otherwise. People's interests and experiences vary, and inherently, you will find some papers more interesting and thought-provoking than others. You should not comment just to comment. Your engagement and posting on FlipGrid will also be considered in scoring your participation. See also, the [Discussion/Participation Guidelines](#).

9.4 Discussion Assistant [15%]

Live sessions are on Wednesdays and Fridays, and we will cover all of the papers presented for the week. These sessions will take place in Macintosh-Corry Room A309. If you are a Discussion Assistant for the week (see Presentation Schedule), you are responsible for three things, which help toward Learning Goals 1 and 3:

- First, you will generate a document containing 5 potential questions to foster discussion of the papers. This document should contain these 5 questions, as well as a few words to justify why you think this question is interesting or what drove you to include it (2-3 sentences each). **This document should be uploaded prior to the live session for your paper.** I encourage you to reach out the Discussion Leader for your paper to discuss questions and concerns.
- Second, you will help facilitate discussion. The Discussion Leader is responsible for a 15-minute presentation, but the next ~25 minutes will be spent discussing and trying to understand and contextualize the findings of the papers. In general, these should be very freely flowing and involve your peers and the instructor bringing up questions or concerns about the paper. You should be prepared to answer these questions. However, in your role as discussion assistant, your pre-generated questions will provide discussion points to provoke conversation if it is lacking. Don't worry – you will also have a designated colleague who is assigned as the discussion leader who has the same role as you in guiding the discussion!
- Third, you will post a short (3-5 minute) video on FlipGrid that indicates the questions you set out with and what you feel the outcome of the discussion was for those questions, or if we didn't get to your questions, a summary of the general discussion that unfolded following the session. This is due by the night after your paper was presented, so if your paper was presented on Wednesday, your video is due by **Friday at 11:59 PM EST**, and if your paper was presented on Friday, your video is due by **Monday at 11:59 PM EST** (but see below for extensions).

Some of these papers are complex! The instructor *expects* questions and clarifications. However, these must be asked well before the presentation approaches. If you are the Discussion Assistant for the week, you can expect replies to questions within 24 hours of sending them via email.

Your grade will be primarily based on the submitted questions and discussion facilitation, but the video content will be considered.

Automatic extensions of three days will be allowed for these Videos.

9.5 Final Project [30%]

Your final project is a Research Proposal (**Due Nov 25th by 23:59 EST**). The standard form of this (read on for alternatives) is a written document that is < 2500 words (~10 pages, double-spaced, *excluding* references). Choose a topic of interest in human learning and memory. This can be one of the topics covered in class, or a topic of your own choosing. The Proposal should cover the prior literature on the topic, and a proposed new experiment. It should be clear from your coverage of the prior literature why an experiment like yours is needed, impactful or interesting, and how the existing research motivated your experimental question. Your detailing of your proposed experiment should be clear enough that one could design and run the experiment you proposed and understand the predictions.

Optionally, you can submit a rough, high level description of your plan for comments by **Oct 28th by 23:59 EST**. This should be no longer than 250 words, but should include the subject area, a few papers that inspired your direction, and a short description of the methods and predictions. It's okay if your plan changes completely between this date and the final due date.

As an alternative, you can write a shorter (~1500 words) coverage of the prior literature, and design a [research poster](#) that describes the methods, predictions and anticipated results, **OR** write a shorter coverage of the prior literature (~1500 words), provide a lab.js experiment (Exported for offline use), and a summary of predictions. *NOTE: These are not required or preferred, but simply included as an option to give students more alternatives to express their thoughts.*

Automatic extensions of four days will be allowed for this Final Project.

10.0 Discussion/Participation Guidelines

University is a place to share, question and challenge ideas. Each student brings a different lived experience from which to draw upon. To help one another learn the most we can from this experience please consider the following guidelines.

1. Make a personal commitment to learn about, understand, and support your peers.
2. Assume the best of others and expect the best of them.
3. Acknowledge the impact of oppression on the lives of other people and make sure your writing is respectful and inclusive.
4. Recognize and value the experiences, abilities, and knowledge each person brings.
5. Pay close attention to what your peers write before you respond. Think through and reread your writings before you post or send them to others.
6. It's ok to disagree with ideas, but do not make personal attacks.
7. Be open to being challenged or confronted on your ideas and to challenging others with the intent of facilitating growth. Do not demean or embarrass others.
8. Encourage others to develop and share their ideas.

11.0 Copyright of Course Materials

Unless otherwise stated, the material on the course website, including all slides, presentations and assignments, are the instructor's intellectual property. The materials are copyrighted and for the sole use of students registered in PSYC420. The material on the website may be downloaded for a registered student's personal use but shall not be distributed or disseminated to anyone other than students registered in this course. It is a departure from academic integrity to distribute, publicly post, sell or otherwise disseminate an instructor's course materials or to provide an instructor's course materials to anyone else for distribution (including note sharing sites), posting, sale or other means of dissemination without the instructor's express consent. A student who engages in such conduct may be subject to penalty for a departure from academic integrity and may also face adverse legal consequences for infringement of intellectual property rights.

12.0 Academic Integrity

Queen's University is dedicated to creating a scholarly community free to explore a range of ideas, to build and advance knowledge, and to share the ideas and knowledge that emerge from a range of intellectual pursuits.

Queen's students, faculty, administrators and staff all have responsibilities for upholding [the fundamental values of academic integrity](#); honesty, trust, fairness, respect, responsibility and courage. These values are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the [Senate Report on Principles and Priorities](#)).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and their behaviour conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see [Academic Regulation 1](#)) on the [Arts and Science website](#), and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

13.0 Accommodation Statement

Queen's University is committed to achieving full accessibility for people with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. The Senate Policy for Accommodations for Students with Disabilities was approved at [Senate in November 2016](#). If you are a student with a disability and think you may need academic accommodations, you are strongly encouraged to contact the Queen's Student Accessibility Services (QSAS) and register as early as possible. For more information, including important deadlines, please visit the [QSAS website](#).

14.0 Academic Considerations for Extenuating Circumstances

Academic consideration is a process for the university community to provide a compassionate response to assist students experiencing unforeseen, short-term extenuating circumstances that may impact or impede a student's ability to complete their academics. This may include but is not limited to:

- Short-term physical or mental health issues (e.g., stomach flu, pneumonia, COVID diagnosis, vaccination, etc.)
- Responses to traumatic events (e.g., Death of a loved one, divorce, sexual assault, social injustice, etc.)
- Requirements by law or public health authorities (e.g., court date, isolation due to COVID exposure, etc.)

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances. For more information, please see [the Senate Policy on Academic Consideration for Students in Extenuating Circumstances](#).

Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. Arts and Science undergraduate students can find the Faculty of Arts and Science protocol and the [portal where a request can be submitted at](#). Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

If you need to request academic consideration for this course, you will be required to provide the name and email address of the instructor/coordinator. Please use the following contact information:

Instructor: Jeff Wammes

Instructor email address: jeffrey.wammes@queensu.ca

Students are encouraged to submit requests as soon as the need becomes apparent and to contact their Professors/Course Coordinators as soon as possible once Consideration has been granted. Any delay in contact may limit the Consideration options available.

For more information on the Academic Consideration process, what is and is not an extenuating circumstance, and to submit an Academic Consideration request, [please see our website](#).

15.0 Turnitin Statement

***NOTE:** You are free to object to the use of Turnitin, if you let the instructor know via email by Sept 15th. Alternate arrangements will be made to ensure the integrity of the work.

This course makes use of Turnitin, a third-party application that helps maintain standards of excellence in academic integrity. Normally, students will be required to submit their course assignments through onQ to Turnitin. In doing so, students' work will be included as source documents in the Turnitin reference database, where they will be used solely to detect plagiarism.

Turnitin is a suite of tools that provide instructors with information about the authenticity of submitted work and facilitates the process of grading. Turnitin compares submitted files against its extensive database of content, and produces a similarity report and a similarity score for each assignment. A similarity score is the percentage of a document that is similar to content held within the database. Turnitin does not determine if an instance of plagiarism has occurred. Instead, it gives instructors the information they need to determine the authenticity of work as a part of a larger process.

Please read [Turnitin's Privacy Pledge, Privacy Policy, and Terms of Service](#), which governs users' relationship with Turnitin. Also, please note that Turnitin uses cookies and other tracking technologies; however, in its service contract with Queen's Turnitin has agreed that neither Turnitin nor its third-party partners will use data collected through cookies or other tracking technologies for marketing or advertising purposes. For further information about how you can exercise control over cookies, see [Turnitin's Privacy Policy](#):

Turnitin may provide other services that are not connected to the purpose for which Queen's University has engaged Turnitin. Your independent use of Turnitin's other services is subject solely to Turnitin's Terms of Service and Privacy Policy, and Queen's University has no liability for any independent interaction you choose to have with Turnitin.

16.0 Privacy Statement for FlipGrid

This course makes use of Flipgrid.com for Critiques and Extensions, as well as reactions to them. Be aware that by logging into the site, you will be leaving onQ, and accessing Flipgrid's website. Your independent use of that site, beyond what is required for the course (for example, purchasing the company's products), is subject to Flipgrid's terms of use and privacy policy. You are encouraged to review these documents, using the link(s) below, before using the site.
<https://legal.flipgrid.com/>

17.0 Course Schedule

Week: Dates	Topic	Readings	Assessments
1 Sep 07+09	Organizational Meeting	Craik & Lockhart, 1972 ¹	NA- introduction to lab.js / Flipgrid
2 Sep 14+16	Improving Encoding	NA	Topic Response #1 due
3 Sep 21+23	Encoding in the Brain	Roediger, 1980 ² Kuhl, Rissman & Wagner, 2012 ³ Xue et al., 2010 ⁴	Programming Response #1 due
4 Sep 28+30	(Re)consolidation	Nadel & Moscovitch, 1997 ⁵ Hubbach et al., 2007 ⁶ Wilhelm et al., 2011 ⁷	Topic Response #2 due
5 Oct 05+07	Remembering	Parker, Cahill & McGaugh, 2006 ⁸ Roediger & Karpicke, 2006 ⁹	Programming Response #2 due
6 Oct 12+14	FALL TERM BREAK		
7 Oct 19+21	Memory Quality	Boldini, Russo & Avons, 2004 ¹⁰ Wing, Ritchey & Cabeza, 2015 ¹¹	Topic Response #3 due
8 Oct 26+28	Retrieval in the Brain	Polyn et al., 2005 ¹² Johnson et al., 2009 ¹³	Programming Response #3 due <i>(optional) Final Project review due</i>
9 Nov 02+04	Association and Prediction	Bein et al., 2020 ¹⁴ Kim et al., 2014 ¹⁵ Uitvlugt & Healey, 2019 ¹⁶	Topic Response #4 due
10 Nov 09+11	Failures and Forgetting	Sahakyan & Kelley, 2002 ¹⁷ Anderson, Bjork & Bjork, 2000 ¹⁸	Programming Response #4 due
11 Nov 16+18	Learning-related Change	Bakker et al., 2008 ¹⁹ Schlichting, Mumford & Preston, 2015 ²⁰ Favila, Chanales & Kuhl, 2016 ²¹	Topic Response #5 due

12	Nov 23+25	Dynamics and Interactions	Duncan, Sadanand & Davachi, 2012 ²² Yoo et al., 2012 ²³	Topic Response #6 due Final Project due
13	Nov30+Dec02	Odds and ends	Addis, Wong & Schacter, 2007 ²⁴ Clark & Squire, 2013 ²⁵	Topic Response #7 due

18.0 Reading List

- ¹ Craik, F. I., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning And Verbal Behavior*, 11(6), 671-684. [\[link\]](#)
- ² Roediger, H. L. (1980). The effectiveness of four mnemonics in ordering recall. *Journal of Experimental Psychology: Human Learning and Memory*, 6(5), 558. [\[link\]](#)
- ³ Kuhl, B. A., Rissman, J., & Wagner, A. D. (2012). Multi-voxel patterns of visual category representation during episodic encoding are predictive of subsequent memory. *Neuropsychologia*, 50(4), 458-469. [\[link\]](#)
- ⁴ Xue, G., Dong, Q., Chen, C., Lu, Z., Mumford, J. A., & Poldrack, R. A. (2010). Greater neural pattern similarity across repetitions is associated with better memory. *Science*, 330(6000), 97-101. [\[link\]](#)
- ⁵ Nadel, L., & Moscovitch, M. (1997). Memory consolidation, retrograde amnesia and the hippocampal complex. *Current Opinion in Neurobiology*, 7(2), 217-227. [\[link\]](#)
- ⁶ Hupbach, A., Gomez, R., Hardt, O., & Nadel, L. (2007). Reconsolidation of episodic memories: A subtle reminder triggers integration of new information. *Learning & Memory*, 14(1-2), 47-53. [\[link\]](#)
- ⁷ Wilhelm, I., Diekelmann, S., Molzow, I., Ayoub, A., Mölle, M., & Born, J. (2011). Sleep selectively enhances memory expected to be of future relevance. *Journal of Neuroscience*, 31(5), 1563-1569. [\[link\]](#)
- ⁸ Parker, E. S., Cahill, L., & McGaugh, J. L. (2006). A case of unusual autobiographical remembering. *Neurocase*, 12(1), 35-49. [\[link\]](#)
- ⁹ Roediger III, H. L., & Karpicke, J. D. (2006). Test-enhanced learning: Taking memory tests improves long-term retention. *Psychological Science*, 17(3), 249-255. [\[link\]](#)
- ¹⁰ Boldini, A., Russo, R., & Avons, S. E. (2004). One process is not enough! A speed-accuracy tradeoff study of recognition memory. *Psychonomic Bulletin & Review*, 11(2), 353-361. [\[link\]](#)
- ¹¹ Wing, E. A., Ritchey, M., & Cabeza, R. (2015). Reinstatement of individual past events revealed by the similarity of distributed activation patterns during encoding and retrieval. *Journal of Cognitive Neuroscience*, 27(4), 679-691. [\[link\]](#)
- ¹² Polyn, S. M., Natu, V. S., Cohen, J. D., & Norman, K. A. (2005). Category-specific cortical activity precedes retrieval during memory search. *Science*, 310(5756), 1963-1966 [\[link\]](#)
- ¹³ Johnson, J. D., McDuff, S. G., Rugg, M. D., & Norman, K. A. (2009). Recollection, familiarity, and cortical reinstatement: a multivoxel pattern analysis. *Neuron*, 63(5), 697-708. [\[link\]](#)
- ¹⁴ Bein, O., Duncan, K., & Davachi, L. (2020). Mnemonic prediction errors bias hippocampal states. *Nature Communications*, 11(1), 1-11. [\[link\]](#)
- ¹⁵ Kim, G., Lewis-Peacock, J. A., Norman, K. A., & Turk-Browne, N. B. (2014). Pruning of memories by context-based prediction error. *Proceedings of the National Academy of Sciences*, 111(24), 8997-9002. [\[link\]](#)
- ¹⁶ Uitvlugt, M. G., & Healey, M. K. (2019). Temporal proximity links unrelated news events in memory. *Psychological Science*, 30(1), 92-104. [\[link\]](#)
- ¹⁷ Sahakyan, L., & Kelley, C. M. (2002). A contextual change account of the directed forgetting effect. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 28(6), 1064. [\[link\]](#)
- ¹⁸ Anderson, M. C., Bjork, E. L., & Bjork, R. A. (2000). Retrieval-induced forgetting: Evidence for a recall-specific mechanism. *Psychonomic Bulletin & Review*, 7(3), 522-530. [\[link\]](#)
- ¹⁹ Bakker, A., Kirwan, C. B., Miller, M., & Stark, C. E. (2008). Pattern separation in the human hippocampal CA3 and dentate gyrus. *Science*, 319(5870), 1640-1642. [\[link\]](#)
- ²⁰ Schlichting, M. L., Mumford, J. A., & Preston, A. R. (2015). Learning-related representational changes reveal dissociable integration and separation signatures in the hippocampus and prefrontal cortex. *Nature Communications*, 6(1), 1-10. [\[link\]](#)
- ²¹ Favila, S. E., Chanales, A. J., & Kuhl, B. A. (2016). Experience-dependent hippocampal pattern differentiation prevents interference during subsequent learning. *Nature Communications*, 7(1), 1-10. [\[link\]](#)
- ²² Duncan, K., Sadanand, A., & Davachi, L. (2012). Memory's penumbra: episodic memory decisions induce lingering mnemonic biases. *Science*, 337(6093), 485-487. [\[link\]](#)

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- ²³ Yoo, J. J., Hinds, O., Ofen, N., Thompson, T. W., Whitfield-Gabrieli, S., Triantafyllou, C., & Gabrieli, J. D. (2012). When the brain is prepared to learn: enhancing human learning using real-time fMRI. *Neuroimage*, 59(1), 846-852. [\[link\]](#)
- ²⁴ Addis, D. R., Wong, A. T., & Schacter, D. L. (2007). Remembering the past and imagining the future: common and distinct neural substrates during event construction and elaboration. *Neuropsychologia*, 45(7), 1363-1377. [\[link\]](#)
- ²⁵ Clark, R. E., & Squire, L. R. (2013). Similarity in form and function of the hippocampus in rodents, monkeys, and humans. *Proceedings of the National Academy of Sciences*, 110, 10365-10370. [\[link\]](#)