

SCIENCE OF FORGETTING

Class Times: M 1:30-3:50pm in RKC 200 | Office Hours: M 4-5pm/W 2-3pm/by appointment

Instructor

Dr. Justin Hulbert
office: Preston 118
phone: x4390
e-mail: jhulbert@bard.edu
(preferred contact)

Course Materials

Della Sala, S. (Ed.). (2010).
Current Issues in Memory: Forgetting. New York:
Psychology Press.

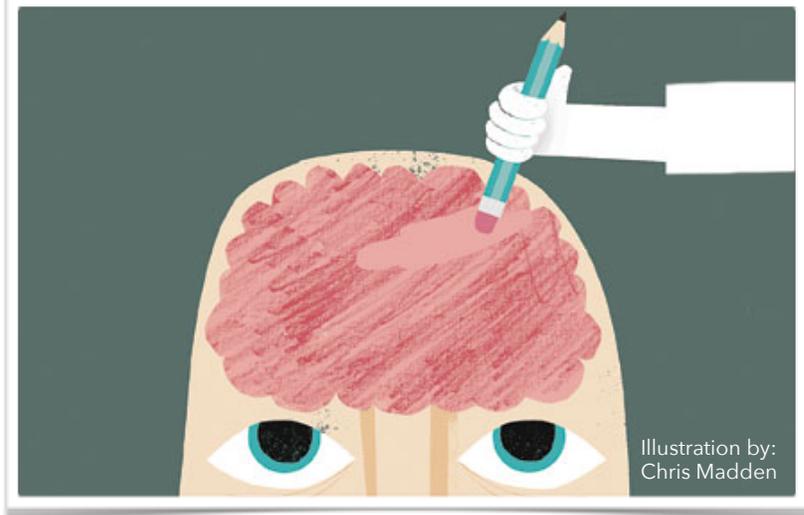
Additional materials will be posted on **Moodle2** (see footer for URL & access code).

Prerequisites

This course is open to moderated students who have completed at least one of the following prerequisites: Cognitive Psychology (PSY 230), Human Memory (PSY 243), Neuroscience (PSY 231), or the instructor's permission.

Assessment

- Forgetting project: **25%**
- Short responses: **25%**
- Article presentation: **25%**
- In-class participation: **25%**
- *Extra credit* ("forgetting on the big screen")

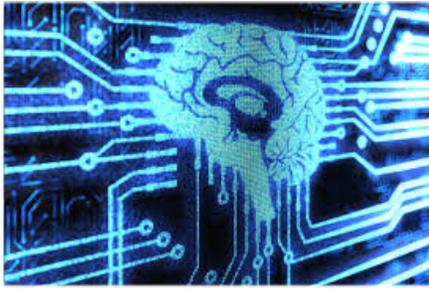


Course Overview

Forget something? Of course, we all have. From annoying tip-of-the-tongue moments to more embarrassing (or worse) memory lapses, forgetting is a regular—and sometimes even advantageous—occurrence. But we still have a lot to learn about exactly how and why these episodes occur. In this seminar, we will consider leading psychological and neuroscientific theories of forgetting, as well as the empirical evidence for them. Do memories simply decay over time or is interference to blame? Can memories be repressed only later to be recovered? How do drugs, alcohol, and traumatic head injuries affect memory consolidation? By the end of the course, you will have acquired the scientific background necessary to address these questions in relation to forgetting in your own life, as well as notorious cases of memory failures in the public sphere.

Joint Responsibilities

Achieving the broad aims of this course requires commitments from instructor and students alike. Below you will find an outline of some of those responsibilities.



Learning Objectives

Coming out of this course, you should have:

- The ability to talk competently about the cognitive processes and neural underpinnings of forgetting, as it occurs in everyday life, under the influence, in patients, and following trauma.
 - Developed an appreciation for the primary research methods and theories used to understand forgetting, as well as their limitations.
 - Come to recognize how computers can both be used to model human forgetting and archive huge quantities of information in a way that the human brain can't.
 - The capacity to critically evaluate evidence related to fundamental debates pertaining to forgetting in the public sphere (e.g., the validity of lie detectors, whether memories can be suppressed and later recovered, etc.).
- **Your instructor agrees to...**
 - a) Make himself available outside of class during posted office hours (and by appointment, as necessary) to answer questions, provide extra help, and discuss matters related to the course of study.
 - b) Respond in a timely fashion (typically by the end of the next school day) to email queries. In the event that more time is required to fully address the student query, the instructor will acknowledge receipt of the email and provide the student with an estimated response time.
 - c) Facilitate a thoughtful, considerate, and engaging learning environment.
 - d) Provide adequate time to complete assignments, minimize changes to the published schedule/ assignments, and immediately notify students about any such changes.
 - e) Provide comprehensive and fair assessments of materials presented or assigned. Assignments, with a level of feedback commensurate with the nature and aims of the task, will be returned to students in a timely fashion.
 - f) Create and welcome opportunities for students to provide feedback on the course/teaching throughout the semester.
 - **You are responsible for...**
 - a) Showing up to class regularly, on time, and prepared.
 - b) Keeping up with the assignments and readings. *I'll make the chapters for the first couple of meetings available on Moodle, for those still shopping around.*
 - c) Substantively participating in class discussions. Note that a top-notch level of participation *does not necessitate responding to every question* raised in class or online; active or passive efforts to welcome contributions from everyone in the class are also looked upon favorably.
 - d) Keeping distractions to a minimum in class. Phones



Best Practices

To make the most of office hours, it is recommended that you:

- Avoid waiting until the last minute (before an exam or due date) to attend. Seeking extra help or clarification well in advance of deadlines will leave you plenty of time to act on advice discussed.
- Email the instructor in advance or bring with you a concise list of topics/questions you wish to discuss, if possible. Itemizing in this way helps ensure all your questions are addressed and saves you time in the long run. That said, *dropping by for a spontaneous, broader chat is also most welcome*. Tea and/or coffee will be available.

When emailing the instructor, keep in mind that:

- Taking the time to draft a concise message with proper spelling/punctuation is appreciated and will be met with a similarly considered reply.

Writing/other academic help is available through [Bard Learning Commons](http://www.bard.edu/dosa/handbook/index.php?aid=1201&sid=705) (lc@bard.edu).

should be turned off or set on vibrate (and kept out of sight).

- e) Submitting assignments on time, digitally via Moodle (unless prior arrangements have been made with the instructor). *A late assignment will immediately be subject to a 10% penalty, with an additional 10% penalty leveled against that assignment's score for every 24 hours it remains late. The only extensions that will be granted involve documented cases of medical or family emergency.* Students requiring alternative testing or course accommodations (e.g., due to disability) should contact the instructor privately as early as possible after the first class meeting.
- f) Upholding academic integrity. Plagiarism (e.g., copying other's words or ideas without proper citation) will not be tolerated. You are expected to work independently on each graded assignment, unless explicitly instructed otherwise. When in doubt as to what constitutes plagiarism within the confines of this course, you are encouraged both to consult the student handbook (<http://www.bard.edu/dosa/handbook/index.php?aid=1201&sid=705>) and to contact the instructor for further guidance. There is absolutely no penalty for asking for clarification; however, failing to abide by Bard's standards for academic integrity can result in failing the course.

Assessment Details

• **Forgetting project** (25% of course grade) first requires you to document your own memory failures over a period of time in a forgetting journal. You will then write a paper examining the underlying causes of forgetting that you documented. The project aims are to: (a) focus your attention on the frequency and diversity of memory lapses that you experience in everyday life, (b) emphasize the costs and benefits associated with those lapses, (c) help relate the concepts and theories presented in this class to real life, and (d) encourage you to think about how you might change your cognition/behavior to better manage your memory. The final

paper should consist of 10-12 pages (not including your forgetting journal/any other appendices you choose to attach) that:

- Characterize the pervasiveness and variety of forgetting that you logged over the self-observation period.
 - Clearly describe the methodology employed to identify the aforementioned episodes and quantify their costs/benefits, while being sure to highlight the limitations of these procedures with suggested improvements.
 - Identify the likely genesis of a target episode (i.e., the most costly documented instance of forgetting), ideally touching on everything from (a) higher-level situational factors and habits to (b) relevant cognitive mechanisms to (c) lower-level neurobiological influences covered in class discussions/readings.
 - Situate these claims in the broader literature (from an independent literature search).
 - Offer at least one specific, justifiable, and realistic strategy for more effectively handling similar situations in the future.
 - Follow APA style with a reference section and page numbers, use a 10- or 12-point font with reasonable margins, and are carefully checked for proper spelling and grammar.
 - Went through a *initial rough-draft stage*, submitted to the instructor on the specified date (see course schedule below) for high-level commentary--this rough draft need not be in a finished/polished form and will not be graded.
- **Short written responses** (*together accounting for 25% of course grade*) to thought-provoking questions/statements posed each week (in the syllabus) should be submitted via Moodle before the start of the subsequent class meeting. These responses need not be written in the style of a formal academic paper; however, they should aim to touch upon the most relevant concepts discussed in class, in assigned readings, and/or from an independent literature search. Feel free to supplement these ideas with popular press accounts that either support or contradict current scientific thinking. To the extent that you continue to have conflicted reactions to the prompt, you are encouraged to explore your evolving thought process in your submission. Each response should include, at least, the equivalent of two paragraphs worth of text (figures and links are also welcome), though your ability to explore pertinent connections to the science of forgetting--rather than quantity or rhetorical polish--will guide assessment of your on-time submission. Given the nature of this exercise, written feedback from the instructor will typically be limited. However, a subset of the ideas raised in the written responses may be flagged for further discussion at the beginning of the next class meeting (with the permission of the student, should the responses include any identifiable information). And, of course, you are encouraged to continue the discussion during office hours.
 - **Presenting an empirical article** (*accounting for 25% of course grade*) affords you an excellent opportunity to practice giving a conference-style scientific presentation, take ownership of a study in order to grasp everything from its big-picture significance down to its methodological

details, and consolidate your understanding of a particular topic. To this end, you will first select one of the empirical articles assigned to be read by the entire class and then prepare a PowerPoint/Keynote presentation on the article, as though you were *introducing it as your very own experiment/series of experiments* to conference attendees. That is, instead of describing what “the authors” hypothesized, did/found/concluded, you will be describing these things using the first person (“I/we”). After your formal presentation of 25 minutes or so, you will then take questions from your audience for an additional 10+ minutes. Audience members could (and should) ask you anything from questions of clarification regarding your presentation/article to hypothetical extensions of your work (e.g., “Based on your conclusions, what would you predict if you changed your design and tried testing...instead?”). To the extent possible, you should attempt to answer these questions from a position of authority (it’s “your” experiment, after all). But just as in real conference settings, sometimes questions from the audience stump the presenter or invite broader discussion. In such cases, you can open up the floor so that we can work through some of the thornier issues together. As the presenter, you should also come prepared with thought-provoking questions for your audience.

- You must make arrangements to meet with the instructor to go over the outline of your presentation at least a week before your scheduled presentation. You are encouraged to bring to this planning meeting a written outline, any questions you may have about the source article, and (to the extent you have any prepared at that point) a rough draft of the slides you’d like to use.
- **Participation and preparation** (accounting for 25% of course grade) are critical for enabling quality class discussions and learning throughout the semester. What’s more, your thoughts, questions, and responses may simultaneously benefit your peers’ understanding and the instructor’s ability to identify topics that require additional attention. These are just some of the reasons why it is so important that you to regularly attend class, eager and ready to participate, having done all of the readings and assignments with due care and consideration. You should aim to contribute at every class meeting. Your contributions to class discussions will be evaluated in terms of both quality and quantity (remember: all students should be given both the opportunity to contribute and respectful consideration of their questions/comments).
 - You are expected to ask each student presenter *at least one* thoughtful question about the content of their presentation/source article. Some of these questions will inevitably arise organically during the presentations; however, you are encouraged to generate some questions of interest while you’re reading the source article in advance. Doing so invites deeper consideration of the readings and better prepares you for the class discussion/Q&A.
- **Extra credit** (10% added to your final participation grade) will be offered should you choose to organize a screening of a movie/television show that prominently features an issue related to forgetting. For credit, one will be expected to start or end the screening with a short presentation discussing the scientific basis (or lack thereof) of the portrayal and a Q&A with the

audience. To confirm your selection and make arrangements for use of Preston Hall's small theater, coordinate with your instructor. As the screenings will occur outside of class hours, other students are under no obligation to attend. Should they attend, 2% extra credit (added to each attending student's final participation grade) will be offered per screening. These screenings may be opened up to the larger Bard community to encourage a scientific dialogue about forgetting in the media. Here are just some ideas for suitable selections:

- ★ *Memento*
- ★ *Eternal Sunshine of the Spotless Mind*
- ★ *Before I Go To Sleep*
- ★ *50 First Dates*
- ★ *Total Recall*
- ★ *Still Alice*
- ★ *Sybil*
- ★ Gilligan's Island (Season 1, Episode 30: *Forget Me Not*)
- ★ For some additional ideas, see: <http://socrates.berkeley.edu/~kihlstrm/movies.htm>

Tentative Course Schedule

Date (day)	#	Topics for Class Assignments
8/31 (m)	1	INTRODUCTION <ul style="list-style-type: none"> ▶ <i>Myths, Perils, & Compensations</i>, Questions About Forgetting ▶ Pick your poison: Schacter's "Seven Sins of Memory" ▶ Forgetting project, explained
9/7 (m)	2	MEMORY'S ARCHITECTURE <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - <i>Myths, Perils, & Compensations</i>, Introduction (.pdf) - <i>Forgetting</i>, Chapters 1-3 (also available on Moodle) - Schacter (1999, <i>American Psychologist</i>)
9/14 (m)	3	HIPPOCAMPAL AMNESIA (Case Study: Clive Wearing) <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - Scoville & Milner (1957, <i>Journal of Neurology, Neurosurgery & Psychiatry</i>) - Vargha-Khadem et al. (1997, <i>Science</i>) - Sharon, Moscovitch, & Gilboa (2011, <i>PNAS</i>) ▶ Before next class, submit a short written response on the following topic: <ul style="list-style-type: none"> a) How is amnesia typically (mis)portrayed in popular media?
9/21 (m)	4	SLEEP & CONSOLIDATION (Case Study: Brett Favre) <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - <i>Forgetting</i>, Chapters 6 & 8 - Diekelmann et al. (2011, <i>Nature Neuroscience</i>) - Oudiette et al. (2013, <i>Journal of Neuroscience</i>) - Mantua et al. (2015, <i>Frontiers in Human Neuroscience</i>) ▶ Before next class, submit a short written response on the following topic: <ul style="list-style-type: none"> a) What are some ways to encourage better sleep habits in college populations?
9/28 (m)	5	RETROACTIVE INTERFERENCE (Case Study: Hermann Ebbinghaus) <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - <i>Forgetting</i>, Chapters 9 & 13 - Bäuml (1996, <i>Psychonomic Bulletin & Review</i>) - Cowan, Beschin, & Della Sala (2004, <i>Brain</i>) - Lustig, Konkel, & Jacoby (2004, <i>Psychological Science</i>) ▶ Assign discussion leaders for future classes (review the QALMRI technique) ▶ Before next class, submit a short written response on the following topic: <ul style="list-style-type: none"> a) Describe one or more scenarios in which retroactive interference might be adaptive/beneficial.

Date (day)	#	Topics for Class Assignments
10/5 (m)	6	<p>DRUGS, ALCOHOL, & CONSEQUENCES (Case Studies: Higinio Salgado, Sarah Hepola)</p> <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - Quednow et al. (2006, Journal of Psychopharmacology) - Montgomery et al. (2012, Human Psychopharmacology: Clinical & Experimental) - Pyapali et al. (1999, Alcohol) - Weissenborn & Duka (2000, Psychopharmacology) ▶ Rate your instructor (online, anonymous) ▶ Before next class, submit a short written response on the following topic: <ol style="list-style-type: none"> a) Should employers be allowed/obliged to prohibit off-the-clock use of legal recreational drugs?
10/12 (m)	--	<p>NO CLASS - FALL RECESS (...DON'T FORGET YOUR FORGETTING PROJECT...)</p> <ul style="list-style-type: none"> ▶ ***Rough draft of forgetting project paper due next <u>Monday, 10/19</u>***
10/19 (m)	7	<p>INFANTILE AMNESIA (Case Study: Luria's Patient S.)</p> <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - Meltzoff (1995, Journal of Experimental Child Psychology) - Wang (2001, Journal of Personality and Social Psychology) - Akers et al. (2014, Science) ▶ Overview of rate-your-instructor survey results ▶ Rough draft of forgetting project paper (plus copy of your in-progress forgetting journal) due today (by 11:59pm via Moodle) ▶ Before next class, submit a short written response on the following topic: <ol style="list-style-type: none"> a) Should young infants be sheltered from discussion of adult topics/language?
10/26 (m)	8	<p>PSYCHOGENIC AMNESIA & FUGUE STATES (Case Study: Agatha Christie)</p> <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - Glisky et al. (2004, Neuropsychologia) - Kikuchi et al. (2009, Journal of Cognitive Neuroscience) - Smith et al. (2010, Neuropsychologia) ▶ Before next class, submit a short written response on the following topic: <ol style="list-style-type: none"> a) Where is the line between "faking" amnesia and willfully forgetting?
11/2 (m)	9	<p>COGNITIVE CONTROL (Case Study: Exchange Student, Columbine Student)</p> <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - Sahakyan & Kelley (2002, Journal of Experimental Psychology) - Storm & Jobe (2012, Psychological Science) - Coman, Manier, & Hirst (2009, Psychological Science) - Hulbert, Henson, & Anderson (submitted) ▶ Before next class, submit a short written response on <i>one</i> of the following topics: <ol style="list-style-type: none"> a) How might the media and society contribute to societal forgetting? b) Is it ethical to administer drugs to encourage memory dampening after traumas?

Date (day)	#	Topics for Class Assignments
11/9 (m)	10	<p>RECOVERED MEMORIES: THE MEMORY WARS (Case Studies: Paul Ingram, Ross Cheit)</p> <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - Geraerts et al. (2006, Psychological Science) - Geraerts et al. (2007, Psychological Science) - Bergström et al. (2013, Biological Psychology) - Patihis et al. (2014, Psychological Science) ▶ Before next class, submit a short written response on the following topic: <ul style="list-style-type: none"> a) Should lie detectors be admissible in court?
11/16 (m)	11	<p>FALSE MEMORIES & CRYPTOMNESIA (Case Studies: Brian Williams, Carlos Mencia)</p> <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - Payne et al. (2009, Neurobiology of Learning and Memory) - Diekelmann, Born, & Wagner (2010, Behavioural Brain Research) - Paz-Alonso et al. (2008, Cerebral Cortex) - Brown & Murphy (1989, Journal of Experimental Psychology: LMC) ▶ Before next class, submit a short written response on the following topic: <ul style="list-style-type: none"> a) What responsibility to memoirists have to tell "the truth?"
11/23 (m)	12	<p>IN-CLASS DEBATE</p> <ul style="list-style-type: none"> ▶ Come prepared to defend (in discussion) at least one position you've addressed in a previous written response for this class. Your position should additionally reflect feedback/relevant ideas introduced since you submitted your original response, as well as any independent literature reviews you've performed. It's fine to have changed your stance since your written submission. ▶ Have a happy Thanksgiving!
11/30 (m)	13	<p>COMPUTATIONAL MODELS OF MEMORY (Case Study: T.C.M.)</p> <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - Forgetting, Chapters 4 & 5 - Gershman et al. (2013, Journal of Neuroscience) - Hulbert & Norman (in press, Cerebral Cortex) ▶ Before next class, submit a short written response on the following topic: <ul style="list-style-type: none"> a) The computer metaphor for the brain is limited. What are some of the most fundamental limitations and what might make for a better metaphor?
12/7 (m)	14	<p>NORMAL AGING & DEMENTIA (Case Study: Auguste D.)</p> <ul style="list-style-type: none"> • Be prepared to discuss: <ul style="list-style-type: none"> - Lupien et al. (1998, Nature Neuroscience) - Gazalley et al. (2005, Nature Neuroscience) - Sahakyan, Delaney, & Goodmon (2008, Psychology & Aging) - Buckner et al. (2005, Journal of Neuroscience)

Date (day)	#	Topics for Class Assignments
12/14 (m)	--	NO CLASS - COMPLETION DAY <ul style="list-style-type: none"> • <u>Optional</u>: Make advance arrangements with the instructor to meet in Preston 118 to discuss progress on your forgetting project paper during this regularly scheduled class time ▶ ***Forgetting project paper due this <u>Friday, 12/18</u>***
12/18 (f)	--	FORGETTING PROJECT DUE! <ul style="list-style-type: none"> ▶ Forgetting project paper due today (by 11:59pm via Moodle)

Schedule is subject to change to improve pacing and/or accommodate unforeseen events (e.g., severe weather). However, for planning purposes, every effort will be made to maintain scheduled due dates.