

The Brain's Conductor: The Psychology of Focus, Flexibility, and Control

📍 William James Hall, Room 401 🗓 Mon. and Wed. 10:30 - 11:45am 🌐 canvas.harvard.edu/courses/157313

🕒 Office Hours: Wed. 1–2PM, William James Hall, 7th Floor 📩 hkeglovits@fas.harvard.edu

Welcome to PSY1351!

Course Description

Cognitive control, also known as executive function, is our ability to behave flexibly and not simply respond automatically to stimuli in our environment. It explains why you're able to avoid answering your phone while driving or concentrate on finishing your homework in a crowded cafe, but also why you might catch yourself walking to last semester's classes when the term changes, or find yourself opening social media apps on your phone without even realizing it. In this course we will dive into important topics in the study of control, discussing multitasking and task-switching; how we stop automatic actions and habits; how attention works; the ways that cognitive control changes over the lifespan, and how it is impacted by illness; whether brain training games make you smarter; how control interacts with short- and long-term memory; what role these processes plays in COVID-19 brain fog; and much more. Classes will involve lectures, demonstrations, activities, and discussion.

Learning Objectives

Students who complete this course will be able to: (1) Describe the scope of abilities and behaviors that are impacted by cognitive control; (2) Produce examples of automatic and controlled behaviors in their daily lives; (3) Compare and contrast theories of cognitive control with supporting empirical evidence; (4) Discuss the impact cognitive control deficits have on major psychiatric disorders; (5) Identify which brain regions are implicated in controlled processes; (6) Interpret data from common standardized tests of cognitive control; Generate testable and falsifiable hypotheses about human behavior; and (7) Integrate data across studies to produce predictions about unstudied populations

Course Assignments

More information about all assignments can be found on Canvas.

Exit Tickets (10%)

After each class, you'll have a choice of 6 prompts (below) to respond to our discussion and reflect on what you've learned. This will be part of a running canvas discussion board which will go live every week. You are encouraged to contribute as much as you want with questions and ideas to the board, but each week you will make at least two posts. One post must respond to one of the prompts below by Friday at 11:59 PM (though I recommend doing them right when you leave class). For the second post which is due by Sunday at 11:59, you have the option of writing an additional new prompt response, or you can respond to something a classmate has written.

Each post (of either type) is graded for completion and you should write 100 words or more, but they do not need to be formatted in any particular way. No late work will be accepted for these assignments (you cannot use your extra 24 hour passes), but I will grade your best 10 weeks out of 12 (no Thanksgiving or Week 1). Across the semester, you should use each of the following prompts at least once (a missing prompt will count as a missing assignment): I'm still confused about... I wish we had discussed this... I really liked learning about... Something that surprised me was... An idea I had for my research proposal was... I learned something from my classmate...

Participation (10%)

See section below on Participation. Your grade will be the final score out of 10 based on your participation across the semester. Also please note attendance policies – any unexcused absences forfeit one point from your participation grade (so if you earn a 9 and miss three classes, you will receive an 8).

Canvas Posts (2% each = 10% total)

These are opportunities for you to regularly engage with our course. Most are due by December 3rd.

- Reflection on Psychology + Society – due Wednesday September 10th
- Make 5 posts to our Control Failures blog

- Reflection on Control Failures blog
- Share research articles (2020 or newer) for 3 course topics, with a 2 sentence summary of findings (*must be submitted different weeks, can be used as sources for your final paper*)
- Post one news or pop science article, with a 2 sentence summary about how it relates to our class

Scientific Skills Papers (8% each = 40% total)

Throughout the semester (approximately every other week) you will submit an assignment which will conceptually work through the main sections of a research study: *background, methods, analyses, discussion, and next steps*. Each assignment will have different requirements (detailed on Canvas) but all will be approximately 3–5 pages in length.

Research Proposal (10%) + Final Paper (20%)

For the final assignment in this class, you will integrate everything you have practiced this semester and write a full research paper about a new study you believe would add to our understanding of cognitive control. It will be the length of a typical scientific article (8–10 pages), where you will explain what the background for this study is, what variables you would manipulate, what measurements you would take and what analyses you would run, what your hypothesis is based on past literature, and then what these (hypothetical) findings would mean for the broader literature.

In preparation for this paper, you will develop the new study you would like to perform based on the ones we have seen in class. You can choose any topic of your liking, and if you have an interest outside of the papers we have read but that you think is relevant to course content, we can discuss before the research proposal is due.

You will write a proposal outline for this new study which includes a one-page background, your question, your hypothesis, and at least 5 additional papers which you will use in motivating your study, with 2–3 sentences annotating each of their relevance. We will have individual meetings to discuss your ideas before the formal proposal is due, to ensure that you are on the right track. More details will be provided on Canvas.

Grade Breakdown

10%	Exit Tickets	A = 93–100	C = 73–76
10%	Participation	A– = 90–92	C– = 70–72
10%	Canvas Posts (2% each)	B+ = 87–89	D+ = 67–69
40%	Scientific Skills Papers (8% each)	B = 83–86	D = 63–66
10%	Research Paper Proposal	B– = 80–82	D– = 60–62
20%	Final Research Paper	C+ = 77–79	E = <60

Course Logistics

Office Hours

Office hours are designated times that I set aside to engage with your questions or thoughts that may come up during class or on assignments. You are welcome to come talk to me about the course, how to write well in psychology, or even what it is like to do a Ph.D. They are even a great place to come do your work – you are very welcome to sit and read/write and ask me/classmates present clarifying questions as you work. My previous students have liked this option as a set time in their week to work on class assignments.

The default format is a drop-in basis (meaning you do not have to stay for the whole hour, you can come and go as you please, and you do not need to tell me ahead of time that you will come) and are for your benefit. Because of this open-door nature, please shoot me an email if you would like to discuss something without others present so we can schedule an uninterrupted time slot. Occasionally, I'll host themed sessions: for example, before the first reading assignment, I'll offer an hour on how to read scientific papers (date TBD). Let me know if there are other topics you'd find helpful for a more structured discussion. Please stop in to see me! :)

Readings

This course does not require a textbook. All readings will be available on Canvas. Please complete the readings *before the class they are listed next to in the schedule*. If a link is broken, just let me know. You can also access readings via the library using the provided citations. As psychologists we know that learning is more effective in small, frequent sessions, so I encourage regular engagement with course material and discussions (not just before deadlines).

Attendance

Regular attendance is essential for your success in this course and for the class as a whole to function well. Therefore, you must attend at least 75% of lectures to pass (that means at least 19 lectures). You have two no-questions-asked excused absences to use during the semester. Absences due to illness or family emergencies are considered excused.

If you plan to use one, please email me at least 30 minutes before class (10AM). Any additional absences will result in a deduction of one point from your participation score (1% of your overall grade). If anything unexpected comes up that might affect your ability to participate or succeed in this course, please reach out. Please don't worry that you're "bothering" me – I'm here to support your learning, and that includes helping you navigate challenges that come up.

Late Assignments

Deadlines are specified in each assignment description under Course Overview. However, sometimes things come up when you least expect them to. Because of this, you will also be allowed two no-questions-asked 24-hour passes to extend a paper deadline (or paper-resubmission deadline) without incurring late penalties. You may combine these passes for a single paper or use them individually, but you cannot break them into pieces (i.e., you can't put 4 hours on an assignment). You cannot use these passes on exit tickets or the final paper.

You do not need to let me know if you are using these or tell me why, but you should be keeping track of whether you have used yours yet. Any additionally late assignments will incur a 10% penalty per 24 hours delayed. This policy is meant to account for any type of lateness, so take heed: even one minute late will use the full 24 hours. I recommend not waiting until the last minute to submit because none of us can predict technology issues!

Accommodations and Support

If you have academic accommodations through the Disability Access Office (DAO), please share your letter with me by the end of the second week of the term so we can make sure you get support. If you do not have formal accommodations yet but have concerns about completing assignments or staying on track in this class, I encourage you to reach out to me so we can discuss campus resource options. I'm always happy to talk during regular office hours or by scheduling a one on one, and our conversations will remain private. In some cases, I may need to consult with DAO to make sure we're applying accommodations appropriately or connecting you with the right resources. My goal is always to support your learning. If something changes during the semester, please come talk to me as soon as possible.

Changes or Modifications to the Schedule

As we move through the semester, I may occasionally decide we need to spend more time on a topic or bring in material that wasn't originally planned. If that happens, I'll give you plenty of notice so you can adjust your reading schedule.

Course Culture

Classroom Environment

My goal is to create an inclusive environment where everyone feels valued, regardless of their background in psychology or personal characteristics. For students, this includes actively listening, ensuring widespread participation, and treating your peers as learners (just like you!) with the same right to contribute and grow. If you have concerns or suggestions about inclusivity in this course, I hope that you will feel comfortable bringing your ideas to me so that we can work together towards improvement.

In this course, we will discuss the impact psychiatric conditions have on people's cognition. I ask that you work with me to do so with respect for all cognitive abilities: these conditions are heterogeneous, and so are the people living with them. You may or may not have personal or social experience with these conditions, but it is likely your peers do – the National Institute of Mental Health estimates more than one in five Americans has any mental illness.

Electronics in Class

In this class, we will often do demonstrations of the tasks in the papers we read, so I encourage you to bring your laptop/tablet to class so you can engage with those activities. However, research shows that using electronic devices in class can reduce focus and lead to more superficial learning (for you and those nearby). For that reason, laptops and tablets are allowed for note-taking or class-activities only. It's surprisingly obvious when someone is multitasking during class, and I'll let you know before we even get to that lecture that it is not possible without detriment!

I know I've been guilty of thinking I'll be able to have my laptop out and not be distracted, just to find myself doing other work/email/sudoku five minutes later, so I encourage you to think carefully about how you want to take notes for this course and check in on your choice throughout the semester. If you want a paper notebook, I can provide one!

Collaboration

One of the great things about being in a university setting is that you get to learn through discussion and collaboration. Sharing ideas can be a valuable part of the learning process. I encourage you to talk with your peers when you're reading papers for class or thinking about what you want to write about. See office hours section above if you want a

place to collaborate! I will include a place on paper submissions for you to note who (if anyone) you talked about the readings / your assignments with. This is not a trick, I genuinely encourage you to talk these papers through. However, all writing you turn in for this course should be your own.

Class Participation

Active engagement is a key part of how we build knowledge together in this course. I expect everyone to contribute to class discussions throughout the semester. You don't need to speak on every topic, but you should be present, prepared, and willing to share your thoughts, questions, or reactions. Our discussions will be richer when everyone's voice is part of the conversation. During our first class, we'll co-create expectations for what thoughtful, respectful discussion looks like. If speaking in class is a skill you are still developing, please come talk with me early in the semester. We can come up with a plan that helps you participate in a way that supports your learning. Just like thinking critically or writing clearly, finding and using your voice is a skill you'll carry beyond this course. I want to create a space where you feel safe practicing it! Midway through the semester, you'll receive a participation check-in (on a scale from 1 to 10) to give you feedback and a chance to adjust if needed. I'll take improvement across the semester into account when calculating your final grade, so this number is not set in stone.

Academic Integrity

AI Use for Assignments

This section may differ widely for your courses this semester, so please read carefully. Each professor will set their own policies on generative AI, and it's your responsibility to follow the rules for each one. If anything is unclear about my policy, I encourage you to come to office hours and chat.

In this class, **the use of Generative AI (e.g., ChatGPT, Claude, Gemini) is strictly prohibited for all assignments** (including but not limited to brainstorming, drafting, summarizing readings, and rewriting). Assignments are designed to build your critical thinking, writing, and research skills; dependence on AI undermines these objectives and compromises the integrity of the learning process. This policy aims to safeguard your learning, not to control you. I want you to do well, and I've carefully designed assignments and support systems to help you succeed without needing AI tools. That includes opportunities to revise your writing, meet with me to talk through ideas, and collaborate with classmates (see the collaboration and office hours sections!). **So what's allowed?** You may use standard spelling and grammar checkers built into programs like Google Docs or Microsoft Word. However, tools like Grammarly, Quillbot, and any AI-based "writing enhancers" are not permitted. If you're unsure whether a tool is okay to use, ask me.

I have designed these policies to aid your learning, and not to unfairly disadvantage students who don't think writing is their strong suit. Please know the writing center at Harvard is a fantastic resource that I absolutely recommend you work with, whether or not you find yourself struggling without AI tools. You are also welcome to bring ideas to me in office hours, where we can talk about effective communication. Additionally, you will see that you have an opportunity to rewrite writing assignments if you want to immediately incorporate my feedback and improve your writing.

I know generative AI is here to stay, and I know you will likely need to learn how to use it for your future careers, so please know I chose this policy after careful consideration. I believe there is high variance in the policies you will encounter while at Harvard so you will have opportunities to practice using these tools, and my primary goal in this course is teaching you about Cognitive Control and not generative AI (for now). If you are interested in learning more about generative AI and large language models, I will be teaching a class in the Spring (PSY 1409).

Violations of this policy will be treated as academic misconduct under the Harvard Honor Code. I trust that you're here to grow and learn, and I appreciate your commitment to doing that honestly.

Academic Honesty

Unless I specifically say otherwise, all assignments must be your own independent writing. When you're drawing on someone else's ideas, whether it's a classmate, a reading, or something else, be sure to cite your sources using APA style. Plagiarism and other forms of academic dishonesty violate the Harvard Honor Code and will be taken seriously. Improper citation, even if unintentional, can still be considered plagiarism. Submitting someone else's work (or work that isn't properly credited) not only risks academic consequences (including referral to the Honor Council), but it also cheats you out of the education you're investing your time and energy in. I have zero tolerance for plagiarism, and I want you to be thoughtful and careful about how you use sources.

If you're unsure about what counts as appropriate collaboration or how to cite something, just ask. I'm happy to help.

[Harvard's honor code](#) ↗ [FAS Handbook for Students](#) ↗ [Harvard Guide to Using Sources](#) ↗

Course Schedule

Date	Topic	Readings	Assignments: Due by 11:59 PM
Part 1: Introduction to Cognitive Control			
In this portion of the course, we will discuss: the history and modern problems of measuring control, the core building blocks of control, and the investigative tools we have to understand control.			
Sept 3	Introduction to Control	Badre (2022), Chapter 1	
Sept 8	History of Studying Control	Burgess et al. (1998)	
Sept 10	Measuring Control with Behavior	Milner (1963) and Bugg et al. (2008)	Reflection on Psychology + Society Due Wed. Sept. 10th
Sept 15	Working Memory	Miller (1956) and Luck & Vogel (1997)	
Sept 17	Effort Allocation	Kool et al. (2010)	Paper 1 Due Fri. Sept. 19th
Sept 22	Stopping and Inhibition	Logan et al. (1997) and Aron et al. (2003)	
Sept 24	Error Monitoring	Notebaert et al. (2009) and Jentzsch & Dudschig (2009)	
Sept 29	Task Switching	Rogers & Monsell (1995)	
Oct 1	Multi-Tasking	Pashler (1984) and Ophir et al. (2009)	Paper 2 Due Fri. Oct. 3rd
Oct 6	Stability-Flexibility Tradeoff	Fröber & Dreisbach (2017)	
Oct 8	Brain Measurements	Gehring et al. (1993) and Banich et al. (2000)	
Oct 13	Indigenous Peoples' Day, No class	No Readings	
Oct 15	Brain Regions	Bunge et al. (2003) and Botvinick et al. (1999)	Paper 3 Due Fri. Oct. 17th
Oct 20	Theories/Models of Control	Shenhav et al. (2013) and Miller & Cohen (2001)	Note: You will be assigned to read only one of these two papers
Oct 22	Theories/Models of Control 2	Braver (2012) and Eisenreich et al. (2017)	
Part 2: Variations and Interactions of Cognitive Control			
In this portion of the course, we will discuss: control across the lifespan, how control is impacted in clinical populations, the influences of life experiences on control, and how control interacts with other psychological phenomena.			
Oct 27	Development: Early Life	Gerstadt et al. (1994) and Bunge et al. (2002)	
Oct 29	Development: Aging	Bugg et al. (2007)	Paper 4 Due Fri. Oct. 31st
Nov 3	Mood and Thought Disorders	Adams et al. (2011) and Meiran et al. (2011)	
Nov 5	Psychosis	Cohen et al. (1999)	
Nov 10	Neurodegenerative Diseases	Muslimovic et al. (2005) and Stopford et al. (2012)	Research Paper 1:1 chats this week - bring 2 ideas for final project
Nov 12	Life Factors	Tun et al. (2013) and Shannon et al. (2025)	Paper 5 Due Fri. Nov. 14th
Nov 17	Injury and Illness	Ellemborg et al. (2007) and Duindam et al. (2022)	
Nov 19	Can Control be Improved?	Melby-Lervåg & Hulme (2013)	
Nov 24	Research Proposal Writing Workshop	A Brief Guide to Writing the Psychology Paper ↗	Paper Outline Due Tues. Nov. 25th
Nov 26	Thanksgiving, No class	No Readings	
Dec 1	Control and Long Term Memory	Anderson & Green (2001) and Anderson et al. (2004)	
Dec 3	Control and Learning	Rmus et al. (2021)	All Canvas Posts Due Wed. Dec. 3rd

Final Research Paper Due Thursday December 11th

Helpful Resources

Harvard Writing Center

“The Writing Center is a place for Harvard students to get help with any aspect of their writing, from specific assignments to general writing skills. The Writing Center is staffed by trained tutors who provide individual conferences to students working on any writing assignment. You don’t have to have a finished paper to come for a conference. You can come with ideas, notes, or a draft.” To schedule an appointment, please visit [their website](#), which includes a scheduler app. We also have Psychology-specific writing advising: [Psych Writing Advising](#).

Counseling and Mental Health Services

Harvard Counseling and Mental Health Services (CAMHS) offers a variety of services to support your mental health and wellbeing. For information on how to get support, visit [camhs.huhs.harvard.edu](#). You may also call their 24/7 help line at 617-495-2042 or visit the CAMHS Cares Line page: [CAMHS Cares Line](#).

The Academic Resource Center (ARC)

The ARC offers a wide range of support for students working toward academic goals. These include peer tutoring, study skills workshops, support for study groups, and guidance for long-term projects like senior theses. [Learn more](#)

Mignone Center for Career Success (MCS)

MCS supports students in exploring and pursuing their career and professional goals, wherever those may lead. You can find career tools, appointment scheduling, and resources at [MCS eResources](#).

Boston Food Bank

If you or someone you know is experiencing food insecurity, the Greater Boston Food Bank offers support. Visit [gbfb.org/need-food](#) to find food resources in the area.

Financial Resources at Harvard

“As a Harvard student, you have access to financial resources and opportunities at the University. The programs and policies listed on this page are designed to help you take advantage of those opportunities during your four years at Harvard. We always encourage you to contact the Griffin Financial Aid Office and speak with a financial aid officer if you have any questions.” Visit [Additional Funding Procedures](#) to learn more.