



Cognition: The Science of How We Learn, Think, and Act

PSYC 2040

LO: Getting Started



welcome!



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- instructor



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- learning assistant



agenda for today

- meet & greet
- course & canvas walkthrough
- effective study strategies



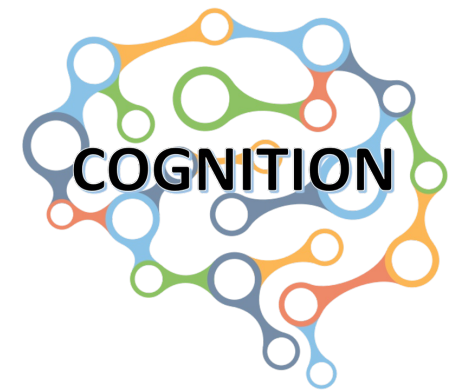
ice-breaker

- pair/triple up with someone you don't know:
 - your name and pronouns
 - your year & major
 - where home is

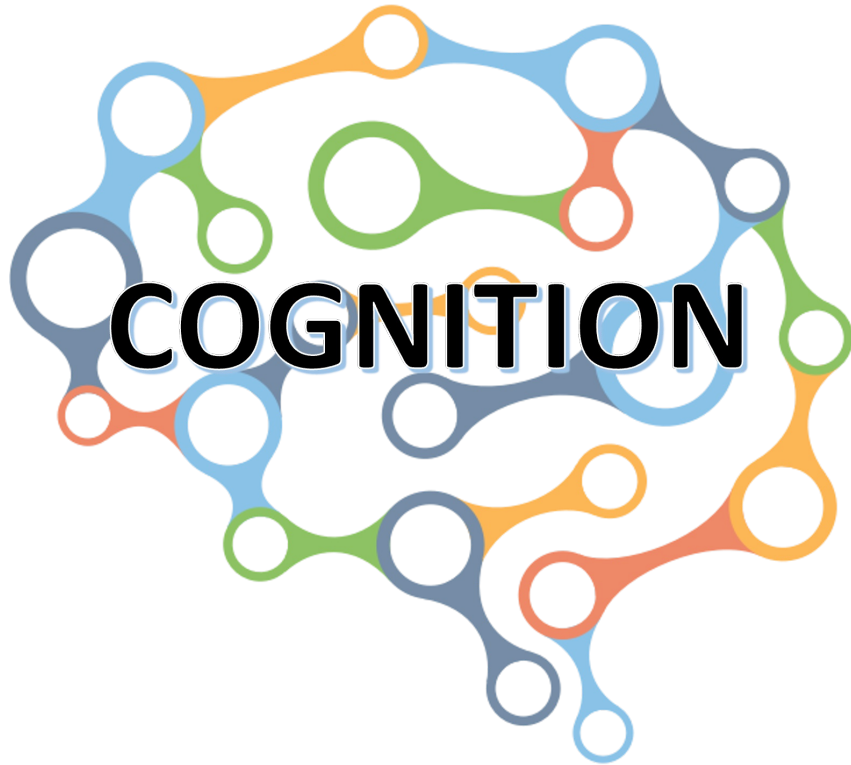


visit
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where does the course live?



- course website:
 - <https://teaching-me.github.io/cognition/>
 - syllabus, (most) readings, course schedule, and assignment details
 - will be updated regularly
- canvas
 - announcements
 - quizzes + assignment submission
 - grades
 - discussions



what is this course about?

- introducing you to the **scientific study of human cognition**
 - how people acquire, represent, and use knowledge to guide their everyday functioning
- **learning goals**
 - **understand** the fundamental questions & prominent methodologies in the study of cognition
 - **connect** theoretical ideas about cognition to real-world applications and their implications
 - **reflect** on the sociocultural issues surrounding the study of cognition

textbook

- free and open-source textbook written by Dr. Matthew Crump, Assistant Professor at Brooklyn College, NY
 - Matthew J. C. Crump. (2021). *Instances of Cognition: Questions, Methods, Findings, Explanations, Applications, and Implications*. <https://crumplab.com/cognition/textbook>
- no need to purchase/download, all material is available on our website



course syllabus walkthrough

- find a **group** of 5!
- **review the syllabus** (5 minutes):
- **come back** with any questions!

general class format

- you are expected to do the **readings before class**
- **slides** will be uploaded before class
 - minimize looking over in advance so you can be present!
- **class time** will be devoted to
 - lectures + interspersed activities
 - discussions + question time
- **each week**, these things are due
 - quiz (due Sunday midnight)
 - writing assignment (due Monday midnight)
- irregular things:
 - meme submission (optional, active all semester)
 - research summaries



to quiz or to write?



- key things to remember:
 - both are worth **3 points**
 - each quiz has 10 questions (*typically* 4 **easy**, 3 **medium**, 3 **hard**)
 - most **writing** assignments have **2-3 options** (exam-like short-answer, but also more exciting/fun exploration-based)
 - the **highest score** counts, i.e., you can earn a **maximum of 3 points per week**
- how to choose:
 - if you feel very good about **most concepts** a week, try the **quiz**
 - if a particular **writing** assignment really **speaks** to you, do it!
 - I do NOT expect everyone to do BOTH every week

canvas walkthrough

- canvas will be mainly used for:
 - **announcements** (make sure you have **notifications turned on!**)
 - go into account settings on canvas to check this
 - all **submissions**:
 - quiz and/or writing assignment
 - meme submission
 - keeping track of **flex days**



questions?

exercise: **how** do you study?

- let's take 2 minutes to note:
- what **study methods** do you typically use when you are preparing for an exam?
- think of **as many strategies** as you use
- try to identify the ones you use **more frequently** and the ones you use **less frequently**.



study strategies and their frequency

<i>Strategy</i>	<i>Percent who list strategy</i>		<i>Percent who rank as #1 strategy</i>		<i>Mean rank</i>
1. Rereading notes or textbook	83.6	(148)	54.8	(97)	1.5
2. Do practice problems	42.9	(76)	12.4	(22)	2.1
3. Flashcards	40.1	(71)	6.2	(11)	2.6
4. Rewrite notes	29.9	(53)	12.4	(22)	1.8
5. Study with a group of students	26.5	(47)	0.5	(1)	2.9
6. “Memorise”	18.6	(33)	5.6	(10)	2.0
7. Mnemonics (acronyms, rhymes, etc)	13.5	(24)	2.8	(5)	2.4
8. Make outlines or review sheets	12.9	(23)	3.9	(7)	2.1
9. Practise recall (self-testing)	10.7	(19)	1.1	(2)	2.5
10. Highlight (in notes or book)	6.2	(11)	1.6	(3)	2.3
11. Think of real life examples	4.5	(8)	0.5	(1)	2.8

three effective study strategies

- retrieval practice
- elaborative encoding
- spaced practice



retrieval practice

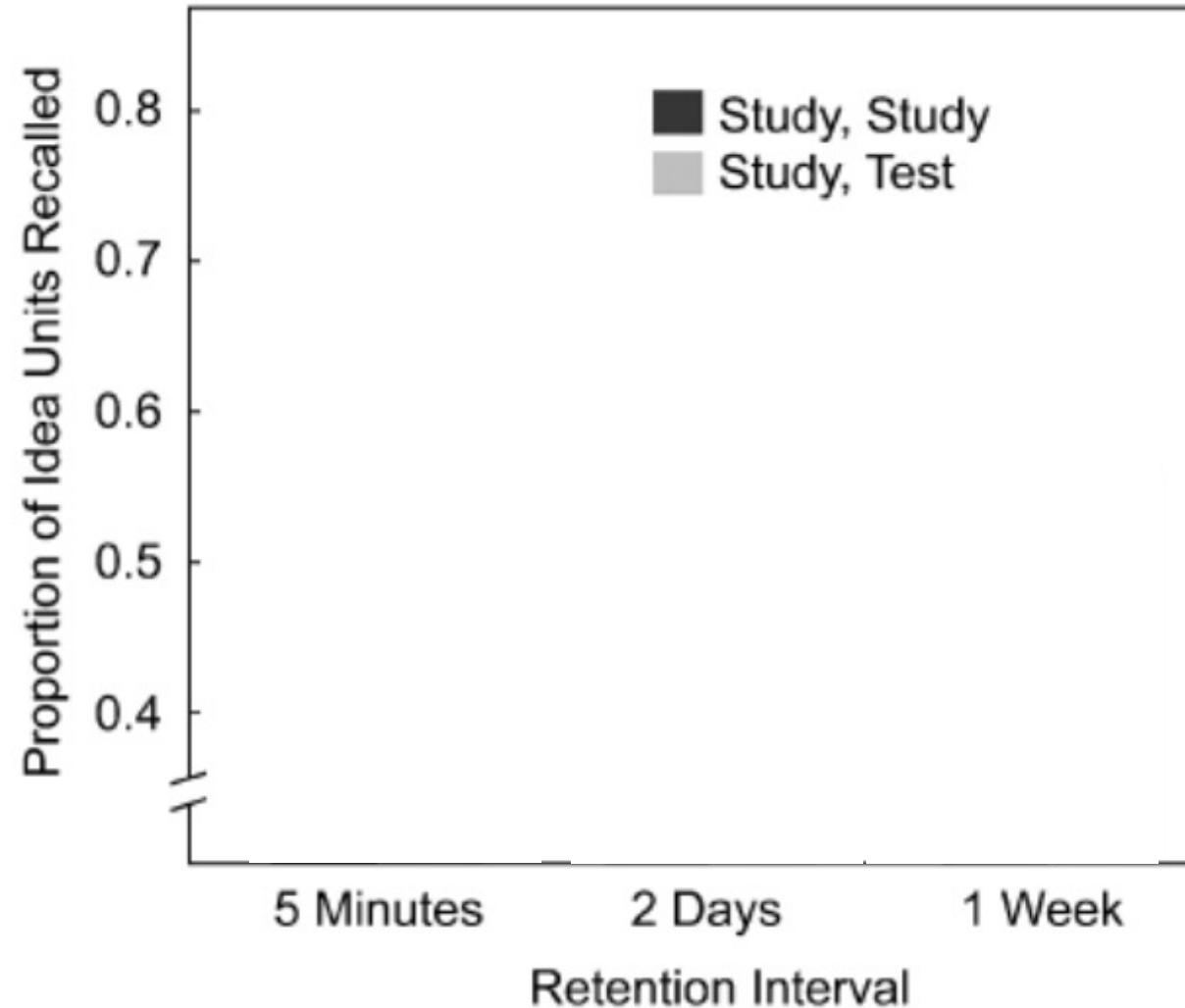
Research Article

Test-Enhanced Learning

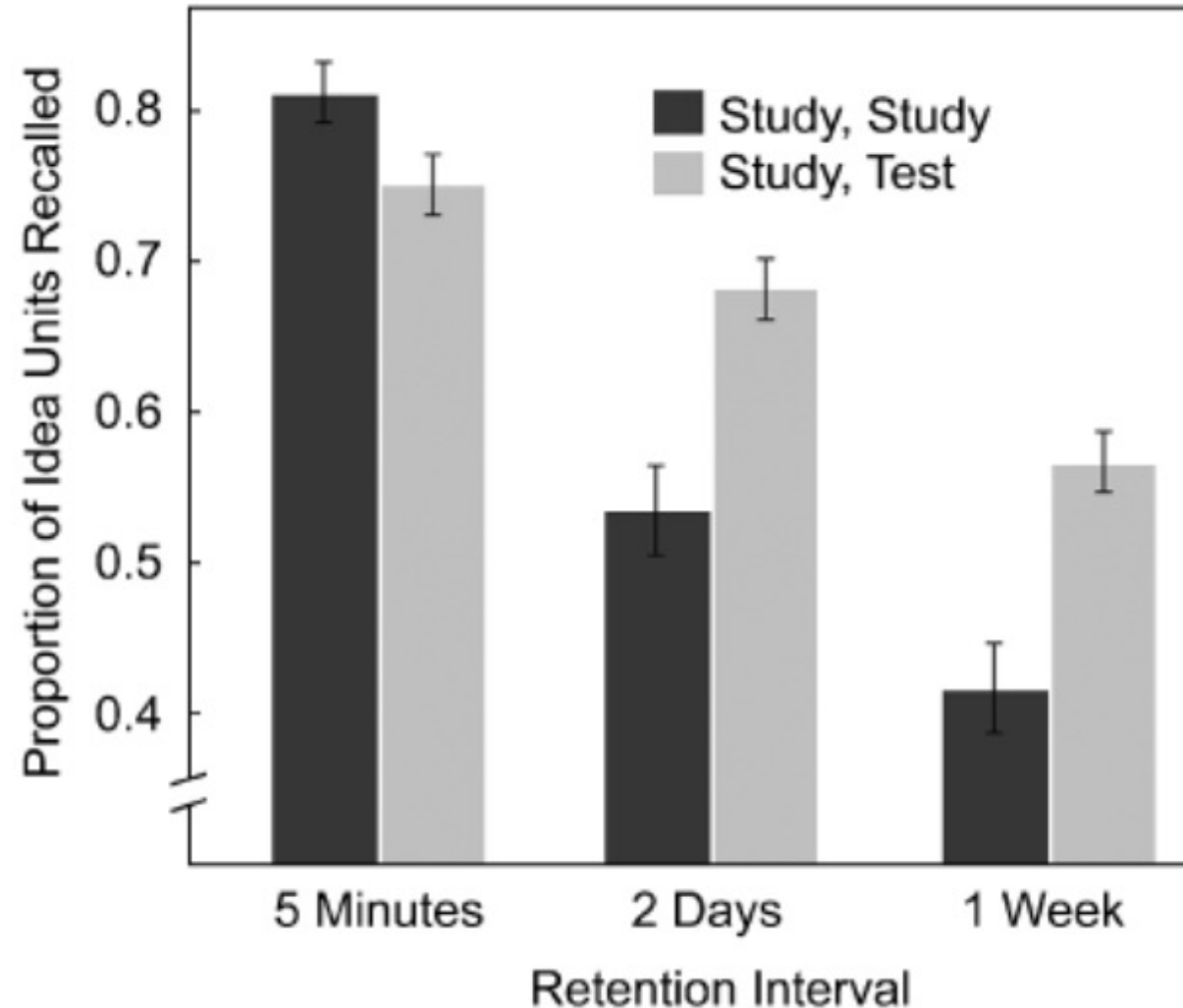
Taking Memory Tests Improves Long-Term Retention

Henry L. Roediger, III, and Jeffrey D. Karpicke

Washington University in St. Louis



retrieval practice



Research Article

Test-Enhanced Learning

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a test can take many different forms for example:

- weekly quizzes
- writing what you remember from a lecture/reading
- teaching a friend or family member
- flashcards

retrieval practice in a college classroom

- undergraduate statistics for psychology at the University of Louisville
 - **section 1**: students answered ~4 questions during the last 5-10 minutes of class without looking at their notes
 - **section 2**: business as usual, nothing special at the end of class
- both sections took the same 4 exams throughout the semester
- on average, students in **section 1 (86%)** did better on exams than students in **section 2 (78%)**
- bottom line: spending 5-10 minutes after each class meeting to review that day's lecture from memory can boost exam performance

class exercise!

sentences about different men will be presented on the screen one at a time

please read and try to remember each of the sentences on your own

do not write anything down!



class exercise

get a piece of paper/open a document or note and number it 1 through 8

write down the missing part of the sentence. If you can't remember the missing part, just place a slash next to that number.

time to score!

Write down the total
number you got
correct on your sheet

- 1) The **rich** man picked up the chair.
- 2) The **dying** man used a feather.
- 3) The **dishonest** man looked closely at the wrapper.
- 4) The **artistic** man put down the knife.
- 5) The **frightened** man ironed the sheet.
- 6) The **bearded** man threw out the coupon.
- 7) The **kind** man ate the dinner.
- 8) The **short** man bought the broom.

class exercise – part 2

sentences about different men will be presented on the screen one at a time.

please read and try to remember each of the sentences by generating a **reason** for the man-action relation. Think about **why** the man did the action. For example, you might remember that the hungry man got into the car because he wanted to drive to a restaurant.

do not write anything down!



Get another piece of paper and number it 1 through 8. You can use your worksheet here as well.

Please write down the missing part of the sentence. If you can't remember the missing part, just place a slash next to that number.

Time to score!

Write down the total number you got correct on your sheet

- 1) The **smart** man went to work.
- 2) The **sad** man looked at his new boat.
- 3) The **religious** man used the saw.
- 4) The **tall** man bought the crackers.
- 5) The **sleepy** man bought the mug.
- 6) The **evil** man wound up the clock.
- 7) The **thin** man found the scissors.
- 8) The **bald** man used the phone.

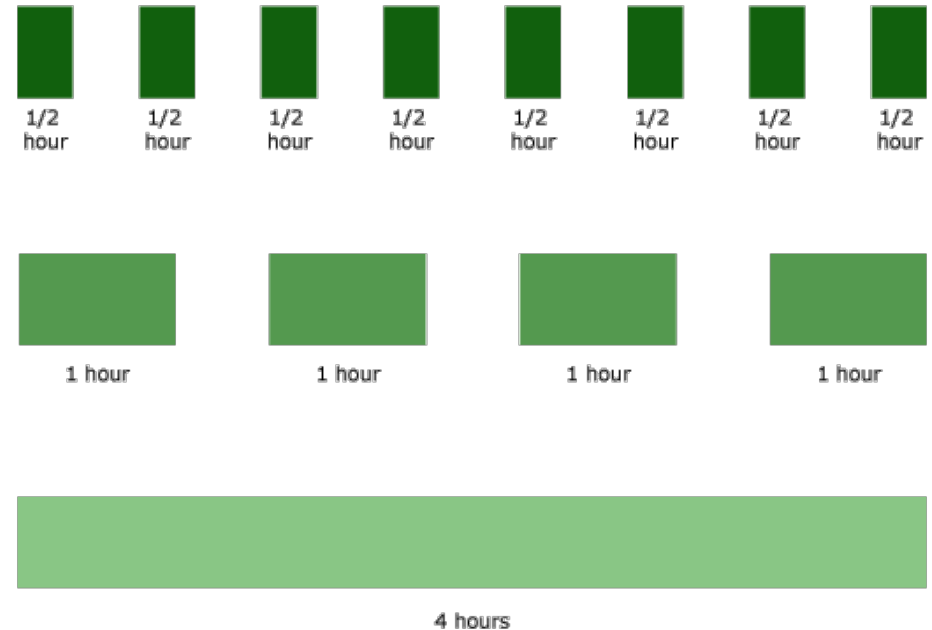
Compare your performance on the two tests – which one did you do better on?

elaborative encoding in a college classroom

- undergraduate biology students at Salisbury University
 - group 1: answered simple “why” questions embedded in textbook sections
 - group 2: read the same textbook sections twice
- all students took the same 105-question test
- on average, students in group 1 (76%) did better than students in group 2 (69%)
- bottom line: asking yourself “why” questions as you read a textbook (or other course material) can improve your memory for what you are reading.

spaced practice

- distributing study sessions **over time (spacing)** instead of cramming them into one long study session (massing)



spaced practice in medical school

- surgical residents in a Chicago medical school were trained in microsurgery (videos and practice on a synthetic artery model)
 - **group 1 (massed)**: 4 training sessions all in one day
 - **group 2 (spaced)**: 4 training sessions over one month
- a month after the last training, all residents took the same test, where they were asked to repair the damaged aorta of an anesthetized rat
- **~15%** of the residents in the **massed group failed** the task, whereas **all** the residents in the **spaced group succeeded** (no one failed)

spaced practice in a college classroom

- undergraduate precalculus course for engineering students
 - **condition 1**: multiple questions on a topic appeared all on one quiz (**massed**)
 - **condition 2**: multiple questions about a topic were **distributed across 3 quizzes** administered over multiple weeks
- all students took the same precalculus final exam and the same readiness exam for calculus at the start of the following semester
- on average, students who took the **spaced quizzes did better** than the students who took **massed** quizzes on both exams
- bottom line: **spacing out your studying** over time can boost long-term retention of course material

bottom line: study actively, not passively

- utilize **evidence-based effective** study strategies:
 - **retrieval practice**: quiz yourself, ask-a-friend, flash cards
 - **elaborative encoding**: ask “why” questions, use mental maps, paraphrase
 - **spaced practice**: space out your studying, do not cram!
- but...your **attitudes** toward effort also matter
 - a **“growth mindset”**
 - read the assigned chapters/readings **before** class
 - come prepared to class for engagement
 - minimize distractions (more next time on this!)
 - plan early for assignments, assessments

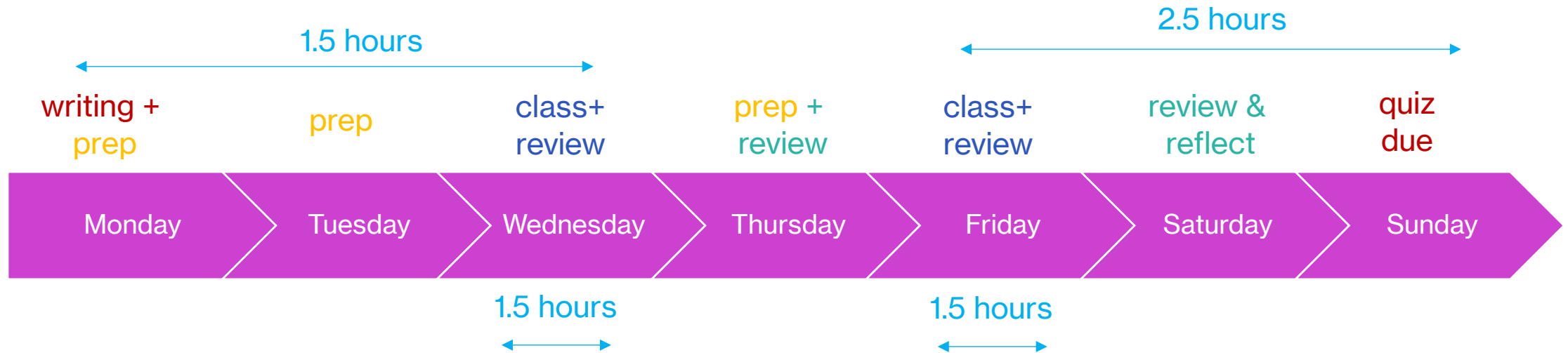


the course is designed to support you

- retrieval practice
 - class participation via activities/reflections
 - weekly quizzes on each learning module
 - mid-semester assessments
- elaborative encoding
 - writing assignments that push you to think more deeply about the content
- spaced practice
 - mid-semester and final assessments that cover broader content



a weekly breakdown



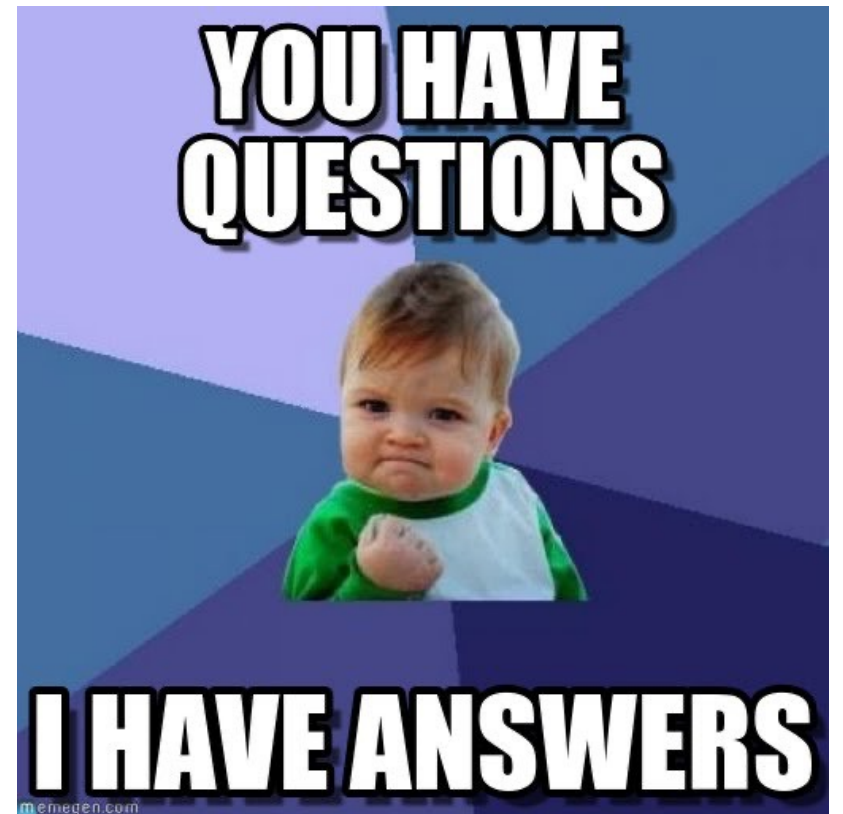
if I was a student...



- I would
 - USE A CALENDAR!!
 - actively study module material before Tuesday
 - use retrieval practice / elaborative encoding strategies
 - make high-quality notes in class
 - revisit my notes and do some retrieval practice / reflection on Thursday/Friday
 - attempt the quiz on Friday/Saturday
 - think about a possible meme on Saturday/Sunday
 - evaluate whether I need to do another assignment on Saturday/Sunday

when you have thoughts and questions

- **office hours**: these are YOUR hours!
 - Prof. Kumar
 - Wed, 2-4 (in person)
 - Thurs, 2-4 (Zoom)
 - Nick
 - email him to find a time to meet!
- meetings by **appointment**
- anonymous **feedback**
 - end of February, March, and April



reasons to come to office hours (and whose)

- Prof. Kumar

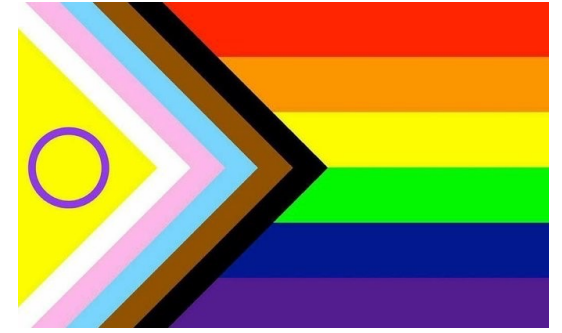
- Qs about material
- Qs about course policies/assessments/grades
- reflections on the classroom experience

- Nick

- informal feedback about course pace
- Qs about Canvas deadlines/due dates
- review sessions before assessments



valuing our voices



- I will try my very best to create an **inclusive environment** for all of you
 - we are all **different** and that is a **strength**
 - we also exist **beyond the classroom!**
- **but...nobody is perfect!**
 - my style may not match your style
 - I am always listening and learning so **PLEASE** reach out!

next class



- **before** class:
 - *fill out*: pre-class survey (link in Canvas announcements)
 - *read*: L1: What is Cognition?
- **during** class:
 - what is cognition?
 - how do we study the mind?
 - what does cognitive research look like?