UN1021 Science of Psychology: Explorations and Applications
3 points
Spring 2021
TR 11:40-12:55
Location: online & synchronous

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Bulletin description: UN1021 offers a broad introductory survey of psychological science, discussing relations between the brain, behavior, and experience, with regard to topics including: sensation and perception; learning, memory, language, and cognition; emotions and motivation; development, personality, health and well-being, and social behavior. The course emphasizes science as a process of discovering both new ideas and new empirical results -- and the ways in which psychological research can be used to address real-world challenges.

Learning objectives:
1. <u>Core concepts and themes in psychology</u>: Identify basic concepts and research findings, and give examples of psychology's integrative themes.
    a. Biological, psychological, social, and cultural factors continually influence mental processes and behavior.
    b. Our minds interpret the outside world using many shortcuts, both helpful and harmful.
    c. We learn a great deal about psychological processes from investigating how they develop, change with experience, and are disrupted.
    d. Psychology is a science *of people, by people, for people,* and thus comes with a unique set of ethical concerns.
2. <u>Collecting, assessing & synthesizing empirical research</u>:
    a. Identify the kinds of questions psychologists ask at different levels of analysis. Find, identify, and appropriately cite relevant empirical research in psychology
    b. Evaluate the ability of a study design to address a particular research question. Evaluate the methods, results, limitations, and broader implications of research findings and communicate these findings in oral, written, and graphical form.
    c. Evaluate the accuracy of popular news reports about empirical research and the appropriateness of graphs and other visualizations of data.

3. <u>Applications of psychology</u>:
   a. Apply psychological principles of learning, memory, social cognition, etc. to work effectively in this class, both individually and in groups.
   b. Apply scientific reasoning to make sense of our daily lives, including things like habits, decisions, and social relationships.
   c. Evaluate the applicability of research findings to real-world scenarios and leverage those findings to inform our understanding and decision-making related to: social justice, education, public policy, and the health and well-being of individuals and societies.

Prerequisites: None.

Role in the Psychology Curriculum: UN1021 explores many of the same topics as UN1001, but uses a different course structure; students should take one or the other but cannot receive credit for both. Like UN1001 The Science of Psychology, UN1021 can serve as a prerequisite for further coursework in the Psychology department. For the Psychology major and concentration and for the Psychology post-baccalaureate program, it can fulfill the introductory psychology requirement. Similarly, for the Neuroscience & Behavior major, it can fulfill the P1-introductory psychology requirement. Pending approval by the Committee on Science Instruction, UN1021 can also be used to partially fulfill the science requirement.

Course format: While this course will explore many of the same topics explored in UN1001 The Science of Psychology, it is structured somewhat differently. We will be piloting a team-based learning model. While some portion of synchronous class time will include overviews of key concepts, much of the time will be devoted to deeper dives into current debates or unanswered questions in psychological research. The course will be structured around several challenges that are relevant in the world right now, and students will work in assigned teams of ~4 to figure out ways that psychological research might inform these challenges.

These challenges may change from year-to-year, but the spring 2021 challenges are as follows:
1. Identifying misinformation and combatting its spread
   [drawing on research on attitudes and persuasion, group dynamics, cognitive biases, and scientific literacy]
2. Recommending strategies for academic success in the first year of college
   [drawing on research on the brain, learning, memory, motivation, and metacognition]
3. Creating a policy regarding in-person vs. remote learning in a preschool-elementary school setting
   [drawing on research on visual perception, language, child development, and emotion]
4. Writing an amicus brief, providing the court with empirical evidence they might consider in a hypothetical juvenile court case
   [drawing on research on adolescent development, brain development, judgment and decision-making, emotion, stress, and morality]

5. Recommending changes to social media platforms to promote well-being
   [drawing on research on personality, social psychology, and mental health & well-being]

Communication with Instructor & TAs: We are very much looking forward to the opportunity to get to know you this semester. We each hold weekly office hours, so please make an effort to stop by. You don't need to have a specific question! We're happy to talk about course-related material, but we can also talk about lab research, course planning, etc. If you have the option of either emailing or going to office hours, please do everything you can to go to office hours. You'll get an immediate answer to your question, and we'll have the chance to get to know each other. If you do need to email, please help us not to miss your email by writing the subject line as "UN1021: [topic of email]." We can't always respond to emails right away, so if you haven't heard back from us after a few days, please feel free to ping us again – or, better yet, come to office hours!

Course materials: In addition to textbook readings, this course will rely heavily on the empirical literature and academic reviews, as well as the occasional popular science article, podcast, and video. Pdfs and/or links to these materials will be posted under the relevant Module on Canvas. The textbook is available for purchase in hard copy or as an e-book.
> Textbook: Introducing Psychology: Brain, Person, Group by Stephen M. Kosslyn & Robin S. Rosenberg (FlatWorld).

Course Components

Before-class preparation: We will spend our time in class tackling big questions in psychology, working together as a class and with our individual teams to discuss empirical and review articles and their implications for public policy, education, justice, etc. In order to be able to fully participate in these discussions, we need to make sure that we come to class prepared, having spent some time reading (/watching/listening to) the materials and generating questions for discussion. To help facilitate this preparation, we'll have short, open-book quizzes on Canvas on the assigned class materials before each class session. These quizzes will give you a chance to check your understanding and enable you to engage with the sometimes complex material multiple times in order to better facilitate your understanding. There are no make-up quizzes; however, your lowest quiz grade will be dropped, allowing you to miss one quiz without any repercussions.

Introduction to the Psychology Department: As this is likely your first class in the Psychology department, we aim to use this opportunity to introduce ourselves. Towards that end, we will post video interviews with faculty about their areas of research, their career trajectories, and the pressing questions and challenges in their respective fields of study, for your optional viewing. During some class periods, we will also have the opportunity to hear short lectures from PhD

students and postdoctoral scholars at Columbia, who are doing research relevant to our challenges.

Class-wide discussions: As part of the Canvas quizzes, you'll be asked to generate questions for discussion in class. These questions can focus on sections of the material you found unclear or challenging or on extensions of the assigned material. We will collate these questions before class and use them as a way to guide our in-class discussions. Discussion topics will range from student-submitted questions to in-class demonstrations and explorations of new topics, building on what you learned before class.

Team-based challenges: While class time will incorporate some more traditional lecturing, some portion of synchronous class time will be devoted to working in your assigned teams on the particular challenge for the unit. More detailed directions and rubrics will be provided in class, but, briefly, each challenge is structured such that individual members of a team will each be assigned to be the "expert" in a given area relevant to the challenge. The expert on a topic will be tasked with reading an assigned empirical or review paper on the topic and writing a short (1-2-page) paper linking that article to the challenge. During each class, the expert for that day will present their findings to their team. At the culmination of each unit, teams will pool their expertise to address the challenge. Thus, for each challenge, you will turn in an individual assignment related to the topic you're assigned to be expert on, and your team will turn in the final team assignment for that unit, e.g., the research-backed policy proposal, amicus brief, recommendation.

For example, in the first graded case, you will recommend policy regarding what psychology research can contribute to decisions regarding remote vs. in-person learning for young children. One person in your group might be assigned to be the expert on face recognition and recognizing emotions in faces. They will come to class on that day having read an article on their own and written a short (1-2-page) paper and will share their expertise as it relates to how wearing masks might affect children's ability to recognize people and identify their emotions. Another student in the group will be assigned to be the expert in child development, and they will come to that class having read an article and written a short paper on the topic and will present their findings to their group regarding what that literature has to say about how our understanding of faces and emotions develops and what we know about learning from screens vs. learning in-person at different stages of development. Another group member will be an expert on language, again exploring how children learn language and the importance of visual facial cues to comprehension and the ability to learn language in person vs. remotely. And so on. Each team member will present on one day in the unit, and at the end of the unit, they will bring together their expertise and put themselves in the role of advisors to a local preschool/elementary school and co-create a policy recommendation for the school that is grounded in psychological research.

Final individual project: Early in the course, you'll be asked to come up with a challenge of your own -- a societal, legal, educational, public policy, etc. question that can be somehow addressed by psychology research. Much as you're doing in your groups, you will find literature addressing different aspects of the question and synthesize it in a final project that can take the form of a policy paper, an amicus brief, proposed intervention, etc. More detailed guidance and rubrics will be shared in class, but, briefly, the project will be scaffolded throughout the course such that you will first turn in a topic proposal and citations, then an annotated bibliography, an outline, and a rough draft and will receive feedback at each step in the process so that you're well-prepared for the final draft.

Grading: Final course grades will be calculated as follows:
 Daily Canvas quizzes (after dropping lowest 1): 20%
 Attendance & class participation: 5%
 Team-based challenges: 40% Total
  [Challenge 1 will not be graded]
  Challenge 2: Individual assignment 6%; Team assignment 4%
  Challenge 3: Individual assignment 6%; Team assignment 4%
  Challenge 4: Individual assignment 6%; Team assignment 4%
  Challenge 5: Individual assignment 6%; Team assignment 4%
 Final project: 35% Total
  Topic proposal: 2%
  Annotated bibliography: 5%
  Outline: 5%
  Rough draft: 8%
  Final draft: 15%

Course policies:
Fostering an inclusive classroom: My aim is to foster a learning environment that both supports a diversity of perspectives and experiences and encourages you to expand your understanding. Please reach out to me with any concerns or suggestions you may have to better address your learning needs and to improve the effectiveness of this course. I look forward to working together to create a classroom community built on mutual respect and inclusivity.

Students who may require classroom/test accommodations should make an appointment with me before or during the first week of class. You should also contact the Office of Disability Services (ODS) in Lerner Hall before the start of the course to register for these accommodations. The procedures for registering with ODS can be found at
https://health.columbia.edu/content/disability-services or by calling (212) 854-2388.

Health & well-being: Many of us have periods in which our mental health and well-being suffer, especially during such difficult and uncertain times. I urge you to take care of yourselves – and of each other. Please prioritize your mental health and wellbeing and know that there are many resources available to you both within our classroom community and throughout the university: https://health.columbia.edu/content/counseling-and-psychological-services http://blogs.cuit.columbia.edu/nightline/ https://universitylife.columbia.edu/student-resources-directory#health We are in this together. Please reach out for help if you need it, and, if you see others who are struggling, please make sure they know how to find the support they need.

Ensuring Academic Integrity: As members of this academic community, we are responsible for maintaining the highest level of personal and academic integrity, which includes presenting only our own work on assignments and exams. You can find detailed definitions and examples on the Academic Integrity site (https://www.cc-seas.columbia.edu/integrity). Any questions of academic integrity will be automatically referred to Columbia's office of Student Conduct and Community Standards. The semester progresses very quickly, and there is a lot of material to learn. If you find yourself in a situation – e.g., starting an assignment too late or not having enough time to study for an exam – in which it seems like the best option may be to violate your academic integrity, please see me. Together, we can work out a solution. It is far better to have a few points deducted from an assignment than to compromise your academic integrity and potentially put your academic standing at the university in jeopardy. Plagiarism—whether intentional or inadvertent—is a serious violation of academic integrity. If you have any questions about what constitutes plagiarism and/or how to properly cite sources, please come to me. I am more than happy to help.

Schedule: The schedule below is preliminary and subject to minor adjustments as needed. (The textbook is referred to below as K&R.)

Date	Topic	Readings and Assignments
1/12	Introduction/ Thinking like a psychological scientist	● Read K&R Ch. 1 Intro to Psychological Science ● Watch course welcome video
1/14	Research design	● Review syllabus and K&R Ch. 1 ● Complete Canvas quiz ● Optional: Watch faculty video on getting involved in research
1/19	Reading empirical	● Pennycook, G., McPhetres, J., Zhang, Y., Lu, J. G., &

	articles and review papers	Rand, D. G. (2020). Fighting COVID-19 misinformation on social media: Experimental evidence for a scalable accuracy-nudge intervention. *Psychological science*, *31*(7), 770-780. ● Watch video guide to reading scientific papers ● Complete Canvas quiz ● Optional: How to (seriously) read a scientific paper
1/21	Neurons & neuron communication	● Read K&R Ch. 2: Biology of Mind & Behavior, sections 2.1 (Brain Circuits) and 2.2 (The Nervous System), pp. 73-90 ● Complete Canvas quiz

1/26	Brain	● Read K&R Ch. 2, sections 2.3 (Spotlight on the Brain) and 2.4 (Probing the Brain), pp. 90-111
		● Complete Canvas quiz
		● Each member of your group is assigned to read/watch/listen to a different article/video/podcast and prepare to share what they learned with their group:
		   ○ Fearless : Invisibilia
		   ○ Damn It, Basal Ganglia | Radiolab
		   ○ An Artist with Amnesia
		   ○ The Final Five Percent

1/28	Learning	● K&R, Ch. 4: Learning, pp. 189-236 ● Complete Canvas quiz ● Optional: TEDMED - Talk Details - Let's quit abusing drug users ● Team expert reads & writes report on: ○ Roediger III, H. L., & Pyc, M. A. (2012). Inexpensive techniques to improve education: Applying cognitive psychology to enhance educational practice. *Journal of Applied Research in Memory and Cognition, 1*(4), 242-248.
2/2	Memory	● Read K&R, Ch. 5: Memory, pp. 243-289 ● Complete Canvas quiz ● Optional: Faculty video on memory research ● Team expert reads & writes report on: ○ Schacter, D. L. (1999). The seven sins of memory: Insights from psychology and cognitive neuroscience. *American Psychologist, 54*(3), 182-203.

2/4	Memory continued	- Read [Science, Journalism, and the Legacy of Patient HM](#) - Read Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R. (2008). Learning styles: Concepts and evidence. *Psychological science in the public interest*, *9*(3), 105-119. - Complete Canvas quiz - Team expert reads & writes report on: - Son, L. K., & Metcalfe, J. (2000). Metacognitive and control strategies in study-time allocation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *26*(1), 204.
2/9	Wrap up + Team project	- Read [Knowledge Emotions: Feelings that Foster Learning, Exploring, and Reflecting](#) - Team expert reads & writes report on: - Kang, M. J., Hsu, M., Krajbich, I. M., Loewenstein, G., McClure, S. M., Wang, J. T. Y., & Camerer, C. F. (2009). The wick in the candle of learning: Epistemic curiosity activates reward circuitry and enhances memory. *Psychological science*, *20*(8), 963-973. Team project due 2/12
2/11	Visual perception	- Read K&R, Ch. 3: Sensation & Perception, section 3.1 Vision, pp. 129-162 - Complete Canvas quiz - Team expert reads & writes report on: - Pavlova, M. A., Guerreschi, M., Tagliavento, L., Gitti, F., Sokolov, A. N., Fallgatter, A. J., & Fazzi, E. (2017). Social cognition in autism: face tuning. *Scientific reports*, *7*(1), 1-9.
2/16	Face perception	- Read [Face-Blind](#) - Read K&R, Ch. 7: Emotion & Motivation, section 7.1 Emotion, pp. 359-378 - Complete Canvas quiz - Team expert reads & writes report on: - Hancock, K. J., & Rhodes, G. (2008). Contact, configural coding and the other-race effect in face recognition. *British Journal of Psychology*, *99*(1), 45-56.
2/18	Audition & language	- Read K&R, Ch. 3, section 3.2 Hearing, pp. 163-171 - Read K&R, Ch. 6, section 6.1 Language, pp. 295-303 - Complete Canvas quiz - Optional faculty video on auditory perception - Team expert reads & writes report on: - Klatte, M., Bergström, K., & Lachmann, T. (2013). Does noise affect learning? A short review on noise effects on cognitive performance in children. *Frontiers in Psychology*, *4*,

		578. **Topic proposal due 2/19**
2/23	Infant & child development	● Read K&R, Ch. 9: Psychology over the Life Span, section 9.2 Infancy & Childhood, pp. 466-491 ● Complete Canvas quiz ● Optional faculty video on developmental research ● Team expert reads & writes report on: ○ Woodard, K., & Pollak, S. D. (2020). Is there evidence for sensitive periods in emotional development?. *Current Opinion in Behavioral Sciences, 36*, 1-6.
2/25	Wrap-up + Team project	● Choose at least one recent journal article relevant to the challenge, from a list of choices we will provide, and be prepared to incorporate the findings into your team project. **Team project due 3/1**
3/2	Spring break	-----
3/4	Spring break	-----
3/9	Adolescent development	● Read Casey, B. J. (2015). Beyond simple models of self-control to circuit-based accounts of adolescent behavior. *Annual Review of Psychology*, *66*, 295-319. ● Watch Prof. Sarah-Jayne Blakemore's lecture, The Neuroscience of the Teenage Brain ● Complete Canvas quiz ● Optional: Teenage Brains: Wired to Learn	Columbia	Zuckerman Institute ● Team expert reads and writes report on: ○ Galván, A. (2014). Insights about adolescent behavior, plasticity, and policy from neuroscience research. *Neuron*, *83*(2), 262-265.
3/11	Emotion, motivation, & stress	● K&R, Ch. 7: Emotion & Motivation, section 7.2 Motivation & Reward, pp. 379-389. ● K&R, Ch. 10: Stress, Health, & Coping, section 10.1 What is Stress, pp. 513-525 and section 10.3 Strategies for Coping, pp. 543-562 ● Complete Canvas quiz ● Team expert reads and writes report on: ○ Silva, K., Shulman, E. P., Chein, J., & Steinberg, L. (2016). Peers increase late adolescents' exploratory behavior and sensitivity to positive and negative feedback. *Journal of Research on Adolescence*, *26*(4), 696-705.

		Annotated bibliography due 3/12
3/16	Judgment & decision-making	K&R, Ch. 6: Language, Thinking, & Intelligence, section 6.3 Problem Solving & Reasoning, pp. 312-321. Judgment and Decision Making	Noba - Complete Canvas quiz - Team experts read and writes report on: - Rudolph, M. D., Miranda-Domínguez, O., Cohen, A. O., Breiner, K., Steinberg, L., Bonnie, R. J., ... & Richeson, J. A. (2017). At risk of being risky: the relationship between "brain age" under emotional states and risk preference. *Developmental cognitive neuroscience*, *24*, 93-106.
3/18	Morality	- Heiphetz, L. (2020). The Development and Consequences of Moral Essentialism. Advances in Child Development and Behavior, 59, pp. 165-187. - Complete Canvas quiz - Team expert reads and writes report on: - Dunlea, J.P. & Heiphetz, L. (in press). Moral psychology as a necessary bridge between social cognition and law. *Social Cognition*.
		Outline due 3/22
3/23		Choose at least one recent journal article relevant to the challenge, from a list of choices we will provide, and be prepared to incorporate the findings into your team project.
		Team project due 3/26
3/25	Social psychology	- Read K&R, Ch. 13: Social Psychology, section 13.1 Social Cognition, pp. 675-695. - Read Frith, C., & Frith, U. (2005). Quick guide: Theory of mind. *Current biology*, *15*(17), R644-R645. - Complete Canvas quiz - Team experts reads and writes report on: - Baek, E. C., & Falk, E. B. (2018). Persuasion and influence: what makes a successful persuader?. *Current opinion in psychology*, *24*, 53-57.
3/30	Social Psychology cont.	- Read K&R, Ch. 13, section 13.2 Social Behavior and 13.3 A Final Word: Ethics, pp. 695-722. - Read Penner, L. A., Dovidio, J. F., Piliavin, J. A., &

		Schroeder, D. A. (2005). Prosocial behavior: Multilevel perspectives. *Annu. Rev. Psychol.*, *56*, 365-392. ● Complete Canvas quiz ● Team expert reads and writes report on: ○ Weisz, E., Ong, D. C., Carlson, R. W., & Zaki, J. (2020). Building empathy through motivation-based interventions. *Emotion,* in press.
4/1	Personality	● Read K&R, Ch. 8: Personality, sections 8.2 What Is Personality pp. 418-428 and 8.5 Sociocultural Influences on Personality pp. 442-447 ● Complete Canvas quiz ● Team expert reads and writes report on: ○ Park, G., Schwartz, H. A., Eichstaedt, J. C., Kern, M. L., Kosinski, M., Stillwell, D. J., ... & Seligman, M. E. (2015). Automatic personality assessment through social media language. *Journal of personality and social psychology*, *108*(6), 934. **Rough draft due 4/2**
4/6	Psychopathology	● Read K&R, Ch. 11: Psychological Disorders, section 11.1 Identifying Psychological Disorders pp. 569-581 and section 11.2 Overview of Mood and Anxiety Disorders pp. 581-598 ● Complete Canvas quiz ● Team expert reads and writes report on: ○ Guntuku, S. C., Yaden, D. B., Kern, M. L., Ungar, L. H., & Eichstaedt, J. C. (2017). Detecting depression and mental illness on social media: an integrative review. *Current Opinion in Behavioral Sciences*, *18*, 43-49.
4/8	Treatment	● Read K&R, Ch. 12: Treatment, sections 12.2 Treatments that Focus on Behavior, 12.4 Biologically-Based Treatments, 12.5 Treatment Issues ● Complete Canvas quiz ● Team expert reads and writes report on: ○ Hölzel, B. K., Lazar, S. W., Gard, T., Schuman-Olivier, Z., Vago, D. R., & Ott, U. (2011). How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. *Perspectives on psychological science*, *6*(6), 537-559.
4/13	Well-being + Wrap-up	● Read: Gosling, S. D., & Mason, W. (2015). Internet research in psychology. *Annual Review of Psychology*, *66*, 877-902. ● Complete Canvas quiz **Team project due 4/16**

4/15	Wrap-up + Open Questions	● Reading TBD [earlier in the semester, we'll vote on a topic of interest that we didn't have the chance to discuss in class]
4/21		**Final project due**