

# **SOCIAL COGNITIVE NEUROSCIENCE (Psych 3003H.01) Fall 2018**

## **Laffere Hall, Room E3510; Tues & Thurs, 12:30-1:45**

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**Course Overview:** This class will focus on the principles of social cognitive neuroscience (SCN), which represents a merging of social science questions with the methods and theory of cognitive neuroscience. Although the course will survey a broad array of topics in SCN, a particular focus of this course will be on attention, especially the control of attention. Several theories posit that the control of attention is fundamental to humans' ability to navigate the world successfully. Virtually everything we do, from everyday skills such as driving a car or having a conversation to higher-order abilities like those needed to maintain a diet or pursue other long-term goals, requires that we be able to focus attention on relevant information and ignore or filter out distractions. On the surface, this seems easy; and indeed we can often do it without thinking. However, in many cases we have to work to maintain attention control, which can be hard. As we will learn in this course, failure to maintain attention control can have very serious, even grave consequences.

**Books:** Lieberman, M. D. (2013). *Social: Why our brains are wired to connect*. New York: Crown.

Richtel, M. (2014). *A Deadly Wandering: A Mystery, a Landmark Investigation, and the Astonishing Science of Attention in the Digital Age*. New York: Harper Collins.

**Readings:** In addition to assigned portions of the books, other readings will be assigned on occasion relating to a given week's topic. Readings will be distributed at least one week prior to the class for which they are assigned.

**Lecture Slides:** Due to the nature of this course, lecture slides will be used only occasionally. When they are used, we will try to provide the PowerPoint slides prior to the relevant class period. However, this will not always be possible due to your Instructor's tendency to be working on lecture slides right up until class time.

**Grades and participation:** Four things will determine your grade in this course. You will be required to: (1) *actively contribute to seminar discussions*; (2) *lead seminar discussions*; (3) *take quizzes based on the readings each week*; and (4) *write a research review paper*. The relative contribution of each of these things to your final grade will be as follows:

- |                                 |     |
|---------------------------------|-----|
| 1. Active Seminar Participation | 20% |
| 2. Reading quizzes              | 20% |
| 3. Group presentations          | 30% |
| 4. Review paper                 | 30% |

Final grades will be calculated based on a percentage of the total points available in the course, using the following scale:

- A = 90% and above
- B = 80%-89%
- C = 70%-79%
- D = 60%-69%
- F = 59% and below

**1. Active seminar participation.** An important part of the success of this course rests on the participation and contribution of all members. Actively participating means that you must do the readings prior to each class and be able to discuss their contents. Critically analyze what you are reading. What is the theme of the reading? What are the key points and conclusions? How do these differ from your own intuitions or experiences? How would you test these alternatives? What processes might be responsible for the observed effects (i.e., what mechanisms might be at play)? How could this information be applied in business, clinical, or other real world settings? What might be the limits of application? These are just some examples of the types of things that you might think about when reading for this course; you can likely come up with many others.

Active learning is more effective, particularly at the level this course aims to hit. We will try to answer your questions as best we can. However, we do not know everything about the field and therefore likely will not be able to answer every question. We will also try to give background information on each topic at the beginning of each class, when appropriate. However, there might be times when we mistakenly assume that everyone understands what's being said when this is not the case. Feel free to ask questions or indicate that you would like to spend some time going over the basics of a particular issue we may have skimmed over.

**2. Reading quizzes.** At the beginning of each class period, you will be given a short quiz on the assigned readings for that class period. The reading quizzes serve three related functions: (1) they encourage you to read the material carefully and critically; (2) they will focus your ability to discuss the material in a reasonably informed way during class; and (3) they are a tangible way of showing the instructor that you have read the material and are prepared for the week. Another way to view this requirement is that the reading quizzes will take the place of a final exam, which we won't have.

Keep in mind that the quizzes will be only 3-5 questions and will cover broad and general conclusions from the readings; they will not focus on nitpicky details. In other words, you do not have to fully comprehend in a deep way everything in each of the readings in order to do well on the reading quizzes—that's what our class discussions are for. As long as you do the readings and give your best effort to understand the main concepts covered in each one, you will do just fine. The grading scheme additionally reflects this: each correct answer is worth 3 points, and each *incorrect* answer is worth 1 point. Failure to provide any answer at all will be worth zero points. This grading scheme is meant to provide the largest rewards for doing the readings and trying to understand the main concepts, but will also provide a modest reward simply for showing up to class and putting forth some effort.

**3. Group presentations.** One of the course goals is to engage critically with the material and develop skills in finding relevant information in primary sources so as to increase your understanding of a topic. One of the ways in which you will achieve this is through facilitating class discussion. However, because this can be somewhat daunting, you will not be asked to do this alone. Rather, for each class period when a reading from *Social* or *A Deadly Wandering* is assigned, a group of two or three people will be tasked with finding 2-3 recent scientific journal articles focused on a topic covered in the assigned readings, and providing the class with an overview of the findings presented in those articles. This overview should take the form of a 10-15 minute presentation to the class.

You might have noticed that both of the source books for this course are somewhat dated, having been published in 2013 and 2014, respectively. Science moves forward at a very rapid pace, and therefore findings presented in those two books are already somewhat outdated. Thus, an important component of these group presentations will be finding 2-3 empirical articles that are MORE RECENT than the studies discussed in *Social* and *A Deadly Wandering*. For example, if a study discussed in the book was published in 2005 and there are no additional, more recent studies on that topic presented in the book, then you should look for articles on that same topic that were published after 2005. Ideally, you will find the most recent articles you can on that topic (e.g., within the last couple of years). We encourage you to find empirical articles that present direct or conceptual replications of studies presented in the readings.

An important component of your presentations should be providing the class with an update on relevant findings. By reading primary sources and presenting them to the class, facilitators will develop a more nuanced picture of the current state of the science and practice disseminating that science effectively to the

rest of the class. For each article, in addition to providing a brief overview of the main topic, the facilitators should include (but are not limited to): 1) Enough information for others to find the article themselves (title, author, publication year, publication journal, etc.); 2) A brief discussion of the methods; and 3) A brief discussion of the results. Additionally, the facilitators should synthesize the findings across related articles and discuss how together the articles broaden and update our understanding of a particular issue. In other words, why did you choose these particular articles to share and what we can learn from them?

Additionally, there will be a peer-evaluation aspect to your grade. Besides the grade the group as a whole receives for the presentation, you each will provide a peer evaluation for the other member(s) of your team, as well as type up and submit a brief description of your contribution to the group project (half of a single-spaced page, at the most). Your peer evaluations will also contribute to your overall grade.

Hannah will do the first one of these, in order to provide an example of the type of presentation we are looking for. You will have two opportunities to indicate the topic/class period for which you would like to serve as one of the facilitators. First, you can email Hannah or Dr. Bartholow prior to the second class meeting (Thursday, August 23, at 12:30pm) to request a particular date (see the course calendar, which begins on page 6 of the syllabus). Alternatively, you can sign up for a class period during the second class meeting on Thursday, August 23. Requests will be accommodated as much as possible, on a first-come, first-served basis. You can choose to form a group with someone else in the class, or you can sign up for a particular day by yourself and be matched with whoever else signs up for that day.

**4. Review paper.** The final review paper is an important contributor to your final grade. Review papers will be on topics in *social neuroscience*, chosen by you and approved by Dr. Bartholow or Hannah. For those who have never written anything like this before, a review paper focuses on a particular problem or research question that has been empirically studied in the scientific literature (or that you believe requires empirical study). You then search for peer-reviewed journal articles that report investigations of this particular research question, and synthesize the information provided in each of the articles to describe the overall state of knowledge on that research question. As an example, let's imagine that you're interested in the topic of gender stereotypes and believe it would be important to understand how information about gender, as a social construct, is processed in the brain. In your review paper, you would want to introduce the topic of gender and gender stereotypes, review previous research showing the prevalence of gender stereotypes, how they function and how they influence behavior, and then discuss your particular research question related to gender stereotypes. For instance, are they represented in the brain in the same way as other stereotypes (e.g., stereotypes related to race or age) or other semantic knowledge (e.g., that birds can fly, but not all birds fly)? How do we form gender stereotypes, and does that learning rely on similar neural networks as other forms of knowledge or attitudes? What can neural representations about gender tell us about how men and women are evaluated in the work place? Then, your review paper would present findings from previous empirical articles that tell us something about the answer to your research question, and possibly finish with a "Future directions" paragraph or section in which you discuss gaps in the existing literature (i.e., what scientists still don't know). We'll talk more about specifics as the semester progresses.

Given that this is an Honors-level course, I expect students' written work to be extraordinary, meaning it should be better than what generally is expected of students in regular (i.e., not Honors) courses. To facilitate your writing the best paper possible, we will devote considerable time in class to working on your review papers. As you will notice in the Course Calendar section of the syllabus, assigned reading drops off considerably after the mid-term exam. This is because we will devote a considerable portion of each class to working on your papers, and will spend less time on discussion of readings. **NOTE, however, that you will still need to devote time outside of class to working on your research proposals.** Class writing time should be considered time for you to get assistance with framing your ideas into a viable research project, to ask questions about structure and formatting, and seeking input on issues that come up when you are working independently outside of class.

To encourage you to begin thinking about your research question early on in the semester, you will submit your research question to me by **September 25**. This will be your opportunity to tell me what you think you would like to write about, but with the understanding that your topic needs approval before you go forward with it. Then, we will expect you to turn in a brief outline of the empirical articles you have found that are relevant to your research question (no more than a page or 2), by **November 13**. Based on your

topics, we will aggregate students together that have similar research topics and schedule time in class for us to discuss as a group the published articles you have found. This will allow you to talk with others in the class who have similar interests and allow me to give you feedback about your literature search and potentially suggest articles that you haven't yet considered. The reason for these deadlines is to force you to put "pen to paper" at a point in the semester when you can still change course if need be. Critically, in order for you to know whether your idea for the review paper is viable, you will need to spend time reviewing the relevant research literature related to your topic idea(s) long before November 13.

The process of scientific inquiry is inherently iterative and collaborative, which means that all of us get ideas from other scientists. Still, an important requirement of your paper is that it be your own work/ideas and not taken wholesale from something you read. This can be a difficult balancing act, especially when one is first attempting to come up with ideas, so please discuss this with me if you have any questions or if anything about it is unclear. In order to come up with an idea, it can be helpful to write down questions that you have while doing the assigned reading. Another key requirement is that your research question be directly relevant to the topic of this course. That doesn't mean it has to be derived from something we talk about in class or from one of the assigned readings, but it has to fit under the broad umbrella of social neuroscience.

***Bonus activity! Self-regulation training.*** An important theme running through the content of this course is the idea that attention and our ability to control it are critical to our functioning as a social species. In order to get anything accomplished, we have to be able to focus attention on relevant tasks and avoid becoming distracted by things unrelated to those tasks. The number and variety of potential distractions has virtually exploded in just a couple of decades, which can create serious challenges for us as a species.

In particular, all of us have become emotionally attached to our phones, for reasons that will be discussed in *A Deadly Wandering*, and this has some consequences for our attention control and self-regulation abilities. The near-constant, immediate social connection that our phones provide is very alluring, even addictive, and plays on very basic, evolutionary needs for such connection. But, similar to the way that easy availability of fattening foods exploits our evolutionary need for calories, too much of a good thing can be a bad thing. Our brains aren't really designed to be able to handle this level of connection and speed of information delivery. As noted by Dr. Daniel Lieberman in *A Deadly Wandering*, "We use stone-age brains with space-age technology, and that can lead to trouble." In short, our phones (and other connected devices) hijack our brains, taking advantage of evolved needs and leading us to devote far more attention to them than to our present physical worlds.

To illustrate this fact, I am hoping to encourage our collective ability to exercise self-regulation by spending time ignoring and not using our phones. To provide an incentive for this activity, I would like each of you to download an app called Pocket Points (it's free). This app gives you points for not using your phone while you're in class, which can be used to get discounts at various restaurants and stores around town and online. In addition, weekly updates of your Pocket Points totals can be submitted (e.g., sending a screenshot) for bonus points toward your final grade in the course. Specifically, if you participate and send your point totals for 12 or more weeks of the semester, you will earn a 3% bonus (i.e., extra credit) toward your final grade.

## What Makes This an Honors-level Course?

As noted on the Honors College website ([http://honors.missouri.edu/faculty/course\\_criteria.php](http://honors.missouri.edu/faculty/course_criteria.php)), the Honors College at MU offers courses specifically designed for high-ability, motivated students. Several specific criteria distinguish honors-level courses from non-honors courses. Below, I have listed several of these criteria and detailed the ways in which this course meets them.

1. *"Honors courses should differ from non-honors courses in depth and/or breadth of coverage. In many Honors courses, students will explore connections within and among disciplines, as well as the relationship of course material to a diverse global society."*
  - a. The field of social cognitive neuroscience directly involves "connections within and among disciplines," including (especially) social psychology, cognitive psychology, cognitive neuroscience, biology, and philosophy.
  - b. This course is designed to provide a much deeper treatment of the subject matter than you would find in a typical undergraduate course.
2. *"Where appropriate, [honors] courses should use primary source documents (e.g., journal articles, original texts), and require students to design and conduct research models appropriate for the discipline."*
  - a. We will not use a standard textbook for this course. Rather, the weekly readings will come from primary source documents, supplemented by chapters from the books.
  - b. In both your review paper and your group presentations, you will be required to search for and read empirical papers related to topics within social neuroscience, as covered throughout the course.
3. *"Honors courses should require students to participate in discussion, debate, simulations, or case studies where the student is expected to actively engage with the course material."*
  - a. Classroom time will be spent primarily on discussion of assigned readings and their implications for the advancement of knowledge of interactions between mind, brain and social behavior. Students will be expected to contribute to class discussion each week by voicing their opinions and providing their interpretations of the research under consideration. This discussion is intended to provide a forum for debate and challenging assumptions in addition to sharing potentially divergent perspectives on scientific process and outcomes.
4. *"Honors courses should ask students to develop, discuss, and defend opinions, attitudes, or values related to the course content; to pose questions and develop oral and written responses appropriate to the discipline; and/or to develop leadership skills through presentations, service-learning internships, or professional development activities."*
  - a. Through group presentations, students will be responsible for guiding class discussion of the assigned readings. This format will provide students opportunities to develop and practice group leadership skills, particularly related to encouraging their own and other group members' critical thinking abilities.
  - b. Class discussion is additionally intended to bolster students' comprehension of the material and to encourage the development of opinions and evaluations of the material.
5. *"Honors courses should encourage students to interact with faculty and with one another, both inside and outside class, as part of the learning process. For this reason, they should be designed for fewer students than other classes and be taught by regular faculty members."*
  - a. This course is capped at 20 students to allow for the seminar-style, discussion-based format described here.
  - b. The instructor for this course is a tenured Full Professor with more than 17 years' worth of experience in conducting and teaching social neuroscience.

## Course Calendar and Readings

\*Dates indicated with an asterisk indicate dates that include a group presentation.

### Week 1: Background

8/21/18 Introduction to Social Cognitive Neuroscience

8/23/18 Chapter 2, *Social*

### Week 2: Psychophysiological inference

8/28/18 Sarter, M., Berntson, G. G., & Cacioppo, J. T. (1996). Brain imaging and cognitive neuroscience: Toward strong inference in attributing function to structure. *American Psychologist*, *51*, 13-21.

Hutzler, F. (2014). Reverse inference is not a fallacy per se: Cognitive processes can be inferred from functional imaging data. *NeuroImage*, *84*, 1061-1069.

8/30/18 Chapters 1-3, *A Deadly Wandering*

### Week 3: Attention control and self-regulation

9/4/18 Braver, T.S. (2012). The variable nature of cognitive control: a dual mechanisms framework. *Trends in Cognitive Sciences*, *16*, 106-113.

Inzlicht, M., Bartholow, B.D., & Hirsh, J.B. (2015). Emotional foundations of cognitive control. *Trends in Cognitive Sciences*, *19*, 126-132.

9/6/18 Wauthia, E., & Rossignol, M. (2016). Emotional processing and attention control impairments in children with anxiety: An integrative review of event-related potentials findings. *Frontiers in Psychology*, *7*, 1-16.

Chapters 4-7, *A Deadly Wandering*

### Week 4: Social and physical pain

\*9/11/18 Eisenberger, N.I., Lieberman, M.D., & Williams, K.D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science*, *302*, 290-292.

Chapter 3, *Social*

\*9/13/18 Chapters 8-11, *A Deadly Wandering*

### Week 5: Theory of Mind

\*9/18/18 Gallese, V., Keysers, C., & Rizzolatti, G. (2004). A unifying view of the basis of social cognition. *Trends in Cognitive Sciences*, *8*, 396-403.

Chapter 5, *Social*

\*9/20/18 Schaafsma, S.M., Pfaff, D.W., Spunt, R.P., & Adolphs, R. (2015). Deconstructing and reconstructing theory of mind. *Trends in Cognitive Sciences*, *19*(2), 65-72.

Chapters 12-15, *A Deadly Wandering*

### Week 6: Empathy

\*9/25/18 **RESEARCH QUESTION DUE!!**

Chapter 6 and Chapter 7 (pages 151-161, ending before "Being a Social Alien"), *Social*

\*9/27/18 Lamm, C., & Majdandžić, J. (2015). The role of shared neural activations, mirror neurons, and morality in empathy—A critical comment. *Neuroscience Research*, *90*, 15-24.

Chapters 16-20, *A Deadly Wandering*

### **Week 7: Autism**

\*10/2/18 Chapter 7 (pages 161-178), *Social*

Southgate, V., & Hamilton, A.F. de C. (2008). Unbroken mirrors: challenging a theory of autism. *Trends in Cognitive Sciences*, *12*, 225-229.

Markram, K., & Markram, H. (2010). The Intense World Theory – a unifying theory of the neurobiology of autism. *Frontiers in Human Neuroscience*, *4*, Article 224, 1-29.

\*10/4/18 Shield, A., Pyers, J., Martin, A., & Tager-Flusberg, H. (2016). Relations between language and cognition in native-signing children with autism spectrum disorder. *Autism Research*, *9*(12), 1304-1315.

Chapters 21-24, *A Deadly Wandering*

### **Week 8: Poverty and self-regulation**

10/9/18 Hackman, D.A., & Farah, M.J. (2009). Socioeconomic status and the developing brain. *Trends in cognitive sciences*, *13*(2), 65-73.

Shah, A.K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science*, *338*(6107), 682-685.

\*10/11/18 Chapters 25-28, *A Deadly Wandering*

### **Week 9: Emotion and emotion regulation**

10/16/18 Harmon-Jones, E., & Peterson, C.K. (2009). Supine body position reduces neural response to anger evocation. *Psychological Science*, *20*, 1209-1210.

Kragel, P.A., & LaBar, K.S. (2016). Decoding the nature of emotion in the brain. *Trends in cognitive sciences*, *20*(6), 444-455.

10/18/18 Ochsner, K.N., Silvers, J.A. & Buhle, J.T. (2012). Functional imaging studies of emotion regulation: A synthetic review and evolving model of the cognitive control of emotion. *Annals of the New York Academy of Sciences*, *1251*, E1-E24.

Reeck, C., Ames, D.R. & Ochsner, K.N. (2016). The social regulation of emotion: An integrative, cross-disciplinary model. *Trends in Cognitive Sciences*, *20*, 47-63.

### **Week 10: Face perception**

10/23/18 Freeman, J., Johnson, K., Adams Jr, R., & Ambady, N. (2012). The social-sensory interface: category interactions in person perception. *Frontiers in integrative neuroscience*, *6*, 1-13.

Ratner, K.G., & Amodio, D.M. (2013). Seeing "us vs. them": Minimal group effects on the neural encoding of faces. *Journal of Experimental Social Psychology*, *49*, 298-301.

10/25/18 Chapters 29-35, *A Deadly Wandering*

### **Week 11: Race bias and its control**

- 10/30/18 Amodio, D.M. (2014). The neuroscience of prejudice and stereotyping. *Nature Reviews Neuroscience*, 15, 670-682.
- Amodio, D.M., & Ratner, K. (2011). Mechanisms for the regulation of intergroup responses: A social neuroscience analysis. In J. Decety and J. T. Cacioppo (Eds.), *Handbook of social neuroscience* (pp. 729-741). New York: Oxford University Press.
- Gonsalkorale, K., Sherman, J.W., & Klauer, K. C. (2009). Aging and prejudice: Diminished regulation of automatic race bias among older adults. *Journal of Experimental Social Psychology*, 45, 410-414.
- 11/1/18 Chapters 25-32, *A Deadly Wandering*
- Week 12: Doing some science**
- 11/6/18 **REVIEW PAPER OUTLINES DUE!!**
- In-class outline discussion
- 11/8/18 In-class outline discussion
- Week 13: Doing some science**
- 11/13/18 Working on proposals
- 11/15/18 Chapters 33-42, *A Deadly Wandering*
- Week 14: Thanksgiving**
- Week 15: Doing some science**
- 11/27/18 Working on proposals
- 11/29/18 Chapters 43-Epilogue, *A Deadly Wandering*
- Week 16: Final wrap-up: Living with a social brain**
- 12/4/18 Chapter 10, *Social*
- 12/6/18 Working on proposals
- 12/10/18 **FINAL DRAFT OF REVIEW PAPERS DUE!** By 5:00pm

## **University Policies and Regulations**

### **Academic Integrity**

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor.

### **Students with Disabilities:**

If you anticipate barriers related to the format or requirements of this course, if you have emergency medical information to share with me, or if you need to make arrangements in case the building must be evacuated, please let me know as soon as possible. If disability related accommodations are necessary (for example, a note taker, extended time on exams, captioning), please register with the Office of Disability Services (<http://disabilityservices.missouri.edu>), S5 Memorial Union, 882-4696, and then notify me of your eligibility for reasonable accommodations. For other MU resources for students with disabilities, click on "Disability Resources" on the MU homepage.

### **Intellectual Pluralism**

The University community welcomes intellectual diversity and respects student rights. Students who have questions or concerns regarding the atmosphere in this class (including respect for diverse opinions) may contact the Departmental Chair or Divisional Director; the Director of the Office of Students Rights and Responsibilities (<http://osrr.missouri.edu/>); or the MU Equity Office (<http://equity.missouri.edu/>), or by email at [equity@missouri.edu](mailto:equity@missouri.edu). All students will have the opportunity to submit an anonymous evaluation of the instructor(s) at the end of the course.

### **Academic Inquiry, Course Discussion and Privacy**

University of Missouri System Executive Order No. 38 lays out principles regarding the sanctity of classroom discussions at the university. The policy is described fully in Section 200.015 of the Collected Rules and Regulations. In this class, students may not make audio or video recordings of course activity, except students permitted to record as an accommodation under Section 240.040 of the Collected Rules. All other students who record and/or distribute audio or video recordings of class activity are subject to discipline in accordance with provisions of Section 200.020 of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matters.

Those students who are permitted to record are not permitted to redistribute audio or video recordings of statements or comments from the course to individuals who are not students in the course without the express permission of the faculty member and of any students who are recorded. Students found to have violated this policy are subject to discipline in accordance with provisions of Section 200.020 of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matters.