

Neuroscience 442-010: Social Neuroscience

Fall 2018

T/TH 2:00pm – 3:15pm

Meeting in ISE 207

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Course description and aims

How are the processes underlying social behavior instantiated in the brain? Are these processes localized in specific regions, or are they distributed across the brain? Is there even a social brain? And how does any of this inform psychological theory? The course will examine research that attempts to answer these questions, using the tools of cognitive neuroscience to understand social functioning.

This course will aim to offer you a comprehensive understanding of the methods of social neuroscience, as well as direct exposure to contemporary topics and controversies in this literature. At the end of this course, it's my hope that you will be a conscious, savvy consumer of social neuroscience research, that you will hone your scientific writing skills, and that you will have a deeper appreciation of the connections between mind, brain, and behavior.

Attendance, participation, and professionalism

Attendance is required. While I will not explicitly monitor your daily attendance, missing class will definitely put you at a disadvantage for several reasons. First, on most class days, I will ask a general participation question via iClicker, to make sure we're all on the same page. These responses will go towards your participation grade. Second, the majority of classes will feature active discussion and problem solving. These activities will offer you excellent preparation for the sorts of questions and problems you'll encounter on the exams. Third and finally, as far as the exams go, I'll expect you to be responsible for *any* material covered in class. If you miss class, you'll miss this material.

A few other notes on professionalism... I will *genuinely* appreciate your kind attention and participation during class. I know you all know the drill, but these are just a few friendly reminders:

1. Please arrive on time and prepared – i.e., having done the reading and ready to work! Please don't leave early, unless it's absolutely necessary. (If you *must* be late or depart early, please try to minimize the disruption to the class.)
2. Please turn off your cell phones, and only use your laptops or tablets for taking notes or working on in-class assignments – i.e., no email, chat, Facebook, Twitter, etc.

Course format

This course will primarily consist of (hopefully) lively discussions about weekly selections of readings. Below, you will see a tentative week-by-week schedule. This is somewhat subject to change, but should serve as a relatively faithful guide going forward. As a general rule, you'll be assigned a review article or two about a broad topic area for classes on Tuesdays, and I'll lecture in class on that topic. For Thursdays, you'll read between two and four few empirical articles, and we'll have a student-led discussion. PDFs of all readings will be available on Canvas.

Grading breakdown

Grades in this course will be based on your performance on reading responses, class presentation and participation, two exams, and a final paper. Your final course grade will be non-negotiable – grade changes will be made only to correct clerical errors – and will be based on the following components:

Exam #1	15%
Exam #2	20%
Participation and presentation	20%
Reading Responses	20%
Final Project	25%

From time to time, there will be small opportunities for extra credit, but these will be afforded to all students and assigned at the discretion of the instructor. No special deals!

Grading cut-offs

A	93%	C	73%
A-	90%	C-	70%
B+	88%	D+	68%
B	83%	D	63%
B-	80%	D-	60%
C+	78%		

Reading responses and discussants

Each empirical article assigned for the Thursday classes will have an assigned discussant, to be determined during the first week of class. **Each** student will serve as a discussant **once** during the semester. Each discussant will be responsible for providing some structure to that particular week's conversation. You'll be asked to briefly (<5 minutes) describe the motivation, methods, and results of your assigned article at the beginning of class. Then you and your fellow discussants will form a "panel" and lead the class in discussion.

To assist you in your task, **every** student will contribute **one** discussion question for **each** of the readings **each week**. (The week you're serving as a discussant, you don't need to submit reading questions.) These questions don't have to be elaborate – just a coherent distillation of your response to the week's readings. For example, a good

question could address an empirical paper's motivations, or it might note potential confounds in a particular study or issues with the interpretation of results, or it might draw connections to other work we've read, or it could explore the implications of a particular finding. Please focus on specific aspects of the empirical papers we read, rather than on more mundane details (e.g., "Isn't this study underpowered?", etc.) **Reading questions should be posted on Canvas by 8pm each Wednesday night (e.g., the night before empirical papers will be discussed in class).** That way, discussants will have plenty of time to read over the questions related to the paper they'll be presenting on, and to select a handful that they feel are really crucial to touch on during class.

For your performance as a discussant, you'll receive a grade out of 25 points – which will comprise your presentation of your assigned paper, as well as your handling of questions from both me and the rest of the class. Each set of reading questions will receive a grade out of 4 points: a 4 is a truly excellent, incisive response; a 3 represents a solid, satisfactory effort; a 2 is for relatively cursory, superficial work; a 1 represents the bare minimum – falling very short of expectations.

Exams

You will take two closed-book, closed-note exams, comprising 35% of your grade. Each exam will consist primarily of multiple-choice questions, followed by a few short answer questions. Neither exam will be cumulative. **You'll take the first exam in class. The second exam will be taken during finals week but will only cover the second half (well, two-thirds) of the course. Neither exam is optional. Bring pencils and erasers to exams.** Both multiple choice and short answer questions will be based on material covered in lectures *and* readings. I'll expect you to be responsible for *all* material: some readings won't be touched on in lecture, some lecture material won't appear in the readings.

Final project

In the final week of the course, you will a) submit a written, APA-formatted paper (somewhere in the vicinity of ~10-12 pages) outlining a plan for conducting an experiment (or set of experiments) using social neuroscientific methods. The idea here is for you to synthesize the methodological and theoretical approaches you learn in this class with your own research interests and goals. More info to come on this, of course! Several extra credit opportunities associated with this project (specifically, submitting a proposal, outline, and bibliography ahead of time) will arise later in the course.

Email policy

I will gladly respond to your emails! I want to do whatever I can to make sure you are well informed regarding both the content and the structure of the course. With that in mind, here are a few guidelines to make sure things work smoothly:

- a.) I will respond to emails with "NSCI442" in the subject line that are respectful, coherent, and concise.

- b.) I generally try respond to emails from students once per day, so you may not hear back from me for up to 24 hours. If I don't reply in 24 hours, my apologies! Please re-send!
- c.) For emails regarding exams: All emails regarding exam-related questions must be sent by 8pm the night prior to each exam. Any emails sent after 8pm will be disregarded.
- d.) For procedural or administrative questions: I'm happy to answer these, but *please, please* check to see if your question is addressed by the syllabus. Is the final cumulative? Does the final project have to be in APA style? It's in the syllabus. (Spoiler alert: No to the first question, yes to the second.)

Reviewing and contesting grades

Contesting your grade on an exam: You will have a separate sheet of paper at each exam to write down and explain anything you feel is ambiguous on the exam (for example, you think two answers are accurate but you can only choose one), or if you want to justify your answer for any reason. You *must* turn this sheet in at the end of the exam. After you receive your grade, you will only be able to contest the answers for the specific questions that you discussed on this sheet.

Contesting your grade on a reading response or final project: If you wish to contest a grade, the entire assignment will be re-graded. This could result in either an improvement or a reduction in your grade. The new grade will stand, even if it's lower than the original.

You will have a maximum of 2 weeks to contest any grade received in this course. Please initiate the contest via email, and be as *clear and specific as possible* regarding the nature of the dispute.

Late work and make-up exams

With regards to reading responses and the final project, no extensions will be granted, because they are unfair to other students in the class. Late work will not be accepted under any circumstances. However, per the policy of the Dean's Office, under the following circumstances (and *only* under these circumstances), I will allow excused absences from exams:

1. Absence from an exam due to athletic participation or other extracurricular activities in which the student is an official representative of the University is excused, as long as the student informs the instructor in writing during **the first 2 weeks** of the semester of these absences.
2. Absence from an exam due to serious illness or death within a student's family. To validate such absences, students need to present evidence to the Dean's Office of his or her college. The Dean's Office will then provide a letter of verification to all of the student's instructors.
3. Absence from an exam due to serious illness (e.g., hospitalization, surgery, or protracted medical illness or convalescence). To validate such absences, the student

should present evidence of the illness to the Dean's Office of his or her college. The student will need to request that the Student Health Service provide supportive evidence directly to the respective Dean.

Again, I will *only* grant make-up exams in light of the above-mentioned circumstances. Otherwise, a score of 0 will need to be entered for the missed exam. Under certain circumstances, makeup exams *may* take an alternative form to that taken by the rest of the class (e.g., essay exam).

Academic integrity

Academic dishonesty is categorically unacceptable and will not be tolerated. Take pride in *your* work in this class – all exam work, reading responses, and the final project are to be *your own*. Please familiarize yourselves with the policies governing academic integrity at the University of Delaware at <https://www1.udel.edu/studentconduct/ai.html>. The Office of Student Conduct has an excellent description of what constitutes academic dishonesty (e.g., cheating, plagiarism, etc.) and how to avoid these missteps. Plagiarism can be an especially tricky area, so I urge you to educate yourself regarding how to appropriately cite your sources. When in doubt, please don't hesitate to ask!

Tentative schedule

8/28 & 8/30	Introduction & Methods
9/4 & 9/6	Social perception
9/11 & 9/13	Social evaluation
9/18 & 9/20	Thinking and learning about other people
9/25 & 9/27	Theory of mind and empathy
10/2	Empathy, continued
10/4	Exam 1
10/9 & 10/11	Emotion and emotion regulation
10/16 & 10/18	Social decision-making
10/23 & 10/25	Social rejection, connection, and influence
10/30 & 11/1	Morality and moral judgment
11/6	<i>No class – Election Day</i>
11/8	The self
11/13 & 11/15	Self-regulation and self-control
11/20 & 11/22	<i>No class – Thanksgiving</i>
11/27 & 11/29	Social groups
12/4 & 12/6	Stereotyping & prejudice
Finals week	Exam 2

We may get to a particular week and I'll think, "Oh man, how did I forget to assign XYZ?" or "Yikes, I went overboard this week." Again, this is a good guide, but it could change.

Introduction & Methods

8/28 Stanley, D. A., & Adolphs, R. (2013). Toward a neural basis for social behavior. *Neuron*, *80*(3), 816-826.

- 8/30** Berkman, E. T., Cunningham, W. A., & Lieberman, M. D. (2014). Research methods in social and affective neuroscience. *Handbook of research methods in social and personality psychology*, 123-58.

Cacioppo, J. T., Berntson, G. G., Lorig, T. S., Norris, C. J., Rickett, E., & Nusbaum, H. (2003). Just because you're imaging the brain doesn't mean you can stop using your head: a primer and set of first principles. *Journal of personality and social psychology*, 85(4), 650.

Social perception

- 9/4** Kanwisher, N., & Yovel, G. (2006). The fusiform face area: a cortical region specialized for the perception of faces. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 361(1476), 2109-2128.

Haxby, J. V., & Gobbini, M. I. (2011). Distributed neural systems for face perception. In A. J. Calder, G. Rhodes, M. H. Johnson, & J. V. Haxby (Eds). *The Oxford handbook of face perception* (pp. 93-107).

- 9/6** Eimer, M., Gosling, A., Nicholas, S., & Kiss, M. (2011). The N170 component and its links to configural face processing: a rapid neural adaptation study. *Brain research*, 1376, 76-87.

Rezlescu, C., Barton, J. J., Pitcher, D., & Duchaine, B. (2014). Normal acquisition of expertise with greebles in two cases of acquired prosopagnosia. *Proceedings of the National Academy of Sciences*, 201317125.

Peelen, M. V., Wiggett, A. J., & Downing, P. E. (2006). Patterns of fMRI activity dissociate overlapping functional brain areas that respond to biological motion. *Neuron*, 49(6), 815-822.

Social evaluation

- 9/11** Todorov, A., Mende-Siedlecki, P., & Dotsch, R. (2013). Social judgments from faces. *Current opinion in neurobiology*, 23(3), 373-380.

- 9/13** Winston, J. S., O'Doherty, J., Kilner, J. M., Perrett, D. I., & Dolan, R. J. (2007). Brain systems for assessing facial attractiveness. *Neuropsychologia*, 45(1), 195-206.

Said, C. P., Dotsch, R., & Todorov, A. (2010). The amygdala and FFA track both social and non-social face dimensions. *Neuropsychologia*, 48(12), 3596-3605.

Freeman, J. B., Stolier, R. M., Ingbretsen, Z. A., & Hehman, E. A. (2014). Amygdala responsivity to high-level social information from unseen faces. *Journal of Neuroscience*, 34(32), 10573-10581.

Thinking and learning about other people

9/18 Amodio, D. M., & Frith, C. D. (2006). Meeting of minds: the medial frontal cortex and social cognition. *Nature Reviews Neuroscience*, 7, 268-277.

Mitchell, J. P., Macrae, C. N., & Banaji, M. R. (2006). Dissociable medial prefrontal contributions to judgments of similar and dissimilar others. *Neuron*, 50(4), 655-663.

9/20 Mende-Siedlecki, P. & Todorov, A. (2016). Neural dissociations between meaningful and mere inconsistency in impression updating. *Social, Cognitive, & Affective Neuroscience*, 11(9), 1489-1500.

Wang, Y., Collins, J. A., Koski, J., Nugiel, T., Metoki, A., & Olson, I. R. (2017). Dynamic neural architecture for social knowledge retrieval. *Proceedings of the National Academy of Sciences*, 114(16), E3305-E3314.

Meyer, M. L., Taylor, S. E., & Lieberman, M. D. (2015). Social working memory and its distinctive link to social cognitive ability: an fMRI study. *Social cognitive and affective neuroscience*, 10(10), 1338-1347.

Theory of mind and empathy

9/25 Koster-Hale, J., & Saxe, R. (2013). Theory of mind: a neural prediction problem. *Neuron*, 79(5), 836-848.

Bernhardt, B. C., & Singer, T. (2012). The neural basis of empathy. *Annual review of neuroscience*, 35, 1-23.

9/27 Young, L., Camprodon, J. A., Hauser, M., Pascual-Leone, A., & Saxe, R. (2010). Disruption of the right temporoparietal junction with transcranial magnetic stimulation reduces the role of beliefs in moral judgments. *Proceedings of the National Academy of Sciences*, 107(15), 6753-6758.

Mitchell, J. P. (2007). Activity in right temporo-parietal junction is not selective for theory-of-mind. *Cerebral cortex*, 18(2), 262-271.

Grèzes, J., Frith, C., & Passingham, R. E. (2004). Brain mechanisms for inferring deceit in the actions of others. *Journal of Neuroscience*, 24(24), 5500-5505.

10/2 Zaki, J., Weber, J., Bolger, N., & Ochsner, K. (2009). The neural bases of empathic accuracy. *Proceedings of the National Academy of Sciences*, 106(27), 11382-11387.

Morelli, S. A., Rameson, L. T., & Lieberman, M. D. (2012). The neural components of empathy: predicting daily prosocial behavior. *Social cognitive and affective neuroscience*, 9(1), 39-47.

Brethel-Haurwitz, K., Cardinale, E., Vekaria, K., Robertson, E. L., Walitt, B., VanMeter, J., & Marsh, A. (2017). Extraordinary altruists exhibit enhanced self-other overlap in neural responses to distress.

Emotion and emotion regulation

- 10/9** Lindquist, K. A., Wager, T. D., Kober, H., Bliss-Moreau, E., & Barrett, L. F. (2012). The brain basis of emotion: a meta-analytic review. *Behavioral and brain sciences*, 35(3), 121-143.
- Adolphs, R. (2002). Neural systems for recognizing emotion. *Current opinion in neurobiology*, 12(2), 169-177.
- Ochsner, K. N., & Gross, J. J. (2008). Cognitive emotion regulation: Insights from social cognitive and affective neuroscience. *Current directions in psychological science*, 17(2), 153-158.
- 10/11** McRae, K., Hughes, B., Chopra, S., Gabrieli, J. D., Gross, J. J., & Ochsner, K. N. (2010). The neural bases of distraction and reappraisal. *Journal of cognitive neuroscience*, 22(2), 248-262.
- Mobbs, D., Yu, R., Rowe, J. B., Eich, H., FeldmanHall, O., & Dalgleish, T. (2010). Neural activity associated with monitoring the oscillating threat value of a tarantula. *Proceedings of the National Academy of Sciences*, 107(47), 20582-20586.
- Schiller, D., Monfils, M. H., Raio, C. M., Johnson, D. C., LeDoux, J. E., & Phelps, E. A. (2010). Preventing the return of fear in humans using reconsolidation update mechanisms. *Nature*, 463(7277), 49.
- Cunningham, W. A., Van Bavel, J. J., & Johnsen, I. R. (2008). Affective Flexibility: Evaluative Processing Goals Shape Amygdala Activity. *Psychological Science*. 19, 152160.

Social decision-making

- 10/16** Rilling, J. K., & Sanfey, A. G. (2011). The neuroscience of social decision-making. *Annual review of psychology*, 62, 23-48.
- 10/18** Fareri, D. S., Chang, L. J., & Delgado, M. R. (2012). Effects of direct social experience on trust decisions and neural reward circuitry. *Frontiers in neuroscience*, 6, 148.
- Behrens, T. E., Hunt, L. T., Woolrich, M. W., & Rushworth, M. F. (2008). Associative learning of social value. *Nature*, 456(7219), 245.
- Hackel, L. M., Doll, B. B., & Amodio, D. M. (2015). Instrumental learning of traits versus rewards: dissociable neural correlates and effects on choice. *Nature Neuroscience*, 18(9), 1233.

Social connection, rejection, and influence

10/23 Eisenberger, N. I. (2012). The pain of social disconnection: examining the shared neural underpinnings of physical and social pain. *Nature Reviews Neuroscience*, 13(6), 421.

Bartz, J. A., Zaki, J., Bolger, N., & Ochsner, K. N. (2011). Social effects of oxytocin in humans: context and person matter. *Trends in cognitive sciences*, 15(7), 301-309.

10/25 Parkinson, C., Kleinbaum, A. M., & Wheatley, T. (2018). Similar neural responses predict friendship. *Nature communications*, 9(1), 332.

Morelli, S. A., Leong, Y. C., Carlson, R. W., Kullar, M., & Zaki, J. (2018). Neural detection of socially valued community members. *Proceedings of the National Academy of Sciences*, 201712811.

Kross, E., Berman, M. G., Mischel, W., Smith, E. E., & Wager, T. D. (2011). Social rejection shares somatosensory representations with physical pain. *Proceedings of the National Academy of Sciences*, 108(15), 6270-6275.

Falk, E. B., Berkman, E. T., Mann, T., Harrison, B., & Lieberman, M. D. (2010). Predicting persuasion-induced behavior change from the brain. *Journal of Neuroscience*, 30(25), 8421-8424.

Morality and moral judgment

10/30 Van Bavel, J. J., FeldmanHall, O., & Mende-Siedlecki, P. (2015). The neuroscience of moral cognition: from dual processes to dynamic systems. *Current Opinion in Psychology*, 6, 167-172.

Young, L., & Dungan, J. (2012). Where in the brain is morality? Everywhere and maybe nowhere. *Social neuroscience*, 7(1), 1-10.

11/1 Parkinson, C., Sinnott-Armstrong, W., Koralus, P. E., Mendelovici, A., McGeer, V., & Wheatley, T. (2011). Is morality unified? Evidence that distinct neural systems underlie moral judgments of harm, dishonesty, and disgust. *Journal of Cognitive Neuroscience*, 23(10), 3162-3180.

FeldmanHall, O., Dalgleish, T., Thompson, R., Evans, D., Schweizer, S., & Mobbs, D. (2012). Differential neural circuitry and self-interest in real vs hypothetical moral decisions. *Social cognitive and affective neuroscience*, 7(7), 743-751.

Hutcherson, C.A., Montaser-Kouhsari, L., Woodward, J., & Rangel, A. (2015). Emotional and utilitarian values of moral dilemmas are encoded in separate areas and integrated in ventromedial prefrontal cortex. *Journal of Neuroscience*, 35, 12593-12605.

The self and self-control

11/8 Denny, B. T., Kober, H., Wager, T. D., & Ochsner, K. N. (2012). A meta-analysis of functional neuroimaging studies of self-and other judgments reveals a spatial gradient for mentalizing in medial prefrontal cortex. *Journal of cognitive Neuroscience*, *24*(8), 1742-1752.

Uddin, L. Q., Iacoboni, M., Lange, C., & Keenan, J. P. (2007). The self and social cognition: the role of cortical midline structures and mirror neurons. *Trends in cognitive sciences*, *11*(4), 153-157.

11/13 Tamir, D. I., & Mitchell, J. P. (2012). Disclosing information about the self is intrinsically rewarding. *Proceedings of the National Academy of Sciences*, *109*(21), 8038-8043.

Hughes, B. L., & Beer, J. S. (2013). Protecting the self: The effect of social-evaluative threat on neural representations of self. *Journal of Cognitive Neuroscience*, *25*(4), 613-622.

Forbes, C. E., Schmader, T., & Allen, J. J. (2008). The role of devaluing and discounting in performance monitoring: A neurophysiological study of minorities under threat. *Social cognitive and affective neuroscience*, *3*(3), 253-261.

11/15 Kober, H., Mende-Siedlecki, P., Kross, E. F., Weber, J., Mischel, W., Hart, C. L., & Ochsner, K. N. (2010). Prefrontal–striatal pathway underlies cognitive regulation of craving. *Proceedings of the National Academy of Sciences*, 201007779.

Brewer, J. A., Worhunsky, P. D., Gray, J. R., Tang, Y. Y., Weber, J., & Kober, H. (2011). Meditation experience is associated with differences in default mode network activity and connectivity. *Proceedings of the National Academy of Sciences*, *108*(50), 20254-20259.

Berkman, E. T., & Lieberman, M.D. (2010). Approaching the bad and avoiding the good: Separating action and valence using dorsolateral prefrontal cortical asymmetry. *Journal of Cognitive Neuroscience*, *22*, 1970-1979.

Social groups

11/27 Cikara, M., & Van Bavel, J.J. (2014). The neuroscience of intergroup relations: An integrative review. *Perspectives on Psychological Science*, *9*, 245-274.

11/29 Freeman, J. B., Ma, Y., Barth, M., Young, S. G., Han, S., & Ambady, N. (2013). The neural basis of contextual influences on face categorization. *Cerebral Cortex*, *25*(2), 415-422.

Van Bavel, J. J., Packer, D. J., & Cunningham, W. A. (2008). The neural substrates of ingroup bias: A functional Magnetic Resonance Imaging investigation. *Psychological Science*, 11, 1131-1139.

Cikara, M., Botvinick, M. M., & Fiske, S. T. (2011). Us versus them: Social identity shapes neural responses to intergroup competition and harm. *Psychological Science*, 22, 306-313.

De Dreu, C. K. W., Greer, L. L., Van Kleef, G. A., Shalvi, S., & Handgraaf, M. J. J. (2011). Oxytocin promotes human ethnocentrism. *Proceedings of the National Academy of Sciences of the United States of America*, 108, 1262-1266.

Stereotyping & prejudice

12/4 Amodio, D. M. (2014). The neuroscience of prejudice and stereotyping. *Nature Reviews Neuroscience*, 15(10), 670.

Kubota, J. T., Banaji, M. R., & Phelps, E. A. (2012). The neuroscience of race. *Nature neuroscience*, 15(7), 940.

12/6 Richeson, J. A., Baird, A. A., Gordon, H. L., Heatherton, T. F., Wyland, C. L., Trawalter, S., & Shelton, J. N. (2003). An fMRI investigation of the impact of interracial contact on executive function. *Nature neuroscience*, 6(12), 1323.

Cunningham, W. A., Johnson, M. K., Raye, C. L., Gatenby, J. C., Gore, J. C., & Banaji, M. R. (2004). Separable components in the processing of Black and White faces. *Psychological Science*, 15, 806-813.

Brosch, T., Bar-David, E., & Phelps, E. A. (2013). Implicit race bias decreases the similarity of neural representations of black and white faces. *Psychological science*, 24(2), 160-166.

Kubota, J. T., & Ito, T. (2017). Rapid race perception despite individuation and accuracy goals. *Social neuroscience*, 12(4), 468-478.

Social Justice Statement & Students with Disabilities:

The University of Delaware is committed to social justice. I firmly agree with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran's status, religion, sexual orientation, or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.

If you need special academic accommodations due to a documented physical or sensory disability, please contact the Office of Disability Support Services at www.udel.edu/DSS/ during the first two weeks of class. The office provides academic support services to eligible students with temporary and permanent disabilities.