

## **Language and Mind**

**GU4244**

**4 points**

**Nora Isacoff, PhD (ni2237@columbia.edu)**

**Wednesdays 2:10-4, Fall 2020**

### **Bulletin Description**

This seminar explores the relationship between language and thought by investigating how language is mentally represented and processed; how various aspects of language interact with each other; and how language interacts with other aspects of cognition including perception, concepts, world knowledge, and memory. Students will examine how empirical data at the linguistic, psychological, and neuroscientific levels can bear on some of the biggest questions in the philosophy of mind and language and in psychology.

### **Full Description**

This graduate/advanced undergraduate seminar will explore language in the mind. Students will read seminal and modern empirical papers as well as some theoretical works exploring how language is mentally represented and processed; how various aspects of language interact with each other; and how language interacts with other aspects of cognition such as perception, concepts, world knowledge, and memory. A key feature of this seminar will be examining how empirical data can bear on some of the biggest questions in the philosophy of mind and language and in psychology, for example, the relationships between language and thought, the nature of meaning, and the contributions of “nature” and “nurture” to human development. The seminar will cover select topics from all of the primary areas of psycholinguistics – syntax, semantics, phonology, and pragmatics – and will give students familiarity with various techniques for exploring these areas at the linguistic, psychological, and neuroscientific levels.

### **General advice for success in this class**

To quote the scholar Kyla Wazana Tompkins, “We aren’t here to learn what we already know.” In this spirit, I invite you to approach this class with deep curiosity and a commitment to jump into the messiness of an emerging science.

This class is intentionally interdisciplinary, both in the selection of readings and in your backgrounds. This means that depending on the topic for the week, you may find the readings hard or easy, fascinating or boring. All of this is okay.

When you’re reading, I encourage you to think about what level you want to read that particular paper on. If it’s on something you find particularly interesting, perhaps something that relates to an honors thesis you will be writing, then you may want to read it with a lot of detail, making

sure you understand every nuance, even looking for other references that help you understand the article more deeply. If it's on something that is very far from your core interests, or on which you have little background, you may want to read it in a more general way, thinking about how it might relate to your own interests and trying to grasp the main idea.

I believe that learning to read in these different ways is important, especially for interdisciplinary, collaborative work. What does it mean to read a paper that is outside your own field and to get out of it enough that you can effectively collaborate with someone in the field? This is something we can try out in our class this semester, thinking of our discussions as interdisciplinary collaborations.

To this end, we all need every one of you to be fully present in our discussions. If you don't understand something you'd like to understand, please ask. If you don't understand why we are even reading a particular paper, you are welcome to share that. I ask that you bring with you to class respect for each other and me, curiosity, an open mind, and all of your unique gifts and backgrounds, and let's see where this takes us.

## **Prerequisites**

PSYC UN1001 The Science of Psychology, or an equivalent introductory course in psychology. It is recommended that students have also taken an additional course in Psychology, preferably one focusing on cognition, development, or research methods. Instructor permission is required.

## **Role in the Psychology Curriculum**

GU4244 is a seminar open to graduate students and advanced undergraduate students. It fulfills the following degree requirements:

- For undergraduates pursuing a Psychology major or concentration in the College or GS or the Psychology Postbac certificate, it meets the Group I (Perception & Cognition) distribution requirement.
- For Psychology majors and Psychology Postbac students, it fulfills the seminar requirement.
- For undergraduates pursuing the Neuroscience & Behavior major, it fulfills the advanced seminar requirement in the Psychology portion of the major.
- Graduate students in Psychology and junior and senior Neuroscience & Behavior and Psychology majors will have priority for registration.

## **Goals:**

- Gain exposure to some of the deepest questions related to language and the mind across all of the primary areas of psycholinguistics and learn some methods for investigating these questions

- Understand what language can teach us about the mind and what the mind can teach us about language
- Understand how language interacts with other aspects of cognition
- Learn to analyze empirical papers critically to determine how well evidence supports a claim
- Develop strong oral and written communication skills

## Assignments and grades

1. **Reading reflections.** By 1pm the day before each class (Tuesday), students should submit a reading reflection on our Canvas discussion board. Reflections should be at least half a double-spaced page and, rather than merely summarize the readings, should raise points that we can discuss in our seminar. These might include connections to other readings we have read in our seminar or that you have read in other classes; critiques of the methodology and/or how well the results of an experiment support the authors' claims; and/or a description of something you are having trouble understanding or would like to know more about and how you are going about trying to learn more (e.g., you weren't familiar with a statistical analysis the authors used, so you found an article explaining it, and you want to share what you are learning). Reflections may also/instead be responses to other students' postings. Each reading response will be graded on a scale from 0-2, with 0 points if you do not make an attempt at all, 1 point if you attempt a response but do not do so completely, and 2 points if you fully reflect on the reading in a way that demonstrates you are truly engaging with it. (25% of grade)
2. **Leading class discussions.** During the first class, we will divide up all the readings so that one student is in charge of each reading, with each student leading twice. (In a few cases, 2 students may be assigned to the same papers, in which case, you may either lead together or divide up the material among yourselves ahead of time.) If you are in charge of a reading, you should prepare an introduction to make sure everyone is on the same page and to raise key issues for discussion. I strongly suggest you prepare slides or a handout to guide your introduction, and if you do, I will post this on Canvas so that everyone has access to it. Everyone who is responsible for a reading that day will also help me co-lead that day's discussion. (25% of grade)
3. **Term paper.** Students will write a 10-12 page double-spaced paper on any topic within "language and mind." The goal of this assignment is to consider how empirical data can be used to explore big questions within language and mind and to grapple with supposedly conflicting arguments in the literature. General advice is that narrower topics tend to be more successful. We can discuss what this means in class or individually. There are 3 parts to this assignment (all due at 11:59pm).
  - a. By October 9, students should a proposal detailing a specific research question. The proposal should be about 1 page in length and might include 2 competing hypotheses about the research question and an example of the type of evidence that could bear on this question, or it might simply spell out some sub-questions

that the student is interested in investigating. It should also include at least 2 sources that the student plans to read. I highly suggest you spend some time before this deadline beginning to work on your project so that I can give you specific feedback and you can get on the right track from the beginning. (10% of grade)

- b. By Nov 20, students should submit a rough draft of the term paper including the research question and any sub-questions, explaining experimental methods and results that relate to the research question, and trying to make sense of conflicting results and positions within the literature. You also have the option of proposing a new experiment at the end of your paper. Students should cite at least 5 sources, and this should be a complete attempt at a paper, meaning at or close to the length of the final paper, proofread, etc. (20% of grade)
- c. By December 18, students should submit a final draft of the term paper, incorporating in feedback from the rough draft. (20% of grade)

## Topics and Readings

### Week 1 (9/9). Linguistic representation: What do we mean by “language”?

Marr, David. *Vision*. (1982/2010). Chapter 1. San Francisco: Freeman, 8-38.

Hauser, M.D., Chomsky, N., and Fitch, W.T. (2002). The Faculty of Language: What Is It, Who Has It, and How Did It Evolve? *Science*, 298 (5598), 1569-1579.

Marr is perhaps an unusual choice for a psychology of language course, but I think it provides an illuminating framework for studying the psychology of language. I first read this for a syntax course as an undergraduate linguistics major, and found it incredibly clarifying. I have found that having a shared vocabulary around terms like *representation*, *computation*, and *physical instantiation* can be an invaluable tool for productive conversations throughout the semester. It's also useful for distinguishing what linguists study (computational level) from what psychologists study (algorithmic level) from what neuroscientists study (implementation level).

Similarly, the Hauser et al. paper gives a good introduction to what we mean by “language” and the properties of language we'll be exploring throughout the semester.

### Week 2 (9/16). Nature or nurture? Part 1. The connectionism (empiricism) vs. computation (rationalism) debate

Golato, Peter (2008). Theories of language processing. Processing French, Yale University Press, 8-31.

Rumelhart, D.E. & McClelland, J.L. (1986). On learning the past tense of English verbs, in *Parallel distributed processing: explorations in the microstructure of cognition, vol. 1: foundations*. MIT Press, Cambridge, MA, 216-271. *Optional*.

Pinker, S. & Prince, A. (1988). On language and connectionism: Analysis of a parallel distributed processing model of language acquisition. *Cognition*, 28 (1-2), 73-193. *Optional*.

Lidz, J. & Gleitman, L.R. (2004). Argument structure and the child's contribution to language learning. *Trends in cognitive science*. 8(4), 157-161.

A central question in psychology is, how much is “nature” and how much is “nurture.” A more sophisticated way of asking this question is, are we born with a general learning mechanism that allows us to learn whatever we come across (a “blank slate”) or are we pre-programmed with specific learning constraints. These two papers are classics in the psychology of language and set up this still-hot debate. Because they are extremely technical, just take a look at them if you’d like, but read a summary of their positions in Golato. The Lidz & Gleitman paper lends a more recent approach.

### **Week. 3 (9/23). Nature or nurture? Part 2. Evidence from sign languages**

Singleton, J.L. & Newport, E.L. (2004). When learners surpass their models: The acquisition of American Sign Language from inconsistent input. *Cognitive Psychology*, 49, 370-407.

Senghas, A. & Coppola, M. (2001). Children creating language: How Nicaraguan Sign Language acquired a spatial grammar. *Psychological Science*, 12(4), 323-328.

Chomsky, C. (1986). Analytic study of the Tadoma Method: Language abilities of three deaf-blind subjects. *Journal of speech and Hearing Research*, 29, 332-347.

One way of teasing apart the nature/nurture question is to investigate cases in which some of the “nature” is absent. That is, what effect does less input have on output? For societal or practical reasons, deaf and/or blind speakers often have less or delayed input compared to hearing and/or seeing children. Here, we can explore this larger question through this specific lens.

### **Week 4 (9/30). The Sapir-Whorf Hypothesis: Does language shape thought? Part 1.**

Boroditsky, L. (2001). Does language shape thought?: Mandarin and English speakers' conceptions of time. *Cognitive Psychology*, 43, 1-22.

January, D. & Kako, E. (2007). Re-evaluating evidence for linguistics relativity: Reply to Boroditsky (2001). *Cognition*, 104, 417-426.

Wolff, P & Holmes, K. Linguistic Relativity. (2011). *WIREs Cognitive Science*, 2, 253-265.

Boroditsky's paper is cited as evidence that language affects thought. This is a classic paper in the pro-linguistic relativity world. But, the methodology is fraught with problems. Reading and analyzing this paper will give us the opportunity to evaluate the evidence for claims rather than to assume that the claims in a well-cited paper in a respected journal are necessarily correct.

## **Week 5 (10/7). The Sapir-Whorf Hypothesis: Does language shape thought? Part 2.**

Malt, B.C., et al. (1999). Knowing versus naming: Similarity and the linguistic categorization of artifacts. *Journal of memory and language*, 40, 230-262.

Lucy, J.A. & Gaskins, S. (2003). Interaction of language type and referent type in the development of nonverbal classification preferences. In Dedre Getner & Susan Goldin-Meadow (eds.), *Language in Mind: Advances in the Study of Language and Thought*. MIT Press. pp. 465—492.

Here we continue our exploration of the relationship between language and thought, asking whether differences in the language we speak are related to/cause differences in the way we categorize items in the world.

## **Week 6 (10/14). Theories of meaning part 1: An overview**

Laurence, S., & Margolis, E. (1999). Concepts and Cognitive Science, In Concepts: Core Readings, E. Margolis & S. Laurence (eds.), pp. 3-81.

When I say “dog,” you know exactly what I mean. How is the meaning of this word mentally represented? How is the meaning distinct from things you know about dogs (they have livers), from associations you have with them (they like bones) or experiences you’ve had with them (you saw one last night)? This seminal chapter provides a detailed overview of all of the primary theories related to these questions.

## **Week 7 (10/21). Theories of meaning part 2: Experimental insights**

Rosch, E.H. (1973). Natural Categories. *Cognitive Psychology*, 4, 328-350.

Sloman, S.A., Love, B.C., and Ahn, W. (1998). Feature centrality and conceptual coherence. *Cognitive Science*, 22(2), 189-228.

Genome, J., & Lombrozo, T. (2012). Concept possession, experimental semantics, and hybrid theories of reference. *Philosophical Psychology*, 25, 1-26.

We’ll dive further into the questions and problem raised the previous week, asking, can we get help with our questions by looking at a typical dog? By looking at a dog’s features? Can experimental semantics shed any light?

## **Week 8 (10/28). Linguistic interfaces part 1: pragmatics**

Grice, H.P. (1975). "Logic and Conversation," *Syntax and Semantics*, vol.3 edited by P. Cole and J. Morgan, Academic Press. Reprinted as ch.2 of Grice 1989, 22–40.

Sperber, D. & Wilson, D. (2002). Pragmatics, modularity, and mind-reading. *Mind and language*, 17(1), 3-23.

It may surprise students who are new to the study of language to learn that every sentence is infinitely ambiguous. In the most extreme cases, the meaning of a sentence isn't even contained in the language itself. For example, if a professor's reference letter for a student simply says, "he was always on time," the implication is that he's not such a great student. It seems clear that "not a great student" is *not* part of the linguistic meaning of "he was always on time." Here we'll look at how linguistic and nonlinguistic processes interact.

## **Week 9 (10/28). Linguistic interfaces part 2: interactions with perception and memory**

Snedeker, J. & Gleitman, L.R. (2003). Why it is hard to label our concepts, in S Waxman and G. Hall (eds.). *Weaving a lexicon*, NY: Cambridge Univ. Press, 1-37.

Loftus, E. F., & Palmer, J. C. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory. *Journal of Verbal Learning and Verbal Behavior*, 13(5), 585-589.

Syrett, K., Simon, G., & Nisula, K. (2014). Prosodic disambiguation of scopally ambiguous sentences in a discourse context. *Journal of Linguistics*, 50, 453-493.

We don't use language in a vacuum; we use it while we're in the real world, taking in sensory information. Can our language systems interact with our learning and perceptual systems? Can it influence our memories?

## **Week 10 (11/11). Sentence processing part 1.**

Leslie, S.J. (2012). Generics Articulate Default Generalizations. *Recherches Linguistiques de Vincennes: New Perspectives on Genericity at the Interfaces* (A. Mari, ed.), 41, 25-45.

Swinney, D.A. (1979). Lexical access during sentence comprehension: Re-consideration of context effects. *Journal of verbal learning and verbal behavior*, 18, 645-659.

Bock, J. K. (1986). Syntactic persistence in language production. *Cognitive Psychology*, 18(3), 355-387.

Words don't stand alone. We perceive, retrieve, and produce them within the context of sentences. This section will investigate lexical access within the context of sentences. How does the word-level interact with the sentence-level? The first paper, for example, asks why it is that people judge "ducks lay eggs" as true and "ducks are female" as false, even though the percentage of ducks that lay eggs is not greater than the percentage that is female? We'll also look at how sentence structure is activated and how perceiving a particular structure can subconsciously influence the production of that structure.

### **Week 11 (11/18). Sentence processing part 2.**

Paczynski, M. & Kuperberg, G.R. (2012). Multiple influences of semantic memory on sentence processing: Distinct effects of semantic relatedness on violations of real-world event/state knowledge and animacy selection restrictions. *Journal of memory and language*, 67, 426-448.

MacDonald, M. C. (2013). How language production shapes language form and comprehension. *Frontiers in Psychology*, 4, 1-16.

Continued from previous week. If we haven't finished the previous week's papers, we can continue with those as well.

### **Week 12 (12/2). Bilingualism: How does knowing more than one language shape how the mind functions?**

Kroll, J. F., & Bialystok, E. (2013). Understanding the consequences of bilingualism for language processing and cognition. *Journal of Cognitive Psychology*, 25, 497-514.

Nichols, E.S. et al. (2020). Bilingualism affords no general cognitive advantages: A population study of Executive Function in 11,000 people.

Does speaking more than one language fundamentally shape the way the mind functions, as bilingual speakers shift back and forth between linguistic representations in ways that monolingual speakers do not? These two papers offer opposite perspectives on this question. We'll ask, what are the benefits of bilingualism, if there are any, and what can this tell us about how language is mentally represented and processed?

### **Week 13 (12/9). Like, uh, and um: What can we learn about language from how people actually speak?**

Clark, H. H., & Tree, J. E. F. (2002). Using uh and um in spontaneous speaking. *Cognition*, 84(1), 73-111.

Siegel, M.E.A (2014). Semantic Theory and Teen Language. *Journal of the American Academy of Child and Adolescent Psychiatry*, 53(6), 606-608.

Houghton K.J, Upadhyay, S.S.N., & Klin, C.M. (2018). Punctuation in text messages may convey abruptness. Period. *Computers in Human Behavior*, (80), 112-121.

Finally, descriptive language (how we actually speak) is far from prescriptive language (how a grammar textbook would direct us to speak). Here we'll look at characteristics of real natural language and how they fit into our linguistic systems.

## **Additional Information**

**Academic integrity.** As a member of the academic community, one of your responsibilities is to uphold principles of honesty and integrity. This means that you can only present your own work on assignments and presentations — plagiarism is strictly prohibited, as is presenting work as your own when it was done by someone else. Doing so compromises your academic integrity and potentially your academic standing. If you are falling behind, don't understand the material, or are not confident about your writing or presentation, talk to me as soon as possible instead of taking measures that go against principles of academic integrity. [Columbia's Honor Code in Columbia's Guide to Academic Integrity  
(<http://www.college.columbia.edu/academics/academicintegrity>)].

**Attendance.** Class participation is the foundation of any seminar course, including this one. If you need to miss a class, please notify me as soon as possible. One absence will not negatively affect your grade. More than one absence will generally mean that your grade will drop by a +/-, although additional absences may be excused on a case-by-case basis and with provided documentation. You will still be responsible for the work due in a class you miss, e.g., reading response and interim paper deadlines. Please let me know if you have any questions about this policy.

**Late assignments.** It is not fair for you to get more time on your assignments than your peers. If there is an appropriate reason for turning an assignment in late, please discuss it with me well in advance so that we can work together on a plan. Unless we have agreed that there is a strong justification, late assignments will lose 5 points for each day they are late (e.g., from 20 points to 15 for the final paper). Late reading responses will get a maximum of 1 point and cannot be turned in after we have discussed them in class.

**Students with disabilities.** If you are a student with special needs and require accommodation, meet me before the first class to discuss your needs. You must also contact Disability Services before the first class to register for specific accommodations  
(<https://health.columbia.edu/disability-services>).

## Sign-up sheet

Week 2

Rumelhart & McClelland/Golato

Pinker & Prince AND Golato

Lidz & Gleitman

Week 8

Grice

Sperber & Wilson

Week 3

Singleton & Newport

Senghas & Coppola

Chomsky

Week 9

Snedecker & Gleitman

Syrett

Loftus

Week 4

Boroditsky

January & Kako

Wolff & Holmes

Week 10

Leslie

Swinney

Bock

Week 5

Malt

Lucy & Gaskins

Week 11

Paczynski & Kuperberg

MacDonald

Week 6

Laurence & Margolis (counts as 2)

Week 12

Kroll & Bialystok

Nichols

Week 7

Rosch

Sloman et al.

Genome & Lombrozo

Week 13

Clark & Tree

Other 2 readings