

Language and Mind

GU4244

4 points

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Wednesdays 12:10-2pm

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.

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 the day before each class, students should submit a reading reflection on our Canvas discussion board. Reflections should be at least half a 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 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 or merely summarize the reading, 1 point if you attempt a response but do not do so completely (for example, mentioning a part of the reading you are having trouble with, without explaining how you are attempting to work it out), 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 an even number of readings per student, likely 2). 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 (approximately

10 minutes per reading). You might want to prepare slides or a handout to guide your introduction, but this is not required. Everyone who is responsible for a reading that day (2 or 3 students depending on the number of readings) will also help me co-lead that day's discussion. (25% of grade)

3. Term paper. Students will write a 10-12-page 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. There are 3 parts to this assignment.
 - a. By the end of the 3rd week of the semester, students should submit one paragraph detailing a specific research question. This paragraph 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. (10% of grade)
 - b. By the end of the 9th week, 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. (20% of grade)
 - c. By the end of the semester, 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. 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. Nature or nurture? The connectionism (empiricism) vs. computation (rationalism) debate

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.

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.

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, and the Lidz & Gleitman paper lends a more recent approach.

Week 3. Nature or nurture? 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. 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 linguistic relativity: Reply to Boroditsky (2001). *Cognition*, 104, 417-426.

Chen, J. (2007). Do Chinese and English speakers think about time differently? Failure of replicating Boroditsky. *Cognition*, 104, 427-436.

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. 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. The semantics-pragmatics continuum.

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

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.

Exactly how much of the meaning of what we say is part of our language (semantics) and how much is extra-linguistic (pragmatics)? Sometimes this question is clear cut. 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." But there are many cases in which it's less clear what is part of our language and what is not. This class will set us up for studying linguistic meaning in classes to come.

Week 7. Words & concepts part 1: Typicality and features

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.

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

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)? Can we get help with this question by looking at a typical dog? What about by looking at a dog’s features?

Week 8. Words & concepts part 2: Mental representations of nouns and verbs

Papafragou, A., Cassidy, K., & Gleitman, L.R. (2007). When we think about thinking, *Cognition*. 125-165.

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.

Gleitman, L.R., Cassidy, K., Papafragou, A., Nappa, R., & Trueswell, J.T. (2005). Hard words, *Journal of Language Learning and Development*, 1:1., 23-64.

Building on our discussion from the previous week, where we focused on nouns, we’ll look at the mental representations of verbs. Why is verb meaning even harder to pin down, and what can this tell us about language and about our minds?

Week 9. Sentence processing part 1.

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

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.

Of course individual 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, using both a classic paper and a more modern one. How does the word-level interact with the sentence-level?

Week 10. Sentence processing part 2.

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

MacDonald, M. C. (2013). How language production shapes language form and comprehension. *Frontiers in Psychology*, 4, 226.

Building on the previous week, we'll look at how sentence structure is activated and how perceiving a particular structure can subconsciously influence the production of that structure.

Week 11. Ambiguity: Help from pragmatics and prosody

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

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

It may surprise students who are new to the study of language to learn that every sentence is infinitely ambiguous. And yet, we manage to understand each other well enough most of the time. How is this possible? Here we'll look at two aids to ambiguity resolution: pragmatics (context clues) and prosody (intonation).

Week 12. Linguistic interfaces with perception and memory

Tanenhaus, M. K., Spivey-Knowlton, M. J., Eberhard, K. M., & Sedivy, J. C. (1995). Integration of visual and linguistic information in spoken language comprehension. *Science*, 268(5217), 1632.

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.

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 perceptual systems? Can it influence our memories?

Week 13. Bilingualism: How does knowing more than one language shape how the mind functions?

Spivey, M. J., & Marian, V. (1999). Cross talk between native and second languages: Partial activation of an irrelevant lexicon. *Psychological Science*, 10(3), 281-284.

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

There is strong evidence that speaking more than one language fundamentally shapes the way the mind functions, as bilingual speakers shift back and forth between linguistic representations in ways that monolingual speakers do not. What are the benefits of bilingualism, and what can this tell us about how language is mentally represented and processed?

Week 14. 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.

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 topic. Phonetics & phonology: Evidence from infants

If we have time, we may include this additional topic. If not, I recommend these readings for your own exploration!

Mehler, J. et al. (1988). A precursor of language acquisition in young infants. *Cognition*, 29(2), 143-178.

Kuhl, P. K., Williams, K. A., Lacerda, F., Stevens, K. N., & Lindblom, B. (1992). Linguistic experience alters phonetic perception in infants by 6 months of age. *Science*, 255(5044), 606-608.

Werker, J.F. & Tees, R.C. (2002). Cross-language speech perception: Evidence for reorganization during the first year of life. *Infant behavior & development*, 25, 121-133.

What's something a baby can do much better than you? Differentiate between the phonemes in every human language! We'll look at how this ability is lost over time, and also how surprisingly early babies begin to learn their native language: in the womb!

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. As long as documentation (e.g., a dean's note) is provided, one absence will not negatively affect your grade. You will still be responsible for the work due in the class you missed, e.g., reading response and interim paper deadlines.

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, I will have to penalize late assignments accordingly.

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>).