

**Course Name and Number****185:360 Origins of Cognition**

Course Canvas site: <https://rutgers.instructure.com/courses/186981>

Requirement: 185:201 Intro to Cog Sci

**Semester**

Fall 2022

**Meeting Days, Times, and Place(s)**

Tuesday and Friday 10:20-11:40

Livingston Campus, Business School Rm. 5101

**Instructor**

Marta Mielicki

[marta.mielicki@rutgers.edu](mailto:marta.mielicki@rutgers.edu)

Office Hours: Office hours are an opportunity for you to connect with us, ask clarifying questions about content, and find support. We are often lonely during office hours, watching the door and waiting for someone to come talk to us. Don't be shy – stop by at least once during the semester and it will actually count towards your grade!

In-person: Tuesdays TBD Psychology Building Rm. 104A (Busch Campus)  
via Zoom: by appointment

**Teaching Assistant**

Joseph Sommer

[js2409@scarletmail.rutgers.edu](mailto:js2409@scarletmail.rutgers.edu)

In-person: Wednesdays TBD Psychology Building  
via Zoom: by appointment

**List of Required Books &/or Materials**

No required textbook.

All readings will be articles or book chapters available in PDF format, posted on Canvas.

**Learning Goals**

Where does human knowledge come from? In this course we will explore the origins of human knowledge through the lens of cognitive developmental science, and link it to ideas from other academic fields, such as philosophy, neuroscience, and anthropology. We will examine findings and ideas from developmental science, broadly construed. The topics will include objects, number, language, social understanding, and learning. We will learn about ideas and research findings through readings and discussions, and through doing in-class experiments ourselves!

We will explore what it means to be a human thinker. Along the way, you will:

- Learn the central concepts and theoretical foundations of cognitive developmental science
- Learn to think for yourselves about issues regarding the origins of mind
- Think deeply about research questions through contemporary research methods
- Communicate complex ideas effectively in writing and in oral presentation

## Course Structure and Requirements

**Attendance Activities (20%, 3 can be dropped):** In addition to being mandatory per Rutgers policy, research shows that regular class attendance significantly improves course performance! Although coming to class regularly is a start, my goal is to have you all be active participants during EACH AND EVERY class. For this reason, there will be an attendance activity during every class meeting. These activities are designed to make you think deeply about what we cover during class, and to give you the opportunity to talk things over with me and, more importantly, with your fellow classmates.

**Small Assignments (30%, 2 can be dropped):** The goal of these assignments is to base part of your grade on the work you do outside of class (which is just as, if not more, important than the work you do when we meet twice a week). Assignments will include pre- and end-of-semester reflection papers, completing our class experiments, quizzes about the reading, and coming to my (or Dr. Sommer's) office hours at least once this semester. These are denoted with one \* in the schedule below.

**Big Assignments (50%, no drops, but see extension policy below):** The goal of these assignments is for you to think deeply about a couple of research questions, and to share what you have learned with your instructors and fellow classmates. You will also get some experience putting your thoughts into writing and expressing them through discussion and oral presentations.

### Experiment Abstracts, Presentations, and Peer Review (50%: 10%, 15%, 25%):

After each of the 3 class experiments, you will make a conference-style abstract addressing key points about the experiment. You will also present your abstracts and discuss them with your classmates in small groups. You will evaluate each other's abstracts, helping each other craft the best possible versions of these assignments before final versions are due. At the end of the semester, you will choose the abstract you are most excited about to create a poster that will be shared with the whole class. These are denoted with two \* in the schedule.

**One-time extension policy:** For the big writing assignments, everyone can have one three-day extension NO QUESTIONS ASKED. Use it wisely, but also remember that the assignments are structured around peer grading. This means that if your assignment is late, it may impact your fellow classmates who are assigned to give you feedback to improve your work.

## Extra Credit (up to 20%):

If you do especially well on your first writing assignments, you **will be invited to** submit an extra credit research proposal **in place of** your 3<sup>rd</sup> writing assignment. You will automatically get full credit for your 3<sup>rd</sup> assignment as long as your research proposal follows the instructions. The final amount of extra credit will depend on the quality of your proposal. The research proposal must directly address one of the topics we covered in the course from the perspective of cognitive developmental science.

## Class Schedule (more or less)

### 9/6 Introduction

**What is this class even about, and how do I get a good grade?**

### 9/9 Skills to succeed: Reading empirical research

**How do I read a journal article?**

#### **BEFORE CLASS READ:**

- Pain, E. (2016). How to (seriously) read a scientific paper. <https://www.sciencemag.org/careers/2016/03/how-seriously-read-scientific-paper#>
- Baillargeon, R. (1987). Object permanence in 3½- and 4½-month-old infants. *Developmental Psychology*, 23(5), 655-664.

**\*Pre-semester reflection paper due by midnight 9/9 (see Canvas for details)**

### 9/13 Initial Thoughts: What makes human cognition unique?

**Peer-grading session for reflection paper 1**

#### **BEFORE CLASS READ:**

- Your assigned peer reflection paper
- Spelke, E. S., & Kinzler, K. D. (2007). Core knowledge. *Developmental Science*, 10(1), 89-96.
- Prinz, J. J. (2005). The return of concept empiricism. In H. Cohen & C. Lefebvre (Eds.), *Handbook of categorization and cognitive science*. New Jersey: Elsevier.

### 9/16 Core Cognition: Objects

**What do babies (and non-humans) know about objects?**

#### **BEFORE CLASS READ/WATCH:**

- Spelke presentation (link on Canvas, watch first 27 minutes)
- Regolin, L., & Vallortigara, G. (1995). Perception of partly occluded objects by young chicks. *Perception & Psychophysics*, 57(7), 971-976.

**\*Complete Experiment 1 by midnight 9/16 (link on Canvas)**

### 9/20 Core Cognition: Objects

**How can object knowledge impact cognition?**

#### **BEFORE CLASS READ:**

- Guo, L., Courtney, S. M., & Fischer, J. (2020). Knowledge of objects' physical properties implicitly guides attention during visual search. *Journal of Experimental Psychology: General*, 149(12), 2332-2343.

**\*In-class quiz on article**

**9/23 Core Cognition: Objects**  
**Review findings from Experiment 1**

**9/27 Core Cognition: Objects**  
**Wait, what even is an object?**

**BEFORE CLASS READ:**

- Feldman, J. (2003). What is a visual object? *Trends in Cognitive Sciences*, 7(6), 252-256.

**\*\*Draft of Abstract from Experiment 1 due by midnight 9/27 (see Canvas for details)**

**9/30 Core Cognition: Objects**  
**Peer-grading session for Experiment 1**

**BEFORE CLASS READ:**

- Your assigned peer abstract

**10/4 Core Cognition: Number**  
**How do we know what babies know about number?**

**BEFORE CLASS READ:**

- Feigenson, L., Dehaene, S., & Spelke, E. (2004). Core systems of number. *Trends in Cognitive Sciences*, 8(7), 307-314.

**10/7 Core Cognition: Number**  
**What babies don't know about number (yet).**

**BEFORE CLASS READ:**

- Carey, S. (2004). Bootstrapping and the origin of concepts. *Daedalus*, 133(1), 59-68

**\*\*Final Experiment 1 Abstract due by midnight 10/7 (see Canvas for details)**

**\*Complete Experiment 2 by midnight 10/7 (link on Canvas)**

**10/11 Core Cognition: Number**  
**More on core number sense, the role of ratio.**

**BEFORE CLASS READ:**

- Xu, F., & Spelke, E. S. (2000). Large number discrimination in 6-month-old infants. *Cognition*, 74(1), B1-B11.

**\*In-class quiz on article**

**10/14 Core Cognition: Number**  
**Review findings from Experiment 2**

**10/18 Core Cognition: Number**  
**What's the deal with sex differences in math?**

**BEFORE CLASS READ:**

- Spelke, E. S. (2005). Sex differences in intrinsic aptitude for mathematics and science?: A critical review. *American Psychologist*, 60(9), 950-958.
- Gonzalez, A. M., Odic, D., Schmader, T., Block, K., & Baron, A. S. (2021). The effect of gender stereotypes on young girls' intuitive number sense. *PloS One*, 16(10), e0258886.

**\*\*Draft of Experiment 2 Abstract due by midnight 10/18 (see Canvas for details)**

**10/21 Core Cognition: Number**  
**Peer-grading session for Experiment 2**

**BEFORE CLASS READ:**

- Your assigned peer abstract

**10/25 Core Cognition: People**

**What do babies know about other people**

**BEFORE CLASS READ/WATCH:**

- Gopnik TED Talk (link on Canvas)
- Spelke presentation (link on Canvas, watch from 27- 47 minutes)
- Ruffman, T., Aitken, J., Wilson, A., Puri, A., & Taumoepeau, M. (2018). A re-examination of the broccoli task: Implications for children's understanding of subjective desire. *Cognitive Development, 46*, 79-85.

**10/28 Core Cognition: People**

**Wait, what even is a belief? (Dr. Sommer's guest lecture)**

**BEFORE CLASS READ/WATCH:**

- TBD (check Canvas)

**\*\*Final Experiment 2 Abstract due by midnight 10/28 (see Canvas for details)**

**\*Complete Experiment 3 by midnight 10/28 (link on Canvas)**

**11/1 Core Cognition: People**

**What do we think we know about other people?**

**BEFORE CLASS READ:**

- Wang, J. J., & Feigenson, L. (2019). Is empiricism innate? Preference for nurture over nature in people's beliefs about the origins of human knowledge. *Open Mind, 3*, 89-100.

**\*In-class quiz on article**

**11/4 Core Cognition: People**

**Review findings from Experiment 3**

**11/8 Core Cognition: People**

**The banana is a telephone! Theory of mind.**

**BEFORE CLASS READ/WATCH:**

- Leslie, A. M., 'Theory of mind' as a mechanism of selective attention. In M. Gazzaniga (Ed.), *The new cognitive neurosciences 2nd Ed.*, (pp. 1235-1247). MIT Press.
- Sally Anne video (link on Canvas)

**\*\*Draft of Experiment 3 Abstract/Proposal due by midnight 11/8 (see Canvas for details)**

**11/11 Core Cognition: People**

**Peer-grading session for Experiment 3/Proposal**

**BEFORE CLASS READ:**

- Your assigned peer abstract

**11/15 Putting the pieces together: The role of language**

**How do humans learn language?**

**BEFORE CLASS READ:**

- Stromswold, K., The cognitive neuroscience of language acquisition. In M. Gazzaniga (Ed.), *The new cognitive neurosciences 2nd Ed.*, (pp. 909-932). MIT Press.

**11/18 Putting the pieces together: The role of language**

**How does language shape cognition?**

**BEFORE CLASS READ:**

- Boroditsky, L. (2011). How language shapes thought. *Scientific American*, 304(2), 62-65.
- Gentner, D., & Christie, S. (2010). Mutual bootstrapping between language and analogical processing. *Language and Cognition*, 2(2), 261–283.

**\*\*Final Experiment 3 Abstract/Proposal due by midnight 11/18 (see Canvas for details)**

**NO CLASS 11/22 or 11/25**

**11/29 Professional development: Ask a cognitive scientist**

**Visit from some real live cognitive scientists**

**BEFORE CLASS READ:**

- TBD

**12/2 Final thoughts: What makes human cognition unique?**

**Some concluding thoughts/discussion on the role of environment in shaping human minds.**

**BEFORE CLASS WATCH:**

- A Class Divided documentary (link on Canvas)

**\*End-of-semester reflection paper due by midnight 12/2 (see Canvas for details)**

**12/6 Final thoughts: What makes human cognition unique?**

**Peer-grading session for reflection paper 1**

**BEFORE CLASS READ:**

- Your assigned peer reflection paper

**\*\*Poster draft due by midnight 12/6 (see Canvas for details)**

**12/8 FINAL POSTER SESSIONS**

**12/13 FINAL POSTER SESSIONS (continued)**

**\*\*Final poster due by midnight of 12/19 (see Canvas for details)**

**Other Important Information and Resources**

**Student-Wellness Services**

**Counseling, ADAP & Psychiatric Services (CAPS)**

**(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/**

**<http://health.rutgers.edu/medical-counseling-services/counseling/>**

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professionals within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community, and consultation and collaboration with campus partners.

**Crisis Intervention** : <http://health.rutgers.edu/medical-counseling-services/counseling/crisis-intervention/>

**Report a Concern:** <http://health.rutgers.edu/do-something-to-help/>

### **Violence Prevention & Victim Assistance (VPVA)**

**(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / [www.vpva.rutgers.edu/](http://www.vpva.rutgers.edu/)**

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

### **Disability Services**

**(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>**

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation:

<https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at:

<https://ods.rutgers.edu/students/registration-form>.

### **Cheating and Plagiarism**

Cheating or plagiarizing robs you of the learning experience of completing an assignment yourself, and it makes it impossible for me as the instructor to truly know what you have learned in preparing an assignment. In addition to being dishonest, it is also unfair, since it gives you an undeserved advantage over your classmates who are graded on the basis of their own work. In this class we will take cheating/plagiarism very seriously. All suspected cases of cheating and plagiarism will be automatically referred to the Office of Student Conduct,<sup>1</sup> and we will recommend penalties appropriate to the gravity of the infraction. The university's policy on Academic Integrity is available at <http://academicintegrity.rutgers.edu/academic-integrity-policy><sup>2</sup> I strongly advise you to familiarize yourself with this document, both for this class and for your other classes and future work. To help protect you, and future students, from plagiarism, we require all papers to be submitted through Turnitin.com.

Since what counts as plagiarism is not always clear, here's the definition given in Rutgers' policy:

**Plagiarism: Plagiarism is the use of another person's words, ideas, or results without giving that person appropriate credit. To avoid plagiarism, every direct quotation must be identified by quotation marks or appropriate indentation and both direct quotation and paraphrasing must be cited properly according to the accepted format for the particular discipline or as required by the instructor in a course. Some common examples of plagiarism are:**

- Copying word for word (i.e. quoting directly) from an oral, printed, or electronic source without proper attribution.
- Paraphrasing without proper attribution, i.e., presenting in one's own words another person's written words or ideas as if they were one's own.
- Submitting a purchased or downloaded term paper or other materials to satisfy a course requirement.

<sup>1</sup> Nomenclature updated Aug. 29, 2019. S. Lawrence

<sup>2</sup> This web link was corrected on Sept. 13, 2015. S. Lawrence

- **Incorporating into one's work graphs, drawings, photographs, diagrams, tables, spreadsheets, computer programs, or other nontextual material from other sources without proper attribution.**<sup>3</sup>

A SPECIAL NOTE: Students often assume that because information is available on the Web it is public information, does not need to be formally referenced, and can be used without attribution. This is a mistake. **All** information and ideas that you derive from other sources, whether written, spoken, or electronic, must be attributed to their original source. Such sources include not just written or electronic materials, but people with whom you may discuss your ideas, such as your roommate, friends, or family members. They deserve credit for their contributions too!

Judgments about plagiarism can be subtle. If you have any questions, please feel free to ask for guidance from your Professor.

### **Current Academic Integrity Policy:**

Summary: <http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers/>

Violations include: cheating, fabrication, plagiarism, denying others access to information or material, having someone else complete your course work, and facilitating violations of academic integrity by others.

Resources for Students: <http://academicintegrity.rutgers.edu/resources-for-students/>

### **Mask Requirement**

In order to protect the health and well-being of all members of the University community, masks must be worn by all persons on campus when in the presence of others (within six feet) and in buildings in non-private enclosed settings (e.g., common workspaces, workstations, meeting rooms, classrooms, etc.). Masks must be worn during class meetings; any student not wearing a mask will be asked to leave.

Masks should conform to CDC guidelines and should completely cover the nose and mouth:  
<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/about-face-coverings.html>

Each day before you arrive on campus or leave your residence hall, you must complete the brief survey on the My Campus Pass symptom checker self-screening app.

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<sup>3</sup> <http://academicintegrity.rutgers.edu/academic-integrity-policy/> Updated with the University's current language on July 13, 2012 and web link was corrected on Sept. 13, 2015. S. Lawrence.