

P429: Lab in Developmental Psychology

Fall 2025

Course Details

[location and time redacted]

Prerequisites: PSY-P 211; and PSY-P 315 or PSY-P 316; and PSY-K 300 or equivalent

	Email	Office	Office Hours
Instructor: Tongyao Zhang	zhangton@iu.edu	Geology 6050F	Tuesday 2pm-4pm or by appointment
Graduate TA: [redacted]	xxx@iu.edu	xxx	xxx

I want you to succeed in this course, and I am here to help. If you ever have questions or want to discuss something, please let me know – come by my office hours or email. You can schedule an appointment with me if you are unavailable during my office hours.

Directions to Office: My office is located on the 6th floor of the Geology Building (directly across the street from psychology). Please use the main west entrance of the building (on 10th street). The elevator is to the right of the entrance. Once you exit the elevator on the 6th floor, turn left and enter through the double doors. Finally, turn left and my office is the first door on the left side of the hallway (6050F).

All office hours will be simultaneously held on Zoom: <https://iu.zoom.us/j/3331440698>

Course Objectives and Learning Goals

This is a one-semester laboratory in developmental psychology – giving students hands on research experience in order to a gain deeper understand of how and why behavior changes over time. The overarching goal is to introduce students to current theory, research, and applications in the field of developmental psychology emphasizing the development of number and patterning knowledge from infancy to middle childhood. Throughout the course we will progress through all stages of the research process—from a literature review that assesses the state of current knowledge, to questions and hypothesis generation, to the observation, processing and analyzing of real experiments with children, interpretation of results, and the writing (and-rewriting) of an experimental report. The beginning of the class will consist of lectures, in-class activities, discussions, demonstrations, and videos to ground the class on the current state of research on children’s early math and reasoning knowledge. The remainder of the class will serve as a collaborative space to discuss research ideas and apply those ideas to data sets. The class will conclude with students writing and presenting a unique experimental report which aligns with the student’s interest.

By the end of the semester, successful students will:

1. Exhibit knowledge of core psychological research on early learning processes
2. Understand and apply principles of effective research design with child populations
3. Conduct appropriate statistical analyses using statistical software
4. Write scientific manuscripts using APA 7th edition style
5. Collaborate with others in conducting scientific research
6. Communicate effectively scientific information through written, oral, and other modes (e.g., videos, images, graphs).

Course Materials

Textbook is not needed. All required materials will be available on CANVAS. The online materials will include (1) the syllabus, (2) announcements, (3) slides that you can download (these will be available before each class, but they are optional – no obligation to use them), (4) required research articles, (5) assignment instructions, and (6) the grade book.

Course Requirements

Your grade will be based on several requirements (out of 1000 points total), as indicated below:

Assignment	Percent of Final Grade	Points
CITI Training	5%	50 pts.
Article responses (5)	20% (4% each)	200 pts.
Project Section 1 (Intro & Research Questions)	8%	80 pts.
Project Section 2 (Methods)	8%	80 pts.
Project Section 3 (Results)	8%	80 pts.
Project Section 4 (Discussion & References)	8%	80 pts.
In-Class Participation and Processes: Class survey, research question draft, peer review, etc.	Approximately 20%	~ 200 pts.
Final Project Presentation	15%	150 pts.
Final Paper	8%	80 pts.
TOTAL	100%	1000 pts.

CITI Training

Before conducting research with human subjects, everyone must complete CITI training (CITI stands for Collaborative Institutional Training Initiative). This training must be completed by Wednesday of the second week of class. To work with human data and children, IU requires a certification for the CITI courses and modules:

- Social and Behavioral Responsible Conduct of Research
- Social/Behavioral Researchers
 - Research with Children

Article Responses

There will be 5 scientific article response assignments during the semester. The first 3 will be completed to help scaffold our conversations about the development of math and patterning knowledge over time. The other 2 article responses will be of your choosing, one to help you build the literature review and introduction of final project, and one for the discussion of your final project.

In-Class Participation

As this is an upper-level project-based capstone course, your consistent attendance and participation is essential for success in the course. It is expected that you will attend class for every class session. To receive full credit for participation students should come to class ready to contribute to class discussions and activities. Completing assigned readings ahead of class is also necessary to fully contribute. If student participation in class is falling due to lack of participation, I reserve the right to institute quizzes on assigned readings or other content shared in-class. If you are unable to attend class due to illness or other unforeseen circumstances, please let the instructor know immediately. If you know you will be unable to attend class due to external events, please let the instructor know at the beginning of the semester.

Final Paper

Your final project will be a paper in which you will have developed new research questions, created and tested hypotheses, analyzed and interpreted data using statistical techniques and software, and related these results to prior literature in the field. This paper will be unique for each student; you are able to tailor it to your interests. The sections of this project will be assigned as 4 milestone sections across the class. Class topics are aligned so that we cover the material that comprises successful completion of these projects as we go. I will provide support and scaffolding through this, our workshops, office hours, and questions to make sure everyone is able to succeed in completing all sections of the paper.

Final Presentation

You will also be required to present your final paper in a brief 5-minute presentation. The combination of the final paper and presentation are concrete examples of these dissemination skills, and this will be useful in many careers as well as being tangible material for future job or graduate school applications.

Grades

Final letter grades will be assigned according to the table below. “Percent” is calculated by adding up your total earned points and dividing by the total available points (1000 by the end of the semester). Percentages will be rounded to the nearest whole number (decimal values of .5 and higher will be rounded up, all other decimal values will be rounded down).

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
Percent	97-100	93-96	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	<59

Course Policies

Students are expected to **be respectful of the instructor and of each other**. I encourage open discussion and critical evaluation in my course – that is often how we learn the most and how we eventually advance science. We must do our best to maintain an open and inviting environment in which everyone feels free to ask questions, share ideas, and debate issues. We should strive to be respectful; however, it's just as important to realize that respecting others' ideas does not mean that you must agree with them. Debate is highly encouraged – it's more fun that way!

Students are expected to **adhere to the Code of Student Rights, Responsibilities, and Conduct**: <https://studentcode.iu.edu/>. According to this code, academic misconduct is defined as any activity that tends to undermine the academic integrity of the institution. It includes cheating, fabrication, plagiarism, violation of course rules, and facilitating academic dishonesty. Disciplinary action in response to these or other forms of academic misconduct may include a grade reduction or zero on any activity, quiz, writing, or in the course, or other actions as determined by the instructor and/or the Dean of Students.

If you need course **accommodations** due to a disability, if you have emergency medical information to share with me, or if you need special arrangements, please make an appointment with me as soon as possible. For example, if anyone requires assistance for a disability, you must have established your eligibility for disability support services through the Office of Disability Services. Also, it is the policy of Indiana University that instructors must reasonably accommodate students who want to observe their religious holidays at times when academic requirements conflict with those observations. If a conflict with a religious observance exists, the student must make a request to me by the end of the second week of the course.

As your instructor, one of my responsibilities is to create a positive learning environment for all students. **Bias incidents** (events or comments that target an individual or group based on age, color, religion, disability, race, ethnicity, national origin, sex, gender, gender identity, sexual orientation, marital status or veteran status) are not appropriate in our classroom or on campus. What should you do if you witness or experience a bias incident? See it? Hear it? Report it by talking to me, submitting a report online (biasincident.indiana.edu), or calling the Dean of Students Office (812-855-8187).

Late Work: Since most assignments are to be discussed right after the due date, late submissions will receive late penalty proportionally. The only exception is medical or other critical reasons communicated in advance with necessary proofs.

Generative AI: You have the liberty to use generative AIs (e.g., ChatGPT, Gemini, Copilot, etc.) to tackle lower-level problems like language barriers or finding a button in the statistical software. However, the rule of thumb is that you must produce the content you submit as assignments yourself. In some literature heavy courses, it might be possible to get away with AI-generated article responses and research questions, but in this lab-based course, each student will actively discuss and explain the ideas in their assignments to their peers, and it is extremely difficult to fake it with what an AI wrote in your own assignments for this level of discussion.

Extra Credit: Any potential extra credit opportunities will be announced in class.

See the link below for university-wide applicable policies.

<https://psych.indiana.edu/syllabus-policies/>

Disclaimer

This syllabus is an outline of the course and its policies, which may be changed for reasonable purposes during the semester at the instructor's discretion. You will be notified in class and / or via email if any changes are made to this syllabus, and an updated syllabus will be provided on Canvas.

How to Succeed in this Course

There are many things you can do to foster your enjoyment and success in this course.

Attend Class. Lectures and in class activities will illuminate material and will help you develop your unique research ideas. Class is also where we have fun – engaging in lively discussions, demonstrating psychology principles in the real world, and watching relevant video clips.

Come to Office Hours (or make an appointment). Come and see me any time you have a question, any time you're confused or behind, or any time you feel like talking. My goal is to help you succeed! I want you to learn a lot, do well, and enjoy the class. If you're too shy to visit – send me or the TA an email. It is our responsibility to help you along the right path.

Read the Assigned Scientific Articles. Find a place where you enjoy reading, go there, and read the assigned scientific articles. Don't just try to memorize terms and facts – but really delve in as if each article as a scientific story. Note things that are confusing or interesting. Read the relevant content before class and complete a draft of your article response so you are prepared for in class discussions.

Have fun. Motivation is critical for learning. While our class will focus on the development of numerical cognition, developmental psychology is a broad field with many subfields – find out what interests and motivates you and dive in! Perhaps you gravitate toward content area questions (What do babies know? How do family dynamics shape development?) or toward different methodological approaches (What are the benefits of a longitudinal study? Can I study this using an experiment?). Whatever it is that interests you I encourage you to delve deeper and engage with the material and enjoy the topic you choose to as the focus of your final paper and presentation.

Start early. Most of the class's assignments, especially the later part for project papers, can be started earlier than the week of due. Starting to think about it earlier will surely advance the intellectual outcome you get out of your writing.

Course schedule is below.

Week	Tuesday Class	Thursday Class	Major Dues
Week 1 Aug 25 – Aug 29	Introduction	Research ethics & CITI training	Wed 8/27: Class survey
Week 2 Sept 1 – Sept 5	CITI training workshop	Reading & Evaluating Research	Wed 9/3: CITI training Fri 9/5: Article response practice
Week 3 Sept 8 – Sept 12	Development of early numeracy	Article response review	Wed 9/10: Article response 1
Week 4 Sept 15 – Sept 19	Development of early patterning skill	Article response review	Wed 9/17: Article response 2
Week 5 Sept 22 – Sept 26	Relationship between cognitive skills and learning processes	Article response review	Wed 9/24: Article response 3
Week 6 Sept 29 – Oct 3	Study example: Patterning study with 4–6-year-olds	Project idea workshop: In class peer review	Wed 10/1: Develop research question & hypotheses Fri 10/3: Final research question and hypotheses
Week 7 Oct 6 – Oct 10	Literature Review	NO CLASS	Wed 10/8: 4+ sources & article response 4
Week 8 Oct 13 – Oct 17	Coding Videos	Practice Coding Videos	Wed 10/15: Sample Size Justification Fri 10/17: Project Section 1 - Intro and Research Questions
Week 9 Oct 20 – Oct 24	Practice Coding Videos	Practice Coding Videos	Wed 10/22: Coding Scheme Fri 10/24: Project Section 2 - Methods
Week 10 Oct 27 – Oct 31	Data Analysis Lecture (SPSS setup & Descriptive stats)	Data Analysis Lecture (t-test, ANOVA, Correlation)	Wed 10/29: Descriptive Stats Fri 10/31: Analysis Plan
Week 11 Nov 3 – Nov 7	Data Analysis Workshop	Data Analysis Workshop	Wed 11/5: Completed Coding Data
Week 12 Nov 10 – Nov 14	Discussion Lecture	Discussion Practice	Wed 11/12: Project Section 3 - Results Fri 11/14: 4+ sources & article response 5
Week 13 Nov 17 – Nov 21	Dissemination and presentation skills	Workshop on presentations	Fri 11/21: Project Section 4 - Discussion
Week 14 Nov 24 – Nov 28 Thanksgiving	NO CLASS	NO CLASS	
Week 15 Dec 1 – Dec 5	Work on Final Presentations	Work on Final Presentations	Fri 12/5: Presentation slides
Week 16 Dec 8 – Dec 12	Final Project Presentations	Final Project Presentations	Final project paper due Friday 12/12
Finals Week	NO CLASS	NO CLASS	