Graduate Research Methods (Psych 711)

Gary Lupyan & João Guassi Moreira

Spring 2026

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Lecture Time: Wednesdays 2:30pm-3:45pm
Section Time: Mondays 3:00pm-3:50pm
Class website: psych-methods.netlify.app
Both Meet in Psych 634

Course Description

This course provides doctoral-level training on contemporary research methods in psychological science. Topics include measurement, a review of validity, reliability and its paradoxes, power and sampling, introduction to common experimental designs, and guidance to best practices in data management and open science. The course also touches on survey design, meta-analyses, longitudinal studies, the ergodicity assumption, and emergent topics such as non-experimental approaches to causal inference.

Course Learning Outcomes

Upon completion of the course, students will be able to...

1. Assess the reliability and validity of study constructs.
2. Design clear experimental manipulations that allow for causal inference.
3. Fluently articulate limitations of various experimental studies.
4. Organize and structure their data in accordance with open science best practices.
5. Critically and thoughtfully engage in peer review of experimental psychology studies.
6. Understand enough about the basic premise of non-experimental approaches to causality to bootstrap additional self-study.

Expectations

Students are expected to read and critically engage with the 2-4 readings assigned each week. Be on the lookout for ideas that challenge your intuitions and that provoke you into thinking differently. Please note that some weeks have more reading than other weeks. Plan your schedule accordingly. To help you engage with the readings and to avoid falling behind, you will be expected to (1) Post a comment/response on each reading by Monday 8pm prior to each class. Strive for being brief and to the point. What did you learn from the reading? What was most surprising to you? (2) We've designed a little web-app that allows you to submit questions and vote on questions submitted by other students. This helps us focus on the questions you've identified as most in need of being answered.

There will also be several short assignments. Detailed instructions for each will be provided at least 2 weeks before the due date.

How credit hours are met by the course

(Times are rough estimates)

- 32 hrs class-time
- 48 hrs reading
- 12 hrs assignment posts and section assignments
- 26 hrs final project
  = 118 hrs total

Grading Policy

- **30%** Attendance & in-class participation
- **30%** Reading responses
- **10%** Final project presentation
- **30%** Final project paper

Class Schedule[1]

We recommend reading the papers in the order in which they are listed.

Week 01, Wednesday, 01/21 *The scientific method as it pertains to psychology*

- **Readings (in class):** Feynman (1974); Forscher (1963);

Section: Monday, 01/26

- **Read for section**: Cohen (1994); Gelman & Higgs (2025); Experimentology: Primer on research ethics

Week 02, Wednesday, 01/28 *Experiments, causality, and the two disciplines of psychology*

- **Readings:** Experimentology: Experiments & causal inference; Experimentology: How data inform theoretical constructs; Cronbach (1957)

Section: Monday, 02/02

- When should we (not) do experiments? A discussion of what (non)experimental methods can and can't tell us.

Week 03, Wednesday, 02/04 *Measurement: Validity, reliability, the reliability paradox*

- **Readings:** Experimentology: Measurement; Westfall & Yarkoni (2016); Hedge et al. (2018); Zorowitz & Niv (2023)
- Extra: Sijtsma (2009); Cortina et al. (2020);

Section: Monday, 02/09

- Assignment 1: With a partner, prepare a short (~5 minute) presentation on the challenges in establishing one of the discussed types of validity in your ongoing research.

[1] Subject to revision

Week 04, Wednesday, 02/11 *Experimental Design 1: Design basics; the ergodic fallacy*

- **Readings:** Experimentology: Design; Speelman & McGann (2020)
- Extra: Speelman et al. (2024); Rouder & Haaf (2019)

Section: Monday, 02/16

TBD

Week 05, Wednesday, 02/18 *Sampling, power, and effect sizes*

- **Readings:** Experimentology: Sampling; Funder & Ozer (2019); Smallest Effect Size of Interest
- Extra: Wagenmakers (2007); Lovakov & Agadullina (2021); Marek et al. (2022)

Section: Monday, 02/23

TBD

Week 06, Wednesday, 02/25 *Data management best practices*

- **Readings:** Experimentology: Project management; Wilkinson et al. (2016)

Section: Monday, 03/02

TBD

Week 07, Wednesday, 03/04 *Experimental Design 2: Participant consent & recruitment; counterbalancing; instructions; data quality checks*

- **Readings:** Experimentology: Data collection; Westwood (2025)

Section: Monday, 03/09

- Practice with designing effective data quality checks

Week 08, Wednesday, 03/11 *Experimental Design 3: Introduction to some common behavioral methods*

- **Readings:** Skim through these, pausing on what most interests you: Bower & Clapper (1989); Leek (2001); the first chapter or two of Macmillan & Creelman (2005)

Section: Monday, 03/16

- TBD

Week 09, Wednesday, 03/18 *Quantifying Qualitative Data*

- **Readings:** TBD (Content Analysis of Free response data; Behavioral coding; Use of LLMs in data-coding

Section: Monday, 03/23

- TBD

Week 10, Wednesday, 03/25 *Non-Experimental Design 1: Surveys; Item Response Theory; Propensity score matching*

- **Readings:** TBD

Section: Monday, 03/30

- Spring Break. Enjoy!

Week 11, Wednesday, 04/01 *Spring Break. Enjoy!*

Week 12, Wednesday, 04/08 *Non-Experimental Methods 2: Longitudinal & In-the-Wild Data*

- **Readings:** TBD; Goldstone & Lupyan (2016)

Section: Monday, 04/13

- TBD

Week 13, Wednesday, 04/15 *Meta-Analysis*

- **Readings:** Experimentology: Meta-Analysis; TBD

Section: Monday, 04/20

- TBD

Week 14, Wednesday, 04/22 *Putting it all together: Maximizing knowledge gain*

- **Readings:** Yarkoni (2020); Giner-Sorolla (2019); Rozin (2009)

Section: Monday, 04/27

- TBD

Week 15, Wednesday, 04/29 *Final presentations*

References

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Students' Rules, Rights, & Responsibilities

See https://guide.wisc.edu/graduate/

UW-Madison Badger Pledge

Course Evaluations

Students will be provided with an opportunity to evaluate this course and your learning experience. Student participation is an integral component of this course, and your feedback is important to us. We strongly encourage you to participate in the course evaluation.

Digital Course Evaluation (AEFIS)

UW-Madison now uses an online course evaluation survey tool, AEFIS. In most instances, you will receive an official email two weeks prior to the end of the semester when your course evaluation is available. You will receive a link to log into the course evaluation with your NetID where you can complete the evaluation and submit it, anonymously. Your participation is an integral component of this course, and your feedback is important to me. I strongly encourage you to participate in the course evaluation.

Academic Calendar & Religious Observances

- See: https://secfac.wisc.edu/academic-calendar/#religious-observances

Ethics of Being a Student in the Department of Psychology

The members of the faculty of the Department of Psychology at UW-Madison uphold the highest ethical standards of teaching and research. They expect their students to uphold the same standards of ethical conduct. By registering for this course, you are implicitly agreeing to conduct yourself with the utmost integrity throughout the semester.

In the Department of Psychology, acts of academic misconduct are taken very seriously. Such acts diminish the educational experience for all involved – students who commit the acts, classmates who would never consider engaging in such behaviors, and instructors. Academic misconduct includes, but is not limited to, cheating on assignments and exams, stealing exams, sabotaging the work of classmates, submitting fraudulent data, plagiarizing the work of classmates or published and/or online sources, acquiring previously written papers and submitting them (altered or unaltered) for course assignments, collaborating with classmates when such collaboration is not authorized, and assisting fellow students in acts of misconduct. Students who have knowledge that classmates have engaged in academic misconduct should report this to the instructor.

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Accommodations Policy

McBurney Disability Resource Center syllabus statement: "The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA." http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php

UW-Madison students who have experienced sexual misconduct (which can include sexual harassment, sexual assault, dating violence and/or stalking) also have the right to request academic accommodations. This right is afforded them under Federal legislation (Title IX). Information about services and resources (including information about how to request accommodations) is available through Survivor Services, a part of University Health Services: https://www.uhs.wisc.edu/survivor-services/ .

Diversity and Inclusion

Institutional statement on diversity: "Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world." https://diversity.wisc.edu/

Complaints

Occasionally, a student may have a complaint about a TA or course instructor. If that happens, you should feel free to discuss the matter directly with the TA or instructor. If the complaint is about the TA and you do not feel comfortable discussing it with the individual, you should discuss it with the course instructor. Complaints about mistakes in grading should be resolved with the TA and/or instructor in the great majority of cases. If the complaint is about the instructor (other than ordinary grading questions) and you do not feel comfortable discussing it with the

individual, make an appointment to speak to the Associate Chair for Graduate Studies, Professor Yuri Saalmann (saalmann@wisc.edu).

If you have concerns about climate or bias in this class, or if you wish to report an incident of bias or hate that has occurred in class, you may contact the Chair of the Department, Professor Shawn Green (cshawn.green@wisc.edu) or the Chair of the Psychology Department Climate & Diversity Committee, Martha Alibali (martha.alibali@wisc.edu). You may also use the University's bias incident reporting system, which you can reach at the following link: https://osas.wisc.edu/report-an-issue/bias-or-hate-reporting/.

Concerns about Sexual Misconduct

All students deserve to be safe and respected at UW-Madison. Unfortunately, we know that sexual and relationship violence do happen here. Free, confidential resources are available on and off campus for students impacted by sexual assault, sexual harassment, dating violence, and stalking (regardless of when the violence occurred). You don't have to label your experience to seek help. Friends of survivors can reach out for support too. A list of resources can be found at https://www.uhs.wisc.edu/survivor-resources/

If you wish to speak to someone in the Department of Psychology about your concerns, you may contact the Chair of the Department, Professor Shawn Green (cshawn.green@wisc.edu) or the Associate Chair of Graduate Studies, Professor Yuri Saalmann (saalmann@wisc.edu). Please note that all of these individuals are Responsible Employees (https://compliance.wisc.edu/titleix/mandatory-reporting/#responsible-employees).