

## **Global Behavioral Science**

Psych UN1990 (4 Points)

Spring 2020

### Course Information

200C Schermerhorn

Mondays 2:10-4pm

### Instructor Information

Kai Ruggeri

Office: R424 Allen Rosenfield Building (Mailman School of Public Health)

Office hours: Wednesdays 0930-1200 (other times/days by appointment)

*Prof Ruggeri will have an office on Morningside, location and hours TBD*

Email: kai.ruggeri@columbia.edu

### **Bulletin Description**

As part of the Columbia Global Scholars Program, this course builds on fundamentals of psychological and behavioral science by exploring reproducibility and replication on a global level. Students will learn from a wide range of studies and their real-world implications, while having the chance to contribute to original research through an interactive program in New York, Paris, and Cambridge (UK).

### **Course description**

This course transitions students from learning about fundamental theory and methods in psychology to learning about their applications in science and real-world settings around the world. At its core, it is a behavioral science class focusing on the design and development of reproducible psychological research. This involves further review of theory already covered in previous courses as well as exploring new topics along with their real-world applications. For example, how did social norms go from an experimental question in a laboratory to changing policies from investments to household energy consumption?

Furthermore, this course is explicitly about reviewing behavioral research on a global level, including replications (successful and failed) and attempts to apply to policy around the world. By participating in this seminar course, students will have the opportunity to work within the Junior Researcher Programme (<https://jrp.psychol.org>), completing a five-week practicum at the University of Cambridge in summer 2020, as well as having optional activities in Spain and Italy. The course will also include a conference on behavioral science in Paris in July 2020.

### **Prerequisites**

Students should have completed at least one semester of research methods and/or one semester of statistics, as part of a minimum total of 16 credits in a behavioral subject (psychology, neuroscience, economics, sociology, public health, or public policy). Students that have not met these requirements but are interested in the program should contact the instructor as early as possible.

Enrollment limit is 15. Participation is optimal for juniors, such that they have completed sufficient study for participation and will also still be students during the summer practicum. For 2020, preference will be given to seniors that have not had the opportunity previously, but all interested students are welcomed to apply or to speak with the instructor in advance.

### **Role in the Psychology Curriculum**

This course is designed to give advanced undergraduates in behavioral sciences a hands-on opportunity to apply their training toward strong theoretical research in the real world. This means they will explore theories beyond the publications where they were introduced, critique those studies' potential for replication in controlled and natural settings, and design studies that would determine their reproducibility in other languages and settings. For example, is anchoring a behavioral insight that we only observe in controlled experiments, or can we also see it when people are purchasing cars, or when we compare candidates in a voting booth?

- For undergraduates pursuing the Psychology major or concentration, this course could be used to fulfill the elective requirement.

### **Motivating Questions**

1. Do the most influential findings in psychological science replicate?
2. What makes psychological research more or less reproducible in new settings?
3. What are the real-world applications and implications of more reproducible methods in behavioral sciences?

### **Course Overview**

The four-credit course introduces students to the importance of reproducibility in psychological research methods on an international scale. It will fit into the category of advanced research methods in the Psychology Department curriculum, which explicitly advances training in statistics, research methods, experimental design, and other inferential techniques in empirical studies. Students learn the challenges in implementing and validating methods across languages and populations, as well as the value of replicating research findings.

There will be a strong emphasis on critiquing, adapting, and validating the testing measures and interventions used in behavioral sciences around the world. Students also gain experience with translation (conceptual and linguistic) of measures, with course material including the direct evaluation and critique of past Junior Researcher Programme projects. Specific methodological topics include model equivalence, measure invariance, multiple components of validation and cross-validation, and method design for replication. Materials for many of these have recently been produced by the Center for Open Science, and are freely available online.

By the end of the course, students will identify a major psychological study and design a proposed replication plan - original settings as well as new locations and languages - to be submitted at the end of the course. Replication design will follow processes implemented in recent student-driven replication collaboratives (e.g., [bit.ly/2SLATB9](https://bit.ly/2SLATB9)), then carried out during the subsequent practicum. Students also learn why reproducibility in new settings can have a major impact on policy. The course includes the following sections:

Section 1: Introduction to research methods with an international focus (Weeks 1-3)

Section 2: Reproducibility in psychological science (Weeks 4-5)

Section 3: Introduction to research translation and behavioral policy (Weeks 6-9)

Section 4: Ethics, data, and analysis for international samples (Weeks 6-7)

Section 5: Designing an international replication (Weeks 10-12)

Presentation of projects (Weeks 13-14)

Specific sessions are detailed later.

### **Course Objectives**

1. Students will gain deep understanding and practical experience in behavioral science, including the translatability of findings between settings as well as the reproducibility of methods.
2. Students will learn a broader range of behavioral interventions and measurement techniques by exploring a global caseload of theory and empirical studies.
3. Students will produce their own proposed replication project, present it in at least one conference overseas, and then contribute to the actual multi-country replication of another study as part of a summer practicum abroad. The study will be chosen from those proposed by the group, and selected by a team of advisors to GLOBES.
4. Students will contribute as co-authors to a full manuscript for submission to a behavioral science journal.

### **Course Organization**

#### *Class*

This class meets once per week. All sessions are 1 hour 50 minutes, and consist of brief introductions, discussion of assigned readings, student (individual and group) presentations, and practical activities regarding the design of interventions and measurement approaches. This class will be highly interactive and requires that everyone come prepared for all sessions. Considerable classroom time will be dedicated to working on individual project assignments to be submitted for the final paper; all sessions will involve content that must be reflected in those final reports. Students will also be given administrative tasks focused on project management, which is meant for realistic exposure to conducting research.

#### *Assignments*

**Attendance.** Attendance at all sessions is mandatory and accounts for 10% of the total grade. It is expected that all students attend actively, meaning there must be clear engagement in discussions and presentations. Practical sessions will be the best opportunity for this as there will not be a formal assignment, but instead, the entire group will work through a given issue or article in order to design improvements that can be applied to course projects. Absences will be excused only for valid personal reasons, and the instructor must be consulted in writing as early as is possible, depending on the situation.

**Pre-registration.** The primary piece of work for this course will be a complete pre-registration (see <https://osf.io/wtu9j> for an example, which we will review and critique in class) of a behavioral study chosen by the student. Details on the assignment will be provided in class, but all students will select a theory, study, or general topic where literature is available in order to design their own replication of a given insight (to be defined in class). All students will be required to produce a 10-page written manuscript using pre-registration format. The requirement to design a replication study of an existing concept in psychological sciences may be direct (repeating the same method and analyses) or

conceptual (attempting the same question with a modified method or analyses). Secondary data may be considered for these, but we will focus on original study for this class.

**Paper Discussions.** All students will be expected to lead a discussion on one of the readings, beginning in week 3. These do not require extensive presentations, but should summarize key points of the reading and establish a set of questions or activities for the group to engage with. Students will be allowed to identify additional articles of interest that complement the session if they choose (though should be cleared with the instructor beforehand). Students should meet with instructor prior to their allocated session to discuss the material and any activities. Some sessions will involve multiple students presenting papers; these may be done in coordination if agreed in advance with instructor.

**Project presentations.** The final sessions of the semester will involve all students presenting their proposed replication studies following feedback on their pre-registration manuscripts. Students will present in standard format, with ten minutes per presentation and 3 minutes for Q&A.

### **Grading**

Attendance & participation: 10 points

Pre-registration report: 40 points

Paper discussions: 10 points

Poster presentations: 10 points

Project presentations: 30 points

A	90-100
B	80-89.9
C	70-79.9
D	60-69.9
F	59.9 and below

There is no extra credit for this course. Students must attain a B or higher to remain eligible for the overseas aspect of this program. Borderline grade changes will only be considered for students with 100% attendance (excluding excused absences). Grades are assigned for the spring semester course only. The practicum is only assigned a pass/fail grade, awarded at the end of the summer.

### **Class Policies**

Attendance at all sessions is expected. Only genuine emergencies are excused (illness, family emergency, etc.), or religious holidays. Students with scheduling conflicts must notify the professor in writing at the earliest possible moment. Anyone with care duties may of course speak with instructor about having a dependent in class.

Late assignments are marked down 10% at the moment they are late based on the score assigned, then an additional 5% for every day. For example, an assignment due on Monday but submitted Wednesday that receives a grade of 30 will be have 20% deducted, meaning it receives only 24 points in the end. Anything not submitted during the week it is due will be given a 0. Exceptional cases will be reviewed individually.

Laptops and tablets are permitted during class provided they are being used for the purpose of the immediate discussion or presentation. Social media use is not allowed. Phones must be silenced (preferably in airplane mode) for the duration of class and should not be visible during sessions. Students must be aware of any noise they make using devices during class, particularly the volume of typing on a keyboard, which is likely to disrupt the class if not kept reasonable.

### *Academic Integrity*

Academic honesty includes presenting only your own work in exams and assignments, and correctly attributing others' ideas where appropriate. Taking credit for work that is not your own is a serious violation within the academic community, and anyone found to be cheating or plagiarizing in this class will be reported to the university. Detailed definitions and examples of academic dishonesty (and a rundown of the consequences) are available in Columbia's Guide to Academic Integrity (<http://www.college.columbia.edu/academics/integrity>)—it might not be the most riveting text on the internet, but since you'll be held to it, you should probably give it a read.

It is assumed you are here because you're interested in the course topics and enthusiastic to learn as much as you can. We understand that reality can get in the way of studies. Please make sure you speak with me about any issues before they get so bad that they become overwhelming, or create a scenario in which cheating or plagiarism feels like your only option. It is always better to over-cite, be extremely transparent, and generally practice integrity in your work. Please speak to me if you have any doubts about this. You may also consider speaking with your academic advisor or dean; with one of the Psychology Department's Directors of Undergraduate Studies; or with the counselors at Columbia's Counseling and Psychological Services (<http://health.columbia.edu/services/cps>) or here (<https://psychology.columbia.edu/content/advising>).

### *Students with Disabilities*

Students with special needs who may require accommodations should make an appointment to see me as soon as possible, at least by the end of the second week of class. If you have not already done so, stop by the Office of Disability Services (ODS) on the 7th floor of Lerner Hall to register for support services. ODS often requires two weeks to process an application, so please contact them as soon as you can, preferably before the course begins.

### ***Individual session descriptions***

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#### **Week 1 – Course introduction, syllabus review, administrative planning for term/summer**

*This session will introduce students to the wider GLOBES program, partnership with the JRP, timelines for the semester and practicum, and clarify course expectations. Students will also begin assigned roles regarding the July conference in Paris.*

Ruggeri, K. et al., & Norton, S. (2019). Advancing methods for psychological assessment across borders. *Frontiers in Psychology (10)*, 503, 1-4. doi: 10.3389/fpsyg.2019.00503

## **Week 2 – Introduction to replication, reproducibility, and pre-registration**

*The objective of this session is to evaluate conflicting results and measurement variance in behavioral science. We will also explore the universality – or lack thereof – for research findings in multiple locations. All students will choose an article for reading and brief presentation for Week 3.*

Wood, W., & Wilson, T. D. (2019). No Crisis but No Time for Complacency. *APS Observer*, 32(7).

Munafò, M. R., Nosek, B. A., Bishop, D. V., Button, K. S., Chambers, C. D., Du Sert, N. P., ... & Ioannidis, J. P. (2017). A manifesto for reproducible science. *Nature Human Behaviour*, 1(1), 0021.

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, 349(6251), aac4716.

## **Week 3 – International collaborations for early career behavioral scientists**

*The objective of this session is to introduce students to the opportunities and challenges involved in leading large-scale research involving an international team. There will be no formal instruction apart from a brief introduction to JRP projects, and students only need to present simple notes in the session about their chosen study. Following these, we will establish guidelines for presentations at the Paris conference, and discuss speakers as well as the wider format.*

Students should review the special edition Frontiers protocol repository (<https://bit.ly/34iDBnN>) and pick one protocol to evaluate. A sign-up sheet will be shared so only one student picks an article. This will not require formal presentation in class, only brief overviews in a group “lightning round” discussion. Articles are typically 8-10 pages in length.

## **Week 4 – Evaluating the ManyLabs trials**

*The purpose of this session is to evaluate, critique, and build upon the methodological approaches taken in the most influential replication collaboration. Students will need to review the approach in detail and consider how insights can be applied for their own work. They should also consider the scientific implications of these studies, and are expected to form their own conclusions about the work. Two students (one for each paper) will present in this session.*

Klein, R. A., Ratliff, K. A., Vianello, M., Adams Jr, R. B., Bahník, Š., Bernstein, M. J., ... & Cemalcilar, Z. (2014). Investigating variation in replicability. *Social Psychology*, 45, 142-152.

Klein, R. A., Vianello, M., Hasselman, F., Adams, B. G., Adams Jr, R. B., Alper, S., ... & Batra, R. (2018). Many Labs 2: Investigating variation in replicability across samples and settings. *Advances in Methods and Practices in Psychological Science*, 1(4), 443-490.

## **Week 5 – Running a replication – many labs, many languages**

*This session is to review a more recent replication trial similar to ManyLabs, but focusing on a single study. The approach in this study is what the previous JRP cohort used, and focuses on testing a highly influential theory in many settings and languages, plus a recent, controversial critique of its conclusions. Three students will present in this session.*

Students will also be provided instructions on what is needed to be presented in week 9.

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An analysis of decisions under risk. *Econometrica*, 47(2), 263-291.

Gal, D., & Rucker, D. D. (2018). The loss of loss aversion: Will it loom larger than its gain?. *Journal of Consumer Psychology*, 28(3), 497-516.

Ruggeri, K., Alí, S., Berge, M. L., Bertoldo, G., Cortijos-Bernabeu, A., Bjørndal, L. D., ... Folke, T. (2019, August 21). Not lost in translation: Successfully replicating Prospect Theory in 19 countries. <https://doi.org/10.31219/osf.io/2nyd6> - **Only read methods**

World Health Organization. (2009). Process of translation and adaptation of instruments. [http://www.who.int/substance\\_abuse/research\\_tools/translation/en/](http://www.who.int/substance_abuse/research_tools/translation/en/)

### **Week 6 – Guest speaker (TBD)**

*Reading to be assigned once speaker confirmed.*

### **Week 7 – Research ethics, administration, and data collection**

*In this session, students will shift from theoretical to practical aspects of conducting behavioral research. Following two student paper presentations, the instructor will provide a “methods and management” introduction seminar for students to consider as they choose their replication project. Finally, one student will introduce the group to Qualtrics as a data collection platform.*

Casler, K., Bickel, L., & Hackett, E. (2013). Separate but equal? A comparison of participants and data gathered via Amazon’s MTurk, social media, and face-to-face behavioral testing. *Computers in Human Behavior*, 29(6), 2156-2160.

Ebersole, C. R., Atherton, O. E., Belanger, A. L., Skulborstad, H. M., Allen, J. M., Banks, J. B., ... & Brown, E. R. (2016). Many Labs 3: Evaluating participant pool quality across the academic semester via replication. *Journal of Experimental Social Psychology*, 67, 68-82.

Peer, E., Brandimarte, L., Samat, S., & Acquisti, A. (2017). Beyond the Turk: Alternative platforms for crowdsourcing behavioral research. *Journal of Experimental Social Psychology*, 70, 153-163.

Palan, S., & Schitter, C. (2018). Prolific. ac—A subject pool for online experiments. *Journal of Behavioral and Experimental Finance*, 17, 22-27.

*All students should register for a Qualtrics account prior to class using their Uni.*

### **Week 8 – Introduction to behavioral policy: Translating evidence from science to society**

*The objective of this session is rethinking behavioral evidence in the context of applying to real-world settings. We will consider both effective and ineffective applications*

Chapter 1 – *Psychology and policy*, from: Ruggeri, K. (2019). *Behavioral insights for public policy: Cases and concepts*. London and New York: Routledge.

Ruggeri, K., Yoon, H., Kácha, O., van der Linden, S., & Muennig, P. (2017). Policy and population behavior in the age of Big Data. *Current Opinion in Behavioral Science*, 18, 1-6.

Rosenow, J., & Eyre, N. (2016). A post mortem of the Green Deal: Austerity, energy efficiency, and failure in British energy policy. *Energy Research & Social Science*, 21, 141-144.

### **Week 9 – Selecting a study to replicate**

*There is no assigned reading for this week. By this point in the course, students should have decided on their top three studies that they feel warrant replication based on prior sessions. In this session, all participants will share their identified studies, from which each student will choose one to focus on. The group will also decide on common themes in order to plan for the wider replication study. All students must bring drafted materials and supporting documents to present a case for their proposed replication. Specific instructions will be provided in week 5. Following feedback, all students should begin preparations for presenting in weeks 11-13.*

### **Week 10 – Designing a replication**

*In this session, the group will begin the framework for the study to be carried out in the practicum by taking into considering the necessary sampling and procedural aspects. We will discuss critical aspects such as power, effect, and analysis planning, and begin outlining specific expectations of the eventual study.*

Funder, D. C., & Ozer, D. J. (2019). Evaluating effect size in psychological research: Sense and nonsense. *Advances in Methods and Practices in Psychological Science*, 2(2), 156-168.

*Note – the student(s) assigned to present this week will be expected to produce a document with guidelines from the AMPPS article. It will be slightly more effort than other student presentations, which is why it is coming later in the semester.*

### **Week 11 – Finalizing the Paris Conference**

*No reading assigned for this session. This will be a practical session involving final plans for the Paris conference, including student presentation arrangements for proposed studies. All students must produce a draft poster of what they intend to present at the Paris Conference.*

### **Week 12 – Presentation set I**

*The presentation sessions are mandatory and all students must be actively involved. These are not listening sessions, but will be run similar to all other sessions. These sessions will be used to decide on the final replication study or studies. A handout with details on presentation expectations will be posted on Canvas earlier in the semester.*

### **Week 13 – Presentation set II**

*The presentation sessions are mandatory and all students must be actively involved. These are not listening sessions, but will be run similar to all other sessions. These sessions will be used to decide on the final replication study or studies. A handout with details on presentation expectations will be posted on Canvas earlier in the semester.*

### **Week 14 – Final design of replication**

*The final session will be a hands-on practical establishing plans, assigning tasks, and agreeing on timelines for work needed to be carried out prior to the practicum. This will involve task allocation for*

*GLOBES and JRP teams. All students must attend – completion of allocated tasks will be mandatory for full course credit. Tasks may include Qualtrics measurement setup, translation, analytical code preparation, pre-registering the trial, or other scientific tasks. All students will also be responsible for some level of involvement in data collection.*

### **Summer activity**

All students admitted to GLOBES are expected to participate in the summer practicum during July and August. This involves travel to the UK and France, with optional trips to Italy and Spain. The primary activity in these locations will be the delivery of a multinational replication project as chosen by the group. The final sections of the course will focus on choosing and designing the final study, whether rerunning a single study in multiple locations/languages, or a compilation of studies (vis a vis ManyLabs). This project will be led by Columbia faculty but activities will largely be carried out at the University of Cambridge. There will be two conferences during the overseas component, which will be at the start and close of the practicum. The first will be in Paris and the second in Cambridge. All activities are mandatory for all students enrolling in GLOBES. Students will also help contribute to the organization of the Paris conference (details to be discussed in class).