



## MRPE 9200A · Quantitative Research Methods and Data Collection

Fall Term 2023  
The University of Western Ontario

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Although this academic year might be different, Western University is committed to a thriving campus. We encourage you to check out the **Digital Student Experience** website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: <https://www.uwo.ca/health/>.

### Course Description

**Overview.** The overall objective of this course is to provide students with hands-on experience in designing quantitative data collection instruments and implementing data collection strategies, tailored for research in social policy and evaluation. The course lectures and labs are organized around the following six research method topics: (1) data collection for various research designs; (2) survey design; (3) creating multi-item measures that are psychometrically sound; (4) working with secondary data (archival) sets; (5) creating data and variables from textual/observed/media (i.e., quantitative content coding); (6) and meta-analysis.

**Course format and resources.** The lecture material for these six methods will be applied and integral to a group project and two individual lab assignments. Weekly lectures (approximately 2 hours) will be followed by a one-hour lab session focusing on the group projects and the lab assignments.

The six course topics are described below.

**Research design.** This section includes various designs (experimental, randomized controlled trials, quasi-experimental, correlational) to test and evaluate interventions, programs, products, choices that people make, or specific research hypotheses. We will focus on how to interpret and extract information from studies using different designs and effect measures. We will use this information to conduct the meta-analysis projects.

**Survey design.** In this course, the term survey will refer to the “total package of self-report measures” administered to research participants, including the information and consent material, the various measures addressing hypotheses and objectives, and optionally the embedded experiment material. Important design components will also include the sampling method, response rates, attention check variables, and missing data strategies.

**Scaling, measure evaluation and construction.** This section will include the selection of the scale for effective performance measurement, the evaluation and selection of existing measures, and the construction of multi-item composite measures and composite index variables tailored for a specific research objective.

**Secondary data analysis.** We are witnessing an exponential growth of data available to researchers, including very well designed large-scale national or international surveys. Many researchers are also making their data sets available in repositories accessible to the research community. In this section we will go through the process of designing studies and extract and prepare the necessary data from secondary sources.

**Quantitative content coding and analysis.** Perhaps less obvious than lab experiments or the use of surveys are the more “natural” methods that extract data from existing sources of information such as observations, textual data, and other forms of media. The unit of analysis may consist of accidents at intersections occurring during a given time period, the use of violence in movies for children, or the use of specific words in tweets or concepts in newspaper articles. Students will learn how to develop codebooks for coding information into quantitative data and variables and promote and establish interrater agreement. We will develop coding schemes for assessing the quality of studies that will go into a meta-analysis.

**Meta-analysis.** Meta-analysis provides a convenient way to synthesize quantitative results from previous studies into a systematic review and to learn how to combine results and examine potential reasons for differences across studies. Students will learn how to extract the necessary information, the different types of effect size measures, the pooling of results, and the preparation of results of the typical forest plots and tables. The group projects this year will consist of meta-analyses from start to finish, including reports and presentations.

## Learning Outcomes

By the end of the course, students will have developed the following skills and knowledge:

- **Research design.** Ability to interpret, evaluate, and extract important information (e.g., effects and standard error) from studies using different designs. Ability to use this information in a meta-analysis review study.
- **Survey design.** Ability to design online high-quality survey in Qualtrics that includes various components.
- **Creating multi-item measures.** Knowledge and ability to develop a multi-item measure to assess a concept/construct such as Quality of Life or composite index such as marginalization and knowledge to evaluate the soundness of these measures.
- **Secondary data analysis.** Ability to locate archival data related to a specific research question and extract and manipulate data to create new variables (possibly multi-item measures).

- **Quantitative content coding.** As part of the meta-analysis project, ability to create a codebook to extract data from each study including effect size, moderators, and study quality indices.
- **Meta-analysis.** Ability to conduct a meta-analysis study from start to finish including the formulation of a problem in a social policy related area, conducting the search for studies in various databases, evaluation and coding, producing the meta-analysis results, and writing a meta-analytic report.

## Course Materials

Students will have access to Qualtrics at Western University and will be able to use software packages that are freely available such as Jamovi (a friendly menu-driven software built from R).

Readings mostly from journal articles and book chapters, available electronically through the Western University Library and linked in the OWL course site are listed below. Additional readings will be provided throughout the course as resources beyond the course.

## General Resources

All course resources including the online books below will be available on the Western OWL meta-analysis course website. Software resources (for R metafor, Jamovi with MAJOR module, and Stata) will also be included in the OWL course website. Additional reading resources are listed in the Lecture and Lab schedule

Cooper, H. (2017). *Research synthesis and meta-analysis. A step-by-step approach*. Fifth edition. Los Angeles: Sage.

Statistical resources:

Navarro, D. J., & Foxcroft, D. R. (latest version). *Learning statistics with jamovi. A tutorial for psychology students and other beginners*. <http://www.learnstatswithjamovi.com>

Lakens, D. (2022). *Improving Your Statistical Inferences*. Retrieved from [https://lakens.github.io/statistical\\_inferences/](https://lakens.github.io/statistical_inferences/). <https://doi.org/10.5281/zenodo.6409077> (see especially chapters 6-7 and 11-12).

## Examples of Meta Analytic Studies

de Freitas, D. F., Fernandes-Jesus, M., Ferreira, P. D., Coimbra, S., Teixeira, P. M., de Moura, A., Gato, J., Marques, S. C., & Fontaine, A. M. (2018). Psychological correlates of perceived ethnic discrimination in Europe: A Meta-analysis. *Psychology of Violence*, 8, 712-725. <http://dx.doi.org/10.1037/vio0000215>

Johnson, B. T., & Hennessy, E. A. (2019). Systematic reviews and meta-analyses in the health care sciences: Best practice methods for research syntheses. *Social Science & Medicine*, 233, 237-251. <https://doi.org/10.1016/j.socscimed.2019.05.035>

Karamouzian, M., Nasirian, M., Hoseini, S. G., Mirzazadeh, A. (2020). HIV and other sexually transmitted infections among female sex workers in Iran: A systematic review and meta-analysis. *Archives of Sexual Behavior*, 49, 1923-1937. <https://doi.org/10.1007/s10508-019-01574-0>

Vannucci, A., Simpson, E. G., Gagnon, S., & McCauley Ohannessian, C. (2020). Social media use and risky behaviors in adolescents: A meta-analysis. *Journal of Adolescence*, 79, 258-274. <https://doi.org/10.1016/j.adolescence.2020.01.014>

## Course Evaluation

The course work is divided into two projects consisting of (1) an individual research proposal with development of the data collection material, and (2) a group meta-analysis project consisting of groups of 3 to 4 students. These projects are described in more detail below with the due dates for the different components. Note that the assignments are due by 11:50 pm on the listed due date.

### **Individual Research Proposal and Development of Data Collection Materials in Qualtrics (50%).**

Students will prepare the necessary materials including the information letter, consent form and the survey package in Qualtrics including an experimental component with random assignment to different conditions (or the use of a quasi-experimental with covariates or repeated-measures design). The overall instrument will have the form of a survey with various sections including a set of demographic questions, an experimental manipulation component (e.g., a series of vignettes with random assignment to two or more conditions), and it will include at least one set of questions used to produce a psychometric measure (e.g., attitudes toward working from home).

This individual project will consist of the following components:

1. The Qualtrics research material
  - i. Experiment with random assignment to conditions section. (10%). **Due Oct 5**
  - ii. Survey section (demographics, individual questions, multi-item measure). (10%). **Due Oct 19**
  - iii. Letter of information, consent statement (5%). **Due Oct 26**
  - iv. Test data imported in a statistical package with descriptive statistics (5%). **Due Nov 9**
2. The Proposal (approx. 10 double-spaced pages). **Due Dec 7.**
  - i. Introduction (5%)
  - ii. Methods (5%)
  - iii. Results (descriptive statistics using test data) (5%)
  - iv. Executive summary (5%)

**Group Meta-Analysis project (50%).** This group project will consist of the components described below. The final product will consist of a PowerPoint presentation with all the sections that would typically be included in a report, but in condensed format for a presentation in the last class. For each component your group will submit the PowerPoint document with notes describing your work up to that point, along with the relevant files.

1. Formulating the problem – introduction (5%). **Due Sep 28.**
2. Search report and study database (5%). **Due Oct 12.**
3. Coding template and preliminary coding (5%). **Due Oct 26.**

4. Completion of coding and data file ready for analysis (5%). **Due Nov 9.**
5. Analysis and results section (5%). **Due Nov 23.**
6. Presentation (5%). **Due Dec 7.**
7. Completed PowerPoint (10%). **Due Dec 14.**
8. Individual Journal (10%). Biweekly journal of your contributions to the project. (**Sep 21, Oct 5, Oct 19, Nov 2, Nov 16, Nov 30**)

## How to Contact Me

Please contact me by email at [ptrembla@uwo.ca](mailto:ptrembla@uwo.ca) to ask questions or set an appointment, or see me directly in SSC 6336 if my door is open.

## Course Schedule

Please note: This schedule is subject to change over the course of the term in order to meet the needs of the class. Any changes will be announced through our OWL course website.

### Week 1 (Sep 14). Overview and Steps in Meta-analysis

Cooper Ch1 (Introduction).

Moreau, D., & Gamble, B. (2022). Conducting a meta-analysis in the age of open science: Tools, tips, and practical recommendations. *Psychological Methods*, 27(3), 426-432.

<http://dx.doi.org/10.1037/met0000351>

Pigott, T. D., & Polanin, J. R. (2020). Methodological guidance paper: High-quality meta-analysis in a systematic review. *Review of Educational Research*, 90(1), 24-46.

<https://doi.org/10.3102/0034654319877153>

Page, M. J., Moher, D., Bossuyt, P. M. et al. (2021). PRISMA 2020 explanation and elaboration: Updated guidance and exemplars for reporting systematic reviews. *BMJ. British Medical Journal (International Ed.)*, 372, n160–n160. <https://doi.org/10.1136/bmj.n160>

*Lab. Identifying a topic for a meta-analytic study.*

### Week 2 (Sep 21). Research Design

Cooper. Ch 6. (pp. 209-226). Analyzing and Integrating the Outcomes of Studies

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs. *frontiers in Psychology*. doi: 10.3389/fpsyg.2013.00863

Borush, R. F., Weisburg, D., Turner III, Karpyn, A., & Littell, J. (2009). Randomized controlled trials for evaluation and planning. In L. Bickman & D. J. Rog (Eds.), *The SAGE handbook of applied social research methods*. (pp. 147-181).

D'Antoni, D. A., Auyeung, V., & Weinman, J. (2019). The effect of framed health messages on intention to take antivirals for pandemic influenza: A vignette-based randomized controlled trial. *Journal of Health Communication*, 24, 442-455. <https://doi.org/10.1080/10810730.2019.1631914>

Mark, M. M., & Reichardt, C. S. (2008). Quasi-experimental and correlational designs: Methods for the real world when random assignment isn't feasible. In C. C. Morf & A. T. Panter (Eds.), *The SAGE handbook of methods in social psychology*. (pp. 265-286).

*Lab. Identifying a topic and developing a research question for the meta-analysis.*

### **Week 3. (Sep 28). Research Design II**

Same resources as previous week

*Lab. Searching the literature: Databases and software.*

### **Week 4. (Oct 5). Survey Design**

Krosnick, J. A., Kavrakas, P. J., & Kim, N. (2014). Survey Research. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology. Second edition* (p. 404-442). New York: Cambridge University Press.

Whitley, Jr., B. E., & Kite, M. E. (2018). Chapter 15: Survey Research (pp. 567-617). In *Principles of Research in Behavioral Science. 4<sup>th</sup> edition*. New York: Routledge.

Cooper. Ch3. Searching the Literature

Gusenbauer, M., & Haddaway, N. R. (2020). Which academic search systems are suitable for systematic reviews or meta-analyses? Evaluating retrieval qualities of Google Scholar, PubMed, and 26 other resources. *Research Synthesis Methods, 11*, 181-217. DOI: 10.1002/jrsm.1378

*Lab. Searching the literature: Conducting systematic searches.*

### **Week 5. (Oct 12). Scaling, Measure Evaluation and Construction**

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*, 309-319. doi: 10.1037/1040-3590.7.3.309

Clark, L. A., & Watson, D. (2019, March 21). Constructing validity: New developments in creating objective measuring instruments. *Psychological Assessment*. Advance online publication. <http://dx.doi.org/10.1037/pas0000626>

Curran, P. G. (2016). Methods for the detection of carelessly invalid responses in survey data. *Journal of Experimental Social Psychology, 66*, 4-19. <http://dx.doi.org/10.1016/j.jesp.2015.07.006>

DeVellis, R. F. (2006). Classical test theory. *Medical Care, 44*, S50 S59. <http://www.jstor.org/stable/41219505>

Cooper. Ch4. Gathering Information from Studies

Cooper. Ch5. Evaluating the Quality of Studies

*Lab. Collecting studies (software)*

## **Week 6. (Oct 19). Secondary Data Analysis**

Cheng, H. G., & Phillips, M. R. (2014). Secondary analysis of existing data: opportunities and implementation. *Shanghai Archives of Psychiatry*, 26, 371-375.

Corti, L., & Wathan, J. (2017). Online access to quantitative data resources. In R. M. Lee & G. Black (Eds.), *The SAGE handbook of online research methods*. (pp.489-507).

Cooper. Ch4. Gathering Information from Studies

Cooper. Ch5. Evaluating the Quality of Studies

*Lab. Collecting studies. Inclusion criteria. Creating a coding database*

## **Week 7. (Oct 26). Content Coding and Analysis**

Riff, D., Lacy, S., Fico, F., & Watson, B. (2019). *Analyzing media messages. Using quantitative content analysis in research. 4<sup>th</sup> edition*. New York: Routledge. (Chapter 4. Measurement); (Chapter 5. Sampling); (Chapter 8. Designing a content study).

Robinson, M. D., Boyd, R. L., & Fetterman, A. K. (2014). An emotional signature of political ideology: Evidence from two linguistic content-coding studies. *Personality and Individual Differences*, 71, 98-102. <http://dx.doi.org/10.1016/j.paid.2014.07.039>

Syed, M., & Nelson, S. C. (2015). Guidelines for establishing reliability when coding narrative data. *Emerging Adulthood*, 1-13. doi: 10.1177/2167696815587648

Wild, T. C. et al. (2019). Media coverage of harm reduction, 2000-2016: A content analysis of tone, topics, and interventions in Canadian print news. *Drug and Alcohol Dependence*, 205. Available online at <https://doi.org/10.1016/j.drugalcdep.2019.107599>

*Lab. Coding studies and calculating interrater agreement.*

## **Week 8. (Nov 2). Fall reading week. No lecture.**

I will be available during the week for consultation on projects.

## **Week 9. (Nov 9). Meta-analysis procedure and software**

Cooper. Ch6. Analyzing and Integrating the Outcomes of Studies  
Lakens (online book). Chapters 11-12

## **Week 10. (Nov 16). Meta-analysis producing results**

Cooper. Ch6. Analyzing and Integrating the Outcomes of Studies

## **Week 11. (Nov 23). Meta-Analysis interpreting and reporting results**

Cooper. Ch6. Analyzing and Integrating the Outcomes of Studies



## **Week 12. (Nov 30). Writing the research report**

## **Week 13. (Dec 7). Project presentations**

### **Important Policies**

**Assignment Deadlines.** Students must submit their assignments by the date stated (and by 11:50 pm) in the Course Evaluation section. stated in the course outline and on the OWL website. Late assignments will be penalized 10% for each day they are late. Any assignment not received within 5 days of the due date will not be accepted, except in the event of a documented medical or family emergency. If a student anticipates an issue with an assignment, they are recommended to speak to the professor as early as possible to make alternative arrangements.

**Plagiarism.** Students must write their assignments in their own words. Whenever students take an idea from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major scholastic offence (the Scholastic Offence Policy can be viewed in the Western Academic Calendar). All required assignments may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com ([www.turnitin.com](http://www.turnitin.com)).

**Standards of Professional Behaviour.** It is the responsibility of all to adhere to and promote standards of professional behaviour that support an effective learning environment. These include:

- Respect for others both in and out of the classroom through words and actions (be professional, fair, and respectful in interactions with people on-line and in-person; understand and respect differences among classmates and colleagues; avoid disrupting the learning environment; respect others' expectations of confidentiality and privacy).
- Active engagement in learning and commitment to quality (being prepared for classes; participating and listening actively to other; using technology and social media appropriately, striving to do your best). Take responsibility for your own learning by: relating course content and projects to your own professional interests; monitoring your own understanding; seeking clarification and assistance when necessary.
- Personal integrity (following through on commitments; doing one's own work).

Students should also be aware of the UWO Student Code of Conduct found at:

<https://www.uwo.ca/univsec/pdf/board/code.pdf>

**Copyright of Lectures and Other Course Materials.** Any materials created by the instructor (e.g., videos, notes, handouts, summaries, slide decks, assignments, exams, etc.) are protected by copyright law and may not be copied or distributed in any form without the explicit permission of the instructor. Any non-authorized use of these materials constitutes an academic offence.



**Scholastic Offences.** Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence ([https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/appealsgrad.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/appealsgrad.pdf)).

**Accommodation.** Western is committed to achieving barrier-free accessibility for all its members, including graduate students. As part of this commitment, Western provides a variety of services devoted to promoting, advocating, and accommodating persons with disabilities in their respective graduate program.

Graduate students with disabilities (for example, chronic illnesses, mental health conditions, mobility impairments) are encouraged to register with Student Accessibility Services, a confidential service designed to support graduate and undergraduate students through their academic program. With the appropriate documentation, the student will work with both SAS and their graduate programs (normally their Graduate Chair and/or Course instructor) to ensure that appropriate academic accommodations to program requirements are arranged. These accommodations include individual counselling, alternative formatted literature, accessible campus transportation, learning strategy instruction, writing exams and assistive technology instruction. For more information, see <http://www.sdc.uwo.ca/ssd/>.

**Completion of Course Requirements.** Course requirements must be completed by the end of the term in which the course is offered (Fall–December 31; Winter–April 30, Summer–August 31). Only in exceptional circumstances may a student take additional time to complete the course requirements. In such a case, the student must first meet with the Graduate Chair to request permission to carry the incomplete. Medical documentation, where required, will be kept on file in the graduate program office. More details regarding incompletes are outlined in the Graduate Handbook: [http://www.sociology.uwo.ca/graduate\\_handbook/course\\_information.html](http://www.sociology.uwo.ca/graduate_handbook/course_information.html).

**Accessibility Options.** Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 519-661-2111, x82147 for any specific question regarding an accommodation. Information regarding accommodation of exams is available on the Registrar's website: [www.registrar.uwo.ca/examinations/accommodated\\_exams.html](http://www.registrar.uwo.ca/examinations/accommodated_exams.html).

**Mental Health.** Students in emotional/mental distress should refer to Mental Health@Western ([http://uwo.ca/health/mental\\_wellbeing/index.html](http://uwo.ca/health/mental_wellbeing/index.html)) for a complete list of options how to obtain help.

**Health and Wellness.** As part of a successful graduate student experience at Western, we encourage students to make their health and wellness a priority. Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. The Wellness Education Centre (lower level UCC) assists students in finding mental health and other related resources best suited to their needs (<http://se.uwo.ca/wec.html>). Western's School of Graduate and Postdoctoral Studies' Living Well website provides tips for thriving at grad school and other helpful information ([http://grad.uwo.ca/current\\_students/living\\_well/index.html](http://grad.uwo.ca/current_students/living_well/index.html)). Western provides several on-campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your graduate degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre. Numerous cultural

events are offered throughout the year. Also, we encourage you to check out the Faculty of Music web page (<http://www.music.uwo.ca/>), and our own McIntosh Gallery (<http://www.mcintoshgallery.ca/>).

**Disputing a Grade.** Students who wish to dispute an assignment, exam, or course grade must write a one-page explanation justifying why their work should be re-evaluated. Work will not be re-evaluated on the basis that students were sick or feeling stressed when completing the assignment. Please be advised that a student's mark may go up or down upon re-evaluation.

**Extraordinary Circumstances.** The content and/or evaluation of this course is subject to change in the event of extraordinary circumstances beyond the University's or instructor's control.