RMTD 488
Meta-analysis

Instructor: Meng-Jia Wu, Associate Professor
Classroom: Corboy Law Center, 25 E. Pearson, Room 201
Class hours: Mondays, 4:15 - 6:45pm (Break: 5:30 - 5:45pm)
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Course content

The purpose of this course is to familiarize you with the literature on and methods for meta-analysis. While our focus is primarily on the social sciences, we will also have readings from the medical literature, where much of the recent work on methods for synthesis has appeared. Conceptual issues in reviewing research will be discussed, and methods for quantitative research synthesis will be presented. This class covers a mix of issues relevant to research reviews and quantitative synthesis methods. An introductory statistics sequence (e.g., RMTD 404 & 482) or an equivalent is a prerequisite.

School of Education's Conceptual Framework (www.luc.edu/education/mission/)

We fulfill our School's mission, *Professionalism in Service of Social Justice*, by learning the skills to conduct rigorous research on issues of professional practice and social justice. Specifically, this course will equip students with the special analytical skill, meta-analysis, to possibly explore research questions related to social justice using statistical software, such as SPSS and R.   The statistical techniques used in this course also add to students' ability to explore diversity of perspectives that researchers used to address social problems.

Required text(s)

Set 1: Cooper, H.M., Hedges, L.V., & Valentine, J. (2008). *The handbook of research synthesis and meta-analysis*. New York: Russell Sage Foundation.

OR

Set 2: Lipsey, M.W., & Wilson, D.B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage Publications. AND

Cooper, H. M. (2009). Research synthesis and meta-analysis: A step by step approach (4th ed.). Thousand Oaks, CA: Sage.

Course Objectives

The broad goal of the course is to introduce students to the issues and controversies in the area of research synthesis and to a set of quantitative procedures for summarizing primary studies. Specifically, students will…
1. Understand the benefit and limitation of meta-analysis;
2. Acquire the quantitative skills to synthesize previous studies focusing on the same research question by practicing data analyses using prepared computer programs of existing data sets;
3. Conduct and present a synthesis of a small set of outcomes (8-10 outcomes per person), including a quantitative synthesis of effect-magnitude measures. Specifically students will ...
   a. identify and code potential explanatory variables.
   b. identify different kinds of study outcomes, select a measure of effect magnitude to best represent those outcomes, and use the sampling distribution appropriate to their chosen effect-magnitude measure in data analyses.
   c. conduct appropriate data analyses, including homogeneity tests, the estimation and testing of categorical or continuous models, and analyses of confounding variables.
   d. prepare a report of the synthesis.

Grades

Course grades will be based on class participation, exercises, a series of memos and a final project. These items will be weighted as follows in the computation of the final grade:

Class participation	10%
Exercises	40%
Memos	20%
Project	30%

Class participation. Attendance is mandatory. If you will have to miss a class, inform the instruction as early as possible. Unexcused absence will impact the final grade. In addition, be sure you finish reading the assigned articles and join the discussion in the class.

Exercises. You will do several data-analysis exercises to get experience using SPSS and/or Excel to compute meta-analysis tests and estimates. Eight exercises are planned but, by the end of the term, you will need to complete any **four** of the eight exercises, using the data from your project (see below). Some of you will not have the kind of data that are needed to do some exercises. No specific due date for each exercises is listed but you will need to turn in all the four exercises by the 13th week of the class. Start doing the exercises as early as possible.

Project. The project will be a longer paper reporting on a research synthesis of a

relatively circumscribed area of literature of your choosing. A project done by one person is expected to include about 8-10 studies. You may also wish to do a *larger* project as a group of 2 and include 16-20 studies. You may select your own research topic, or if you don't have a particular area of interest you may choose to re-do an existing meta-analysis with smaller number of studies included. One required part of the project will be a search of a computerized reference database (e.g., ERIC, Psych Abstracts). In the project you will also be expected to apply appropriate quantitative research-synthesis methods to the available data (as will be discussed in class). Final papers must be typed using APA or other format adopted in your field.

Memos. A series of four memos (very short papers) will be due as indicated on the schedule. Those memos work as the log of your project. In each memo you should write your thoughts, questions, ideas or insights about your project. You will show your progress through the memos. You can write these like short papers *or* like notes or letters. The length of each memo is one single-spaced typed page (minimum) or two single-spaced typed page (maximum). Late memos will not count toward your grade.

IDEA Objectives

IDEA is an evaluation system that our School uses to assess whether a class reaches the major goals in the end of the semester. The essential objectives for this course are:
1. Gaining factual knowledge (terminology, classifications, methods, trends)
2. Learning fundamental principles, generalizations, or theories
3. Learning to apply course material (to improve thinking, problem solving, and decisions)
4. Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course

SOE ACADEMIC POLICIES

Academic Honesty

Academic honesty is an expression of interpersonal justice, responsibility and care, applicable to Loyola University faculty, students, and staff, which demands that the pursuit of knowledge in the university community be carried out with sincerity and integrity. The School of Education's Policy on Academic Integrity can be found at: www.luc.edu/education/resources/academic-policies/academic-integrity/. For additional academic policies and procedures refer to: www.luc.edu/education/resources/academic-policies/

Accessibility

Students who have disabilities which they believe entitle them to accommodations under the Americans with Disabilities Act should register with the Services for

Students with Disabilities (SSWD) office. To request accommodations, students must schedule an appointment with an SSWD coordinator. Students should contact SSWD at least four weeks before their first semester or term at Loyola. Returning students should schedule an appointment within the first two weeks of the semester or term. The University policy on accommodations and participation in courses is available at: http://www.luc.edu/sswd/

EthicsLine Reporting Hotline

Loyola University Chicago has implemented EthicsLine Reporting Hotline, through a third party internet & telephone hotline provider, to provide you with an automated and anonymous way to report activities that may involve misconduct or violations of Loyola University policy. You may file an anonymous report here on-line or by dialing 855-603-6988. (within the United States, Guam, and Puerto Rico)

The University is committed to the highest ethical and professional standards of conduct as an integral part of its mission of expanding knowledge in the service of humanity through learning, justice and faith. To achieve this goal, the University relies on each community member's ethical behavior, honesty, integrity and good judgment. Each community member should demonstrate respect for the rights of others. www.luc.edu/ethicsline

Electronic Communication Policies and Guidelines

The School of Education faculty, students and staff respect each other's rights, privacy and access to electronic resources, services, and communications while in the pursuit of academic and professional growth, networking and research. All members of the university community are expected to demonstrate the highest standards of integrity, communication, and responsibility while accessing and utilizing technology, information resources, and computing facilities. A link to the Loyola University Chicago and School of Education official policies and guidelines can be found at:
www.luc.edu/media/lucedu/education/pdfs/SOE_Cyberbullying_Policy.pdf
www.luc.edu/media/lucedu/education/pdfs/SOE_Netiquette_Guidelines.pdf
www.luc.edu/its/itspoliciesguidelines/index.shtml

Diversity
School of Education is committed to ensure the learning environment and activities are designed with respect of individual and cultural differences. The examples used in this class are chosen to reflect the diversity of students' backgrounds and interests.

Dispositions
Each course in the School of Education focuses on one or more professional dispositions. Students are offered opportunities to receive feedback on their dispositional growth in the areas of professionalism, fairness and/or the belief that

all students can learn. The expected behaviors for the specific dispositions for this class and the evaluation rubric are listed in the end of this syllabus.

Schedule

CHV: Handbook (Set 1 text)

C: Cooper (Set 2 text); LW: Lipsey & Wilson (Set 2 text)

Week	Date	Topic	Reading	Due
1	8/26	Introduction to research synthesis;	CHV 1 C 1 LW 1	
2	9/2	Formulating problems	CHV 2 C 2 LW 2	
3	9/9	Data collection; Guidelines for syntheses	CHV 7-9 C 3 LW 2	Memo 1
4	9/16	Data evaluation	CHV 10 C 4 & 5 LW 3	
5	9/23	Effect sizes	CHV 11 & 12 C 6 LW 4 & Appendix B	Coding sheets swap!
6	9/30	Fixed-effects models	CHV 15 C 7 LW 7	Memo 2
7	10/7	Random-effects models	CHV 16	
8	10/14	Mixed models	CHV 16	
9	10/21	Modeling in meta-analysis I	CHV 20	Memo 3
10	10/28	Modeling in meta-analysis II	CHV 20	
11	11/4	Publication bias (& artifacts correction)	CHV 17, 22 & 23 C 8 LW 8	
12	11/11	Using R – review of the concept	"Metafor" user guide[a]	Memo 4

13	11/18	Using R – application	"Metafor" user guide[a]	All four exercises
14	11/25	*No class* Thanksgiving break		
15	12/2	Final presentation		Final project due on 12/8

a. Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software, 36*(3), 1–48.

Evaluation of Disposition in RMTD 488
Rubric

Area	Target	Acceptable	Unacceptable
Systematic Inquiry AEA A.3	Candidate communicates effectively and appropriately with faculty and peers.	Candidate is working on communicating effectively and appropriately with faculty and peers.	Candidate is unable to communicate effectively and appropriately with faculty and peers.
Responsibilities for General and Public Welfare AEA E.3	Candidate's written work is appropriate and effective for the course.	Candidate's written work is sometimes appropriate and effective for the course.	Candidate's written work is inappropriate and ineffective for the course.
Timeliness	Candidate is able to meet all deadlines.	Candidate is sometimes able to meet all deadlines.	Candidate is unable to meet all deadlines.
Accountability	Candidate attends all classes and fulfills all professional obligations.	Candidate sometimes attends classes and fulfills professional obligations.	Candidate's attendance to class is inconsistent and is unable to fulfill all professional obligations.
Collegiality	Candidate is able to work with peers.	Candidate is sometimes able to work with peers.	Candidate is unable to work with peers.
Integrity/Honesty AEA C.4	Candidate respects the viewpoints of others.	Candidate sometimes respects the viewpoints of others.	Candidate has difficulty respecting the viewpoints of others.
Integrity/Honesty AEA C.2	Candidate recognizes potential conflicts and handles them appropriately.	Candidate sometimes recognizes potential conflicts and handles them appropriately.	Candidate has difficulty recognizing potential conflicts and handling them appropriately.
Integrity/Honesty AEA C.5	Candidates appropriately represent procedures, data, and findings – attempting to prevent misuse of their results.	Candidates represent procedures, data, and findings in a manner that is likely to allow the misuse of their results.	Candidates misrepresent procedures, data, and findings. There is minimal attempt to prevent misuse of their results.