

RMTD 400: INTRODUCTION TO RESEARCH METHODOLOGIES

Fall 2011

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Required Text:

Borenstein, M., Hedges, L. V., Higgins, J. P. T. & Rothstein, H. R. (2009). *Introduction to meta-analysis*. Oxford, UK: Wiley.
Cooper, H. (1998). *Research synthesis and meta-analysis (4th ed.)*. Thousand Oaks, CA: Sage Publications.
Lipsey, M. W. & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage Publications.
Additional readings will be posted on Blackboard

Course Description:

In this course, we will study the techniques used in systematic reviews, and in particular, the statistical methods used for quantitative research reviews, or meta-analysis. The course will introduce students to the issues and controversies in the area of systematic reviewing and meta-analysis. Students will complete a small-scale meta-analysis of a topic of their choosing during the semester. The course will follow the steps of a research review: problem formulation, data collection, data evaluation, analysis and interpretation, and finally presentation. The course will also discuss the controversies surrounding the use of meta-analysis for policy decisions in the medical, social, and behavioral sciences, and the ethical use of results of meta-analyses.

School of Education's Conceptual Framework:

The School of Education at Loyola University Chicago, a Jesuit and Catholic urban university, supports the Jesuit ideal of knowledge in the service of humanity. We endeavor to advance professional education in the service of social justice, engaged with Chicago, the nation, and the world. To achieve this vision the School of Education participates in the discovery, development, demonstration, and dissemination of professional knowledge and practice within a context of ethics, service to others, and social justice. We fulfill this mission by preparing professionals to serve as teachers, administrators, psychologists, and researchers; by conducting research on issues of professional practice and social justice; and by partnering with schools and community agencies to enhance life-long learning in the Chicago area. This course will equip students with the knowledge, skills of inquiry, and ethics necessary to be professional and socially just researchers. The case studies used in this course illustrate how educational research can illuminate issues of social justice, and specifically how systematic reviews can contribute to evidence-based policy and practice.

Course Objectives:

- Discuss the differences between systematic research reviews and traditional narrative reviews
- Understand the rationale for conducting a systematic research review in contrast to a traditional research review
- Know the steps of a systematic review: problem formulation, data collection, data evaluation, data analysis, and reporting results
- Develop a question appropriate for a systematic research review that potentially includes a meta-analysis
- Understand the necessary requirements and rationale for a thorough literature search in a systematic review including strategies for searching the grey literature
- Develop and utilize a coding protocol for a research synthesis
- Explain the strategies used to maintain reliability and transparency for inclusion/exclusion decisions and coding in a systematic review
- Explain the concept of effect size in meta-analysis
- Know the major types of effect sizes and the research designs where they are appropriate
- Understand and conduct the basic steps of a meta-analysis, including the construction of a Forest plot, the computation of the mean effect size and its variance, and the test of homogeneity
- Discuss the options available for examining the potential for publication bias in a research synthesis
- Understand and conduct moderator analyses in a research synthesis
- Discuss the types of generalizations possible from a research synthesis
- Write a report of a meta-analysis using reporting guidelines for research synthesis as outlined in the APA guidelines (MARS), and in the PRISMA statement
- Critique a published research synthesis

Course requirements:

Since this course is an advanced methods course, I will expect that students will actively participate in class discussions and group work during class. The major assignment in the course will be to conduct a small meta-analysis on a topic of the students' choosing. This project can be completed as a group project with one other person. The assignments will help the students to develop the final project. The assignments and their point totals are below.

Assignment	Description	Points
Proposed research question	1 page paper proposing a research question for a research synthesis	10
Literature search strategy	Paper outlining the search strategy, including the key words and operators that will be used for databases	10
Coding	Paper outlining: (1) Exclusion/Inclusion criteria, and (2) Draft coding form	20

Homework (3)	3 homework assignments on techniques of meta-analysis	30
Critique of a published synthesis	3-5 page paper critiquing the methods of a published research synthesis	50
Final report of a research synthesis	Report following MARS and PRISMA guidelines for research synthesis	100
Class participation		10
Total		230

Late assignments will be assessed a penalty. All assignments will be uploaded to Blackboard.

Tentative Schedule (subject to change)

Date	Topic	Readings	Assignment due
Sept 1	Introduction to Research Synthesis Rationale for systematic reviewing		
Sept 8	Problem Formulation	Cooper, Chs 1 & 2	
Sept 15	Literature Searches	Cooper, Ch 3 Campbell Collaboration Info Retrieval Brief	Problem formulation paper
Sept 22	Inclusion/Exclusion Criteria Coding	Cooper, Chs 4 & 5	Lit Search strategy
Sept 29	Coding (continued) Data management	Lipsey & Wilson, Ch. 4 & 5	
Oct 6	Introduction to Effect Sizes	Lipsey & Wilson, Ch. 3 Borenstein et al., Chs 1, 2 & 3	Coding form
Oct 13	Effect Sizes – Standardized mean difference & correlations	Borenstein et al., Ch 4 & 6	
Oct 20	Effect sizes – Odds ratios	Borenstein et al., Ch 5	
Oct 27	Combining effect sizes – Fixed effect models	Borenstein et al., Chs. 10 & 11 Lipsey & Wilson, Ch. 6	Homework 1
Nov 3	Combining effect sizes – Random effects models	Borenstein et al., Chs. 12 & 13	Homework 2
Nov 10	Homogeneity of effect	Borenstein et al.,	

	sizes	Chs. 15 & 16	
Nov 17	Categorical models of effect size	Borenstein et al., Ch. 19	Homework 3
Nov 24	<i>Thanksgiving</i>		
Dec 1	Meta-regression	Borenstein et al., Chs. 20 & 21 Lipsey & Wilson, Ch. 7	Critique of published meta-analysis
Dec 8 (last class)	Interpretation and reporting of results	Cooper, Chs 7, 8 & 9	
Dec 15 (exam week)			Last day to hand in final paper

Additional readings will be posted on Blackboard.

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:

http://www.luc.edu/education/academics_policies_integrity.shtml

For additional academic policies and procedures refer to:

http://www.luc.edu/education/academics_policies_main.shtml

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/>

Harassment (Bias Reporting)

It is unacceptable and a violation of university policy to harass, discriminate against or abuse any person because of his or her race, color, national origin, gender, sexual orientation, disability, religion, age or any other characteristic protected by applicable law. Such behavior threatens to destroy the environment of tolerance and mutual respect that must prevail for this university to fulfill its educational and health care mission. For this reason, every incident of harassment, discrimination or abuse undermines the aspirations and attacks the ideals of our community. The university qualifies these incidents as incidents of bias.

In order to uphold our mission of being Chicago's Jesuit Catholic University-- a diverse community seeking God in all things and working to expand knowledge in the service of humanity through learning, justice and faith, any incident(s) of bias must be reported and appropriately addressed. Therefore, the Bias Response (BR) Team was created to assist members of the Loyola University Chicago community in bringing incidents of bias to the attention of the university. If you believe you are subject to such bias, you should notify the Bias Response Team at this link:

<http://webapps.luc.edu/biasreporting/>

Technology

In this course, students are expected to know how to use Blackboard and its features, be able to navigate the internet to explore resources, and to use the electronic resources available through LUC's library homepage. In addition, students will learn to use SPSS and the freeware package RevMan to analyze meta-analytic data. Students will also be introduced to a number of reference database packages such as RefWorks to organize literature searches.

Diversity

The School of Education is committed to diversity including but not limited to race, gender, sexual orientation, social class, ethnicity, and ability. Through this course, students will learn how to interpret, critique and produce systematic reviews. The course is designed to provide students with the knowledge necessary to evaluate research concerning the social dimensions mentioned above, and to utilize the results of systematic reviews to develop evidence-based decisions.

