ED 900: Systematic Reviews of Research Evidence on Program and Policy Issues  
(Last taught spring 2002)

Instructor:  
Rebecca Maynard  
University Trustee Chair Professor, University of Pennsylvania  
409 Graduate School of Education  
215-898-3558 voice/ rmaynard@gse.upenn.edu

Goals:  The class is designed to provide students with the technical background and experience to conduct thorough, analytically rigorous, and policy relevant reviews of evidence in support of education and social policy issues. Students will learn to define relevant problems in researchable terms. They will gain experience conducting extensive searches of information sources to assemble the corpus of scientific evidence to inform the policy or program problem. They will learn to review evidence critically and make sound judgments regarding the use of evidence. They will conduct meta-analyses of program evaluation findings, exploring the sensitivity of results to analytic methods used. And, they will prepare written synthesis of research on one or more important policy topics.

Approach:  The course is experimental. It is designed in part to explore and critically assess various approaches to research syntheses, including the structured methods adhered to in the Cochrane Collaboration which supports reviews in medical sciences and those that are proposed for the Campbell Collaboration for reviews of education and social science research (http://www.cochrane.org and http://campbell.gse.upenn.edu). This course treats the concept of a research review as a rigorous and systematic scientific activity in which research studies constitute the primary information source. Much of the course will focus on information retrieval sources and methods and on appropriate methods for combining program and policy impact findings across studies. However, this course also will devote considerable attention to a number of other important aspects of systematic reviews:

- Framing questions that guide the review, paying particular attention to the interests and information needs of program staff and/or policy makers
- The importance of qualitative research findings and methods for meaningfully incorporating such findings into systematic reviews
- Methodological issues related to the study quality, pooling guidelines, accounting for moderating influences, and dealing with missing data

The expectation is that all students will complete a thorough, rigorous review of evidence in an area of personal or professional interest following the Campbell Collaboration guidelines, with such modifications and enhancements as may seem prudent, given goals of the review and the nature of the evidence base.
Texts:


Other Course Reference Documents:


Additional materials assembled throughout the course.

Grading Policy: Students will receive a letter grade for the course based on the following criteria:
- Class prep and participation
- Research review protocol
- Location and coding of data
- Final synthesis report
- Presentation and participation in roundtable

Office Hours: Monday 10 – 12; Tuesday 10 – 12 and by appointment. (Students are welcome to drop in if I am in my office with the door open.)

Early and Ongoing Feedback: Students are encouraged to provide early and ongoing feedback on the course. This can benefit all.
Weekly Readings and Assignments for
ED 900: Systematic Reviews of Research Evidence on Program and Policy Issues
(Spring 2002)

1. **January 7: Introduction to Research Syntheses and the Campbell Collaboration**
   (Bob Boruch)

   **Readings:**
   Cooper and Hedges, Part II (pages 15-38)

   **Assignment for next week:**
   Select a topic of interest for a research synthesis. Identify at least three practical reasons one would want to review research on this topic. Specify the major research questions that would be important for guiding policy or practice. Think about key words you might use in a literature search.

2. **January 14: Defining Research Questions; Identifying and Acquiring the Literature**
   (Patty Lynn, Penn Library)

   **Readings:**
   Cooper and Hedges, Part III (pages 39-95)
   Gilliam and Zigler (2001) (Available via e-mail)

   **Assignment for next week:**
   Be prepared to discuss the methods, substance, and conclusions in the Gilliam and Zigler article.
   Assemble a preliminary bibliography of research on the topic of interest. For each reference, note the source through which it was identified, the type of research product (for example, research review, experimental design impact study, quasi experimental design study, qualitative research report), and important notes.

3. **January 28: Evaluating the Quality of Research and Reporting and Refining Research Questions**

   **Readings:**
   Cooper and Hedges, Part IV, Chapters 8 and 9 (pages 95-124)

   **Assignment for next week:**
   Develop a list of criteria that you think distinguish good and bad quality research.

   Read three of the studies you have identified. For each study, prepare a simple summary of (1) the study goals, (2) analytic methods, (3) data sources, sample frame, selection procedures and size, (4) summary of findings and the level of detail you have about the findings (for example, program and control group means, p-values, significance levels), and (5) overall rating of study quality (0 = poor to 5 = excellent) and an explanation of your rationale.

   Continue to search for and acquire research studies.
4. February 4: Organizing and Summarizing Research Studies
Readings:
Cooper and Hedges, Section IV, Chapters 10 and 11 (pp. 125—162)
Three more of your studies and the three reports one of your peers read and summarized for last week’s class.

Assignment for next week:
Develop a proposed coding scheme for your research synthesis, including provisions for denoting research quality and for summarizing qualitative aspects of the programs and/or study implementation, and necessary follow-up. Code three of your studies; code the three studies you read for your peer, using his/her coding scheme. Keep notes on issues encountered during coding.

5. February 11: Statistical Results and Preparing to Combine Results Across Studies
Readings:
Cooper and Hedges, Section V, Chapters 12-13 (pp. 163-190)
Cooper and Hedges, Section VI, Chapters 14-15 (pp. 191-230)

Assignment for Next Week:
Create a table for your research studies detailing the following information: (1) participant and control group sample sizes; (2) effect sizes; (3) mean outcomes; (4) p-values; (5) moderators; and (6) Z-scores. Annotate any missing data or unusual circumstances.

6. February 20-22: Special Class and Conference Participation
Application of Meta Analysis 1 (Jeff Valentine and Harris Cooper)

Readings: Selected Campbell and Cochrane Collaboration Reviews

Abstract online: [http://www.missouri.edu/~psychhc/abstracts.htm#Abstract8](http://www.missouri.edu/~psychhc/abstracts.htm#Abstract8)
See also the Campbell version which will be included in the coursepack.
Greene, Jay P. A Meta-Analysis of the Effectiveness of Bilingual Education (1998) University of Texas at Austin. Sponsored by The Tomas Rivera Policy Institute, The Public Policy Clinic of the Department of Government, University of Texas at Austin, The Program on Education Policy and Governance at Harvard University Report Online: http://www.la.utexas.edu/research/ppc/bilingual2.html

Assignment for Next Week:
For a minimum of eight studies among those you are reviewing, (1) conduct a vote count; (2) calculate a combined significance estimate; and (3) calculate a combined effect size and confidence interval. Document your assumptions at each stage.

7. February 25: Application of Meta Analysis 2 (Jeff Valentine)
Readings:
Cooper, Chapter 5 (pp. 104-186)
Cooper and Hedges, Section V, Chapters 17-18 (pp. 245-283)

Assignment for Next Week:
For a minimum of eight studies among those you are reviewing, (1) conduct a vote count; (2) calculate a combined significance estimate; and (3) calculate a combined effect size. Document your assumptions at each stage.

8. March 4: Preparing the C-2 Protocol
Readings:
Guidelines for the Preparation of C-2 Protocols
Sample protocols (to be distributed via e-mail)

Assignment for Next Week:
Develop a draft C-2 protocol for your review. Refine coding protocol. Continue reviewing and coding data.

March 9 – 17: Spring Recess

9. March 18: When and How to Include Quasi-Experimental Studies in Syntheses (Daivd Myers, invited)
Readings: (To be Determined by Presenter)

Assignment for Next Week:
Prepare a brief description of the study design features for at least 8 of your studies. Conduct separate meta analyses for your research studies, grouped by analytic method. Discuss the similarities and differences in findings.

10. March 25: Distinguishing Fixed and Random Effects (Larry Hedges, invited)
Readings:
Cooper and Hedges, Section VI, Chapters 19-20 (pp. 285-222)
Assignment for Next Week:
Organize your data to conduct a fixed and random effects estimates of program impacts. Conduct the analysis manually using six of your studies. Then repeat the analysis using the software. Discuss the findings.

Critique the draft C-2 protocol for a peer.

11. April 1: Special Analytic Issues in Meta Analysis (Will Shadish, Steve Raudenbush or Mark Applebaum)
Readings: (To be selected by presenter)
Possible topics:
  Diagnostics and Sensitivity Analysis
  Publication Bias
  Accounting for Study Quality

Assignment for Next Week:
Review your array of research studies to determine what special analytic concerns may apply to your research synthesis. Outline a plan for addressing the concerns.

12. April 8: Incorporating Qualitative Research
Readings:
Light and Pillimer, Chapter 4 (pp. 104-143)

Assignment for Next Week:
Summarize key qualitative aspects of four of the studies included in your review. Consider issues of program design and implementation, as well as study design and implementation. Note important gaps in the qualitative information and significant implications of the qualitative information for how you use and/or interpret the study results.

13. April 15: Reporting the Results with an Emphasis on Informing Policy and Practice (Matt Stagner)
Readings:
Cooper and Hedges, Section VIII, Chapters 27-28 (pp. 425-454)
Cooper, Chapter 6 (pp. 157-181)

Assignment for Next Week:
Read two research syntheses. Compare and contrast them in terms of (1) thoroughness of the search; (2) criteria for inclusion of studies in the formal synthesis; (3) methods of analysis; (4) incorporation of qualitative data; (5) conclusions; and (6) relevance to current policy concerns.

Revise your review protocol and update as warranted.

Prepare draft report on your research synthesis. Prepare PowerPoint presentation for the Roundtable.
Presentation and Discussion of Research Findings

Assignment for Next Week:
Revise report and presentation.

15. April 29: Roundtable Panel II
Follow-up and reflections
Discussion of nature of and rationale for revisions. Recommendations for future research, including recommendations about research methods, reporting, and synthesis.
Background on The Campbell Collaboration (C2)
“The Campbell Collaboration, A Brief Introduction”


C2 Resource Manual and Support Documents

C2 Protocols and Reviews


Typical Academic Research Synthesis

Sample Campbell-type Review with Policy Translation Document

Cooper, Harris. “Summer School: Research-based Recommendations for Policymakers.” Columbia, MO: University of Missouri, no date.
Corchrane Reviews

Reviews of Reviews


Research Methods
Research http://www.nap.edu/books/0309082919/html/