

EVAL 6970: Meta-Analysis

Spring 2011

Course Description

This course is an advanced graduate seminar designed to provide students with the knowledge, skills, and abilities necessary to conduct basic research reviews, research syntheses, and meta-analyses. Topics covered include, but are not limited to, the increasing use of meta-analysis in formulating and enacting evidence-based policies and practices, the role of meta-analysis in theory development, principles and procedures for planning and executing research reviews and meta-analyses, identifying and retrieving literature, coding studies, computing effect sizes (e.g., based on means, binary data, and correlations) and their corresponding confidence intervals for meta-analysis, converting among effect sizes, factors that affect precision (e.g., variance, standard error, confidence intervals), fixed-effect and random-effects models for meta-analysis, identifying and quantifying heterogeneity, prediction intervals, subgroup analysis, meta-regression, meta-analysis with complex data structures (e.g., independent subgroups, multiple outcomes or time points), power analysis for meta-analysis, publication bias, and psychometric meta-analysis. Students should have a fundamental knowledge of applied statistics and research design to succeed in the course and will be required to plan and execute a basic meta-analysis. EVAL 6970: Experimental and Quasi-Experimental Designs for Applied Research and Evaluation, or an equivalent course (e.g., EMR 6550), is a recommended, but not required, prerequisite.

Credit and Course Hours

3 semester hours

This class meets from 5:30 PM – 8:00 PM on Wednesdays beginning the week of January 10, 2011 and ending the week of April 25, 2011.

The course meets in Ellsworth Hall, room 4410, in The Evaluation Center.

Instructor

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Course Website

The Website for this course is located at <http://evaluation.wmich.edu/phd/courses/meta-analysis>. From this site students can access assigned readings, data sets, spreadsheets, and other materials related to the course.

Office Hours

By appointment.

Course Objectives

This course has multiple student learning objectives. Students will be expected to develop the following knowledge, skills, and abilities:

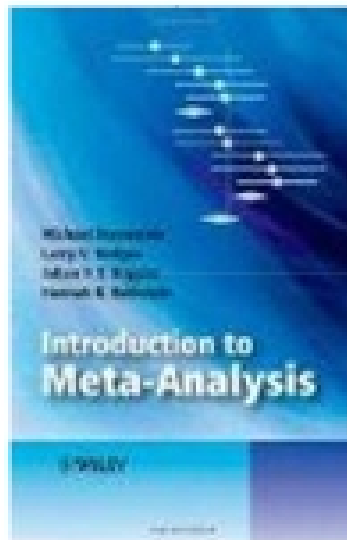
1. An understanding of the increasing importance of, applications and uses of, and recognition of meta-analysis for formulating and enacting evidence-based policies and practices
2. An ability to plan and execute a basic meta-analysis
3. An ability to compute a variety of effect sizes for use in meta-analysis
4. An ability to compute variances, standard errors, and confidence intervals for use in a meta-analysis and an understanding of their influence on summary statistics typically reported in a meta-analysis
5. An ability to convert among different types of effects sizes (e.g., from a log odds ratio to d or from d to a log odds ratio)
6. Understanding the differences between fixed- and random-effects models for meta-analysis, their assumptions, interpretations, and when each is appropriate
7. An ability to identify and quantify heterogeneity in the context of a meta-analysis
8. An ability to identify how statistical power is affected by moving from primary studies to a meta-analysis and how to extend statistical power concepts to meta-analysis
9. An ability to statistically model publication bias and its impact on a meta-analysis
10. An ability to execute a meta-analysis in the Comprehensive Meta-Analysis 2.0 software package

Required Textbooks and Readings

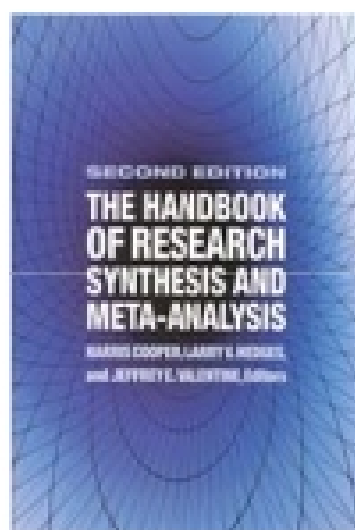
Two textbooks are required for this course. In addition, students are required to read, reflect on, and critically assess several other required readings. Additional readings may be assigned.

Required Textbooks

The textbooks required for this course are:



Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to meta-analysis*. West Sussex, UK: Wiley.



Cooper, H., Hedges, L. V., & Valentine, J. C. (Eds.). (2009). *The handbook of research synthesis and meta-analysis* (2nd ed.). New York, NY: Russell Sage Foundation.

Additional Readings

The following readings are required in addition to the two required textbooks:

- Anderson, C. A., et al. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in eastern and western countries: A meta-analytic review. *Psychological Bulletin*, *136*(2), 151-173.
- Bornmann, L., diger Mutz, R., & Daniel, H-D. (2010). A reliability-generalization study of journal peer reviews: A multilevel meta-analysis of inter-rater reliability and its determinants. *PLoS ONE*, *5*(2), e14331.
- Cook, T. D., & Leviton, L. C. (1980). Reviewing the literature: A comparison of traditional methods with meta-analysis. *Journal of Personality*, *48*(4), 449-472.
- DuBois, D. L., Holloway, B. E., Valentine, J. C., & Cooper, H. (2002). Effectiveness of mentoring programs for youth: A meta-analytic review. *American Journal of Community Psychology*, *30*(2), 157-197.
- Peterson, J. L., & Shibley Hyde, J. (2010). A meta-analytic review of research on gender differences in sexuality, 1993–2007. *Psychological Bulletin*, *136*(1), 21-38.
- Schwandt, T. A. (2000). Meta-analysis and everyday life: The good, the bad, and the ugly. *American Journal of Evaluation*, *21*(2), 213-219.