Advanced Research Methods in Meta-Analysis
CJT765
Spring, 2011 – Mondays, 6:00 - 8:30 PM
Grehan (EGJ) 223

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COURSE DESCRIPTION

The rapidly expanding volumes of research in a variety of areas of communication and the social sciences demands that we learn, understand, and advance ways to accurately summarize such research. While traditional literature reviews and "vote counting" methods can give us some sense of the literature on a given topic, such methods have been criticized for providing poor cumulation of quantitative research findings. Since its advent in the late 1970's, meta-analysis has virtually replaced the narrative review as the most accurate (and sophisticated) way to cumulate quantitative research findings.

Advanced Research Methods in Meta-Analysis is a course designed to give masters and doctoral-level students a detailed treatment of quantitative research synthesis techniques (meta-analysis). Meta-analysis can be fruitfully applied to virtually any quantitative research literature, and the technique is concerned with providing an accurate estimate of a given effect – whether it is a correlation between 2 variables or a treatment effect resulting from some type of intervention. Meta-analysis is also concerned with moderators of effects, which help us to understand "under what conditions" effects are most likely to be strong or weak.

This course examines the importance of cumulative knowledge building in communication and the social sciences and covers, in great detail, what meta-analysis is as well as its strengths and limitations. Each step that is taken within the context of a meta-analytic project will be studied in depth, including: conceptualizing a project, searching the published (and unpublished) literature, coding articles, retrieving and calculating effect sizes, analyzing the dataset, and writing up the study for publication. Future directions in meta-analytic thinking will also be covered.

One major goal of the course is to advance students' understanding of the building of cumulative knowledge in science as well as their understanding of effect size indicators in the social sciences. A second major goal of the course is for each student to gain the knowledge and skills necessary to carry out a meta-analysis of their own. Because of the time restrictions of a semester long course, students will likely not complete their meta-analytic project but will complete the first several phases of such a project (in full) and will carry out all of steps in the meta-analysis (at least in part). It is the instructor's hope that many students will ultimately complete their meta-analysis after the course has ended subsequently submit it for publication.

COURSE PHILOSOPHY

The conceptualization of this course is as a methods course in which class discussion is a vital part of the learning process. Although at times material will be presented, this course is *not* structured to be a lecture-style statistics course. Rather, it is structured to be a course where we learn from discussing the readings and analyzing the ideas and points raised and presented in class.

Students are expected to have a high level of commitment to this course. This can be demonstrated by doing the readings in advance of class, participating in class when appropriate, and overall putting in effort. It is vital that you come to class each day with a background of the topic for that day (which you will get from the readings). Those of you with less of a background in statistics/methodology may want to do extra preparation before class.

The instructor will do his best to ensure that the information in class is presented in an understandable and clear manner. I will also be available during office hours and at other times by appointment for those who need or want extra help.

REQUIRED TEXTS AND COURSE MATERIALS

1. Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage Publications.
2. Additional readings (see pages 5-7)
3. Comprehensive Meta-Analysis Software (www.meta-analysis.com)

ASSESSMENT AND GRADING

META-ANALYSIS PROJECT: You will complete a meta-analysis project that should be approximately 20-25 double-spaced pages with 12-point (Times New Roman or similar) font. The project should be written up in APA Fifth Edition reference style.

The project should include a: A) *Literature review* – provide a literature review of the area which culminates in a strong rationale for the current meta-analysis (6-8 pages); B) *Methods* – describe the details of your search strategy, inclusion/exclusion criteria, article coding information, and effect size/analysis details. Decisions made in these areas should be justified (4-6 pages); C) *Results* - include at least 10 studies that met inclusion criteria and were coded, effect sizes extracted, and the dataset analyzed. Describe what you have found in terms of overall effect size and homogeneity, as well as which moderating influences you plan to examine (2-3 pages); D) *Implications and limitations* - indicate what you expect to find, what this means to this area of research, and limitations of your meta-analysis (1-2 pages); E) *References* – list all references cited in the paper (2-4 pages); F) *Table* - list each study that met inclusion criteria along with key information that was coded, including effect size (1-3 pages); G) *Appendix* - include a copy of your coding form (2 pages).

Your grade on this project will be determined based upon the overall quality of the project, which includes: 1) conceptualization of the project; 2) how well decisions were carefully thought out and justified in the paper; 3) use of appropriate meta-analytic procedures; 4) presence of the elements discussed above; 5) quality of the writing in the document; 6) grammar, spelling, and APA style. This assignment will be worth 50% of your final grade, and is due on April 25.

META-ANALYSIS PRESENTATION: You will give a 20 minute presentation of

your meta-analytic project. Use the page guidelines above as a guide for how long each section should be. For example, you should spend significant time describing the literature that provides a basis for your project and significant time explaining the methods that were used and how you arrived at particular decisions. Less time can be spent on results and implications. Use of a visual medium such as Microsoft powerpoint is required. This assignment is worth 20% of your final grade, and will take place in class on April 18 and April 25.

META-ANALYSIS CRITIQUE: You will choose a published meta-analysis in your area of interest and write a 4-5 page (double-spaced) critique of that meta-analysis. The critique should include an analysis of the conceptualization of the research area and rationale for the meta-analysis; inclusion and exclusion criteria; choice of published only versus unpublished work; coding of studies; choice of effect size indicator; analysis of data (overall effects, moderators) and writing up of study results. This assignment is worth 20% of your final grade, and is due on March 7.

EXERCISES: There will be a few "take home" assignments throughout the semester. These small assignments are worth 10% of your final grade, and will be due a few times in the semester.

Your final grade will be calculated as the sum of the percentages above (50 + 20 + 20 + 10 = 100). Students will receive an A, B, C, or E. Because D grades are not awarded to graduate students, if your final course grade is below a C (below 70%), you will receive a failing grade (E) in the course.

COURSE PROCEDURES

ASSIGNMENTS

All course assignments should be turned in the day they are due, in class. Late assignments will have *10 percent* deducted from the score as a penalty for *each day* they are late.

CHEATING AND PLAGIARISM

In this course working together to understand the material is encouraged. However, cheating or plagiarism in any form will not be tolerated. Any student whom the instructor has sufficient evidence to believe has cheated or plagiarized in the course will be given the maximum penalty allowed according to UK regulations. There will be no exceptions. For definitions and details of these offenses see Senate Rules 6.3.1 and 6.3.2, which are available online at http://www.uky.edu/StudentAffairs/Code/part2.html.

COURSE WEBSITE

Additional course resources can be found on the CJT765 web page. Go to http://comm.uky.edu/Noar and click on Teaching.

PROJECTED WEEKLY SCHEDULE

WEEK	DATE	TOPIC	READINGS
1	1/17	• MLK Day – No class	
2	1/24	• Introduction to Course • Cumulative knowledge in science • What is meta-analysis? • Why is it better than traditional reviews?	Beaman (1991) Cooper (1988) Hunt (1997, Chapter 1) Lipsey & Wilson (1993) Myers (1991)
3	1/31	• Steps in meta-analysis and systematic reviews • Strengths and weaknesses of meta-analysis (in relation to steps)	L & W, Chapter 1 Cooper & Hedges (2009) Noar (2006)
4	2/7	• Conceptualizing a meta-analysis – research questions, feasibility, decisions, inclusion and exclusion criteria	L & W, Chapter 2 Nurius & Yeaton (1987) Sharpe (1997)
5	2/14	• Strategies for searching the published & unpublished literature • File drawer problem and decisions about unpublished studies	L & W, Chapter 2 Reed & Baxter (2009) Rosenthal (1979) Rothstein & Hopewell (2009)
6	2/21	• Coding studies – strategies, approaches, examples, inter-coder reliability, etc.	L & W, Chapter 4, 5, & Appendix E Wilson (2009)
7	2/28	• Criticism of NHST • Introduction to effect size: what is it? • Comparison of effect size indicators • When to use which indicator?	L & W, Chapter 3 Kirk (1996) McCartney & Rosenthal (2000) Rosenthal (1990) Vacha-Haase & Thompson (2004) ***MA Topic due
8	3/7	• Computing effect sizes from study reports • Issues you may encounter with effect size • Multiple studies, multiple outcomes, data not reported, only p<.05, etc.	L & W, Chapter 8 & Appendices B, C, D *Microsoft Excel Effect Size program* ***Meta-analysis Critique Due
9	3/14	Spring Break – No class	
10	3/21	• Approaches to combining effect sizes • Different approaches, same goal • Homogeneity versus heterogeneity • Fixed versus random effects models	L & W, Chapters 6 & 7 Johnson et al. (1995) Lipsey (2003) Noar et al. (2010) *Comprehensive*

		• Analysis of moderators	*Meta-analysis program* ***ES Assignment Due
11	3/28	• Approaches to combining effect sizes and testing for moderators (cont'd)	Review last week's readings ***Code sheet and ES sheet due
12	4/4	• Writing up a meta-analysis for publication • Visual depiction of meta-analytic findings	APA (2008) Moher et al. (2009) Rosenthal (1995)
13	4/11	• Limitations of meta-analysis • The future of meta-analysis	L & W, Chapter 8 Cooper & Hedges (2009) Hunt (1997, Chapter 7) Matt & Cook (2009)
14	4/18	• Class Presentations	
15	4/25	• Class Presentations	***Final Paper Due

**Note: If necessary, presentations will continue during the regularly scheduled final exam period.*

CJT765 Additional Readings

Week 1

None.

Week 2

Beaman, A. L. (1991). An empirical comparison of meta-analytic and traditional reviews. *Personality and Social Psychology Bulletin, 17*, 252-257.

Cooper, H. M. (1988). Organizing knowledge syntheses: A taxonomy of literature reviews. *Knowledge in Society, 1*, 104-126.

Hunt, M. M. (1997, Chapter 1). *How science takes stock: The story of meta-analysis [Making order of scientific chaos]*. New York: Russell Sage Foundation.

Lipsey, M. W., & Wilson, D. B. (1993). The efficacy of psychological, educational, and behavioral treatment. Confirmation from meta-analysis. *American Psychologist, 48*(12), 1181-1209.

Myers, D. G. (1991). Union is strength: A consumer's view of meta-analysis. *Personality and Social Psychology Bulletin, 17*, 265-266.

Week 3

Cooper, H., & Hedges, L. V. (2009). Research synthesis as a scientific process. In H. Cooper, L. V. Hedges & J. C. Valentine (Eds.), *The handbook of research synthesis and meta-analysis (2nd ed.).* (pp. 3-16). New York, NY US: Russell Sage Foundation.

Noar, S. M. (2006). In pursuit of cumulative knowledge in health communication: The role of meta-analysis. *Health Communication, 20*(2), 169-175.

Week 4

Nurius, P. S., & Yeaton, W. H. (1987). Research synthesis reviews: An illustrated critique of "hidden" judgments, choices, and compromises. *Clinical Psychology Review, 7*, 695-714.

Sharpe, D. (1997). Of apples and oranges, file drawers, and garbage: Why validity issues in meta-analysis will not go away. *Clinical Psychology Review, 17*, 881-901.

Week 5

Reed, J. G., & Baxter, P. M. (2009). Using reference databases. In H. Cooper, L. V. Hedges & J. C. Valentine (Eds.), *The handbook of research synthesis and meta-analysis (2nd ed.).* (pp. 73-101). New York, NY US: Russell Sage Foundation.

Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin, 86*(3), 638-641.

Rothstein, H. R., & Hopewell, S. (2009). Grey literature. In H. Cooper, L. V. Hedges & J. C. Valentine (Eds.), *The handbook of research synthesis and meta-analysis (2nd ed.).* (pp. 103-125). New York, NY US: Russell Sage Foundation.

Week 6

Wilson, D. B. (2009). Systematic coding. In H. Cooper, L. V. Hedges & J. C. Valentine (Eds.), *The handbook of research synthesis and meta-analysis (2nd ed.).* (pp. 159-176). New York, NY US: Russell Sage Foundation.

Week 7

Kirk, R. E. (1996). Practical significance: A concept whose time has come. *Educational & Psychological Measurement, 56*(5), 746-759.

McCartney, K., & Rosenthal, R. (2000). Effect size, practical importance, and social policy for children. *Child Development, 71*(1), 173-180.

Rosenthal, R. (1990). How are we doing in soft psychology? *American Psychologist, 45*(6), 775-777.

Vacha-Haase, T., & Thompson, B. (2004). How to estimate and interpret various effect sizes. *Journal of Counseling Psychology, 51*(4), 473-481.

Week 8

None.

Week 9

None (*Spring Break*!)

Week 10

Johnson, B. T., Mullen, B., & Salas, E. (1995). Comparison of three major meta-analytic approaches. *Journal of Applied Psychology, 80*(1), 94-106.

Lipsey, M. W. (2003). Those confounded moderators in meta-analysis: Good, bad, and ugly. *Annals of the American Academy of Political and Social Science, 587*, 69-81.

Noar, S. M., Pierce, L. B., & Black, H. G. (2010). Can computer-mediated interventions change theoretical mediators of safer sex? A meta-analysis. *Human Communication Research, 36*(3), 261-297.

Week 11

Review last week's readings

Week 12

American Publications and Communications Board Working Group on Journal Article Reporting Standards (2008). Reporting standards for research in psychology: Why do we need them? What might they be? *American Psychologist, 63*(9), 839-851.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & the Prisma Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med, 6*(7), e1000097.

Rosenthal, R. (1995). Writing meta-analytic reviews. *Psychological Bulletin, 118,* 183-192.

Week 13

Cooper, H., & Hedges, L. V. (2009). Potentials and limitations. In H. Cooper, L. V. Hedges & J. C. Valentine (Eds.), *The handbook of research synthesis and meta-analysis (2nd ed.).* (pp. 561-572). New York, NY US: Russell Sage Foundation.

Hunt, M. M. (1997, Chapter 7). *How science takes stock: The story of meta-analysis [Epilogue: The future of meta-analysis]*. New York: Russell Sage Foundation.

Matt, G. E., & Cook, T. D. (2009). Threats to the validity of generalized inferences. In H. Cooper, L. V. Hedges & J. C. Valentine (Eds.), *The handbook of research synthesis and meta-analysis (2nd ed.).* (pp. 537-560). New York, NY US: Russell Sage Foundation.

Week 14

None.

Week 15

None.
