SYLLABUS

PSY 507: *Meta-Analysis*.

Fall, 2016 Tuesdays and Thursdays: 1:00-2:20, Psychology B 248

Instructor: Anne Moyer; Home office: Psych B 224 (but office hours will be held in Melville Library N-3010); Tel: 2-7811;
email: anne.moyer@stonybrook.edu. Office hours: Tues 10:00-11:00, Tues Wed 12:00-3:00, or by appointment.

Course Description and Objectives:

This course is an introduction to research synthesis and the use of meta-analytic techniques. The content is intended to be a thorough yet practical coverage of basic principles, with an emphasis on leading students through the steps of conducting their own meta-analytic project. A basic knowledge of statistics commonly used in the social and behavioral sciences is essential. Class meetings will involve both didactic instruction and discussion of readings and homework assignments.

Required Reading:

Card, Noel, A. (2012). *Applied Meta Analysis for Social Science Research*. SAGE: Thousand Oaks, CA.

Additional required course readings, noted below, are available electronically for download from Blackboard. To access the Blackboard site for the course, go to http://blackboard.stonybrook.edu and log in using your NetID and NetID password.

Evaluation:

Course grades will be based on class attendance and participation, weekly homework assignments, and on satisfactory completion of a term paper and presentation as indicated below:

Participation	10%
Homework assignments	40%
Paper	40%
Presentation	10%

Term papers will be a 10-25 page meta-analytic review written and formatted according to APA style. Weekly homework assignments will consist of individual steps in the process of conducting this review. Because the material covered by this class is cumulative, students with multiple absences or late homework assignments may be asked to withdraw.

Policies

Americans with Disabilities Act: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC(Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. https://web.stonybrook.edu/newfaculty/StudentResources/Pages/DisabilitySupportServices.aspx.

Academic Integrity: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/uaa/academicjudiciary/

Critical Incident Management: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Course Schedule and Readings:

***Module 1: Tues Aug 30*: Overview of the Course and Research Synthesis**

Tues (Lecture 1; handouts will be provided)

- No readings

Homework assignment #1 (Due Thurs Sept 1, but not to be handed in): Become familiar with Comprehensive Meta-Analysis Software.

***Module 2: Thurs Sept 1 and Thurs Sept 8*: Introduction to Meta-Analysis**

Readings

Thurs (Lecture 2; download slides from Blackboard and bring to class; read chapter below in advance)

- Card, Chapter 1 *Introduction to Meta-Analysis*

Thurs (discussion; read articles below in advance)

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

- Bem, D. J. (1995). Writing a review article for *Psychological Bulletin*. *Psychological Bulletin*, *118,* 172-177.

- Baumeister, R. F., Leary, M. R. (1997). Writing narrative literature reviews. *Review of General Psychology, 1*, 311-320.

Homework Assignment #2 (due Thurs Sept 15): Contrast a review article and a meta-analysis on the same topic.

***Module 3: Tues Sept 13 and Thurs Sept 15*: Problem Specification and Study Retrieval**

Readings

Tues (Lecture 3; download slides from Blackboard and bring to class; read chapter below in advance)

- Card, Chapter 2 *Questions that Can and Cannot be Answered through Meta-Analysis*

Thurs (discussion; read articles below in advance)

- Connor-Smith, J. K. & Flachsbart, C. (2007). Relations between personality and coping: A meta-analysis. Journal of Personality and Social Psychology, 93, 1080-1107.

- DeLongis, A. & Holtzman, S. (2005). Coping in context: The role of stress social support, and personality in coping. *Journal of Personality, 73*, 6.

Homework Assignment #**3 (due Thurs Sept 22)**: Formulate questions for your meta-analytic review.

***Module 4: Tues Sept 20 and Thurs Sept 22*: Selecting, Computing, and Coding the Effect Size Statistic I**

Readings

Tues LIBRARY WORKSHOP in Melville Library classrooms on first floor of Central Reading Room

- No readings

Thurs ("GUEST lecture" Anne channels Dr. Tracey Revenson "Searching the Gray Literature: Lessons Learned from an R03"; download slides from Blackboard and bring to class; read chapter below in advance)

- Card, Chapter 3 *Searching the Literature*
- Look over *Comprehensive Meta Analysis (CMA)* Manual

Homework Assignment #4 (due Thurs Sept 29): Literature retrieval.

***Module 5: Tues Sept 27 and Thurs Sept 29:* Selecting, Computing, and Coding the Effect Size Statistic II**

Readings

Tues (Lecture 4; download slides from Blackboard and bring to class; read article below in advance)

- Card Chapter 5 Basic *Effect Size Computation*
- Bax, L., Yu, L.-M., Ikeda, N., & Moons, K. G. M. (2007). A systematic comparison of software dedicated to meta-analysis of causal studies. *BMC Medical Research Methodology*, *7*, 40.

Thurs (Lecture 5 and discussion; download slides and read articles below in advance)

- **Skim** Card Chapter 6 *Corrections to Effect Sizes* and Chapter 7 *Advanced and Unique Effect Size Computation*
- McLeod, B. D., & Weisz, J. R. (2004). Using dissertations to examine potential bias in child and adolescent clinical trials. *Journal of Consulting and Clinical Psychology, 72*, 235-271.
- Lipsey, M.W., & Wilson, D. B. (1993). The efficacy of psychological, educational, and behavioral treatment: Confirmation from meta-analysis. *American Psychologist, 48*, 1181-1209 and commentaries by Sohn (1995), Eysenck (1995), Cooper, Door, & Bettencourt (1995) and response by Lipsey & Wilson (1995).

Homework Assignment #5 (due Thurs Oct 6): Computing effect sizes.

Module 6: Tues Oct 4 and Thurs Oct 6: Developing a Coding Scheme and Coding Study Reports

Readings

Tues (Lecture 6; download slides from Blackboard and bring to class; read chapter below in advance)

- Card, Chapter 4 *Coding Study Characteristics*

Thurs (discussion; read articles below in advance)
GUEST presentation: Micah Mumper, "Conducting and Submitting a Meta-Analysis for Publication"

- Micah's paper

Homework Assignment #6 (due Thurs Oct 13): Develop a coding scheme.

Module 7: Tues Oct 11 and Thurs Oct 13: Data Management

Readings

Tues (Lecture 7; download slides from Blackboard and bring to class; read chapter below in advance)

- Card Chapter 8 Basic Computations: *Computing Mean Effect Size and Heterogeneity around This Mean*

Thurs (discussion; read article below in advance)

- Wilson, D. B., & Lipsey, M. W. (2001). The role of method in treatment effectiveness research: Evidence from meta-analysis. *Psychological Methods, 6*, 413-429.

Homework assignment #7 (not due until Thurs Oct 27): Begin study coding.

Module 8: Tues Oct 18 and Thurs Oct 20: Analysis Issues and Strategies

Readings

Tues (Lecture 8; download slides from Blackboard and bring to class; read chapter below in advance)

- Card, Chapter 9 *Explaining Heterogeneity among Effect Sizes: Moderator Analyses*

Thurs (Lecture 9; download slides from Blackboard and bring to class; read chapter below in advance)

- Card, Chapter 10 *Fixed-, Random-, and Mixed Effects Models*
- Look over *Comprehensive Meta Analysis (CMA)* Manual

Homework Assignment #7 (continued) (due Thurs Oct 27): Complete study coding.

Module 9: Tues Oct 25 and Thurs Oct 27: Computational Techniques for Meta-Analysis Data

Readings

Tues individual meetings as needed

Thurs (discussion; read articles below in advance)

- **SKIM** Card, Chapter 12 *Multivariate Meta-Analytic Methods*
- Juni, P., Witschi, A., Bloch, R., Egger, M. (1999). The hazards of scoring the quality of clinical trials in meta-analysis. *JAMA, 282*, 1054-1060.

- Balk, E. M., Bonis, P. A. L., Moskovwitz, H., Schmit, C. H., Ionnidis, J. P. A., Wang, C., & Lau, J. (2002). Correlation of quality measures with estimates of treatment effect in meta-analyses of randomized controlled trials. *JAMA, 287*, 2973-2982.

Homework Assignment #8 (due Thurs Nov 3): Complete CMA data file with effect sizes and coded moderators.

Module 10: Tues Nov 1 and Thurs Nov 3: Interpreting and Using Meta-Analysis Results

Readings

Tues (Lecture 10; download slides from Blackboard and bring to class; read chapter below in advance)

- Card, Chapter 13 *Writing Meta-Analytic Results*

Thurs (discussion; read articles below in advance)

- Bailar, J. C., III (1995). The practice of meta-analysis. *Journal of Clinical Epidemiology, 48*, 149-157.

- Chan, A-. Z., Hróbjartsson, A., Haahr, M. T., Gøzsche, P. C., & Altman, D. G. (2004). Empirical evidence for selective reporting of outcomes in randomized trials: Comparison of protocols to published articles. JAMA, 291, 2457-2465.

Homework assignment #9 (due Thurs Nov 10): **Special topic**.

Module 11: Tues Nov 8 and Thurs Nov 10: Improving the Quality of Meta-analysis and Beyond Meta-Analysis, Alternative Techniques (**No presentation slides to download**)

Readings

Tues (discussion; read articles below in advance)

- Card, Chapter 11 *Publication Bias*
- De Angelis, C. D., Drazen, J. M., Frizelle, F. A., et al., (2005). Is this clinical trial fully registered?—A statement from the International Committee of Medical Journal Editors. *New England Journal of Medicine, 352*, 2436-2438.

- Turner, E. H., Matthews, A. M., Linardatos, E., Tell, R. A., & Rosenthal, R. (2008). Selective publication of antidepressant trials and its influence on apparent efficacy. *New England Journal of Medicine, 358*, 252-260.

- Saito, H., & Gill, C. J. (2014). How frequently do the results from completed US clinical trials enter the public domain? – A statistical analysis of the ClinicalTrials.gov database. *PLoS ONE, 9*.

- Jørgensen, A. W., Maric, K. L., Tendal, B. K., Faurschou, A., & Gøtzsche, P. C. (2008). Industry-supported meta-analyses compared with meta-analyses with non-profit or no support: Differences in methodological quality and conclusions. BMC Research Methodology, 8, 60.

Thurs (discussion; read articles below in advance)

- PRISMA Statement: Transparent reporting of Systematic Reviews and Meta-Analyses.

- APA Publications and Communications Board Working Group on Journal Article Reporting Standards. (2008). (Reporting Standards for Psychology: Why Do We Need Them? What Might They Be? American Psychologist, 63, 839-851.

- Shea, B. Boers, M., Grimshaw, J. M., Hamel, C., Bouter, L. M. (2006). Does updating improve the methodological and reporting quality of systematic reviews? *BMC Medical Research Methodology, 6,* 27*.*

- Dechartres, A., Altman, D. G., Trinquart, L., Boutron, I. Ravaud, P. (2014). Association between analytic strategy and estimates of treatment outcomes in meta-analyses. *JAMA, 312,* 623-630.

- Berlin, J. A., & Golub, R. M. Meta-analysis as evidence building a better pyramid. *JAMA, 312,* 603-605.

Homework Assignment #10 (due Thurs Nov 17): Run analyses.

Module 12: Tues Nov 15 and Thurs Nov 17: Controversies and Conundrums in Meta-Analysis and Research Synthesis

Readings

Tues (Lecture 11 and discussion; download slides from Blackboard and bring to class; read articles below in advance)

- LeLorier, J., Gregoire, G., Benhaddad, A., Lapierre, J., Derderian, F. (1997). Discrepancies between meta-analyses and subsequent large, randomized, controlled trials. *New England Journal of Medicine, 337,* 536-542.

- Petticrew, M. (2005). Why certain systematic reviews reach uncertain conclusions. *BMJ, 326*, 756-758.

- Lehrer, J. (2010, December 13). The truth wears off: Is there something wrong with the scientific method? *The New York Times*

Thurs (Lecture 12 and discussion; download slides from Blackboard and bring to class; read articles below in advance)

- Gregoire, G., Derderian, F., & Le Lorier, J. (1995). Selecting the language of the publications included in a meta-analysis: Is there a Tower of Babel bias? *Journal of Clinical Epidemiology, 48*, 159-163.

- Jüni, P. Holenstein, F., Sterne, J., Bartlett, C., & Egger, M. (2002). Direction and impact of language bias in meta-analysis of controlled trials: Empirical study. *International Journal of Epidemiology, 31*, 115-123.

- Lilienfield, S. O. (2002). When worlds collide: Social science, politics, and the Rind et al. (1998) child sexual abuse meta-analysis. *American Psychologist, 57*, 176-188.

Homework Assignment #11 (not due until Tues Nov 29): Work on term paper.

Module 13: Tues Nov 22, Who Wants to Be a ~~Millionaire~~ Systematic Reviewer?

Tues (Game; slides will be made available after class, no slides to download in advance)

Homework Assignment #11 (continued) (due Tues Nov 29): Continue to work on term paper.

*********Thurs Nov 24 No Classes Thanksgiving Holiday!********

Module 14: Tues Nov 29 FIRST PROJECT PAPERS DUE and Thurs Dec 1:

Student presentations.

Module 15: Tues Dec 6 and Thurs Dec 8:

Student presentations.

Present on Nov 29, paper due Dec 8
Present on Dec 1, paper due Dec 6
Present of Dec 6, paper due Nov 24
Present on Dec 8, paper due Nov 29

Homework Assignment #1:

Getting Familiar with Comprehensive Meta-Analysis Software

Due: Thurs Sept 1 (but not to be handed in)

Your first assignment doesn't involve handing anything in! Please familiarize yourself with the location of the Comprehensive Meta-Analysis Software (CMA v. 2) located in the graduate student computer cluster. It is installed on the two rear (window) row, center of the room computers. Open the program and explore it a bit. Download the pdf's of (1) the CMA Tutorial and (2) the CMA Manual from Blackboard. Skim them and save them to refer to later in the course.

Homework Assignment #2:

Compare a Narrative and Meta-Analytic Review on the Same Topic

Due: Thurs Sept 15 (we'll discuss in class)

Locate two articles on the same topic, one a narrative review and one a meta-analytic review. Compare them in terms of (a) the importance and appropriateness of their focus and scope, (b) how effectively each is able to answer the questions they set out to examine, and (c) what you view to be their relative strengths and weaknesses. (Approximate length 3-5 double-spaced pages.)

Homework Assignment #3:

Formulate Questions for Your Meta-Analytic Review

Due: Thurs Sept 22 (we'll discuss in class)

Define a topic on which you would like to conduct your meta-analytic review.

(1) Identify the question(s) you would like to address with your meta-analysis.
(2) Provide a brief rationale for examining these questions.
(3) Identify study-level moderators that you suspect would be important to examine.
(4) Develop a preliminary list of study inclusion and exclusion criteria.

Assignment #4:

Develop and Execute Literature Retrieval Strategy

Due: Thurs Sept 29 (we'll discuss in class)

Plan, execute, and document a literature retrieval strategy for your meta-analytic review. Identify potential keywords, suitable electronic literature databases, and other strategies (i.e., manual journal search, querying experts in the field) that you will use. Embark on this search, retrieve articles and review them for eligibility. Make note of the number of potentially eligible articles at each stage, and the number of articles excluded at each stage. Create a preliminary reference list of the articles to be included in your review.

Please hand in a preliminary Methods section describing your search strategy, documenting your search process. Submit also your resulting preliminary list of references for the eligible articles.

Homework Assignment #5:

Computing Effect Sizes

Due: Thurs Oct 6

Abstract relevant information from your articles and compute effect sizes for your meta-analysis. You may use the effect size form provided or you may adapt the form to suit your specific analysis (an electronic version is available on Blackboard). Compute effect sizes for all the studies you intend to include in your meta-analysis using Comprehensive Meta-Analysis (or ES Calculator, but I'd recommend getting familiar with CMA sooner rather than later). Refer to the CMA Tutorial and Manual pdf's as necessary. Hand in 3 examples of effect sizes you calculated, including copies of the specific manuscript pages indicating where the raw data are presented and a copy of the completed effect form (or, alternatively, email me the CMA file).

Bring any difficulties you encounter with you to class for discussion.

Homework Assignment #6:

Develop a Coding Scheme

Due: Thurs Oct 13 (we'll discuss in class)

Develop a coding scheme for the particular variables that you wish to code for your meta-analysis. You may want to keep the coding *form* (used for recording) and the coding *manual* (where coding instructions are outlined) separate or together. This will represent your first pass at this task, made at the outset of your coding. When you begin coding, you will probably encounter additional

variables, finer distinctions, or additional instructions that you will want to add, but be as complete as you can at this stage.

Homework Assignment #7:

Code Study Characteristics and Modify Coding Scheme as Necessary

NOT DUE UNTIL: Thurs Oct 22 (we'll discuss in class)

Code study characteristics for each article in your meta-analysis, modifying your coding scheme as necessary. Hand in three of your completed coding forms and explain any adaptations made to the coding scheme.

Homework Assignment #8:

Create a CMA file

Due: Thurs Nov 3 (we'll discuss briefly in class)

Complete your CMA file with study identifiers, effect sizes, and coded moderators (the 3-5 you plan to use in your analyses will suffice). If you cannot print the file, since there is no printer in the computer cluster, you can email me a copy of your file prior to class.

Homework Assignment #9:

Take a Homework Vacation!

Due: Thurs Nov 17

Take the time that you would normally devote to Meta-Analysis homework to deliberately do something enjoyable. Be prepared to tell the class what you did!

Homework Assignment #10:

Run Analyses

Due: Tues Apr 21

Run aggregate and moderator analyses, refer to CMA Tutorial and Manual pdf's as necessary.

Term Papers and Presentations

Due: Tues Nov 29-Thurs Dec 8

Present on Nov 29, paper due Dec 8
Present on Dec 1, paper due Dec 6
Present of Dec 6, paper due Nov 24
Present on Dec 8, paper due Nov 29

As outlined in the syllabus, your meta-analytic review project is to be written up in APA format as if it were a formal paper being submitted for publication. This is meant to be an exercise in outlining your rationale for conducting the meta-analysis, describing the meta-analytic methods used, presenting meta-analytic results, and making reasonable interpretations of your findings. If you didn't locate a large number of studies that you were able to work with, that is less important than successfully bringing all the pieces of the manuscript together in a careful and coherent fashion. Given that this is a course in methodology, special emphasis will be put on the clear and thorough presentation of the methods.

Your presentation, on the other hand, can be content-based, process-based, or a bit of both. My goal is for all of us to benefit from the experiences and insight of each of you as you went through the process of conducting your meta-analysis. It has been very interesting to me to note the differences in topic areas and questions and the types of strategies needed. You're free to use my lap to to deliver a PowerPoint presentation if you wish, but this is not necessary. Each person will have 15-20 minutes for their presentation with 5-10 minutes set aside for questions and discussion.