I. COURSE DOMAIN AND BOUNDARIES

This course addresses substantive and methodological issues in conducting and evaluating intervention research with social work and public health populations. Emphasis is on evaluating evidence-based interventions and methodological rigor in a specific area of practice, as well as statistical methods relating to intervention evaluation (statistical power, attrition analyses, research designs, and types of outcomes). Critical review of intervention methods, and ethical issues inherent in conducting intervention research, are also be examined.

II. COURSE OBJECTIVES

1. To be able to critique the methodological strengths and weaknesses of intervention research in one area of specialization.

2. To be knowledgeable of the most effective interventions for a specific problem or population based on a comprehensive critique and review of the most current research.

3. To understand the methodology involved in process and outcome evaluation for intervention research.

4. To understand the statistical analytic techniques for evaluating interventions and power analysis.
5. To understand the role of mediators and moderators in intervention research.

6. To identify, understand the application of, and evaluate intervention theory and frameworks utilized in intervention studies.

7. To identify ethical issues, particularly those related to human subjects, encountered in intervention research, and to understand and analyze the relation of social work values and ethics in the research process.

8. To understand the different models of community-academia collaboration and partnerships involved in initiating and conducting intervention research.

III. EDUCATIONAL OUTCOMES

Upon completion of this course, students will be able to:

1. Describe and evaluate (through a presentation and paper) the intervention effectiveness in a specific area that includes comparison of outcome attainment, types of interventions, and methodology (e.g. research design, measurement, process and outcome evaluation, and statistical analyses).

2. Understand the statistical techniques used to evaluate interventions, including issues related to power analysis, and unit of analysis.

3. To articulate research questions for an abstract that summarizes the results of a critical review of the current literature of intervention effectiveness with a specific population and area of practice.

READINGS: The required readings are displayed by each week of the syllabus. They will be posted on Blackboard, or in some cases, a copy will be provided for you in class.

Required Texts


Excellent Reference Books:

Ellis, P. D. (2010). The essential guide to effect sizes: Statistical power, meta-analysis, and the interpretation of research results. UK: Cambridge University Press. RESERVE


**Other Relevant Texts:**


V. ORGANIZATION OF THE COURSE

Each class session will involve 2 parts: 1) faculty or TA-led discussion of a specific issue related to evaluating the current evidence and/or conducting intervention research, and 2) student-led discussion using examples of interventions from their area of interest.
The course will involve one major project (which will include a class presentation, and final paper), and five short assignments throughout the semester that will build upon each other towards the final paper. Details pertaining to the assignments can be found in the syllabus.

VI. ROLE OF INSTRUCTOR AND STUDENTS

Course Expectations: The instructor will: lead class discussion and deliver course material for the first half of the class; be available to students by appointment for consultation; and provide timely and clearly explained feedback on student performance. The Teaching Assistant will assist the instructor in presenting class lectures, providing feedback to students in individual meetings and in class, grading papers, and any other tasks needed to implement the course material. Students will: attend each class on time; complete all assignments in a timely manner; come to class prepared, having read all assignments; participate and lead class discussions; seek any necessary clarification regarding course expectations from the instructor; and provide the instructor with feedback about the effectiveness of the course. Any problems with attendance, meeting deadlines, or completing assignments should be discussed promptly with the instructor.

VII. ASSIGNMENTS AND GRADING CRITERIA

The following is a description of the assignments for this course. Although these assignments will be discussed in detail throughout the course, it is important to take note of the specified grading criteria when completing assignments/papers.

1. Participation and Attendance (10%): This class will involve high participation from all students and will be conducted as a seminar. Students are expected to complete all assignments in a timely manner, come to class prepared (having completed required readings and assignments), participate in class discussions, and seek any necessary clarification regarding course expectations from the instructor. Active participation and full preparation by each student for each class is expected. Please let the instructor and TA know before class via e-mail if you cannot attend class.

2. Evaluation of Empirical Evidence of Intervention Studies: Final Paper 40%, Presentation 10%

The purpose of this paper and presentation is to evaluate the psychosocial and/or behavioral interventions in a specific area (for a specific problem and target population) that is relevant to social work. Rather than simply summarizing the effectiveness of the interventions, we will evaluate the evidence in light of the methodological rigor of each study. Because there is often no “gold standard” by which to evaluate the effectiveness of psychosocial and behavioral interventions in a specific area, outcomes (and their measurement) may need to be grouped or categorized in order to make comparisons of intervention effectiveness across studies. You will need a minimum of 15-20 intervention studies for this project to make adequate comparisons.

Final Paper: The final paper (see guidelines) will be a review of the intervention studies in the student’s specialty area. It will include a description of the systematic search strategy, a table summarizing the methodological strengths and weaknesses of each study, identification and categorization of outcomes, and ratings of outcome attainment. Discussion of the most effective interventions will take into account the methodological rigor of each study. The final paper will be due on Monday, December 9 by 12 noon.
**Final Presentation:** All students will deliver a PowerPoint presentation (see guidelines in syllabus) that evaluates the empirical evidence for the effectiveness of intervention studies in their area of specialty. This presentation should take approximately 30 minutes, which includes responding to questions and discussion. Handouts of the PowerPoint presentation should be provided to the class. **Presentations are scheduled for December 5.**

3. **Five Short Assignments (40% of grade):** There will be five short assignments (8% each) that will constitute parts of the final paper and project. **Each student is expected to contribute to the class discussion based on their own assignment.**

**Short Assignment # 1: Statement and Significance of the Problem and Target Population**
(Maximum of 3 pages not including references and title page)
Briefly describe the problem you have selected for focus. The discussion should identify the conceptual issues related to the problem and the target population. Provide statistics or data and references that document the significance and scope of the problem. (Why is this problem important to study?) Identifying the scope of your problem and target population is vital to identifying the intervention studies for your review. **Due on September 5 uploaded before class.**

**Short Assignment # 2: Systematic Search of Intervention Studies and Inclusion and Exclusion Criteria**
(maximum 3 pages not including references and title page)
Collect a minimum of 15-20 intervention studies in your area of interest. Identify inclusion and exclusion criteria and describe search process in systematic way (see Hampson et al., 2000). These studies will become your subjects and data for your major project and presentation. Turn in a brief description of the search process with a **PRISMA SCHEMATIC (1 page)** as shown in the Hampson article or other published systematic review, and a reference list of your studies. Be prepared to present and discuss results of your literature search in class. **Due on September 19 uploaded before class.**

**Short Assignment # 3: Identifying & Categorizing Interventions and Outcomes**
Identify 1) the types of interventions and outcomes that were utilized in each of your studies; and 2) theoretical frameworks underlying these interventions. Create a summary table and provide details about type of intervention (theory, duration, intensity) and outcomes (variable name, how they were measured, including instruments used; and reliability and validity of each measure or instrument). 3) Describe in 1-2 pages a strategy to categorize and compare interventions and outcomes; describe how many studies (i.e. which interventions) target each outcome. **Due on October 3 uploaded before class.**

**Short Assignment # 4: Determining Methodological Quality**
This assignment consists of adapting the MQRS and using this scale to rate your studies. Rate the methodological rigor of **all of your intervention studies** in your chosen area using the adapted Methodological Quality Rating Scale (MQRS). You can adapt this scale based on the nature and level of sophistication of your studies. Place the scores for each study in your table. Summarize the results of your analysis and draw some conclusions. **Due on October 24 uploaded before class.**
Short Assignment # 5: Outcome Attainment

1) Using the outcome attainment index (see p. 16 for examples) rate each outcome through examination of the results of the analyses (significant or not significant at p<.05 level), combined with the study’s methodological rigor.

2) Describe a strategy to compare your intervention studies for each outcome or category of outcomes. For example, compare the effectiveness of two different types of interventions (by theoretical orientation), reach (individual, individual and partner/children, individual and peers) or intensity of the interventions (but with several outcomes in common). Due on November 21 uploaded before class.

Policy on Late Assignments: All assignments will receive a ½ lower grade for late submissions. Please see the instructor if there is extenuating circumstances. For such circumstances, new due dates may be negotiated. With the exception of extreme extenuating circumstances, no Incompletes will be granted.

VIII. COURSE OUTLINE

Class 1: August 29

COURSE OVERVIEW, INTRODUCTIONS AND EXPECTATIONS
SPECIFY THE PROBLEM, POPULATION, AND SAMPLE

What do we know about interventions with the target problem and population? What don’t we know? How can we make a contribution to the knowledge in our area? How will this class add to my methodological, empirical, and theoretical knowledge in my area?

Readings:


Class 2: September 5

IDENTIFYING THE EVIDENCE; SYSTEMATIC LITERATURE SEARCH FOR EMPirical STUDIES
DEFINING THE SCOPE (INCLUSION AND EXCLUSION CRITERIA)
PRISMA DIAGRAMS AND GUIDELINES
Conducting literature searches and defining the scope using inclusion and exclusion criteria

Readings:


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**DUE TODAY:** Short Assignment # 1
Statement and Significance of the Problem and Target Population (Maximum 3 pages excluding title page and references)

Briefly describe the problem you have selected for focus. The discussion should identify the conceptual issues related to the problem and the target population. Provide statistics or data and references that document the significance and scope of the problem. (Why is this problem important to study?). Identifying the scope of the problem and target population is vital to identifying intervention studies. Be prepared to briefly present problem area and target population in your chosen area of intervention research in class.

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**Class 3: September 12**

**THE ROLE OF THEORY: IDENTIFYING INTERVENTION THEORIES AND MODELS OF CHANGE; IMPORTANCE OF MEDIATORS**

Students should review their intervention types and identify the theoretical frameworks that underlie the interventions among your studies.

**First Hour:** Student presentations regarding progress on their literature searches.

**Readings:**


**Class 4: September 19**

**DESCRIBING AND CATEGORIZING INTERVENTIONS (SCOPE, TARGETS, INTENSITY, AND DURATION) AND OUTCOMES (MEASUREMENT)**

Readings with conceptual categories of outcomes:


**DUE TODAY: Short Assignment # 2**

**Systematic Literature Search Results: Identifying Intervention Studies, Scope, and Inclusion/Exclusion criteria.**

Collect a minimum of 15-20 intervention studies in your area of interest. Identify inclusion and exclusion criteria and describe the search process in a systematic way (see Hampson et al.,2000). These studies will become your subjects and data for your major project and presentation. Turn in a brief description of the search process and a 1 page PRISMA SCHEMATIC as shown in the Hampson article or other published systematic reviews, as well as a reference list of your studies. Be prepared to present an update of your literature search in class.
Class 5: September 26

IDENTIFY STRATEGIES TO COMPARE INTERVENTION TYPES OR CHARACTERISTICS BY OUTCOME; IDENTIFY RESEARCH QUESTIONS

Students will bring in a table and describe 5 intervention types and 5 outcomes that are common across their studies for discussion in class.

Class discussion of comparisons across intervention types, outcomes, and research questions.

Class 6: October 3

INTERVENTION DESIGN AND ANALYSIS

Guest speaker: Ken Jung, MA, Statistical Consultant

Discussion and examples of basic intervention design (test/control, pre, post, follow-up)
Basics of analysis of intervention designs (repeated measures vs. between groups, interactions vs. main effects, etc.)
Missing data types (NMAR, MAR, MCAR)
Historical review of analysis methods (ANCOVA, Multivariate Regression, GLM using only non-missing data)
Current state-of-the-art analysis method (mixed model design). Example using SAS PROC MIXED

Students: You may identify a study from your review to bring to class if you have questions regarding data analysis.

Reference Readings:


DUE TODAY: Short Assignment # 3
Categorizing Interventions and Outcomes
Identify 1) the types of interventions and outcomes that were utilized in each of your studies; and 2) the theoretical frameworks underlying these interventions. Create a summary table and provide details about type of intervention (theory, duration, intensity) and outcomes (how they were measured, including instruments used; and reliability and validity of each measure or instrument). Include in the table whether the outcomes were significantly improved or not, 3) Describe in 1-2 pages a possible strategy to categorize and compare interventions and outcomes, and describe how many studies (i.e. which interventions) target each outcome.
Class 7: October 10

ASSESSING STUDY QUALITY ASSESSMENT: THE METHODOLOGICAL QUALITY RATING SCALE


Students discuss ways to adapt the MQRS to their intervention area.

Class 8: October 17

Part I: RELATIONSHIPS AMONG SAMPLE SIZE, EFFECT SIZE, & STATISTICAL POWER

Part 2: MODERATORS AND MEDIATORS

Guest Speaker: Ken Jung, MA, Statistician

Suggested Reference Books


Example meta-analysis from a previous class:

Class 9: October 24

Students present and discuss their findings from the MQRS analysis. Bring copies of your table for the members of the class.

1) What is the methodological rigor of your intervention studies? What are the methodological strengths and areas to improve in future research?
2) Are there differences in rigor according to types of interventions/theories?

DUE TODAY: Short Assignment # 4
Determining Methodological Quality
Rate the methodological rigor of all of your intervention studies in your chosen area using your adapted Methodological Quality Rating Scale (MQRS). You can adapt this scale based on the nature and level of sophistication of your studies. Place the scores for each study in your table. Summarize the results of your analysis and draw some conclusions across studies (What is the methodological rigor of the intervention studies? What are the strengths and what are the areas to improve for future research?) (2 pages plus table).

Class 10: October 31

COMBINING RATINGS OF STUDY QUALITY AND OUTCOME ATTAINMENT; DESCRIPTIVE AND COMPARATIVE RESEARCH QUESTIONS FOR SYSTEMATIC REVIEW

OUTCOME ATTAINMENT; COMPARE INTERVENTION EFFECTIVENESS BY OUTCOMES; DEVELOPING RESEARCH QUESTIONS

Small group and class discussion of student results from their outcome analysis.

1) What comprises your outcome attainment scale? What are some of the challenges with the scale? What modifications may be needed, if any?
2) How will you compare your outcomes across studies? What are your research questions that you will answer with the comparisons?

Class 11: November 7

Scheduled individual and group consults during class regarding Outcome Attainment findings.
Class 12: November 14
Part 1. TREATMENT FIDELITY, STRATEGIES TO REDUCE ATTRITION AND INCREASE RETENTION; THE CONSORT FLOW DIAGRAM


Readings:


Other Recommended Readings:


Resnick, B., et al. (2005). Examples of implementation and evaluation of treatment fidelity in the BCC studies: Where we are and where we need to go. Annals of Behavioral Medicine, 29(Supplement), 46-54.

Class 13: November 21

Class discussion and/or individual meetings about outcome attainment index and categorizing types of interventions for final project.

**DUE TODAY: Short Assignment # 5**

**Significance of Outcomes and Outcome Attainment**

1) Rate each outcome by study the results of the analyses (significant or not significant). Using the **outcome attainment index** (see p. 16 for examples) also rate each outcome on the index by also considering the study’s methodological rigor. Display the findings in a table format by study across your key outcomes.

2) Describe a strategy to compare your intervention studies for each outcome or category of outcomes. For example, compare the effectiveness of two different types of interventions (by theoretical orientation), reach (individual, individual and partner/children, individual and peers) or intensity of the interventions (but with several outcomes in common).

November 28

No Class for Thanksgiving

Class 14: December 5

STUDENT PRESENTATIONS, FEEDBACK, AND PEER REVIEWS

FINAL PAPERS DUE on Monday, December 9 by 12 noon.
Appendix: Additional Details about Assignments

Comparing Outcome Attainment Across Studies

Which interventions are the most effective for your identified problem and target population? Or more specifically, what is the level of support across interventions for each outcome, taking into account the methodological rigor of the study?

1) Rate the methodological rigor of each study based on your adaptation of the Methodological Quality Rating Scale.

2) Graph the findings of your analysis: level of support by intervention for each outcome using the following categorical rating scale used by Rhee and Auslander (2002), or one designed for your area of interest.

Example of Outcome Attainment Index

1=not significant, higher methodological rigor, based on MQRS (points need to be specified, e.g. median split >7)

2=not significant, lower methodological rigor (≤7)

3=significant, lower methodological rigor (≤7)

4=significant, higher methodological rigor (> 7)

The logic behind this rating system is that with good methodology, one has a true test of the intervention. Under these circumstances, there is less chance of a false conclusion.

If however, the methodology is less rigorous, we cannot with confidence state that the intervention has been truly tested. Thus, the study does not represent strong evidence for the effectiveness or ineffectiveness of the intervention, and further study is warranted. (Note: we are not rating the quality of the study, but the strength of the evidence, based on the significance level combined with MQRS ratings).

Another example:

1=not significant, good and lower methodological rigor (e.g., no randomization or no comparison group) based on MQRS

2=significant, lower methodological rigor (≤7)

3=significant, higher methodological rigor (> 7)

Students may develop their own Methodological Quality Rating Scale and Outcome Attainment Index that considers both the significant findings and methodological rigor.
**Guidelines for the Final Presentation (30 minute presentation)**

The purpose of this 30 minute presentation (not including questions and discussion) is to present a critical evaluation of the effectiveness of psychosocial and/or behavioral interventions for a specific problem or target population in the student’s area of interest. It is important to add to the knowledge base in your area, and to produce a publishable abstract for a conference presentation or a manuscript for publication.

The **power point presentation** should include the following:

1) Describe statement and significance of the problem and target population.

2) Describe inclusion/exclusion criteria and replicable search procedures.

3) Describe results of literature and database search (you may want to include a table of study by intervention type and outcomes).

4) Describe interventions to compare; identify and compare theoretical frameworks underlying interventions; categorize interventions and describe each category and the types of intervention that fall in each category.

5) Describe outcomes across studies and strategy to categorize outcomes; specify how many studies (i.e., which interventions) target each outcome.

6) Rate the methodological rigor of at least two intervention studies in your chosen area using the Methodological Quality Rating Scale (MQRS) distributed in class. You can adapt this scale based on the nature and level of sophistication of your studies. Choose two studies that use different types of interventions but have several outcomes in common.

7) Using the outcome attainment index, rate each outcome through examination of the results of the analyses (significant or not significant at p<.05 level), combined with the study’s methodological rigor. Compare the effectiveness of the two interventions by outcome using a table or graph.

8) Describe which interventions work best for which outcomes with and without taking into account methodological rigor.

9) Graph the findings of your analysis: level of support by intervention for each outcome. Below is an example of a Rating Scale:

   1=not significant, good design-based on MQRS (pts need to be specified (e.g. median split >7)
   2=not significant, methodological problems (≤7)
   3=significant, methodological problems (≤7)
   4=significant, good design (> 7)

10) Draw conclusions based on findings.
11) Discuss limitations of your analysis
12) Suggest future research in this area.
Guidelines for the Final Paper

Suggested Outline (maximum 15 pages, not including tables, appendices, references)

INTRODUCTION

- Statement and significance of the problem and target population
- Describe the purpose of this paper
- State the specific research questions that will be addressed (i.e., related to your descriptive findings and comparisons)

METHODS

Identifying inclusion criteria for studies to be included in the review

- Literature search. Describe criteria for choosing studies and search procedures.
- Describe how this review fills a gap in the literature. What other reviews are there? Etc.
- Results of literature and database search: What did you find?

Describe the methodological rating systems that you will use based or adapted from the Methodological Quality Rating Scale (MQRS) distributed in class

- Describe the rationale for your changes or adaptation to the rating scale.
- Describe the outcome attainment index that you will use to determine treatment or intervention effectiveness taking into account the methodological rigor of each study.

RESULTS

Descriptive Results

Describe interventions to compare by study:

- Identify and compare theoretical frameworks underlying interventions, if any comparisons exist.
- What are the most common interventions in the literature? Categorize interventions and describe each category and the types of intervention that fall in each category. Provide a rationale for this.

Identify outcomes across studies:

- What are the most common outcomes in the literature to evaluate interventions?
- Are there any gold standards?
- Describe strategy to categorize outcomes, and describe how many studies (i.e., which interventions) target each outcome.
- Table of study by intervention type and outcomes may be useful (name of variable and how it is measured)

Evaluation of intervention outcomes
Describe which interventions work best for which outcomes taking into account methodological rigor:

- Describe the results of the analyses. Which outcomes significantly improved?
- Summarize or graph the findings of your analysis: level of support by intervention for each outcome.

**Example Rating Scale**

1 = not significant, rigorous design-based on MQRS (e.g. > median split)
2 = not significant, methodological problems (< median split)
3 = significant, and methodological problems (< median split)
4 = significant, and rigorous design (> median split)

**CONCLUSIONS**

- Draw conclusions on findings according to your research questions.
- Discuss limitations of your methods and analysis.
- Suggest future directions for intervention research in this area or population.