

Research Analysis and Synthesis Sample Syllabus

Course Description

This course provides students with an in-depth exploration of research synthesis methods, including systematic reviews and meta-analyses, with a focus on applications in early childhood intervention and education. Students will learn to differentiate between narrative reviews and meta-analytic approaches, conduct systematic literature searches using academic databases, and develop standardized coding frameworks for data extraction.

Course Learning Objectives

As a result of active participation and successful completion of course requirements, students will be able to:

1. Differentiate between narrative literature reviews and methodologically rigorous meta-analyses, including key definitions and distinctions.
2. Conduct systematic literature searches using academic databases and web-based tools.
3. Develop efficient coding frameworks to support standardized data collection (sample details, outcomes, measures, designs).
4. Understand and utilize methodological appraisal tools to evaluate research rigor and bias.
5. Identify how to compute effect sizes for group differences, correlations across studies, and appropriate meta-analytic models (e.g., fixed-effects).

Required Texts

Cooper, H. (2017). *Research synthesis and meta-analysis*. SAGE Publications, Inc, <https://doi.org/10.4135/9781071878644>

Readings:

- Batz, R., & Yadav, A. (2023). Parents' Experiences Navigating Early Intervention and Early Childhood Special Education Services: A Qualitative Metasynthesis. *Journal of Early Intervention, 46*(1), 19-38. <https://doi.org/10.1177/10538151231164902> (Original work published 2024)
- Brunsek, A., Perlman, M., McMullen, E., Falenchuk, O., Fletcher, B., Nocita, G., ... & Shah, P. S. (2020). A meta-analysis and systematic review of the associations between professional development of early childhood educators and children's outcomes. *Early Childhood Research Quarterly, 53*, 217-248.
- Gaspar, Catherine R. PhD; Jahromi, Laudan B. PhD. Parent Perspectives of Early Childhood Special Education Transition: A Systematic Review. *Infants & Young Children 37*(3):p 193-215, July/September 2024. | DOI: 10.1097/IYC.0000000000000268
- Luo, L., Reichow, B., Snyder, P., Harrington, J., & Polignano, J. (2022). Systematic review and meta-analysis of classroom-wide social-emotional interventions for preschool children. *Topics in Early Childhood Special Education, 42*(1), 4-19.
- Shepley, C., Grisham-Brown, J., & Lane, J. D. (2020). Multitiered Systems of Support in Preschool Settings: A Review and Meta-Analysis of Single-Case Research. *Topics in Early*

Childhood Special Education, 41(4), 307-320.
<https://doi.org/10.1177/0271121419899720> (Original work published 2022)

Accommodations

Section 504 of the Rehabilitation Act of 1973 and the American with Disabilities Act of 1990 require the institution to provide academic adjustments or accommodations for students with documented disabilities. Students seeking academic adjustments or accommodations must self-identify with the Coordinator of Services for Students with Disabilities on the appropriate campus.

Attendance

Since many of the classes involve activities, videotapes, discussion, etc., regular attendance is vital to gain maximum benefit. Because this is an 8 week course, each class member needs to make every effort to be in attendance at each class. Anyone who misses more than one class will lose 5 points for each class missed after the first absence. Significant tardiness or early departure beyond 15 minutes will count as an absence. If you know ahead of time you will not be in class, please contact the instructor the day before the class.

Communicating with the Instructor

All correspondences from the instructor to the students by way of announcements, updates, assignments, and so forth, will be communicated via school email or online learning management system if not verbally in class. It is the student’s responsibility to ensure their university e-mail is corrected, provided, and valid. Failure to do so may result in missing important information that could negatively impact your grade. Please be mindful of professionalism.

Course Outline

The following schedule is subject to change. For any course syllabuses posted prior to the beginning of the semester, the course instructor reserves the right to make changes prior to or during the semester. The course instructor will notify students, via e-mail or verbal announcements when changes are made in the requirements and/or grading of this course. ***The course instructor reserves the right to revise the schedule/assignments if needed.***

Week	Topics	Reading	Activities
1	Research Analysis and Synthesis – Early Childhood Intervention	Cooper (2017) Ch 1; PRISMA	Discussion Prompt: The PRISMA Statement provides guidelines for transparent and systematic reporting of systematic reviews and meta-analyses. Why do you think standardized reporting is critical in evidence-based research? How might the



			<p>PRISMA checklist improve the reliability and reproducibility of systematic reviews? Additionally, what challenges do researchers face when implementing PRISMA guidelines, and how could these be addressed in practice?</p>
2	What is the problem?	Cooper (2017) Ch 2 Gaspar & Jahromi (2024)	<p>Discussion Prompt: In their systematic review, Gaspar and Jahromi (2024) examine parent perspectives on early childhood special education transitions. How effectively does the introduction justify the need for this review? Consider the authors' use of statistics, prior research gaps, and the significance of parent perspectives in shaping transition practices. Why is establishing a strong rationale critical for systematic reviews, and how might a weak justification affect the interpretation and impact of the findings?</p>
3	Literature Search	Cooper (2017) Ch 3; Cochrane Website	<p>In-Class Activity: PRISMA Flow Diagram. Give a list of 50 study titles with abstracts (some duplicates, some irrelevant). Include details like:</p>



			<ul style="list-style-type: none"> • Number of records identified through database searching • Additional records identified through other sources • Number after duplicates removed • Number excluded after screening • Number included in qualitative and quantitative synthesis
4	Data Collection	Cooper (2017) Ch 4 Shepley et al. (2020)	<p>Building Your Own Flowchart</p> <p>Discussion Prompt: Shepley et al. (2020) conducted a review and meta-analysis of single-case research on multitiered systems of support in preschool settings. Single-case designs often involve detailed data collection procedures to capture individual responses over time. What are the key considerations for ensuring accuracy and consistency in data collection for single-case research? How might variability in measurement tools, observer training, or data recording impact the validity of findings in a meta-analysis?</p>
5	Evaluating Study Quality	Cooper (2017) Ch 5	Discussion Prompt: Luo et



		Luo et al. (2022)	al. (2022) conducted a systematic review and meta-analysis of classroom-wide social-emotional interventions for preschool children. When evaluating the quality of studies included in a meta-analysis, what criteria should researchers prioritize (e.g., study design, fidelity of implementation, risk of bias)? How might variations in study quality influence the interpretation of the overall findings and their application in early childhood education settings?
6	Analysis and Integration	Cooper (2017) Ch 6 Brunsek et al. (2020)	From PRISMA Flowchart to Meta-Analysis Plan
7	Interpretation	Cooper (2017) Ch 7 Batz & Yadav (2023)	Discussion Prompt: Batz and Yadav (2023) conducted a qualitative metasynthesis exploring parents' experiences navigating early intervention (EI) and early childhood special education (ECSE) services. Their findings highlight themes such as systemic barriers, emotional challenges, and the importance of collaborative relationships between families and



			professionals. Reflect on the methodological approach: How does using a qualitative metasynthesis strengthen or limit the interpretation of these findings compared to individual qualitative studies?
8	Presentation of Findings	Cooper (2017) Ch 8	Presentation for Planned Publication

Major Assignments

1. Build Your Own PRISMA Flowchart

- a. State your problem. Write 2-3 research questions that can be clearly answered by conducting a systematic review or meta-analysis.
- b. Build your own PRISMA Flowchart
- c. Include details like:
 - i. Number of records identified through database searching
 - ii. Additional records identified through other sources
 - iii. Number after duplicates removed
 - iv. Number excluded after screening
 - v. Number included in qualitative and quantitative synthesis
- d. Apply PRISMA checklist to decide what information to report.
- e. Create a PRISMA flow diagram showing the selection process.
- f. Identify any missing reporting elements and discuss why they matter.
- g. Present to class for feedback.

2. From PRISMA Flowchart to Meta-Analysis Plan

- a. Students will apply the PRISMA guidelines to document the study selection process and develop a comprehensive analysis plan for a systematic review or meta-analysis based on selected studies.
- b. Based on your revised PRISMA flowchart create an analysis plan.
 - i. **Define Your Research Question(s):** State the primary and secondary questions guiding your synthesis.
 - ii. **Specify Inclusion Criteria:** Detail population, intervention, comparison, outcomes, and study design (PICOS framework).
 - iii. **Determine Effect Size Metrics:** Identify which effect size(s) you will calculate (e.g., Cohen's d, odds ratio) and justify your choice.
 - iv. **Plan for Heterogeneity Assessment:** Describe how you will assess variability among studies (e.g., Q statistic, I²).



- v. **Moderator/Moderator Analysis:** Identify potential moderators (e.g., age, setting, intervention type) and explain how you will test them.
- vi. **Publication Bias Assessment:** Outline methods (e.g., funnel plot, Egger’s test).
- vii. **Software and Tools:** Indicate which software (e.g., R, Comprehensive Meta-Analysis) you will use and why.

3. Presentation for Planned Publication

- a. Students will present their plan for submitting a systematic review or meta-analysis based on their PRISMA flowchart and analysis plan.
- b. Students will review recent (last 3-5) reviews published by target journals.
- c. Students will create a brief presentation that includes the following:
 - i. Statement of the problem and justification (outline for introduction)
 - ii. Research question(s)
 - iii. Revised PRISMA flowchart
 - iv. Revised analysis plan
 - v. Target journal and justification for why that journal plus anticipated timeline for submission

4. Discussion Group Participation

- a. To prepare for the discussion sessions, students will be required to complete the readings leading up to the discussion session. Students will be asked to respond to the discussion prompt by Friday evening and give substantive feedback to 2 (or more) classmates by Sunday evening. Submit the discussion questions by 5 pm the day before the discussion. Students receive x points for timely and in-depth discussion responses. Evidence of integrating reading and applying theory to practice is necessary to receive full points. Students will receive x point based on the quality of feedback given to peers.

Course Grading

Assignments are due by 11:59pm on the indicated date. Late assignments without previous written approval of the instructor will incur a 50% penalty for the first time and lose all points beyond. This instructor and learners are required to adhere to the University’s Academic Integrity policy. Any plagiarism will not be tolerated and referred to the Academic Integrity Office. And the learners will be given an “F” in the course and be recommended to the Student Conduct Office.

Learners will be evaluated based upon the assignments described below. The plus/minus grading system and scale is as follows:

Letter Grade	Grade Range
A	93 and above
A-	90-92
B+	88-89
B	83-87



Letter Grade	Grade Range
B-	80-82
C+	78-79
C	73-77
C-	70-72
D	60-69
F	59 and below

Course Grading Systems

Component	Weight for final grade
Bridging Research and Practice: Evaluating Inclusive Practices in Early Childhood Settings	30%
Classroom Consultation Plan	20%
Discussions	10% (including responding to other peer's posts)
Classroom Design	20%
Family Engagement & Advocacy Resource Binder	20%

Resources

Resources to supplement the Syllabus:

- [What Works Clearinghouse](#)
- <https://www.cochranelibrary.com/>
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Journals in EI/ECSE

Below are examples of journals that publish topics about EI/ECSE. Faculty may want to explain how to use articles to support practice and to examine current research. Clarify the difference between practitioner-based journals and research-based journals.

- *Child Development*
- *Journal of Early Intervention*
- *Journal of Pediatrics*
- *Journal of Intellectual & Developmental Disability*
- *Journal of Developmental and Physical Disabilities*
- *Journal of Pediatric Nursing*
- *International Journal of Early Childhood Special Education*
- *Pediatric Research*
- *Topics in Early Childhood Special Education*
- *Young Exceptional Children*



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