

**EDRS 823:
ADVANCED RESEARCH METHODS IN SINGLE SUBJECT & SINGLE CASE DESIGN
FALL 2004**

Instructor(s): Michael M. Behrmann, Ed.D.

Class Time: Thursday, 7:20pm

Place: A206 Robinson Hall

Office Hours: By Appointment

Course Description:

This course will provide student's with the knowledge to conduct research utilizing single subject design and single case study design with emphasis on causal inference. This advanced seminar will provide students with an understanding of the salient features as well as the advantages and disadvantages of these research methodologies. Students will participate in critiquing and analyzing published research utilizing these methodologies. Opportunities will be provided for students to apply these methodologies to research questions related to current student interests.

Prerequisite: EDRS 810,811,812 or equivalent. EDSE 620 or equivalent recommended.

Required Texts:

Kennedy, C. H. (in press). Single case designs for educational research. Boston: Allyn and Bacon.

Richard, S.B., Taylor, R., Ramasamy, R., & Richards, R. Y. (1999). Single subject research: Applications in educational and clinical settings. Belmont, CA: Wadsworth.

Todman, J., & Dugard, P. (2001). Single-case and small-n experimental designs: A practical guide to randomization tests. Lawrence Erlbaum Associates, New Jersey.

Yin, R. (1994). Case study research: Design and methods. 2nd ed. Thousand Oaks, CA: Sage.

Supplemental Texts:

Maxwell, J. (1996). Qualitative research design. Thousand Oaks, CA: Sage.

Ogden, T.E. (1991). Research Proposals: A Guide to Success. New York, NY: Raven Press

Cook, T.D. & Campbell, D.T. (1979). Quasi-Experimentation: Design & Analysis Issues for Field Settings. Boston, MA, Houghton Mifflin.

Ragin, C.C. (1992). What is a Case?. Cambridge, England. Cambridge University Press.

Miles, M.B. & Huberman A. M. (1996) Qualitative Data Analysis: An Expanded Sourcebook of New Methods. Thousand Oaks, CA: Sage.

Supplemental Reading:

EDRS 823 CD

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, 1, 91-97.

- Baer, D. M., Wolf, M. M., & Risley, T. R. (1987). Some still-current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, 20, 313-327.
- Barlow, D. H., & Hayes, S. C. (1979). Alternating treatments design: One strategy for comparing the effects of two treatments in a single subject. *Journal of Applied Behavior Analysis*, 12, 199-210.
- Goldenberg, C. (1992). *The limits of expectations: A case for case knowledge about teacher expectancy effects*. American Educational Research Journal, 29, 3, pp 517-544.
- Hersen, M., & Barlow, D. H. (1976). Single case experimental design: Strategies for studying behavior change. New York: Pergamon.
- Horner, Robert H., Carr, Edward G., Halle, James, McGee, Gail, Odom, Samuel, Wolery, Mark. **DRAFT PAPER** (3/26/04). The Use of Single Subject Research to Identify Evidence-based Practice in Special Education, Address correspondence to Robert H. Horner, Educational and Community Supports, 1235 University of Oregon, Eugene, OR 97403-1235. Ph: 541-346-2462. robh@uoregon.edu
- Barlow, D. H., & Hersen, M. (1985). *Single case experimental design: Strategies for studying behavior change* (2nd ed.) New York: Pergamon.
- Harris, F. C., & Lahey, B. B. (1978). A method for combining occurrence and non-occurrence interobserver agreement scores. *Journal of Applied Behavior Analysis*, 11, 523-527.
- Hartmann, D. P., & Hall, R. V. (1976). The changing criterion design. *Journal of Applied Behavior Analysis*, 9, 527-532.
- Horner, R. D., & Baer, D. M. (1978). Multiple-probe technique: A variation on the multiple baseline. *Journal of Applied Behavior Analysis*, 11, 189-196.
- Iwata, B., Bailey, J., Fuqua, W., Neef, N., Page, T., & Reid, D. (1989) Methodological and conceptual issues in applied behavior analysis, 1968-1988. Volume 4. Lawrence, Ka: Society for the Analysis of Behavior, Inc.
- Kennedy, M.M. (1979). *Generalizing from single case studies*. Evaluation Quarterly. 3,4, pp 661-678.
- Maxwell, J. A. *Using Qualitative Research to Develop Causal Explanations*. (1996) Working Papers, Harvard Project on Schooling and Children.
- Wolf, M. M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis*, 11, 203-214.

Course Requirements:

This course will be individualized to the topical research interests of participating students.

Assignments 1 & 2 (30% each):

Students will be required to develop a brief for a research plan for both SSD and SCD research. Each outline will include:

- a one page abstract,
- an annotated bibliography of no less than 10 research studies representing a review of literature for the topic selected
- a 2-3 paragraph description of why they selected the research methodology
- Research Question-description of why the questions is” applied, etc. ala the Baer, Wolf, & Risley article
- *description of participants, setting*
- dependent and independent variables OR description of data and data sources
- experimental design OR case study methodology
- data collection procedures, e.g. observation procedures, reliability,
- data analysis /results
- expected outcomes

Assignment 3 (40%)

Students are required to complete a full research grant proposal utilizing either a single subject design model or a single case study design model. Proposals should be prepared according to the US Department of Education’s “Student Initiated Research “ (CFDA 84.324B) or “Field Initiated Research” (CFDA 84.324C) requirements, including meeting page limitations, budget information, etc. See: <http://www.ed.gov/funding.html> or <http://www.ed.gov/GrantApps/#84.324B> or <http://www.ed.gov/GrantApps/#84.324C>. Students will also be required to present research proposal to class for discussion using PowerPoint or similar presentation tool..

GSE Syllabus Statements of Expectations:

The Graduate School of Education (GSE) expects that all students abide by the following:

Students are expected to exhibit professional behavior and dispositions. See gse.gmu.edu for a listing of these dispositions.

Students must follow the guidelines of the University Honor Code. See http://www.gmu.edu/catalog/apolicies/#TOC_H12 for the full honor code.

Students must agree to abide by the university policy for Responsible Use of Computing. See <http://mail.gmu.edu> and click on Responsible Use of Computing at the bottom of the screen.

Students with disabilities who seek accommodations in a course must be registered with the GMU Disability Resource Center (DRC) and inform the instructor, in writing, at the beginning of the semester. See www.gmu.edu/student/drc or call 703-993-2474 to access the DRC.

Session 1

9/2

Course Introduction

Differences between single subject design and single case study research and other

methodologies

- Distinguishing features of Single Case Study Research
- Distinguishing features of Single Subject research
- Identify and explain the features of single-subject research as stated in the seminal article by Baer, Wolf, & Risley: (a) applied, (b) behavioral, (c) analytic, (d) technological, (e) conceptual, (f) effective, and (g) capable of producing results that are generalizable;
- Applications of these methodologies: Why choose one over the other
- Mixed Design Research
- Ethics in Research

Session 2
9/9

Research Proposal Writing

- Reading the technical requirements
- Abstract: building your case
- Background and Significance
- Plan of Operation
 - Research Design/ Methods
 - Timelines
 - Personnel responsibilities
- Budget
 - Budget forms (overview)
 - Line Item Budget
 - Budget Justification
- Key Personnel
- Qualifications of Applicant
- Appendices

Session 3
9/16

Understand the salient features of single subject research.

- Features of a behavioral approach to research that distinguish it from other approaches to studying human behavior;
- Types of research questions that lend themselves to a single subject design approach.
- Formulating research questions

Session 4
9/23

Understand appropriate application of single subject design to address research questions.

- Setting
- Selection of Participants
- Selection of Behaviors to study : Dependent Variables
- Defining Behaviors

Session 5
9 / 30

Selecting Interventions

- Identifying interventions with positive components
- Advantages of using several interventions as a package to produce an immediate effect

Session 6
10/7

Experimental designs.

- Identify the various types of experimental designs, e.g., ABA, ABAB, multiple baseline, multiple probe, alternating treatments
- Identify applications of designs and how designs establish experimental control
- State how each design establishes a functional relationship;
- Describe the strengths and weaknesses of each of the major designs;
- Select designs appropriate for addressing given research questions.
- Describe procedures for establishing social validity;
- Describe and apply criteria for evaluating the presence of treatment effects

Session 7 Analyzing and Displaying Data to Show Experimental Control and Functional Relationships

10/14

- Plotting graphs
- Analyzing data and establishing functional relationships
- Design Selection implications for establishing relationships
- Drawing conclusions

Session 8 Understand the Salient Features of Single Case Study Design

10/21

- Research as an investigative process
- Building a conceptual framework
- Data through words versus numbers
- The need for data reduction and display
- Drawing conclusions
- Limitations of generalizability

Session 9 Understand appropriate application of single case study design to address research questions.

10/28

- Building a conceptual framework
- Identify and formulate general research questions that lend themselves to a case study design approach.
- Refining research questions during data collection: An iterative process
- Identifying and setting the boundaries of data collection

Session 10 Understand measurement and observation procedures used in case study research.

11/4

- Identify the different types of data collection procedures: e.g., observation, interview, survey, document review
- Describe advantages and/or disadvantages of different types of measurement procedure for gathering information.
- Describe advantages/and or disadvantages of different types of data collection and analysis based on research questions and setting: e.g., coding protocols, pattern coding, contact summaries, site analyses, etc
- Describe procedures to limit observer bias and other threats to internal validity.

Session 11 Understand case study research designs.

11/11

- Identify the various types of research designs.
- Identify applications of designs and how designs establish relationships between data such as:
 - Context charts

- Checklist matrices
- Role order matrices
- Time order matrices
- Event listings
- Causal networks
- Describe the strengths and weaknesses of each of the major designs;
- Select designs appropriate for addressing given research questions.
- Describe procedures for establishing social validity;
- Design and develop single case study according to research protocol

Session 12 **Drawing and Verifying Conclusions**
11/18

- Tactics for generating meaning such as:
 - Counting
 - Noting patterns and themes
 - Seeing Plausibility
 - Clustering
 - Making metaphors
 - Splitting variables
 - Building a logical chain of evidence
- Tactics for testing or confirming findings such as:
 - Checking for representativeness
 - Triangulating
 - Checking for researcher effects
 - Weighting evidence
 - Making contrasts/comparisons
 - Using extreme cases
 - Checking the meaning of outliers
 - Getting informant feedback

Session **NO CLASS SEMESTER BREAK**

Session 13 **Generalizing from Single Subject and Single Case Studies**
12/2

- Statistical Generalization vs. Generalization by Theory

Session 14 **Presentations**
12/9

Research Grant Proposal Due

Session 15 **Optional Presentation Day**