GEORGE MASON UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
SPECIAL EDUCATION

EDRS 823, Section 001:
ADVANCED RESEARCH METHODS IN SINGLE SUBJECT & SINGLE CASE DESIGN
(3 credits)
Fall 2013

INSTRUCTOR INFORMATION
Class days: Tuesdays
Class time: 4:30-7:10PM
Location: Innovation Hall 211

Instructor: Anna (Anya) Evmenova, Ph.D.
Office hours: T 2pm-4pm or by appointment
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COURSE DESCRIPTION
823 Advanced Research Methods in Single Subject/Case Design (3:3:0): Prepares students to conduct research using single subject design and single case study design. Provides understanding of the salient features as well as the advantages and disadvantages of these research methodologies. Students critique and analyze published research using these methodologies. Provides opportunities to apply these methodologies to research questions related to current student interests.

PREREQUISITES: EDRS 810, 811, 812

STUDENT OUTCOMES
By the end of the course students will be able to:
1. Discuss the basic concepts, strengths and limitations of single subject research designs
2. Discuss Interobserver Agreement/Reliability, Validity, Visual Analysis, and Statistical tests involving single subject research designs
3. Evaluate previous research that has employed single subject research methodology
4. Design and implement a research study using single subject methodology

NATURE OF COURSE DELIVERY:
Learning activities include the following:
1. Class lecture, discussion and possible guest speaker
2. Videotapes and other relevant media presentations
3. Study and independent library research
4. Online resources and applications with relevant hardware and software
5. Application activities, including in-class evaluation of research and materials
6. Written research study using the American Psychological Association format

GSE Blackboard will be used to post important information for this course (and others) and in completing some course assignments. The following is how you will access the **Blackboard-GSE Login Page:** Enter the URL https://mymason.gmu.edu into your browser location field. Enter your **Username** (**your** GMU email username) **& Password** (**your** GMU email password). Click **Login**. Find EDRS 823 (Fall 2013) and click on it.

REQUIRED TEXT

Gast, D. L. (2010). *Single subject research methodology in behavioral sciences*. New York, NY: Routledge.

An article readings list provided below and posted on Blackboard will correspond to the syllabus schedule. Additional readings may be provided by the instructor throughout the semester as appropriate.

RECOMMENDED TEXTS

Alberto, P. A., & Troutman, A. C. (2012). *Applied behavior analysis for teachers* (9th ed.). Upper Saddle River, NJ: Prentice Hall.

Kennedy, C. H. (2005). *Single case designs for educational research*. Boston, MA: Allyn and Bacon.

Barlow, D. H., Nock, M. K., & Hersen, M. (2009). *Single case experimental design: Strategies for studying behavior change* (3rd ed.). Boston, MA: Pearson.

Dugard, P., File, P., & Todman, J. (2012). *Single-case and small*-n *experimental designs: A practical guide to randomization tests* (2nd ed.). New York: Routledge.

COURSE EXPECTIONS FOR STUDENTS

Students are expected to (a) attend all classes during the course, (b) **arrive on time**, (c) stay for the duration of the class time (d) bring books to each class and (e) complete Blackboard discussion boards and other assignments. All out-of class assignments are to be competed prior to the beginning of class on the date that they are due.

Please notify the instructor by email in advance if you will not be able to attend class, and arrange for a classmate to pick up handouts/provide notes. If you are absent, the due date does not change and students are responsible to make sure that all assignments are handed in on time.

Late assignments will result in a reduction in points.

In-depth reading, study, and work on course requirements require outside class time. Students are expected to allot approximately three hours for class study and preparation for *each* credit hour weekly in addition to papers and assignments.

COURSE ASSIGNMENTS & POINT DISTRIBUTION

CLASS PARTICIPATION: 10 Points

Due to the importance of lecture and discussion to your total learning experience, you must both attend and participate in class regularly. Attendance, punctuality, preparation, and active contribution are essential.

MINIMAL	GOOD	OUTSTANDING
The student is late for class. Absences are not documented by following the procedures outlined in the syllabus. The student is not prepared for class and does not actively participate in discussions. May fail to exhibit professional behavior and dispositions**.** Excessive absences can result in additional penalties - **5 or less pts.**	The student is on time, prepared for class, and participates in group and class discussions. The student attends most classes and if an absence occurs, the procedure outlined in the syllabus is followed - **5-9 pts**.	The student attends all classes, is on time, and is prepared. The student actively participates and supports the members of the class – **10 pts.**

BLACKBOARD ACTIVITIES: 30 Points

Students will be required to participate in 6 class blackboard discussions (5 points each) for topics throughout the course. Students will be expected to provide their opinions as well as post feedback and comments based on opinions of other students. The tentative list of blackboard activities as follows:

Blackboard 1: Discover information about one of the following figures: Paul Broca, Hermann Ebbinghaus, Ivan Pavlov, Adolphe Quetelet, Ronald Aylmer Fisher, David Barlow, Michel Hersen, Alan Kazdin, Gordon Allport, and Burrhis Frederick Skinner. Write 2-3 paragraphs about their contributions to the field of single subject design. All citations should be noted.

Blackboard 2: Please describe the behaviors you are planning to measure in your project. Provide operationalized definitions for those behaviors. **Find 2-3 single-subject studies that have operationalized your behaviors (or similar ones) in different ways.** Discuss what dimensions you will use to measure the behavior(s). Design a draft of the recording system that you may want to use in your project. Please post by Tuesday morning. We will discuss your recording systems in class.

Blackboard 3: Prepare and post the Logic Model for your study. Your logic model will map out sample characteristics, intervention characteristics (including potential confounding variables), dependent variables, intervention outcomes (proximal and distal), as well as the predicted change in the behavior.

Blackboard 4: Develop research questions appropriate for the single subject research study based on the topic you have chosen for your final project. Provide operationalized definitions for all the terms used in the research questions. Post the questions on the

blackboard by Saturday. Between Sunday and Tuesday provide feedback to your classmates on their research questions. Please discuss why you think their questions are suited or not suited for single subject research study.

Blackboard 5: Prepare and submit a draft of the research project. Post the draft on Blackboard by Saturday. Between Sunday and Tuesday provide feedback to one of your classmates on his/her research project. Please provide constructive and meaningful suggestions for improving the draft.

Blackboard 6: Conduct a mini meta-analysis study using the coding rubric provided in class. Find 3-5 single-subject research articles on your topic (possibly use the same articles in the literature review section of your final paper), code them using the rubric, use one of the methods for calculating effect sizes for single-subject experimental designs discussed in class. Please post a brief description of your meta-analysis methodology, results, as well as your impressions regarding meta-analysis as method for identifying evidence-based practices.

SHORT PRESENTATION: 10 Points

From recent (less than 5 years old) peer reviewed journal articles choose one single subject design research studies to discuss the issue of (1-2 students per topic):

(1) Interobserver Agreement/ Fidelity of Treatment/Procedural Reliability
(2) Validity (internal, external, social)
(3) Visual Analysis
(4) Statistical Analysis

Make sure to include the following requirements:

1. Setting (1)
2. Participants (1)
3. Methodology (1)
4. Findings (1)
5. Commentary should reflect positive points/strengths (2)
6. Commentary should reflect negative points/limitations (2)
7. Personal conclusions and importance of the issue (2)
   Total points=10

A schedule with presentation dates is provided within the course schedule. The rubric below will denote the scoring.

Short Presentations for Each Topic

UNSATISFACTORY	MINIMAL	GOOD	OUTSTANDING
Listener cannot understand presentation because there is no sequence of information. Does not engage the audience. Student does not have grasp of information; students cannot answer questions about subject. Presentation includes five or less of the requirements - **1-5pts**	Listener has difficulty following presentation because presenter jumps around. Does not engage most of the audience. Student is uncomfortable with information and is able to answer only rudimentary questions. Presentation includes only six of the requirements - **6pts**	Student presents information in engaging and logical sequence which audience can follow. Student is at ease with content, but fails to elaborate. Presentation includes minimal work on all seven of the requirements - **7pts**	Student presents information in engaging, novel, and logical sequence which audience can follow. Student demonstrates full knowledge with explanations and elaboration. Presentation includes comprehensive work on all seven of the requirements - **10pts**

RESEARCH PROJECT: 40 points

The research project is designed to provide experience with single subject design, especially implementing and writing up a research report.

Introduction:

Purpose Statement: Discuss what is this research is about including the significance of this topic.

Research Questions: Have at least 2-3 research questions (must include participants, dependent, independent variables, and site if appropriate).

Background Literature: Provide a brief description of the background literature that indicates a need for your questions.

Method: (should be **more** detailed than is common for most published reports)

Research Design*:* Describe and justify single-subject research design chosen for this study.

Participants: Describe demographic and educational information for your individual(s). In studies with less than 10 participants, each participant should be described individually.

Setting: Describe a setting, in which your study took place in detail.

Dependent and Independent Variables*:* Provide operationalized definitions of all dependent variables examined in the study as well as all independent variable(s).

Materials: Carefully describe all of the instructional materials that were used in your project. Attach copies of the precise materials used if applicable.

Procedures: Carefully describe in a step-by-step fashion what you did with the individual(s). Include description of the procedures during the baseline, treatment, maintenance and/or generalization phases.

Interobserver Agreement and Procedural Reliability: Define the procedures, explain observer training, include formulas and coefficients.

Social Validity: Describe social validity measures.

Analysis:

Describe all the analyses you are going to use (visual and statistical) in great detail.

Results:

Visual Analysis: Describe the visual analysis results (e.g., including level, trend, variability, immediacy of change, overlap, consistency)

Statistical Analysis and/or Randomization Tests: Describe the statistical analysis results or discuss why you chose not to use any statistical procedures.

Social Validity: Describe social validity results.

Discussion:

Provide a discussion of your findings.

Implications:

Provide some insights as to why you might have obtained the findings and what you learned from the project.

Reflection:

Include a brief (1-2 pages) reflection on single subject research methodology in general and your project in particular.

Research Project Scoring Rubric

UNSATISFACTORY	MINIMAL	GOOD	OUTSTANDING
Paper with substantial problems in important areas such as writing, implementation of intervention, and evaluation of results, overall thoughtfulness. Contains little or no information of to the research in single subject design –**1-15 pts.**	Overall, acceptable but with one or more significant problems. Contains some useful information, but may have substantial problems with evaluation, writing style, or implementation of project - **16-25 pts.**	Good overall paper, lacking in one or two of the criteria for an exemplary paper. Not entirely reflective or thoughtful, or minor writing style errors may be present - **26-34 pts.**	Appropriate topic, thorough and thoughtful review of previous research, appropriate and clearly described implementation procedures, careful measurement and evaluation of results, thorough and appropriate discussion of implications of findings. Good writing style, free of mechanical or stylistic errors, appropriate use of APA format throughout - **35-40 pts.**

RESEARCH POSTER/PRESENTATION: 10 points

Prepare an overview of your paper using the following guidelines:

1. Title of research
2. Purpose of research
3. Background review including statement of need
4. Method, including sample, materials, and procedures, validity and relibaility
5. Data analyses
6. Results
7. Discussion and implications

Poster/Presentations Scoring Rubric

UNSATISFACTORY	MINIMAL	GOOD	OUTSTANDING
Weak overall presentation that reflects very little knowledge of topic or project. May appear very poorly prepared, or may not have followed directions. Style or visual elements may be inadequate or lacking - **1-5 pts.**	Poster presentation provides relevant information, but demonstrates only a limited understanding of the topic or project. Style, organization, or visual elements may be less than adequate. Responses to audience questions may reflect lack of understanding of relevant research methods - **6-7 pts.**	Good overall poster / presentation, but may be lacking in one or two of the criteria specified in exemplary response. May seem a little less polished or prepared, may be vague in some places, or may fail to completely answer audience questions - **7-9 pts.**	Poster/presentation clearly describes major elements of the proposal; poster reflects clarity, organization, knowledge and interest in the content being presented; reflects a high level of preparation; makes effective use of visual format and presents an interesting, attractive appearance; describes very clearly the methods under consideration; poster and discussion keep the audience engaged; provide information of interest and value to audience. Presenter is able to answer basic audience questions about the proposal with poise, clarity, and thoughtfulness – **10 pts.**

EVALUATION IN SUMMARY:

1. Class participation: 10 points
2. Blackboard activities (6): 30 points (5 points each)
3. Short presentation: 10 points
4. Research project: 40 points
5. Poster presentation: 10 points

Points will be deducted for work submitted late.

GRADING CRITERIA:

90-100 points = A
80-89 points = B
70-79 points = C
<70 points = F

We will use APA 6th Edition guidelines for all course assignments http://writingcenter.gmu.edu/resources-template.php?id=4. This link from the GMU Writing Center provides access to APA online style guides, additional guides for writing papers using APA style and the citation machine http://owl.english.purdue.edu/owl/section/2/10/. This link is connected to an overview, workshop, as well as formatting and guides to the new edition of the APA style. This useful tool is for getting acquainted with APA essentials http://www.apastyle.org/apa-style-help.aspx. This link provides an APA Style Help from the American Psychological Association.

We will use person-first language in our class discussions and written assignments (and ideally in our professional practice). Please refer to "Guidelines for Reporting and Writing about People with Disabilities" http://www.apastyle.org/manual/related/guidelines-reporting-and-writing.pdf

COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT

GMU POLICIES AND RESOURES FOR STUDENTS

a. Students must adhere to the guidelines of the George Mason University Honor Code [See http://oai.gmu.edu/honor-code].

b. Students must follow the university policy for Responsible Use of Computing [See http://universitypolicy.gmu.edu/policies/responsible-use-of-comuting].

c. Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.

d. The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See http://caps.gmu.edu/].

e. Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform their instructor, in writing, at the beginning of the semester [See http://ods.gmu.edu/].

f. Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.

g. The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing [See http://writingcenter.gmu.edu/].

PROFESSIONAL DISPOSITIONS

Students are expected to exhibit professional behaviors and dispositions at all times.

CORE VALUES COMMITMENT

The College of Education & Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles. http://cehd.gmu.edu/values/

For additional information on the College of Education and Human Development, Graduate School of Education, please visit our website [See http://gse.gmu.edu/].

Tentative Class Topics and Due Dates

(Subject to change for weather or other unforeseen interruptions)

Date	Class Topic	Reading &Assignments are Due
Tuesday, August 27	1. Introduction, History, and General Issues in Single Subject Research	- Baer, Wolf, & Risley (1968) - Baer, Wolf, & Risley (1987)
Tuesday, September 3	2. Behavioral Assessment, Data Collection & Recordings	- Gast chapters 1, 2 - Barlow, Nock, & Hersen (2009) chapter 1 (will be provided) **- Blackboard 1** **- Post Study Topic**
Tuesday, September 10	3. Data Collection & Recordings; Logic Model **Guest Speaker:** Dr. Michael Behrmann	- Gast chapters 5 (pp.91-98), 7 (pp. 129-155) - Horner et al. (2005) **- Blackboard 2**
Tuesday, September 17	4. Logic Model Research Questions & Experimental Control	- Kennedy chapter 5 (will be provided) - Kratochwill et al. (2010) **- Blackboard 3**
Tuesday, September, 24	5. Single Subject Research Designs: Basic Designs	- Gast chapters 10, 11 - Ward-Horner & Sturmey (2010) **- IRB applications** (deadline: October 2nd; Gast chapter 3 if needed)
Tuesday, October, 1	6. Single Subject Research Designs: More Designs	- Gast chapters 12, 13 - McDougall et al. (2006) **- Blackboard 4**
No Class – Tuesday October 8th (Columbus Day, October 7th – Monday classes are meeting on Tuesday)		
Tuesday, October, 15	7. Interobserver Agreement and Procedural Reliability	- Gast chapter 7 (pp. 155-165) - Smith, Daunic, & Taylor (2007) - Repp et al. (1976) **- Method Section Draft** (not mandatory)
Tuesday, October, 22	8. Validity: Internal, External, Social	- Gast chapters 5 (pp.98-109), 6 - Wolf (1978) - Kazdin (1981) **- Short Presentation 1**
Tuesday, October 29	9. Visual Analysis	- Gast chapters 8, 9 **- Short Presentation 2**
Tuesday, November, 5	10. Visual Analysis - graphing	- Ferron & Jones (2006) - Graphing directions **- Short Presentation 3**
Tuesday, November, 12	11. Statistical Analysis: Randomization tests	- Gast chapter 14 (pp. 417-437) - Park et al. (1990) - Scruggs et al. (2006)

		- Koehler & Levin (2009) - Haardörfer & Gagne (2010) **- Blackboard 5**
Tuesday, November, 19	12. Single-subject Meta-analysis	- Gast chapter 14 (pp.437-453) - Scruggs & Mastropieri (1998) - Campbell (2004) - Parker et al. (2007) - Parker et al. (2009) - Manolov & Solanas (2009) **- Short Presentation 4**
Tuesday, November, 26	13. Single subject research designs: Single Case	- Odom & Strain (2002) - Barnett et al. (2004) **- Blackboard 6**
Tuesday, December, 3	14. Study Implementation and Update Switch Papers	- Gast chapter 4 - Tankersley, Cook, & Cook, 2008 - Algozzine, Spooner, & Karvonen (2002) **- Final Paper Draft** **- Exchange Papers for Feedback**
Tuesday, December, 10	15. Presentations	**- Poster** **- Final Paper Due**

References

(articles are subject to change if better readings are acquired)

Algozzine, B., Spooner, F., & Karvonen, M. (2002). Preparing special education research articles in APA style. *Remedial and Special Education, 23*, 24-30. doi: 10.1177/074193250202300104

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.

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Barnett, D. W., Daly, E. J. III, Jones, K. M., & Lentz, F. E. Jr. (2004). Response to intervention: Empirically based special service decisions from single-case designs of increasing and decreasing intensity. *The Journal of Special Education, 38*, 66-79. doi:10.1177/00224669040380020101

Campbell, J. M. (2004). Statistical comparison of four effect sizes for single-subject designs. *Behavior Modification, 28*, 234-246. doi:10.1177/0145445503259264

Ferron, J., & Jones, P. K. (2006). Tests for visual analysis of response-guided multiple-baseline data. *The Journal of Experimental Education, 75*, 66-81.

Haardörfer, R., & Gagne, P. (2010). The use of randomization tests in single-subject research. *Focus on Autism and Other Developmental Disabilities, 25*, 47-54.

Hains, A. H., & Baer, D. M. (1989). Interaction effects in multielement designs: Inevitable, desirable, and ignorable. *Journal of Applied Behavior Analysis, 22,* 57-69. doi:10.1901/jaba.1989.22-57

Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71,* 165-179.

Kazdin, A. E. (1981). External validity and single case experimentation: Issues and limitations. *Analysis and Intervention in Developmental Disabilities, 1,* 133-143. doi:10.1016/0270-4684(81)90027-6

Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M. & Shadish, W. R. (2010). Single-case designs technical documentation. Retrieved from What Works Clearinghouse website: http://ies.ed.gov/ncee/wwc/pdf/wwc_scd.pdf.

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Park, H., Marascuilo, L., & Gaylord-Ross, R. (1990). Visual inspection and statistical analysis in single-case designs. *Journal of Experimental Education, 58,* 311-320.

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Parker, R. I., Vannest, K. J., & Brown, L. (2009). The improvement rate difference for single-case research. *Exceptional Children, 75,* 135-150.

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Scruggs, T. E., & Mastropieri, M. A. (1998). Summarizing single-subject research: Issues and applications. *Behavior Modification, 22,* 221-242. doi:10.1177/01454455980223001

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Tankersley, M., Cook, B. G., & Cook, L. (2008). A preliminary examination to identify the presence of quality indicators in single-subject research. *Education and Treatment of Children, 31,* 523-548. doi:10.1353/etc.0.0027

Ward-Horner, J., & Sturmey, P. (2010). Component analyses using single-subject experimental designs: A review. *Journal of Applied Behavior Analysis, 43,* 685-704.

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.

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