

EDSP 670 Assessment in Special Education The Use of Single-Subject Research Designs in Education University of Maryland Spring 2016

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Course Description

The course is designed to provide the student with an extensive background in the design and analysis of single-subject research. The emphasis on applications of such research designs and methodology help to prepare discipline-based practitioners to teach effectively in a pluralistic society. We will begin by addressing issues relevant to the design of empirical research in general and then proceed to issues related to single subject designs.

Required Textbook

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

Learning Objectives

Upon completion of the readings, assignments, and study related to the course topics you will be able to:

- 1. Discuss in writing the advantages and disadvantages of single subject experimental designs as contrasted with group experimental designs.
- 2. Define in detail the terms internal and external validity and state how single-subject designs control for threats to validity.
- 3. Describe, recognize, and give examples of each of the four basic methods commonly used to observe behavior.
- 4. Be able to explain what is meant by the term reliability and state why it is important.
- 5. Compute reliability, given recordings of two observers.
- 6. Given a research study, identify the design employed and evaluate its adequacy with respect to internal and external validity.
- 7. Describe in writing the procedures for implementing the following single subject designs and critically evaluate them with respect to internal and external validity:

- (a) Reversal
- (d) Changing criterion
- (b) Multiple baseline (e) Alternating Treatments/multi-element design
- (c) Multiple probe (f) Simultaneous treatment design
- 8. Display data graphically, accurately, and consistent with accepted norms (as presented in class).
- 9. Evaluate the appropriateness of programmatic decisions on the basis of given set of data.

Course Expectations

1. Attend all class periods and participate in class discussions and activities. Regular attendance and participation in this class is required and is the best way to grasp the concepts and principles being discussed. The University of Maryland's policy on excused absences is provided here: www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1584/s/1540. Below I describe the key elements of UMD attendance policies.

Major Scheduled Grading Events

Any assessment listed as a test or exam, in-class presentation, or an assessment worth at least 20% of your final grade is assumed to be a "major scheduled grading event" unless otherwise defined in the course syllabus.

Single Absences due to Illness or Injury

University of Maryland policy dictates that a single absence during the semester due to illness or injury will be excused with a self-signed letter attesting to the date of the illness and acknowledging that the information is true and correct. You are expected to contact your instructor by phone or email prior to the class meeting if you expect to be absent, and to provide this documentation by the next class meeting where you are present. *Please note that this policy does not excuse students from major scheduled grading events*.

Religious Observations

Absences due to religious observances will be excused provided that a student contacts the instructor at least two weeks in advance of the holiday, submits work due in advance and assumes responsibility for any material or announcements missed that day.

Multiple Absences & those Covering Major Scheduled Grading Events

University policy excuses absences due to (1) the illness of the student or the illness of a dependent as defined by Board of Regents policy on family and medical leave

(http://www.president.umd.edu/policies/docs/VII-750.pdf); (2) religious observance (where the nature of the observance prevents the student from being present during the class period); (3) participation in university activities at the request of university authorities; and (4) compelling circumstance beyond the student's control. Students claiming excused absence must apply in writing and furnish documentary support for their assertion that absence resulted from one of these causes immediately before or after the excused absence.

Multiple absences, and those occurring on a major scheduled grading event, require written documentation of the illness or injury from the Health Center or an outside health care provider. The letter must verify the dates of treatment and the time period during which you were unable to meet academic responsibilities. Accommodations will be arranged on a case-by-case basis, but makeup assessments will not be offered for unexcused or undocumented absences. https://faculty.umd.edu/teach/attend_student.html

2. *Come to class prepared to learn*. Success in this course depends upon being familiar with the readings, prior class assignments and related activities. Arrive to class on time, and bring necessary materials (i.e., handouts, assignments, readings, laptop) to every class. When you attend class, it is the instructor's expectation that you will be fully engaged in class activities. If you use your laptop for note taking, please refrain from noncourse related activities such as playing games, surfing the web, texting, or checking email. These behaviors, along with side conversations, are very distracting to the other students in the class as well as the course instructor. Please turn off or silence cell phones. If it is absolutely necessary to receive a call, notify the instructor, set the phone to vibrate, and take the call outside of the classroom. If it is noted that a student is regularly distracted or not engaged, engagement points will be subtracted accordingly.

3. *Engage in respectful discussions and be open to new or different ideas.* Throughout this class you will be challenged to think critically about the impact of cultural, sociological, and experiential differences from your own perspective as a learner as well as the perspective of a professional who is working with diverse learners. Please participate in discussions openly and respectfully using **person-first language** when speaking and writing about people with disabilities and other groups, and use acceptable terminology when addressing issues of gender, race, ethnicity, disability, sexual orientation, and other areas of diversity. Students are encouraged to take risks in class by asking difficult questions and sharing their stories and comments. It is acknowledged that the instructor or students may make mistakes in this regard, but it is everyone's responsibility to respond constructively to any conflicts or problems that arise. Language used in assignments and class discussions (written and spoken) should be respectful and professional at all times. All people will be treated respectfully in this course.

4. *Turn in assignments on time*. All assignments must be completed before the beginning of class and submitted on or before the assigned due date. **Late work will not be accepted.** All work submitted for the class must be legible, clearly organized, and proofread. Illegible work will not be graded. When emailing assignments, the email time stamp associated with the submission will be used to determine whether to apply the late penalty. *All work submitted via email should include the author's last name and title of the assignment in the subject line (i.e., "Smith Homework 1" not "Homework 1")* as well as in the **body of the submitted document** to avoid the late penalty.

5. *Complete your work with honesty and academic integrity.* The University of Maryland is a member of the Association of American Universities (AAU) and a Tier I Research University. Academic honesty is the expectation at all times. Cheating, fabrication, plagiarism, as well as facilitating academic dishonesty will not be tolerated. All members of the University Community - students, faculty, and staff - share the responsibility to challenge and make known acts of apparent academic dishonesty. Please visit <u>http://osc.umd.edu/osc/AcademicDishonesty.aspx</u> to become familiar with the definitions of these behaviors so that you are protected and are able to confidently sign the Honor Pledge.

I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment).

Unless you are specifically advised to the contrary, the Pledge statement should be handwritten and signed on the front cover of all major papers, projects, or other academic assignments submitted for evaluation in this course. Students who fail to write and sign the Pledge will be asked to confer with the instructor. Compliance with the code is administered by the Student Honor Council, which strives to promote a community of trust on the College Park campus. This instructor, as well as any students who become aware of a violation in academic honesty, is required to report it to the Honor Council (301-314-8204).

6. *College of Education Foundational Competencies:* The College of Education Foundational Competencies Policy was adopted in November 2010 and specifies the professional criteria expected of all Teacher Candidates in the College. Performance that meets the Foundational Competencies is expected across all professional settings, including university-based coursework and field placements. If concerns arise in any professional setting, a referral will be made to the Teacher Candidate's advisor. Each Teacher Candidate and Supervisor will complete the Foundational Competencies evaluation at the end of each field placement experience. Additional Foundational Competencies evaluation forms may be completed if concerns arise during a field placement or in any professional setting. These evaluations will be reviewed along with the candidate's performance across all program requirements and coursework. Continuation in the Special Education teacher certification program depends on both satisfactory completion of all coursework and satisfactory ratings on the Foundational Competencies (8/3/05; updated 8/18/11).

https://www.education.umd.edu/CHSE/documents/CoE_Foundational_Competencies_Evaluation_Form. pdf

7. *Course Evaluations (CourseEvalUM):* Your participation in the evaluation of courses through CourseEvalUM is a responsibility you hold as a student member. Your feedback is confidential and important to improve teaching and learning at UMD as well as to the tenure and promotion process. Go to <u>www.courseevalum.umd.edu</u> to complete your evaluations. **For Masters and Ph.D. students**: Occasionally fewer than five graduate students are enrolled in the class and thus the CourseEvalUM system may not generate a review form for students in 670. In cases such as these, the College of Education has developed an anonymous Qualtrics survey that will be sent out in lieu of the CourseEvalUM request. Please complete this survey to ensure that your voices may be heard.

Your feedback is very important to me, I take your comments very seriously, and I want to know what's working well for you (as well as anything that is not working) as soon as possible. As a result, there are multiple ways of providing feedback in this class outside the end-of-semester evaluations. Mid-course evaluations and confidential feedback through my faculty mailbox in Benjamin 3214, are two ways that I encourage you to let me know your thoughts on the course so that I have a chance to make improvements throughout the entire semester.

8. Student Responsibilities.

- 1. Students will attend all class sections.
- 2. Students will hand in all assignments typed on the dates due. Late papers will not be accepted unless prior permission has been given. All projects must be turned in to obtain a grade of A or B.
- 3. Students will have read all assignments prior to discussion sessions and will actively engage in the class discussion.

Assignments

Evaluation will be based on several variables measured throughout the semester.

1. **Group discussion leaders**: Each week a student will be assigned an article. Each student will provide a written summary of the article's main points, with copies for other students, and lead a

discussion on the article's strengths, any areas of weakness, implications for research, and implications for practice.

- 2. **Review writing**: Each student will be expected to write three reviews of research articles using the format supplied by the Journal of Applied Behavior Analysis. Students will be evaluated on the tone of their review (i.e., constructive instead of harsh) and on their evaluation of the methodology, analysis, results, and discussion sections of the articles. The first review will be considered a practice session with feedback and will not be counted toward the final grade.
- 3. **Exams**: Exams will contain both essay and multiple choice questions on all of the material covered to that point; exams will be cumulative.
- 4. **Final project**: Each student is expected to design, implement, and write a single-subject research study. The project must include replication across at least three subjects, settings, behaviors, or teachers. The final write up must be consistent with the guidelines from the 6th edition of the publication manual for the American Psychological Association. Please make sure that you have access to a copy of this manual while you are writing this report.

You should start thinking of topics early in the semester. As each area is covered (e.g., methodology), you should decide what is most applicable for your project. Everyone must email a proposal for their project by March 7. Your proposal should include a) a description of the general area that you will be investigating b) participants and setting c) observational procedure(s) and d) research design. Projects will be due on May 10, 2016. Evaluation of the project will be based on the completeness of each section (e.g., abstract, introduction, methods, results, discussion, and references). Special attention will be given to the method and result sections.

- 5. **Presentation of final project**: Each student will be required to present the results of their project in a 15-20 minute in-class presentation. Students should provide copies of relevant data sheets, graphs, or other presentation materials to the other students in the class. The presentation should follow the general outline of the final paper. Specifically,
 - a. Statement of problem area and why it was of interest
 - b. Description of subjects/setting
 - c. Detailed presentation of procedures
 - d. Design used
 - e. Results (present graphs, tables, etc.)
 - f. Discussion

Due Date	Assignment Name	Points possible
2/16, 2/23, 3/1, 3/8, 3/29, 4/5, 4/12, 4/19, 4/26	Group Discussion Leads 3 x per student	30
3/7/16	Final Project: Topic Submitted for Approval	5
3/22/16	Exam 1	50
4/11/16	Journal Review.1	Ungraded
4/25/16	Journal Review.2	40
5/2/16	Journal Review.3	40
5/3/16	Student Presentations	50
5/10/16	Final Project Write-up	70
TBD	Exam 2	50
	TOTAL POINTS POSSIBLE:	335

ASSIGNMENT CALENDAR- ALL DATES ON CANVAS

A Note on Grading and Feedback in this Course: Many of your assignments will be graded in Canvas as electronic submissions. My grading style is to make comments *and annotations* on the papers you submit. In order to see my **comments**, please click on the "view feedback" button. Scroll to the bottom of this page for details: <u>https://guides.instructure.com/m/4212/l/54359-how-do-i-view-instructorcomments</u>.

In order to see my **annotations**, another step is required. *This is the most important step for you to see my individualized comments and suggestions for your work*. Please follow the detailed instructions on the following help page and see me for assistance if you have any trouble: <u>https://guides.instructure.com/m/4212/l/352349?data-resolve-url=true&data-manual-id=4212</u>

Need Help?

The University of Maryland offers many options to support you. You have already paid for these services, so don't be afraid to take advantage of them!

Writing Center: http://www.english.umd.edu/academics/writingcenter

UMD Counseling Center: If you feel you are encountering problems that hamper your academic performance or life on campus, contact the Counseling Center 301-314-7651 or Mental Health Services 301-314-HELP for resources or referrals or visit their website: <u>http://www.counseling.umd.edu/</u> *Academic Coaching*: In addition to tutoring services and academic advising (http://www.tutoring.umd.edu/) you have access to academic coaching services. <u>https://www.shadygrove.umd.edu/campus-services/cas/coaching</u>

Additional UM Policies

Accommodations for Students with Disabilities: If you have a documented disability, contact Disability Support Services (301-314-7682) to ascertain the specific accommodations that may need to be provided. The rules for eligibility and the types of accommodations a student may request can be reviewed on the DSS web site at http://www.counseling.umd.edu/DSS/receiving_serv.html *It is the student's responsibility to notify the instructor at the beginning of the semester of any documented disabilities* so that I can ensure reasonable accommodations are made to assist learning and evaluation in the class.

Course Incompletes: In compliance with University of Maryland Policy, the mark of 'I' is an exceptional mark that is an instructor option. It is given only to a student whose work in a course has been qualitatively satisfactory, when, because of illness or other circumstances beyond the student's control, he or she has been unable to complete some small portion of the work of the course. In no case will the mark 'I' be recorded for a student who has not completed the major portion of the work of the course. <u>http://www.umd.edu/catalog/index.cfm/show/content.section/c/27/ss/1584/s/1536</u> *For EDSP Certification students, the incomplete must be resolved by the student before the start of the next semester or he or she may not continue in the program.*

Office of Student Conduct: If a student displays disorderly or disruptive behaviors in class or poses a concern for violence, he or she will be referred to the Office of Student Conduct – this may result in being charged under the University's Code of Student Conduct or being referred for counseling or mental health interventions, if appropriate. 301.314.8204 or studentconduct@umd.edu.

COURSE CALENDAR

Date	Торіс	Chapters	Articles for Discussion
1/26	SNOW DAY		
2/2	Introduction to class Factors affecting experimental designs	1, 3	
2/9	Introduction to single-subject design	4, 5	
2/16	Observational methodology	6, 7	1.
2/23	Observational methodology	8, 15	2.
3/1	Reversal designs	9	3.
3/8	Multiple-baseline designs	11 (p. 150-top of 155)	4.
3/15	UMD Spring Break		
3/22	Exam 1		
3/29	Multiple probe designs Changing criterion designs	11 (p. 155 – 161)	5.
4/5	Brief experimental designs Journal review procedure Format of articles	14	6.
4/12	Comparative designs Repeated acquisition designs Combined designs In class article critique (article A)	10, 12	7.
4/19	Social validity Ethical principles	16	8.
4/26	In class article critique (article B)		9.
5/3	Student presentations		
5/10	Review for final exam		

Readings for Group Discussion (Available on Canvas)

- 1. Horner, R.H., Carr, E.G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of singlesubject research to identify evidence-based practice in special education. *Exceptional Children*, 71(2), 165-179.
- 2. Kratochwill, T.R., Hitchcock, J.H.,& Shadish, W.R. (2013). Single-case intervention research design standards. *Remedial and Special Education*, *34*(1), 26-38.
- 3. Forman, S.G., Shapiro, E.S., ... & Stoiber, K.C. (2013). Implementation science and school psychology, *School Psychology Quarterly*, 28(2), 77-100.
- 4. Lucyshyn, J.M., Albin, R.W., Horner, R.H., Mann, J.C., Mann, J.A., Wadsworth, G. (2007). Family implementation of positive behavior support for a child with autism. *Journal of Positive Behavior Interventions*, 9(3), 131-150.
- Wolery, M., & Lynne Lane, K. (2009). Writing tasks: Literature reviews, research proposals and final reports. In D. Gast (Ed.), *Single subject research methodology in behavioral sciences* (p. 32-56). New York, NY: Routledge.
- 6. Klein, L.A., Houlihan, D., Vincent, J.L., Panahon, C.J. (2015). Best practices in utilizing the changing criterion design. *Behavior Analysis Practice*. 10.1007/s40617-014-0036-x
- 7. Carr, J.E. (2005). Recommendations for reporting multiple-baseline designs across participants. *Behavioral Interventions*, 20(3), 219-224.
- 8. Scruggs, T.E. & Mastropieri, M.A. (2013). PND at 25: Past, present, and future trends in summarizing single-subject research. *Remedial and Special Education*, *34*(1), 9-19.
- 9. Nese, R.N.T., Horner, R.H., Dickey, C.R., Stiller, B., Tomlanovich, A. (2014). Decreasing bullying behaviors in middle school: Expect respect. School Psychology Review, 29(3), 272-286.

GRADING: Point values will be assigned to exams and assignments. Final letter grades will subsequently be assigned on the basis of overall class performance. Letter grades correspond to the point cutoffs listed here (not rounded percentages). Cutoffs are absolute, <u>this means that a grade of 89.99 will not be</u> rounded to a 90%.

Please note: It is possible to earn the following grades in this class: A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F. The "+" and "-" have been added to grades in order to allow for more nuance and precision in the evaluation process. Grades will be assigned according to the following chart:

98.00 - 100% = A+	78.00 - 79.00% = C +
92.00 - 97.00% = A	72.00 - 77.00% = C
90.00 - 91.00% = A-	70.00 - 71.00% = C-
88.00 - 89.00% = B +	68.00 - 69.00% = D +
82.00 - 87.00% = B	62.00 - 67.00% = D
80.00 - 81.00% = B-	60.00 - 61.00% = D-

FORMAL APPEALS OF FINAL GRADES: I am happy to discuss any of your grades with you, and if I've made a mistake I will immediately correct it. Any formal grade disputes must be submitted in writing and within one week of receiving the grade. Do not wait until the end of the semester to review earlier assignments and exams. All students should be aware of the University of Maryland's policy on "arbitrary and capricious grading" and understand the process by which they can appeal a final grade: http://president.umd.edu/policies/docs/III-120B.pdf

Research Article Review Rubric

I. Overall tone of review

2 3 1 4

- a) Tone conveys respect for research.
- b) Includes suggestions for improving research.
- c) Includes detailed suggestions for areas in need of revision.
- d) Uses conditionals to help soften the tone of review (e.g., could, would, might, etc.)
- e) Avoids sarcasm
- f) Makes points in the form of statements rather than questions.

II Introduction Evaluation

1 2 3 4

- a) Identifies whether or not the introduction explains the relationship and importance of the study.
- b) Identifies whether or not the work is placed in the context of the previous research literature related to the current topic.
- c) Identifies whether or not a clear statement of purpose is provided at the end of the review.

III. Methodological evaluation

A. Participants and setting

1 2 3 4

- a) Identifies whether or not the participants and setting are described with sufficient detail to allow for replication.
- b) Describes in detail what additional information is needed if revision(s) are required.
 - B. Procedures section (x2)

2 3 1

- a) Identifies whether or not the procedures are described in enough detail to allow for replication.
- b) Describes in detail what additional information is needed if revision(s) are required.
 - C. Design section (x2)

1 2 3

4 a) Identifies whether or not the design is appropriate for the research.

4

- b) Identifies whether or not the design has been implemented appropriately
- c) Describes in detail what threats to internal validity are not controlled (if any) and how the interpretation might be affected.
 - D. Reliability section

2 3 4 1

a) Identifies whether or not the correct reliability formula has been used and if sufficient reliability data have been collected.

b) Identifies whether or not the reliability figures are acceptable.

IV. Results

1 2 3 4

- a) Identifies whether or not the presentation of the results is descriptive and free from interpretation.
- b) Identifies whether or not the presentation of the results in the text corresponds to the results portrayed in the figure(s).
- c) Identifies whether or not the results reported by the author(s) are consistent with the data presented in the figure(s).

V. Discussion

1 2 3 4

- a) Identifies whether or not the discussion section integrates and interprets the results within the context of previous research.
- b) Identifies whether or not the data support the conclusions presented.
- c) Identifies whether or not future research directions are presented.

Final Paper Rubric

I. Introduction Evaluation

1 2 3 4 5

- a) Must reference 10 research studies related to current project with 3-5 described in detail (purpose, method, results, and implications) and relate them to the purpose of current project.
- b) Must have purpose statement at the end of the introduction
- II. Methodological evaluation

1 2 3 4 5

- A. Participant(s) and setting
 - a) Participant(s) must be described with enough detail so that one could replicate the selection process and the participant(s). Must include at least age, sex, characteristics as they relate to experimental question.
 - b) Setting must be described with enough detail so that one could replicate the setting in which the project occurred

B. Baseline (x2)

1 2 3 4 5

- a) Baseline procedures must be described with enough detail so that could be replicated.
- b) Must include the exact procedures that were used, number of sessions conducted on a given day, length of session.

C. Intervention (x2)

1 2 3 4 5

- a) Intervention procedures must be described with enough detail so that could be replicated.
- b) Must include the exact procedures that were used, number of sessions conducted on a given day, length of session.

D. Design section (X2)

1 2 3 4

- a) Must describe the design used both in terms of implementation and how it controls threats to internal validity.
- E. Reliability section

1 2 3 4 5

- a) Must specify how reliability data were collected
- b) Must specify how reliability was calculated
- c) Must provide both average reliability scores as well as range.

5

III. Results

A. Written

1 2 3 4

a) Must describe the mean and range of the data for each

phase of the design

b) Must not provide any interpretation of the data within this section.

5

B. Graph

1 2 3 4

- a) Must be drawn appropriately given the design selected.
- b) Headings must be based on the independent variable (baseline=absence of IV; intervention=label for IV).
- c) Horizontal axis must reflect time (e.g., sessions, trials, days, etc.). Vertical axis must reflect dependent variable.

III. Discussion

- 1 2 3 4 5
- a) Must begin with a statement that summarizes the results and states why the results are important
- b) Relates current findings to past research.
- c) Identifies reason(s) for results.
- d) Identifies possible confounds.
- e) Identifies areas for future research.

IV. APA style

A. In-text

1 2 3

- a) References are cited correctly (both in and out of parentheses).
- b) All references in the reference list are cited in the text.

4

C. Reference list

1

1 2 3 4

- a) Reference list is formatted correctly
- b) All references in text are cited in reference list.

3

V. Quality of writing

2

a) Very clearly written, excellent sentence structure; evidence of proofreading with no spelling, grammar or language mechanics errors