

# Special Education M.S.

## Counseling Psychology and Special Education (CPSE)

### Brigham Young University

#### **CPSE 673 - Single Case Research Design**

**Course Credit:** 3 hours

#### **Instructor Info**

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#### **Course Information**

##### **Description**

The purpose of this course is to help professionals and researchers acquire the knowledge and skills necessary to conduct single-case experimental research in the behavioral sciences and in education. Concepts and practices integral to data based decision-making and action research will be addressed. Academic activities include (a) reading course material and (b) participating in weekly discussions, (c) completing weekly quizzes, (d) completing specific assignments preparatory to conducting research, (e) writing a research proposal related to the study of independent and dependent variables within a single-case design.

##### **Prerequisites**

Admission to a graduate program in the Department of Counseling Psychology and Special Education or approval of the instructor.

##### **Materials**

Kennedy, C. H. (2005). *Single-case designs for educational research*. Boston, MA: Pearson Education, Inc.

Cooper, J. A., Heron, T. E., & Heward, W. L. (2020). *Applied behavior analysis* (Third ed.). Upper Saddle River, NJ: Pearson.

In addition, we will provide readings throughout the semester.

##### **Learning Outcomes**

1. Design applied behavior analytic research in schools to answer effectiveness and efficiency research questions.
2. Create measurement systems that produce valid and reliable direct observation measures in applied contexts.
3. Evaluate peer-reviewed research as an informed consumer of research.
4. Design action research to enable data-based decision making in practice.

The learning outcomes for this course were developed based on required content from the Behavior Analysis Certification Board (BACB) Task List, 5<sup>th</sup> Edition. Specifically, the following items will be addressed in this course.

<b>C. Measurement, Data Display, and Interpretation</b>
C-1 Establish operational definitions of behavior.
C-2 Distinguish among direct, indirect, and product measures of behavior.
C-3 Measure occurrence (e.g., frequency, rate, percentage).
C-4 Measure temporal dimensions of behavior (e.g., duration, latency, interresponse time).
C-5 Measure form and strength of behavior (e.g., topography, magnitude).
C-6 Measure trials to criterion.
C-7 Design and implement sampling procedures (i.e., interval recording, time sampling).
C-8 Evaluate the validity and reliability of measurement procedures.
C-9 Select a measurement system to obtain representative data given the dimensions of behavior and the logistics of observing and recording.
C-10 Graph data to communicate relevant quantitative relations (e.g., equal-interval graphs, bar graphs, cumulative records).
C-11 Interpret graphed data.
<b>D. Experimental Design</b>
D-1 Distinguish between dependent and independent variables.
D-2 Distinguish between internal and external validity.
D-3 Identify the defining features of single-subject experimental designs (e.g., individuals serve as their own controls, repeated measures, prediction, verification, replication).
D-4 Describe the advantages of single-subject experimental designs compared to group designs.
D-5 Use single-subject experimental designs (e.g., reversal, multiple baseline, multielement, changing criterion).
D-6 Describe rationales for conducting comparative, component, and parametric analyses.

## **Grading Scale**

<b>Grades</b>	<b>Percent</b>
A	95%
A-	90%
B+	87%
B	84%
B-	80%
C+	77%
C	74%
C-	70%
D+	67%
D	64%
D-	60%
E	0%

## **Grading Policy**

Due to the nature of the course content, no late discussions or make-up quizzes are allowed. Late projects will be allowed, but will receive a 10% deduction per day late. The final (take home) exam must be completed on time to receive credit.

## **Participation Policy**

Participation is extremely important in this class. You can participate by attending class, contributing to the discussions, and asking questions. Please be respectful of others' points of view. Feel free to ask your instructor challenging questions.

## **Attendance Policy**

Please attend class. Attending class will help you participate in discussions.

## **Classroom Procedures**

We will start class with a prayer.

## **University Policies**

### **Honor Code**

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and every instructor's expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

### **Sexual Misconduct**

As required by Title IX of the Education Amendments of 1972, the university prohibits sex discrimination against any participant in its education programs or activities. Title IX also prohibits sexual harassment-including sexual violence-committed by or against students, university employees, and visitors to campus. As outlined in university policy, sexual harassment, dating violence, domestic violence, sexual assault, and stalking are considered forms of "Sexual Misconduct" prohibited by the university.

University policy requires any university employee in a teaching, managerial, or supervisory role to report incidents of sexual misconduct that come to their attention through various forms including face-to-face conversation, a written class assignment or paper, class discussion, email, text, or social media post. If you encounter sexual misconduct, please contact the Title

IX Coordinator at [t9coordinator@byu.edu](mailto:t9coordinator@byu.edu) or 801-422-2130 or Ethics Point at <https://titleix.byu.edu/report-concern> or 1-888-238-1062 (24-hours). Additional information about Title IX and resources available to you can be found at <http://titleix.byu.edu>.

### **Students with Disabilities**

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability which may impair your ability to complete this course successfully, please contact the University Accessibility Center (UAC), 2170 WSC or 422-2767. Reasonable academic accommodations are reviewed for all students who have qualified, documented disabilities. The UAC can also assess students for learning, attention, and emotional concerns. Services are coordinated with the student and instructor by the UAC. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures by contacting the Equal Employment Office at 422-5895, D-285 ASB.

### **Respectful Environment**

"Sadly, from time to time, we do hear reports of those who are at best insensitive and at worst insulting in their comments to and about others... We hear derogatory and sometimes even defamatory comments about those with different political, athletic, or ethnic views or experiences. Such behavior is completely out of place at BYU, and I enlist the aid of all to monitor carefully and, if necessary, correct any such that might occur here, however inadvertent or unintentional. "I worry particularly about demeaning comments made about the career or major choices of women or men either directly or about members of the BYU community generally. We must remember that personal agency is a fundamental principle and that none of us has the right or option to criticize the lawful choices of another." President Cecil O. Samuelson, Annual University Conference, August 24, 2010 "Occasionally, we ... hear reports that our female faculty feel disrespected, especially by students, for choosing to work at BYU, even though each one has been approved by the BYU Board of Trustees. Brothers and sisters, these things ought not to be. Not here. Not at a university that shares a constitution with the School of the Prophets." Vice President John S. Tanner, Annual University Conference, August 24, 2010

## **Assignments**

### **Quizzes**

We will have 13 quizzes. Quizzes are completed on Learning Suite at 11:59 the night before class. They will be available within 12 hours of each class period. They are worth 3 points each.

### **Exams**

We will have 2 exams. Exams will be completed on Learning Suite. The due dates will be posted. They will be available for 24 hours before the time they are due. Exams are worth 100 points each.

### **Final Project**

See attachment. Final project is worth 50 points total.

### **Discussion Questions**

Discussion questions are submitted on learning suite the night before class at 11:59 PM. Write one questions about the reading(s) labeled "Discussion". Discussion questions are worth 3 points.

**CITI Training**

Submit your CITI training certificate by 11/17 on Learning Suite. CITI

**Thesis Share**

You will have an opportunity to discuss your thesis with the class. Thesis share is worth 10 points.

Class Session*	Content	Readings	Assignments/Tests
9/1	Introduction to course content.		
9/8	Experimental research. History of single-case research designs. Measuring behavior.	Kennedy, Chapters 1-2 Discussion: Skinner (1981)	Quiz 1 – Completed Online 11:59 Night Before Class
9/15	Strategic issues Variables Baselines Functional relations Replication Experimental questions Event Recording Choice measures	Kennedy, Chapters 3-5 Discussion: Baer, Wolf, Risley (1968)	Quiz 2
9/22	Measurement Continuous recording Quantifying behavior	Kennedy, Chapters 6-7 Discussion: Daly, Witt, Martens, & Dool (1997)	Quiz 3
9/29	Measurement Interobserver agreement Treatment integrity	Kennedy, Chapter 8 Discussion: Sanetti et al 2012	Quiz 4
10/6	Withdrawal/Reversal Design Tactics	Kennedy, Chapter 9 Discussion: Hall, Lund, Jackson (1968)	Quiz 5
10/13	Alternating treatments and multielement designs	Kennedy, Chapter 10	Quiz 6
10/20	Multiple baseline and multiple probe designs	Kennedy, Chapter 11 Discussion: Hancock & Kaiser (2002)	Quiz 7
10/27	Repeated acquisition designs, changing criterion designs, and brief experimental designs	Kennedy, Chapters 12-13 Hartmann & Hall, 1976 Discussion: Daly et al. (2006)	Quiz 8
11/3	Combined design tactics	Kennedy, Chapter 14 Barnett, Daly, Jones, & Lentz (2004) Discussion: Reed and Kaplan (2011); Discussion: Borrero et al. (2010)	Midterm – Completed Online Before Class
11/10	Graphing and visual analysis	Kennedy, Chapter 15 Discussion: Reichow et al. (2010); Hochdorfer (2010)	Quiz 9
11/17	Visual analysis, Descriptive and inferential methods for summarizing data	IES Standards Document	Quiz 10 CITI Training
11/24	Social validity and research ethics	Kennedy, Chapter 16 Wolf (1978) Discussion: Fawcett (1991) Discussion: Sherman & Sheldon (1991)	Quiz 11
12/1	Identifying evidence-based practice (EBP) Synthesis of single-case studies Measurement and EBP	Parker et al. (2011) Discussion: Horner et al. (2005) Discussion: Smith et al. (2013)	Quiz 12
12/8	Component analysis Parametric analysis	Ward-Horner, & Sturmey, 2010 Twohig & Woods, 2001, Reed et al, 2011	Quiz 13
8/15	Complete On Learning Suite		

\*Please note sessions may change depending on semester, but content will be included and BACB alignment will remain intact.

## Readings

- Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*(1), 91-97.
- Barnett, D. W., Daly, E. J., Jones, K. M., & Lentz, F. E. (2004). Response to Intervention Empirically Based Special Service Decisions From Single-Case Designs of Increasing and Decreasing Intensity. *The Journal of Special Education, 38*(2), 66-79.
- Borrero, C. S., Vollmer, T. R., Borrero, J. C., Bourret, J. C., Sloman, K. N., Samaha, A. L., & Dallery, J. (2010). Concurrent reinforcement schedules for problem behavior and appropriate behavior: Experimental applications of the matching law. *Journal of the Experimental Analysis of Behavior, 93*(3), 455-469.
- Daly, E. J., Bonfiglio, C. M., Mattson, T., Persampieri, M., & Foreman-Yates, K. (2006). Refining the experimental analysis of academic skills deficits: Part II. Use of brief experimental analysis to evaluate reading fluency treatments. *Journal of Applied Behavior Analysis, 39*(3), 323-331.
- Fawcett, S. B. (1991). Some values guiding community research and action. *Journal of Applied Behavior Analysis, 24*(4), 621-636.
- Hall, R. V., Lund, D., & Jackson, D. (1968). Effects of teacher attention on study behavior. *Journal of Applied Behavior Analysis, 1*(1), 1-12.
- Hancock, T. B., & Kaiser, A. P. (2002). The effects of trainer-implemented enhanced milieu teaching on the social communication of children with autism. *Topics in Early Childhood Special Education, 22*(1), 39-54.
- Hartmann, D. P., & Hall, R. V. (1976). The changing criterion design. *Journal of Applied Behavior Analysis, 9*(4), 527-532.
- Hanley-Hochdorfer, K., Bray, M. A., Kehle, T. J., & Elinoff, M. J. (2010). Social stories to increase verbal initiation in children with Autism and Asperger's Disorder. *School Psychology Review, 39*(3), 484.
- 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*(2), 165-179.
- Parker, R. I., Vannest, K. J., & Davis, J. L. (2011). Effect size in single-case research: A review of nine nonoverlap techniques. *Behavior Modification, 35*(4), 303-322.
- Reed, D. D., & Kaplan, B. A. (2011). The matching law: A tutorial for practitioners. *Behavior Analysis in Practice, 4*(2), 15-24.
- Reed, F. D. D., Reed, D. D., Baez, C. N., & Maguire, H. (2011). A parametric analysis of errors of commission during discrete trial training. *Journal of Applied Behavior Analysis, 44*(3), 611-615.
- Reichow, B., Barton, E. E., Sewell, J. N., Good, L., & Wolery, M. (2009). Effects of weighted vests on the engagement of children with developmental delays and autism. *Focus on Autism and Other Developmental Disabilities 25, 3-11.*
- Sanetti, L. M. H., Dobey, L. M., & Gritter, K. L. (2011). Treatment integrity of interventions with children in the Journal of Positive Behavior Interventions from 1999 to 2009. *Journal of Positive Behavior Interventions, 14*(1), 29-46
- Sherman, J. A., & Sheldon, J. B. (1991). Values for community research and action: do we agree where they guide us?. *Journal of Applied Behavior Analysis, 24*(4), 653-655.
- Skinner, B. F. (1981). How to discover what you have to say—a talk to students. *The Behavior Analyst, 4*(1), 1-7.
- Smith, G. J., Schmidt, M. M., Edelen-Smith, P. J., & Cook, B. G. (2013). Pasteur's quadrant as the bridge linking rigor with relevance. *Exceptional Children, 79*(2), 147-161.
- Twohig, M. P., & Woods, D. W. (2001). Evaluating the duration of the competing response in habit reversal: a parametric analysis. *Journal of Applied Behavior Analysis, 34*(4), 517-520.
- Ward-Horner, J., & Sturmey, P. (2010). Component analyses using single-subject experimental designs: A review. *Journal of Applied Behavior Analysis, 43*(4), 685-704.
- Wolf, M. M. (1978). Social Validity: The Case for Subjective Measurement or How Applied Behavior Analysis Is Finding Its Heart1. *Journal of Applied Behavior Analysis, 11*(2), 203-214.