

PSY 717 COGNITIVE METHODS

Course and Instructor Information

Semester: Fall 2021

Day/Time: Thursday 10 AM – 12:45 PM

Location: CBC-B425B

Instructor: David Copeland, Ph.D.

Email: david.copeland@unlv.edu

Office: CBC-B441

Office Hours: By appointment

Course Description and Objectives

Course Overview

The primary goal of this course is for students to gain exposure and to learn how to apply research methods that are commonly used by cognitive psychologists. The course will examine basic methods and techniques that are applicable to cognitive research, including response times, working memory measures, eye tracking, event-related potentials, virtual reality, surveys and scales, and transcranial magnetic stimulation.

We will also discuss different perspectives on issues such as sampling and recruiting diverse participants, how qualitative methods can complement quantitative methods, different approaches to data trimming, studying behavior compared to self-reports, and the importance of pilot studies. Finally, the course will conclude with an evaluation of these different methods where we will tackle questions such as, “What is our role as researchers within the field of psychology?” and “Should research be guided by the methods that people have available to them?”

The class will be based on a combination of discussions, short lectures, and demonstrations. It is recommended that students do their part to enhance learning – read critically before class, add to discussions, and to ask questions when concepts are not clear.

Learning Outcomes

At the completion of this course...

1. Students will have applied new cognitive methods to their line of research.
2. Students will be able to discuss strengths and limitations of various methods.
3. Students will be able to consider different perspectives on issues such as studying people from different backgrounds.
4. Students will have experience with submitting and reviewing manuscripts (the peer review journal process)

Course Requirements and Grading

Paper

Students will compete a 15 page paper applying two different cognitive methods to their research (students should select methods they have not used before). Papers will be graded on proper descriptions of a method, clear descriptions of what could be learned from using them, as well as the general quality of writing. To help improve the quality of the papers, and to give students experience with the peer-review process used by journals, students will also complete peer reviews.

Presentation

To practice presentation skills, and to show the class the methods applied to one's research, students will give a brief 10-15 minute conference style presentation of their paper.

Leading Discussion

During the semester, students will lead discussion in at least two class meetings. This task includes an introduction of the topic, finding additional sources and material, preparing demonstrations, and maintaining the discussion.

Participation

Because graduate courses depend on the active involvement of students, as an incentive to participate, students will receive credit for their participation. This is worth a total of 10 points. Typically, someone who is actively involved will earn 9 or 10 points; someone who is moderately involved will earn 7 or 8 points; people who are rarely involved will earn fewer points.

Assignment Points

Paper = 50 points

Peer Review = 20 points

Presentation = 10 points

Leading Discussion = 30 points

Participation = 10 points

Total = 120 points

Grading Scale

The following table lists the letter grades and their corresponding percentages.

Letter Grade	Percentage
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

Important Dates

Paper Draft due: 10/29

Peer Review due: 11/12

Final Paper due: 12/07

Veteran's Day holiday: 11/11

Thanksgiving holiday: 11/25

Tentative Schedule

The following table lists the topics and readings for each week.

Week	Topics	Readings
1	Introduction to the course	
2	Qualitative research	<ul style="list-style-type: none"> • Ormerod & Ball (2017) • Kirk & Ashcraft (2001)
3	Theories, pilots, and hypotheses	<ul style="list-style-type: none"> • Borboom et al. (2021) • Van Teijlingen & Hundley (2001) • McGuire (1997)
4	Cognitive diversity and participants	<ul style="list-style-type: none"> • Roberts et al. (2020) • Henrich et al. (2010) • Chandler et al. (2019)
5	Common measures: Response times, working memory, signal detection	<ul style="list-style-type: none"> • Kyllonen & Zu (2016) • Conway et al. (2005) • Grimshaw et al. (2004) • Hedge et al. (2018)
6	Virtual reality and eye tracking	<ul style="list-style-type: none"> • Wilson & Soranzo (2015) • Eckstein et al. (2017)
7	Surveys, scales, and critiques	<ul style="list-style-type: none"> • Goddard & Villanova (2006) • Lounsbury et al. (2006) • Baumeister et al. (2007) • Bostyn et al. (2018)
8	Event related potentials and transcranial magnetic stimulation	<ul style="list-style-type: none"> • Luck (2005) • Willems et al. (2011)
9	Field Studies vs. lab studies	<ul style="list-style-type: none"> • Ladouce et al. (2017) • Hollerman et al. (2020)
10	Operational definitions and data trimming	<ul style="list-style-type: none"> • Green (1992) • Ulrich & Miller (1994) • van Selst & Joliceaur (1994)
11	Paradigm shifts in research and peer reviews	<ul style="list-style-type: none"> • Kuhn (1996) • Trafimow & Rice (2009)
12	Replication and critiques of psychological research	<ul style="list-style-type: none"> • Scholtz et al. (2020) • Earp & Everett (2015) • Camerer et al. (2018)
13	Review	
14	Class Presentations	

Reading List

Qualitative Research

Ormerod, T. C., & Ball, L. J. (2017). Cognitive psychology. *The SAGE handbook of qualitative research in psychology* (pp. 572-589). Sage Publications.

Kirk, E.P. & Ashcraft, M.H. (2001). Telling stories: The perils and promise of using verbal reports to study math strategies. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 27(1), 157-175.

Theories, Pilots, and Hypotheses

Borsboom, D., van der Maas, H. L. J., Dalege, J., Kievit, R. A., & Haig, B. D. (2021). Theory construction methodology: A practical framework for building theories in psychology. *Perspectives in Psychological Science*, 16(4), 756-766.

van Teijlingen, E. R., & Hundley, V. (2001). The importance of pilot studies. *Social Research Update*, 35, 1-4.

McGuire, W.J. (1997). Creative hypothesis generation in psychology: Some useful heuristics. *Annual Review of Psychology*, 48, 1-30.

Cognitive Diversity and Participants

Roberts, S. O., Bareket-Shavit, C., Dollins, F. A., Goldie, P. D., & Mortenson, E. (2020). Racial inequality in psychological research: Trends of the past and recommendations for the future. *Perspectives on Psychological Science*, 15(6), 1295-1309.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33, 61-135.

Chandler, J., Rosenzweig, C., Moss, A. J., Robinson, J., & Litman, L. (2019). Online panels in social science research: Expanding sampling methods beyond Mechanical Turk. *Behavior Research Methods*, 51, 2022-2038.

Common Measures – Response Times, Working Memory, Signal Detection

Kyllonen, P. C., & Zu, J. (2016). Use of response time for measuring cognitive ability. *Journal of Intelligence*, 4(14), 1-29.

Conway, A.R.A., Kane, M.J., Bunting, M.F., Hambrick, D.Z., Wilhelm, O., & Engle, R.W. (2005). Working memory span tasks: A methodological review and user's guide. *Psychonomic Bulletin & Review*, 12(5), 769-786.

Grimshaw, G.M., Bulman-Fleming, M.B., & Ngo, C. (2004). A signal-detection analysis of sex differences in the perception of emotional faces. *Brain and Cognition*, 54, 248-250.

Hedge, C., Powell, G., & Sumner, P. (2018). The reliability paradox: Why robust cognitive tasks do not produce reliable individual differences. *Behavioral Research*, 50, 1166-1186.

Virtual Reality and Eye Tracking

Wilson, C. J., & Soranzo, A. (2015). The use of virtual reality in psychology: A case study in visual perception. *Computational and Mathematical Methods in Medicine*, 2015 (151702), 1-7.

Eckstein, M. K., Guerra-Carrillo, B., Miller Singley, A. T., & Bunge, S. A. (2017). Beyond eye gaze: What else can eyetracking reveal about cognition and cognitive development? *Developmental Cognitive Neuroscience*, 25, 69-91.

Surveys and Scales

Goddard, R.D., & Villanova, P. (2006). Designing surveys and questionnaires in research. In F.T.L. Leong, J.T. Austin (Eds.), *The Psychology Research Handbook: A Guide for Graduate Students and Research Assistants* (pp. 114-124). Thousand Oaks: Sage Publications.

Lounsbury, J.W., Gibson, L.W., & Saudargas, R.A. (2006). Scale development. In F.T.L. Leong, J.T. Austin (Eds.), *The Psychology Research Handbook: A Guide for Graduate Students and Research Assistants* (pp. 125-146). Thousand Oaks: Sage Publications.

Baumeister, R. F., Vohs, K. D., & Funder, D. C. (2007). Psychology as the science of self-reports and finger movements: Whatever happened to actual behavior? *Perspectives on Psychological Science*, 2, 396-403.

Bostyn, D. H., Sevenhant, S., & Roets, A. (2018). Of mice, men, and trolleys: Hypothetical judgment versus real-life behavior in trolley-style moral dilemmas. *Psychological Science*, 29, 1084-1093.

Event Related Potentials and Transcranial Magnetic Stimulation

Luck, S.J. (2005). *An Introduction to the Event-Related Potentials Technique*. Cambridge, MA: The MIT Press.

Willems, R.M., Labruna, L., D'Esposito, M., Ivry, R., & Casanto, D. (2011). A functional role for the motor system in language understanding: Evidence from theta-burst transcranial magnetic stimulation. *Psychological Science*, 22, 849-854.

Field Studies

Ladouce, S., Donadson, D. I., Dudchenko, P. A., & Ietswaart, M. (2017). Understanding minds in real-world environments: Toward a mobile cognition approach. *Frontiers in Human Neuroscience*, 10(694), 1-14.

Holleman, G A., Hooge, I. T. C., Kemner, C., & Hessels, R. S. (2020). The 'real-world approach' and its problems: A critique of the term ecological validity. *Frontiers in Psychology*, 11(721), 1-12.

Operational Definitions and Data Trimming

Green, C.D. (1992). Of immortal mythological beasts: Operationism in psychology. *Theory & Psychology*, 2, 291-320.

Ulrich, R., & Miller, J. (1994). Effects of truncation on reaction time analysis. *Journal of Experimental Psychology: General*, 123(1), 34-80.

van Selst, M., & Jolicoeur, P. (1994). A solution to the effect of sample size on outlier elimination. *Quarterly Journal of Experimental Psychology*, 47A(3), 631-650.

Paradigm Shifts and Peer Reviews

Kuhn, T.S. (1996). *The Structure of Scientific Revolutions*. Chicago, IL: The University of Chicago Press.

Trafimow, D., & Rice, S. (2009). What if social scientists had reviewed great scientific works of the past? *Perspectives in Psychological Science*, 4, 65-78.

Replication and Critiques of Psychological Research

Scholtz, S. E., de Klerk, W., & de Beer, L. T. (2020). The use of research methods in psychological research: A systematized review. *Frontiers in Research Metrics and Analytics*, 5(1), 1-17.

Earp, B. D., & Everett, J. A. C. (2015). How to fix psychology's replication crisis. *The Chronicle of Higher Education*.

Camerer, C. F., Dreber, A., Holzmeister, F., Ho, T-H., Huber, J., Johannesson, M., et al. (2018). Evaluating the replicability of social science experiments in Nature and Science between 2010 and 2015. *Nature Human Behavior*.

University Policies

Public Health Directives

Face coverings are mandatory for all faculty and students in the classroom. Students must follow all active UNLV public health directives while enrolled in this class. UNLV public health directives are found at [Health Requirements for Returning to Campus](#). Students who do not comply with these directives may be asked to leave the classroom. Refusal to follow the guidelines may result in further disciplinary action according to the [UNLV Student Conduct Code](#).

Academic Misconduct

Academic integrity is a legitimate concern for every member of the University community. We all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility, and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy, and are encouraged to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the source(s). See the [Student Conduct Code](#).

Auditing a Course

Auditing a course allows a student to continue attending the lectures and/or laboratories and discussion sessions associated with the course, but the student will not earn a grade for any component of the course. Students who audit a course receive the same educational experience as students taking the course for a grade, but will be excused from exams, assessments, and other evaluative measures that serve the primary purpose of assigning a grade.

Classroom Conduct

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn, or of instructors to teach. Use of devices such as cellular phones and pagers, or other potentially disruptive activities are only permitted with the prior explicit consent of the instructor. Students are specifically prohibited to record classes without instructor authorization, including online/remote classes (either audio only, or video and audio). The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative withdrawal of the student from the course.

Since the COVID-19 pandemic forced some instruction to be delivered remotely starting in Spring 2020, numerous students have asked instructors to record their synchronous classes, so that they can access them at their convenience. Instructors who agree to record their classes (audio only, or video and audio) should inform students in advance. Recorded lectures may not be broadly released to anyone, but made available exclusively to those students enrolled in the class during the particular academic term. Recorded lectures must be stored securely, and are subject to the Nevada System of Higher Education's Records Retention Policy, meaning that the recordings can only be deleted 120 days after the end of class (i.e., after grades are posted). Once this requirement is met, the recordings should be deleted. Class recordings are protected from disclosure, as they are deemed part of an educational record under the Family Educational Rights and Privacy Act (FERPA).

Copyright

The University requires all members of the University Community to familiarize themselves with, and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The University will neither protect nor defend you, nor assume any responsibility for student or employee violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional [copyright policy information](#) is available online.

Disability Resource Center (DRC)

The [UNLV Disability Resource Center](https://www.unlv.edu/drc) (Student Services Complex, SSC-A, Room 143, <https://www.unlv.edu/drc>, telephone 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to a permanent disability, temporary or permanent medical need, or academic support due to pregnancy are encouraged to contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. Students who are already registered with the DRC should request their accommodations online each semester, and make an appointment to discuss their accommodations with their instructors.

Final Examinations

The University requires that final exams given at the end of a course occur on the date and at the time specified in the Final Exam schedule. The Final Exam schedule is typically available at the start of the semester, and the classroom locations are available approximately one month before the end of the semester. See the [Final Exam Schedule](#).

Identity Verification in Online Courses

All UNLV students must use their Campus-issued ACE ID and password to log in to WebCampus-Canvas.

UNLV students enrolled in online or hybrid courses are expected to read and adhere to the [Student Academic Misconduct Policy](#), which states that “acting or attempting to act as a substitute for another, or using or attempting to use a substitute, in any academic evaluation or assignment” is a form of academic misconduct. Intentionally sharing ACE login credentials with another person may be considered an attempt to use a substitute, and could result in investigation and sanctions, as outlined in the Student Academic Misconduct Policy.

UNLV students enrolled in online courses are also expected to read and adhere to the [Acceptable Use of Computing and Information Technology Resources Policy](#), which prohibits sharing university accounts with other persons without authorization.

To the greatest extent possible, all graded assignments and assessments in UNLV online courses should be hosted in WebCampus-Canvas or another UNLV-managed platform that requires ACE login credentials for access.

Incomplete Grades

The grade of “I” (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student’s control and acceptable to the instructor, and the instructor believes that the

student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the period indicated, a grade of “F” will be recorded, and the student’s GPA will be adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the “I” grade.

Library Resources

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the [Libraries’ Research Consultation](#) website. You can also [ask the library staff](#) questions via chat and text message.

Missed Classwork

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses), or within the first 7 calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Missed Classwork policy, under Registration Policies, on the [Academic Policies](#) webpage.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student submits official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy for missed classwork is to offer fair and equitable assessment opportunities to all students, including those representing the University in extracurricular activities. Instructors should consider, for example, that in courses which offer a “Drop one” option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate’s policy, and an infringement on the student’s right to complete all work for the course.

This policy will not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the University that could be reasonably avoided. There should be a good faith effort by both the instructor and the student to agree to a reasonable resolution. When disagreements regarding this policy arise, decisions can be appealed to the Department Chair/School Director, College/School Dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to academic recruitment activities, competitive intercollegiate athletics, fine arts activities, liberal arts competitions, science and engineering competitions, and any other event or activity sanctioned by a College/School Dean, and/or by the Executive Vice President and Provost.

Rebelmail

Rebelmail is UNLV's official email system for students and by University policy, instructors and staff should only send emails to students' Rebelmail accounts. Rebelmail is one of the primary ways in which students receive official University communications, information about deadlines, major Campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the University. Sending emails within WebCampus-Canvas is also acceptable.

Tutoring and Coaching

The Academic Success Center (ASC), at the Claude I. Howard Building, provides tutoring, academic success coaching, and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, please visit the [ASC website](#) or call 702-895-3177. The ASC is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of SSC A, Room 254. Drop-in tutoring is located on the second floor of the Lied Library, and on the second floor of the College of Engineering building (TBE A 207).

UNLV Writing Center

One-on-one or small group assistance with writing is available free of charge to UNLV students at the [Writing Center](#), located in the Central Desert Complex, Building 3, Room 301 (CDC 3-301). Walk-in consultations are sometimes available, but students with appointments receive priority assistance. Students may make appointments in person or by calling the Center, telephone 702-895-3908. Students are requested to bring to their appointments their Rebel ID Card, a copy of the instructions for their assignment, and two copies of any writing they have completed on their assignment.

Diversity Statement

As an institution of higher learning, UNLV represents a rich diversity of human beings among its faculty, staff, and students, and is committed to aspiring to maintain a Campus environment that values that diversity. Accordingly, the University supports understanding and appreciation of all members of its community, regardless of race, sex, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, gender, gender identity, marital status, pregnancy, genetic information, veteran status, or political affiliation. Please see [University Statements and Compliance](#).

A successful learning experience requires mutual respect and trust between the students and the instructor. Accordingly, the instructor asks that students be willing to listen to one another's points of view, acknowledging that there may be disagreements, keep discussion and comments on topic, and use first person, positive language when expressing their perspectives.