**Research Methods in Psychology**

PSYC 306-02W, Fall 2024

MWF 2:45-3:35

Cuneo 206

Instructor: [Dr. Steve Davis](https://www.luc.edu/psychology/people/faculty/facultystaff/stevendavis/) (he/him) TA: TBA

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Office Hours: MWF 12:30-1:30, or by appointment (Note that I usually work off-campus on TTh)

**Overview:**

Welcome to Psychology 306, the most important course you’ll ever have! Unlike many psychology courses, in this course, you’ll be learning a variety of (very marketable) skills in conducting, analyzing, and writing up research. Perhaps most importantly, however, you’ll learn how to evaluate the myriad of “scientific” claims that we are bombarded with every day, so that you can better decide which claims to believe. This is a lot to learn in one course; however, I’m here to help you through it! Note that this is a writing intensive course.

**From the Catalog:**

Logic and theory of the scientific method. Basic principles of scientific research methodologies employed in approaching major problem areas in psychology.

**Prerequisite**: PSYC 304.

**Outcomes**: Students will demonstrate knowledge and skills necessary to formulate research questions and hypotheses, develop research designs, operationalize variables and gathr data in an ethical manner, choose appropriate statistical methods for analyzing data, interpret results of statistical analysis, write a scientific paper in APA style, and critically evaluate research.

**REQUIRED READING**

Cozby, P.C. & Bates, S.C. (2021). [*Methods in Behavioral Research*](https://www.mheducation.com/highered/product/1260205584.html)*, 14th edition*. McGraw-Hill.

*I also have assigned articles and other selected readings throughout the term to supplement the text. These will be available to you via email, through the Sakai resources page, or electronically through the syllabus (ctrl/click to follow links).*

**SOME CAMPUS RESOURCES AVAILABLE TO YOU**

[**Student Academic Services**](http://www.luc.edu/sas)

[**LUC PSYC Dept. Student Page**](https://www.luc.edu/psychology/undergraduate/)

[**Writing Center**](http://www.luc.edu/writing)(x88468)

[**Career Development**](http://www.luc.edu/career)(x87716)

[**Wellness Center**](http://www.luc.edu/wellness)(x82530)

[**Academic Calendar**](https://www.luc.edu/academics/schedules/fall/academic_calendar.shtml)

[**University Calendar (of events)**](http://lucweb.luc.edu/newsevents/public/calendar.cfm)

[**Student Success Resources**](https://www.luc.edu/ace/resources/studentsuccessresources/)(compiled by the LUC ACE program)

[**“Optimizing Learning in College: Tips from Cognitive Psychology”**](https://go.openathens.net/redirector/luc.edu?url={UrlEncode(https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,sso&db=a9h&AN=118477456&scope=site)})(Putnam, et al., 2016)

**A BIT ABOUT MY TEACHING PHILOSOPHY**

As I see it, my job is to provide you with **opportunities** to learn. What you choose to do with those opportunities is up to you. I believe in treating my students like adults, recognizing that their values and priorities might be very different than mine, and respecting their right to make their own choices. For example, while I **strongly** suggest that you attend all classes (and I have designed this course based on the assumption that you’ll do so), I do not keep track of student attendance. My assumption is that, if you are absent from class, that means that you have a conflicting priority for that day that is more pressing (to you) than coming to class. I am in no position to judge your priorities, and I certainly don’t want to put myself in that position. Therefore, unless your absence inconveniences me or your classmates (e.g., if you are going to be absent on the day of an exam), I do not need to know your reasons. **However, all choices have natural consequences, and class attendance is a strong predictor of class performance. Students who have multiple absences from class won’t learn as much or do as well on exams**. You’ll also have fewer opportunities to participate in class discussion (which is graded, see below) and activities. However, again, if these are not your priorities, it is certainly not my place to judge your decisions. Note that, if you are absent from a class, it is your responsibility to obtain notes from a classmate. You can read more about my teaching philosophy throughout this syllabus and [here](https://www.luc.edu/psychology/people/faculty/facultystaff/stevendavis/).

**HOW TO DO WELL IN THIS COURSE**

Despite respecting your freedom to make your own choices (see preceding paragraph), I really do want you to succeed in this class. I hope that you learn a lot and enhance your critical thinking skills, and that you earn a grade that reflects this. Here are some tips to help you accomplish these goals (Also see handout on “Tips for doing well in a Davis class” and [Putnam, et. al. (2016)](https://go.openathens.net/redirector/luc.edu?url={UrlEncode(https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,sso&db=a9h&AN=118477456&scope=site)})).

**Complete assigned readings before class.** Even if you don’t fully understand the readings on your own, you’ll get more out of our class time together if you’ve at least attempted to do the readings. If study/discussion questions have been assigned for a reading, read with an eye toward trying to answer those questions. You also can use the general questions provided in the “Class Participation” section of this syllabus to read more actively (vs. passively).

**Come to class.** Seriously, you can’t expect to learn the material if you aren’t there. We’ll be discussing some complex ideas in this course, which might be difficult for you to learn on your own. Even relying on a classmate’s notes isn’t as helpful as being there yourself. Exams in this course are based almost entirely on material discussed in class. You won’t do well on them if you don’t attend.

**Pay attention in class.** Try to minimize distractions. If you’ve gone to the effort of showing up, don’t waste that effort by texting/emailing/etc. during class.

**Use good note-taking strategies.** In your notes, you should try to create an organized outline of the lecture. Use class outlines provided as a starting point for this. The very task of imposing an organization on class material forces you to actively engage with the material, leading to deep learning. Do NOT try to transcribe everything that I say in complete sentences in paragraph form! (One reason that handwritten notes are preferable is that students generally type faster than they write, so they are not as deliberate about what they put in their notes when typing). More tips on effective notetaking are available [here](https://libguides.luc.edu/workshops/note_taking).

**Try to engage actively in class.** While taking good notes is one way of staying engaged in class, I also would encourage you to speak up. Ask questions if something seems confusing. Offer your opinion about the ideas being presented. You’ll learn more and enjoy the class more.

**Study effectively for exams.** Focus on your notes, but don’t just passively read and reread your notes. Try to anticipate what questions might be on the exam (based on what we focused on in class) and quiz yourself (or each other) on those questions. Allocate enough time to study before an exam.

**Don’t procrastinate.** Use effective [time management](https://www.luc.edu/media/lucedu/ace/pdfs/TimeManageTips.pdf) to spread your workload out over the semester. There is too much course material for you to try to learn it all the night before an exam. Similarly, the group project assignments require planning and preparation.

**EVALUATION**

Your final grade will be based upon several different measures of performance in this course. These measures include exams, a class research project, and class participation. The relative weights, and a description of each requirement are listed below.

**Class Participation (50 points)**

This course is an upper-level course and will be run in a **discussion** format. Your active participation is essential for the course to succeed. I therefore expect you to prepare for class discussions and activities by completing all readings and assignments *on time* and spending some time *before class* contemplating those readings. Because we will spend class time primarily in discussion and applied activities, your classmates' learning as well as your own depends upon your commitment to preparing for class. There is quite a bit of reading for this course, so try to keep up (Note that students should spend about 6 hours/ week outside of class working on a 3-credit hour course). I will be keeping track of student contributions to class discussions. Your participation grade is largely based on the number of on-topic contributions that you make to class discussion, rather than on any kind of evaluation of the “quality” of your contributions, so please feel free to speak up! Pop quizzes may be used from time to time to ensure that students are coming to class prepared.

You can prepare for discussion by asking yourself the following questions as you read:

* What is the main message the author is trying to communicate?
* What arguments does the author make to support that message? Are those arguments logically sound?
* How good is the quality of the evidence used by the author? Does the author provide enough detail to be able to evaluate that quality?
* What was my emotional reaction to this reading, if any? Why do I think that I reacted this way?
* What examples can I think of that either support or contradict the point(s) that the author is making? Are my examples good evidence?
* What are the implications of the author’s ideas for interventions, policy, attitude change, social justice, etc.?
* What from this reading can I apply to myself or to people around me?
* How does this reading reinforce or contradict ideas that I have learned about in other classes?

**Exams (400 points)**

There will be four exams scheduled during the term. These exams will cover materials presented in class as well as material assigned in the text and other readings. For each exam, including the final exam, you are responsible only for material covered since the previous exam (e.g., the final is not cumulative). Each of these exams will consist of multiple choice, short answer, matching, and/or essay questions, and each will count 100 points toward your final grade. DO NOT MISS A SCHEDULED EXAM!! Only in an extreme case (which you might be asked to document) will alternative arrangements be made for a make-up exam, and I must be aware of your absence **PRIOR** to the exam. Unfortunately, failure to adhere to this policy will result in no credit, and no possibility of a make-up.

**Class Research Project (200 points)**

As a class, we’ll be conducting a (correlational) survey research project, including data collection and analysis. You are responsible for submitting (graded) drafts of the various sections of this project and a final paper incorporating the feedback you receive, as indicated on the course schedule. Although we are collecting and analyzing data as a group, your written work must be your own (see statement about academic honesty).

**IRB Certification**

All students in this course are required to participate in an online tutorial on doing research with human participants, and to obtain certification from this tutorial. Proof of this certification is required in order to earn a grade above a C-. Details of this assignment to be discussed in class.

**Extra Credit**

If you choose, you may earn up to six extra credit points by ANALYZING (not just summarizing) examples of course-related research or theory from the popular press (newspapers or magazines, not journals). There are at least two ways you can earn extra credit points, by analyzing cartoons and/or by analyzing articles describing community-related research. I welcome other creative ideas you may have for analyzing course concepts in the media, but I strongly suggest you clear such ideas with me ahead of time. All extra credit is due by the last day of class (not the final) and should be emailed to the instructor.

**Cartoons** (up to 3 points each). Find a cartoon from a newspaper or magazine that was published during the current term, and that illustrates a concept discussed in class. Type up a brief summary (3-5 sentences) of how the **main point** of the cartoon illustrates the concept and submit the summary with the cartoon.

**Articles** (up to 3 points each). Find an article from a newspaper or magazine (not a professional journal) that was published during the current semester, and that **discusses research** pertaining to some concept from class. Type up a brief (5-7 sentences) discussion of the article. Include the article's main point **and a critical evaluation of the research** presented (e.g., does the research, as reported, support the conclusions)? Does the article mistake correlation for causation? Idiographic conclusions from nomothetic research? Adequacy and representativeness of the sample? Biased experimenters? What other information would you need to evaluate the research properly?) Submit both the article and your discussion.

**General Policies**

**Late assignments**. All assignments are due at the beginning of class time. Any papers submitted more than 5 minutes after class has started will be considered late. Assignments will be penalized 10% for each calendar day late.

**Professional Communication.** Students are expected to maintain professional standards in all oral and written communication. In class, students are expected to show respect for the perspectives of others, to stay on task, and to present differing points of view politely. Please make an effort to address classmates at all times by using their chosen modes of address (including preferred names and gender pronouns). No emailing, texting, social media use, etc. is permitted during class (cell phones should be turned off before class). Similarly, while not forbidden, I would discourage you from using laptops to take notes, as [research suggests](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=96698291&site=ehost-live) that longhand notes are more helpful, and that non-academic laptop use is both tempting and negatively related to performance ([Ravizza, 2017](http://journals.sagepub.com/doi/abs/10.1177/0956797616677314)). Written assignments are expected to be typed, double-spaced and stapled, grammatically correct, well-organized, and proofread for typos and clarity. Clearly unprofessional papers will be returned ungraded.

**Academic Honesty.** The highest standard of academic honesty is expected from all students. Any form of academic dishonesty, such as plagiarism or cheating, will not be tolerated, and may be grounds for an automatic grade of 0 on exams or assignments, and may result in a failing grade for the course. *Students are responsible for knowing Loyola University’s* [*Code of Academic Integrity*](https://catalog.luc.edu/academic-standards-regulations/undergraduate/)*!* Please refer to the Code of Academic Integrity or ask the instructor if you have questions about what constitutes academic dishonesty. Ignorance of the definition of “plagiarism” is not an excuse.

### **Requests for Accommodation.** Loyola University Chicago provides reasonable accommodations for students with disabilities. Any student requesting accommodations related to a disability or other condition is required to register with the Student Accessibility Center (SAC). Professors will receive an accommodation notification from SAC, preferably within the first two weeks of class. Students are encouraged to meet with their professor individually to discuss their accommodations. All information will remain confidential. For more information about registering with SAC or questions about accommodations, please contact [SAC](https://www.luc.edu/sac/) at 773-508-3700 or [SAC@luc.edu.](mailto:SAC@luc.edu)

**LUC Course Drop Policy.** Please see the [academic calendar](https://www.luc.edu/academics/schedules/fall/academic_calendar.shtml) for a list of relevant dates. Note that the last date to withdraw with a grade of W is November 1.

**COVID Policy.** The University has decided that mask use in the classroom is optional this semester. I would encourage you to consider the risks and advantages of going maskless in class in order to make a good decision for yourself. For my part, I won’t be wearing a mask during class since (a) I believe that when I’m speaking (which happens a lot in class!) students find me much easier to understand without a mask (an important advantage) and (b) I’m at the front of the room, where I’m pretty well distanced from students (a mitigated risk). However, these same risks and advantages of going maskless probably don’t apply to your situation in the classroom, since you’ll be closer to your fellow students and (probably) won’t be speaking as much as me. Therefore, I would strongly encourage you to consider wearing a mask during class, as well as keeping some physical distance from your fellow students whenever possible.

**Psychology Department Diversity Statement.** The Department of Psychology at Loyola University Chicago believes that our department is best served when students, faculty, and staff reflect and celebrate the diversity of society at large. An integrated academic community is characterized by a broad range of perspectives. As such, our Department is committed to advocating for and supporting the interests of individuals from all races, sexes, gender identities, gender expressions, sexual orientations, religions, ethnic backgrounds, socioeconomic backgrounds, physical and mental abilities, and residency statuses. In the context of this course, students are expected to be respectful of the opinions of others while at the same time striving to attain the ideals of social and racial justice.

**Honoring Student Religious Observances.** Loyola faculty members will make efforts to accommodate students if the observance of a major religious holiday interferes with a student’s academic work. See the University statement on this topic [here](https://www.luc.edu/academicaffairs/homenews/honoringstudentreligiousobservances.shtml).

**Notice of My Reporting Obligations as a “Responsible Campus Partner.”** As a Loyola instructor, I am a Responsible Campus Partner (“RCP”) under Loyola’s [**Comprehensive Policy and Procedures for Addressing Discrimination, Sexual Misconduct, and Retaliation**](https://www.luc.edu/comprehensivepolicy/) (available at [**www.luc.edu/equity**](http://www.luc.edu/equity)). While my goal is for you to be able to engage fully and authentically with our course material through class discussions and written work, I also want to be transparent that as a RCP I am required to report certain disclosures of sexual misconduct (including sexual assault, sexual harassment, intimate partner and/or domestic violence, and/or stalking) to the [**Office for Equity & Compliance**](http://www.luc.edu/equity) ("OEC"). As the University’s [**Title IX**](http://www.luc.edu/titleix) office, the OEC coordinates the University's response to reports and complaints of sexual misconduct (as well as discrimination of any kind) to ensure students' rights are protected. As an instructor, I also have an obligation under Illinois law to report disclosures of or suspected instances of child abuse or neglect ([**https://www.luc.edu/hr/legal-notices/mandatedreportingofchildabuseandneglect/**](https://www.luc.edu/hr/legal-notices/mandatedreportingofchildabuseandneglect/)). The University maintains such reporting requirements to ensure that any student who experiences sexual/gender-based violence receives accurate information about available resources and support. Such reports **will not generate a report to law enforcement** (no student will ever be forced to file a report with the police). Additionally, the University’s resources and supports are available to all students even if a student chooses that they do not want any other action taken. If you have any questions about this policy, you are encouraged to contact the OEC at [**equity@luc.edu**](mailto:equity@luc.edu) or 773-508-7766. If you ever wish to speak with a **confidential** resource regarding gender-based violence, I encourage you to call [**The Line**](https://www.luc.edu/wellness/gender-basedviolence/advocacyline/) at 773-494-3810. The Line is staffed by confidential advocates from 8:30am-5pm M-F and 24 hours on the weekend when school is in session. Advocates can provide support, talk through your options (medical, legal, LUC reporting, safety planning, etc.), and connect you with resources as needed -- *without* generating a report or record with the OEC. More information about The Line can be found at [**luc.edu/wellness**](https://www.luc.edu/wellness/).

**Summary**

The relative weight given to each course requirement is listed below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Assignment** | **Points** | Final course grades will be assigned as follows: | | |
| Four Exams @ 100 points each | 400 | **A** | = 92.0 - 100% | or 598-650 points |
| Class Research Project | 200 | **A-** | = 90.0 - 91.9% | or 585-597 points |
| Intro Draft | 30 | **B+** | = 88.0 - 89.9% | or 572-584 points |
| Method Draft | 20 | **B** | = 82.0 - 87.9% | or 533-571 points |
| Results Draft | 20 | **B-** | = 80.0 - 81.9% | or 520-532 points |
| Discussion Draft | 30 | **C+** | = 78.0 - 79.9% | or 507-519 points |
| Final (revised) Paper | 100 | **C** | = 72.0 - 77.9% | or 468-506 points |
| Class Participation | 50 | **C-** | = 70.0 - 71.9% | or 455-467 points |
| **TOTAL** | **650** | **D+** | = 68.0 - 69.9% | or 442-454 points |
|  |  | **D** | = 60.0 - 67.9% | or 390-441 points |
|  |  | **F** | = < 60% | or at or below 389 points |

## **Tentative Daily Course Schedule**

## (Note that I am likely to adjust this schedule several times during the semester,

## based on how long we spend discussing various readings. This is a feature of the course, not a bug.

## Readings without links are generally available in the Resources tab of the course Sakai page.)

## **Week 1 (beginning August 26) – Why Bother with Science?**

## M Introduction

## (recommended – read syllabus, [Putnam](https://go.openathens.net/redirector/luc.edu?url={UrlEncode(https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,sso&db=a9h&AN=118477456&scope=site)}), my [teaching philosophy](https://www.luc.edu/psychology/people/faculty/facultystaff/stevendavis/), “Tips for doing well in a Davis class.”)

W Ch. 1

F [Mission critical thinking](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=126761944&site=ehost-live). (2017). *New Scientist, 236*(3156), 5.

Lilienfeld, S.O., Ammirati, R., & David, M. (2012) [Distinguishing science from pseudoscience in school psychology: Science and scientific thinking as safeguards against human error](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=73201520&site=ehost-live)*. Journal of School Psychology, 50*(1), 7-36. DOI: 10.1016/j.jsp.2011.09.006.

(read sections 1-3, pp. 7-21)

Shermer, M. (2013). [When science doesn't support beliefs](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=90337041&site=ehost-live). *Scientific American, 309*(4), 95.

**Week 2 (beginning September 2) – The Scientific Method vs. Pseudoscience**

M **Labor Day (no class)**

W Ch. 2

Medin, D.; Lee, C.D.; Bang, M. (2014). [Particular points of view.](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=98530149&site=ehost-live) *Scientific American, 311*(4), 44- 45.

*Opportunity -* [*Job, Internship, and Service Fair*](https://lucweb.luc.edu/newsevents/public/calendar_detail_jmd.cfm?eventid=125024&siteid=0&month=9&year=2024&day=4&range=d&audience=0&view=mw&skin=default) *(Damen MPR, 1-4)*

F Lilienfeld (read sections 4-5, pp. 21-31)

Barrett, S. (2006) [What ‘they’ don’t want you to know: An analysis of Kevin Trudeau’s Natural Cures](https://skepticalinquirer.org/2006/01/what-they-dont-want-you-to-know/). S*keptical Inquirer, 30*(1).

Wilson, C. (2020). [Pseudoscience on TV](https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,sso&db=a9h&AN=141339398&scope=site&custid=s8448101). *New Scientist, 245*(3266), 23.

For fun, consider browsing some of these good online sources of information about pseudoscience in psychology

* The Committee for Skeptical Inquiry <http://csicop.org>
* Quackwatch (pseudoscience in mental health index)

<http://www.quackwatch.com/01QuackeryRelatedTopics/mhindex.html>

* Scientific Review of Mental Health Practice <http://www.srmhp.org>

**Week 3 (beginning September 9) – Pseudoscience, Communication in Psychology**

M Shermer, M. (2016). [The Quack of the Gaps Problem](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=116822740&site=ehost-live). *Scientific American, 315*(2), 75.

Hooper, R. (2018). [Nightmares from the fringe](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=130636397&site=ehost-live). *New Scientist, 239*(3186), 10.

Shermer, M. (2009). [I want to believe](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=41130026&site=ehost-live). *Scientific American, 301*(1), 33-35.

W Appendix A

F **Exam 1**

**Week 4 (beginning September 16) – Research Ethics and Fundamental Issues**

M Ch. 3

W Singer, P. (1975). *Animal Liberation* (selections).

F Ch. 4

**Week 5 (beginning September 23) – Measurement, Qualitative Methods, and Observation**

M Ch. 5

W **Introduction/references/title page for CRP, Draft 1 due**

F Ch. 6; qualitative handout

**Week 6 (beginning September 30) – Survey Research, Sampling**

M-W Ch. 7

F Ch. 13, pp. 260-266

**Week 7 (beginning October 7) - True Experiments**

M **Mid-semester break (no class)**

W **Exam 2**

F Ch. 8

**Week 8 (beginning October 14) - Correlation and Multiple Regression**

M Ch. 9

W Ch. 12 (read from “Correlation Coefficients” on, pp. 235-247)

F **Method for CRP, Draft 1 due**

Allison, P.D. (1998). [What is multiple regression](http://www.sagepub.com/upm-data/2725_allis01.pdf)? In *Multiple Regression: A Primer.* Sage

Publications.

**Week 9 (beginning October 21) – Complex and Quasi-experimental Designs**

M No new reading

W Ch. 10

F Ch. 11 (quasi-experimental designs, pp. 210-218)

**Week 10 (beginning October 28) – Single Case/Developmental Research, Neuroscience**

M Program Evaluation Outline

W Ch. 11 (Single case design; developmental research)

**Results for CRP, Draft 1 due**

F Beck, D.M. (2010). [The appeal of the brain in the popular press](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=69707286&site=ehost-live). *Perspectives on Psychological*  *Science, 5*(6), 762-766. DOI: 10.1177/1745691610388779.

Rose, F. (2012). [The Selfish Meme](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=80188887&site=ehost-live). *Atlantic, 310*(3), 30.

**Week 11 (beginning November 4) - Misinformation**

M No new reading

W **Exam 3**

F Lewandowsky, S., Ecker, U.K.H., Seifert, C.M., Schwarz, N., & Cook, J. (2012). [Misinformation and its correction: Continued influence and successful debiasing](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=82380758&site=ehost-live). *Psychological Science in the Public Interest, 13*(3), 106-131.

(read pp. 106-111)

**Week 12 (beginning November 11) – Misinformation and Science Skepticism**

M Shermer, M. (2015). [Forging Doubt](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=101051684&site=ehost-live). *Scientific American, 312*(3), 74.

Hagel, C. (2020). [Stop suppressing science](https://search-ebscohost-com.flagship.luc.edu/login.aspx?direct=true&db=a9h&AN=140285372&site=ehost-live&custid=s8448101). *Scientific American, 322*(1), 11.

American Petroleum Institute (1998) Memo.

**Discussion/references/abstract for CRP, Draft 1 due**

W Evans, W. (1996). [Science and reason in film and television](http://www.csicop.org/si/show/science_and_reason_in_film_and_television/). *Skeptical Inquirer, 20*(1).

Raloff, J. (1996). [When science and beliefs collide](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=9606137815&site=ehost-live). *Science News, 149*(23), 360-361.

F Hornsey, M.J. (2020). [Why facts are not enough: Understanding and managing the motivated](https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,sso&db=a9h&AN=147528652&scope=site&custid=s8448101) rejection of science. *Current Directions in Psychological Science, 29*(6), 583-591.

Shermer, M. (2013). [The Left's war on science](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=84950310&site=ehost-live). *Scientific American, 308*(2), 76.

Swenson, D. (2013). [“The Left” and science.](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=87781194&site=ehost-live) *Scientific American, 308*(6), 8.

[Put Science Back in Congress](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=125133763&site=ehost-live). (2017). *Scientific American, 317*(4), 10.

Shermer, M. (2017). [When Facts Backfire](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=120240182&site=ehost-live). *Scientific American, 316*(1), 69.

**Week 13 (beginning November 18) – Anti-Scientific Attitudes**

M Willingham, D.T. (2011). [Trust me, I’m a scientist](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=59966317&site=ehost-live). *Scientific American, 304*(5), 12.

Seppa, N. (2013). [Impactful distraction: Talking while driving poses dangers that people seem unable to see](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=89720444&site=ehost-live). *Science News, 184*(4), 20-24.

W Lilienfeld, S.O. (2012). Public Skepticism of Psychology: Why Many People Perceive the Study of Human Behavior as Unscientific. *American Psychologist, 67*(2), 111-129.

**CRP revised paper due**

F No new reading

**Week 14 (beginning November 25) – Fighting Anti-Scientific Attitudes**

M Aschwanden, C. (2015). [A User's Guide to RATIONAL THINKING](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=103075686&site=ehost-live). *Discover, 36*(6), 44-49.

W-F **Thanksgiving (no class)**

**Week 15 (beginning December 2) – Generalization, Replication**

M Ch. 14

Carey, B. (2015) [Many psychology findings not as strong as claimed, study says](http://www.nytimes.com/2015/08/28/science/many-social-science-findings-not-as-strong-as-claimed-study-says.html?_r=0). *New York Times* (8/28).

Johnson, G. (2014). [New Truths That Only One Can See](https://www.nytimes.com/2014/01/21/science/new-truths-that-only-one-can-see.html). *New York Times, 163*(56388), D1-D6.

W Simmons, J.P.; Nelson, L.D.; Simonsohn, U. (2011). [False-Positive Psychology: Undisclosed Flexibility in Data Collection and Analysis Allows Presenting Anything as Significant](http://flagship.luc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=67745922&site=ehost-live). *Psychological Science, 22*(11), 1359-1366.

F No new reading

**Final Exam – Friday December 13, 4:15**

**Some things that you should already know**

You should be familiar with several statistical concepts, based upon your experiences in PSYC 304. Listed here are some of the most important statistical concepts you should understand *before* enrolling in this course. Specifically, you should know the meaning and use of all of the **bold** terms listed here. You should know …

- how to compute a **mean** and **standard deviation**.

Sd of a sample = sqrt((x-xmean)2)/(n-1))

- how to compute **standard scores**. Standard scores tell you how many standard deviations a data point is from the mean. For example, a z-score of 1.0 is one standard deviation above the mean.

z = (x-xmean)/sd

- that for a **normally distributed** set of scores, the range of standard scores between

-1 and 1 contains the middle 67% of the distribution

-2 and 2 contains the middle 95% of the distribution (technically, between -1.96 and 1.96)

-3 and 3 contains the middle 99% of the distribution

- that the **sampling distribution** of a statistic (such as a mean) is the hypothetical distribution of the statistic (e.g., the means) for an infinite number of possible samples of a certain size sample size n drawn from a population. This sampling distribution is normally distributed and has a standard deviation (**standard error**) equaling the population standard deviation divided by sqrt(n). The mean of the sampling distribution of means is the population mean (**central limit theorem**).

- that a **correlation coefficient** (r) ranges from -1 to 1 and tells you the strength and direction of the relationship between two variables. By squaring the correlation coefficient, you get R2, which represents the **proportion of variance** in each variable explained by the other variable.

- that **null hypothesis significance testing** is used to determine whether you can be confident in rejecting the **null hypothesis** (that there is no difference between groups or no relationship between variables). A **p value** of < .05 indicates that there is only a 5% chance that a true null hypothesis is being rejected incorrectly (which would be a **Type 1 error**, you believe you found something real when the “finding” was just a quirk of your sample), and is usually the standard used to claim that there is a **significant** result.

- a **Type 2 error** occurs when you do not reject the null hypothesis, despite it being false. This usually occurs as a result of insufficient **power** (for example, a small sample size).

- that a 95% **confidence interval** of a **statistic** gives you a range that you are 95% confident contains the true **population parameter**.

- that **t-tests** are used to look for mean difference between two groups, and **F-tests** are used to look for mean difference between more than two groups (**ANOVA**).

- that when you are predicting a **dependent variable** from two or more **independent variables**, each independent variable might have a **main effect** on the dependent variable, but there also might be **interaction effects** between two (or more) independent variables affecting the dependent variable. In an interaction effect, the effect of one independent variable on the dependent variable changes, depending on the value of a second independent variable.