Psychology 205: Psychological Research

William Revelle

May 24, 2021

1 Outline (to be added to frequently – keep checking)

This is the abbreviated form of the syllabus, The full syllabus is at
https://personality-project.org/courses/205.syllabus.21.pdf

Current version of May 24, 2021

1.1 News of changes

March 30: Updated the first week's links.

April 5: Preliminary results have been added to the Week 2 slides.

April 7: Final results have been added to the Week 2 day 2 slides.

April 12: Added answers to the stats problems (this is now really a review of statistics) Changed the dates for the paper and midterm Improved the how to write a paper section.

April 14th : Added the within/between design slides (which also reviews the findings for our experiment) moved the midterm from next Wednesday to the following Monday.

April 18th: Added a link to https://go.oncehub.com/WilliamRevelle for you to schedule appointments to grade your papers. These meetings will be held by Zoom at my office hours address: 8474917700. I am still playing with this booking system, so you need to be tolerant.

April 19th: Added the week 4 between subjects and anova slides.

April 28th: Added the experiment slides

April 29th: Updated the experiment/simulation slides. Note, the problem of not asking for the number of subjects has been corrected. Also updated the link to the Funkhouser short guide.

May 1: Updated the reading list and background for Study 2.

May 3: Improved the how to analyze experiment 2 slides.

May 5: Corrected a mistake in the Funkhouser how to slides (need to install psychTools and make it active) Added the inferential and field experiment slides

May 12: Added the ethics in research and methods of differential psychology slides

May 24: Added the summary slides

1.2 Assignments as a table

Week	Topic	Lecture Notes	Readings	Homework	R and statistics
1 a	Introduction and Overview	Statistical and Experimental Inference	Our memory study is based on Roediger & McDermott, 1995 **Text: Chapter 1: The Science of Psychology**	data collection Turn in data sheets Wednesday	Statistics quiz
1b	Reasoning in Research	Review of statistical concepts the basic t.test	A classic example of experimental reasoning Madsen and McGaugh (1961) **Text: Chapter 2: Overview of the Scientific Method**	review statistics from 201 (perhaps look at Poldrack's on line statistics text Basic stats on our data	 t-test in R
2a	Examples of experimental reasoning	Research design as solving a puzzle	Embracing the power of randomness **Text: Chapter 5: Experimental Research** Descriptive statistics using R	Solving the homework by using R for statistics	A short introduction to R and a longer one
2 b	Review of statistics and of the homework	Study 1 results The generation of false memory based	simulating distributions Why you should not use Excel for statistics (Simonof) or how to fight spreadsheet addiction (Burns)	Optional readings for your enjoyment	stats home work solutions Another approach.
3a	Variables in Experimentation	Review of statistics Writing a research paper Within and between designs Between subject designs	Are subjects WEIRD (optional) & Writing the APA style paper (**Text: Chapter IX: Presenting your research)** Modality effects on false memory results and the most recent results	 Using Endnote or BibTex for references using LaTeX to format an APA style paper	Estimating the central tendency/dispersion
3b	Analysis of Variance	Writing a research paper Artifacts in Experimentation Theory Testing as well as results from our study	APA Manual of Style see also the APA style FAQ as well as the APA tutorial of the basics of APA style 'Doc Scribe's APA Lite' Bem (2003), Writing the empirical journal article	Paper 1 Remember the instructions for writing a research paper materials used in R & M study (For your paper) Possible figures to include in your paper may be taken from the results handout	ANOVA in R
4a	The use of ANOVA and Linear Regression in interaction designs Interaction designs and analysis	More on Design in Experimentation and controlling for confounds	**Text: Chapter IX: Factorial Designs**		**Paper 1 is DUE! Appointments for paper grading**
4b	Correlational designs	Measurement and reliability Problems with inference subject variables	**Text: Chapter IV: Psychological Measurement**		
5a	**Mid Term 1**	Sample tests and another sample test with key		Midterm 1 questions and answers	
5b	Correlational designs (continued) Interaction designs and analysis	Correlational designs (reliability) Correlation and Regression overview subject variables Simulating Science	**Text: Chapter VI: Non experimental research**		 An even simpler guide to R
6a	Experiment 2: simulation experiment	Background on arousal theories of personality and cognition	Issues in Measurement Anderson & Revelle, 1994 Revelle, Anderson & Humphreys, 1987 Revelle, 1993	A simulation experiment handout describing the Experiment-2 for paper 2	Block randomization using R Using R to analyze the data
6b	Observational versus randomized trials in field studies the example of health Inferential tests Exploratory and Confirmatory data analysis	Random assignment in field trials (Born et al., 2002) Pitfalls in scientific research	Searching the literature using Google Scholar or Psych Lit **Text: Chapter VIII: Quasi-Experimental Research**		Shorter guide to R An even simpler guide to R Help on data analysis
7a	Research ethics	Ethics in Research	On Being a Scientist (NAS) Ethical Standards of APA (2018) **Text: Chapter III: Research Ethics**		
7b	Methods in Differential Psychology	Methods in differential psychology	Individual Differences	Paper 2 is DUE! Schedule appointments for grading	
8a	Alternatives to Experimentation	Quasi-experimental designs and other kinds of designs	Individual differences: methods Advanced statistical procedures	Advanced statistical procedures	results
8b	Further topics	Using Qualtrics to collect data		Research Proposals for final project due	scoring scales using qualtrics
9a	Course review				
9b					Brief midterm exam
10a	Reading Week begins		appointments for analysis help Analyze study 3	How to use R to score scales	Score scales (more detail)

1.3 Daily detail— Still in progress

1. Week 1: the text Research Methods Textbook: Research Methods in Psychology, 4th American Edition by Jhangiani et al. (2019). Chapters 1 and 2.
2. Week 2: Experimental Reasoning. Text: Chapter 5.
3. Week 3: Review of basic statistics with some examples in R
4. Bem (2003), Writing the empirical journal article. Text: Chapter 9
5. using LaTeX to format an APA style paper Three output styles: journal, document, manuscript But

one tex file (with an accompanying boxplot and another graphic file as pdfs and an example bib file embedded in the text document.) Remember the instructions for writing a research paper

6. Using Endnote or BibTex for references using LaTeX to format an APA style paper
7. Week 4: Added Sample tests and another sample test with key from prior midterms
8. Background on arousal theories Observational versus randomized trials in field studies experiments versus field studies: the example of health Random assignment in field trials (Born et al., 2002) Using statistics in psychological research A short guide to R for 205 students Long guide to R Detailed handout on data analysis for experiment 2 An even simpler guide to R written by a 205 student
9. Week 8 searching the literature
10. References for paper 2: Revelle, Humphreys, Simon and Gilliland, 1980 (this gives some of the EPI items to measure impulsivity and Revelle, Anderson, and Humphreys, 1987 (very large file) and Anderson and Revelle, 1994 see also Revelle, (1993) which reviews Thayer's results and discusses performance arousal theorie
11. Methods in Differential Psychology Methods in differential psychology Paper 2 is DUE! Schedule appointments for grading
12. Midterm # 2 Study guide for Midterm 2 Example and answers for Midterm 2 (from 2010)
13. Ethics in Researchm On Being a Scientist (NAS) Ethical Standards of APA (2010)
14. Week 10 Alternatives to Experimentation Advanced statistical procedures Course Review Quasi-experimental designs and other kinds of designs Research Proposals for final project due
15. Oral reports on research proposals (Optional) Other topics Using Qualtrics to collect data

    scoring scales using qualtrics
16. Reading Week begins appointments for analysis help Analyze study 3 How to use R to score scales Score scales (more detail)
17. Finals Week

References

Jhangiani, R. S., Chiang, I.-C. A., Cuttler, C., and Leighton, D. C. (2019). *Research Methods in Psychology*. KPU Press, 4th edition.

Poldrack, R. A. (2019). *Statistical Thinking for the 21st Century*. github.

R Core Team (2021). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria.

Revelle, W. (2021). psych: Procedures for personality and psychological research. Technical report, https://CRAN.r-project.org/package=psych. R package version 2.1.3.