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POLS: 450: Research in Biology, Psychology, and Politics—A Peer Review of Teaching Project Benchmark Portfolio

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Peer Review of Teaching Project Benchmark Course Portfolio 2015-2016

Political Science 450: Research in Biology, Psychology, and Politics Spring Semester 2016

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Abstract:

This benchmark course portfolio provides an overview of student learning in Research in Biology, Psychology, and Politics (Political Science 450). This is an upper-level undergraduate course focused on training students to conduct research in the interdisciplinary area of political psychology. Enrollment in the course is primarily advanced political science majors, or students from related majors (i.e., psychology) with an interest in politics. This course focuses on developing understanding of research methods and application of appropriate methods to small group research projects. In addition, the course helps to improve student confidence in ability to engage in the research process and understand research encountered outside of class. In this portfolio, course objectives are measured against classroom performance data and student self-reported confidence in understanding and conducting research over the course of the semester. Results show that most students performed well in the course and confidence in both areas increased from the beginning to the end of the semester. Future plans for the course are discussed.

Keywords: teaching, political science, political psychology, research methods, backward design

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1. Objectives of Peer Review Course Portfolio

This portfolio provides an overview of student learning in my Research in Biology, Psychology, and Politics (POLS 450) course during Spring Semester 2016. I choose to focus on this course for the Peer Review of Teaching Project because it is a challenging, upper-level course that is focused on training students to understand and conduct interdisciplinary research. I plan to offer this course on a regular basis, and it fits well with my overall teaching focus and interests in the area of political psychology. Putting additional effort into development and refinement of this course now will help serve as a foundation for much of my teaching, including the development of other, related courses. This course is unique, in that courses like this are typically not offered in political science departments. It can be challenging to introduce students with varied academic backgrounds and experience to a course that requires direct engagement in the research process. There are challenges in putting together the course in a way that is both accessible and challenging to students, and given the lack of existing courses in this area, it is worth examining what makes a research lab course in political science successful.

Goals for the Portfolio

I have three main goals for creating this course portfolio, which are:

Goal 1: To examine and address the challenges associated with offering an interdisciplinary research course to undergraduates – introducing them to research design and statistical analysis, given varied levels of prior knowledge and experience.

Goal 2: To document my teaching through for the promotion and tenure process.

Goal 2: To share this portfolio with others in the discipline interested in teaching similar interdisciplinary research courses in the area of political psychology, and to help start a dialogue about best practices for teaching advanced undergraduate courses in this area.

Type of Course Portfolio

This is a benchmark course portfolio, which provides a broad overview of the course. My primary focus will be on assessing how well students are able to meet the requirements for conducting their own research projects during the 16-week semester, and examining whether my approach is accessible to students from different academic backgrounds, given the interdisciplinary focus. This portfolio is part of a larger interest in teaching interdisciplinary courses in the area of political psychology, given the shortage of existing textbooks and courses in this subfield.

2. Description of the Course

Research in Biology, Psychology, and Politics (POLs 450) serves as the final course in the undergraduate Biology, Psychology, and Politics sequence in the Political Science Department. The other courses in this area include Introduction to Biology, Psychology, and Politics (POLs 150), Genetics, Brains, and Politics (POLs 250), and Issues in Biology, Psychology, and Politics (POLs 350). POLs 150 and 250 introduce students to political psychology and biopolitics, and 350 rotates topics depending on who is teaching the course but provides some additional in-depth understanding of a topical area in political psychology or biopolitics (such as the influence of emotion on politics, or political ideology). While these courses are meant to be taken in a sequence, there is no prerequisite system currently set up so some students do take all four courses, but some do not. And, students sometimes take them out of order.

In POLs 450, students are introduced to a substantive area of research in political psychology, and they gain a basic understanding of correlational and experimental research methods and statistical analyses relevant to this area of study. Over the course of the semester, students work together in small groups to complete their own research projects for class—proposing an idea, designing study materials, collecting data, analyzing results, presenting their findings in a poster session, and producing a final research paper.

This course is still relatively new, having been taught once by someone else prior to my arrival, and this will be the second time offered by me. However, this course sequence aligns with one of the department's areas of emphasis—biology, psychology, and politics—and is likely to become more popular over time and offered on a regular basis. This course lists only our research methods course, Political Analysis (POLs 286), as a prerequisite, but in the past that class has not been offered on a regular basis so both times I taught the class I waived the prerequisite. Most of the students who have enrolled in POLs 450 have not taken POLs 286, which meant that many of them did not have much training or experience with research design or statistical analysis. The department now plans to require POLs 286 for all majors, so it should be able to serve as a prerequisite for POLs 450 in the future.

Enrollment

The students in this course are mostly undergraduate seniors, as this is a 400-level course. The previous time I taught the course (Spring Semester 2014), 9 of the 14 students were seniors. Most of the students are Political Science majors or minors. In Spring 2014, all but two of the students had Political Science as one of their majors, although many (7 of 14) had two or three majors. During Spring Semester 2016, 9 students took the course. Eight of 9 were political science majors and 6 of 9 were seniors, with 3 planning to graduate in 2016. The students ranged in age from 20 to 44 ($M = 24.33$, $SD = 7.57$). Two of the 9 students identified as non-traditional students (defined as those who took time off before going back to school, or those who work full-time while taking classes). Students self-reported their GPA at the beginning of the semester. GPAs ranged from 2.92 to 4.0 ($M = 3.51$, $SD = .42$). A majority of the students were working part-time, with some reporting significant time commitments for work: 3 reported working 30-40 hours per week, 4 reported 20-30 hours, 1 reported 10-20 hours, and only 1 student was not working. Students were taking between 6 and 19 credits ($M = 13.89$, $SD = 3.92$). At the beginning of the semester, all 9 students said that research skills may be useful for their future career (4 yes, 5 maybe) and 7 of the 9 students were considering graduate school (2 yes, 5 maybe, 2 no).

Course Goals

My goals in teaching Research in Biology, Psychology, and Politics (POLS 450) are as follows (see [Appendix A](#) for a copy of the course syllabus):

Objective 1: Identify and apply the scientific methods that are used by researchers in political psychology.

One of the main goals of the course is for students to develop an improved understanding of how the research process works, both in terms of understanding basic principles of research and applying those principles to existing research literature and to their own research projects over the course of the semester. This should help to improve students' ability to engage in independent research in the future, should it be relevant for their future educational goals or career goals, and should help to provide a lasting foundation for becoming an effective consumer of research (see Objective 4). Students will accomplish this goal through completion of the group research project.

Objective 2: Understand the steps involved in good research: beginning with asking good questions and ending with dissemination of results.

Throughout the semester, we will spend time analyzing each of the steps in the research process—including generation of research questions and hypotheses, conceptualization and operationalization of variables, correlational and experimental research design, literature reviews, and data analysis. This knowledge is instrumental both in conducting independent research and in analyzing existing research literature. Students will gain understanding of these topics through class lecture and discussion, short research methods assignments, and the take-home midterm exam. Students will also have a chance to apply this knowledge through the group research project.

Objective 3: Gain confidence in your ability to conduct research.

The third objective is focused on students' self-perceptions of their own ability to engage in the research process. This is important for their development as independent scholars and practitioners, and should aid them on the job market or in preparation for graduate school. Students build confidence through increased familiarity with the subject material, but more importantly, through hands on experience conducting their own research projects and presenting the final product to the class and the department.

Objective 4: Improve your ability to think critically about the research that you encounter in day-to-day life.

As students learn about research methods, they also learn to apply these methods to the existing research literature. During the early part of the semester, students read existing literature on a topic area within political psychology and are required to dissect the research methods used in the article—identifying hypotheses, variables, and research design. The development of these skills should help with completion of the research project, as well as help turn students into better consumers of research they encounter in the news or as it is relevant to their future careers.

3. Teaching Methods and Course Activities

In this course, I use a combination of lecture, class discussion, and small group work during class time (see [Appendix A](#) for course syllabus). The course consists of three segments—(1) overview of research methods in political psychology, (2) discussion of research literature on political attitudes, and (3) application of this material to the small group research projects. The course changes over the semester—starting with more frequent lectures, followed by class discussion, and ending the semester with much more time spent on small group work.

During the first few weeks of class, I spend quite a bit of time lecturing about research methods in political psychology given that students in the class often come from different backgrounds and have had different levels of exposure to research methods in political psychology. I cover theory and hypothesis development, conceptualization and operationalization of variables, correlational and experimental research design, and issues related to reliability and validity. During these lectures I invite participation and questions from students, but the focus is typically more on conveying content so that everyone has the same level of understanding of research methods.

During the second segment of the class, we focus on discussing relevant research literature in one specific area. This semester, we focused on discussing research from political science and psychology related to understanding political attitudes. I use a different approach during this section of the class, structuring the class more like a graduate research seminar than an undergraduate lecture course. For each class period, students are assigned 2 or 3 peer-reviewed journal articles to read prior to class. During class, I provide a brief introduction to the topic for that day. I may write on the whiteboard but do not prepare lecture slides. Then, we discuss each of the articles in turn. I may ask students to work with a partner to identify key aspects of the article—identifying hypotheses, variables, and results—and then discuss the research studies as a class, focusing on understanding of the research methods and content and discussing implications of the work and ideas for future research.

Finally, students are placed into small groups based on their interests and the remainder of the semester is spent developing and working through their projects in a series of smaller steps. I will usually introduce the next step of the project and provide students with additional information about how to accomplish that task, and then give the students class time to work on that step of the research process. For example, students are placed into research groups based on their interests, I talk a bit about ethics in relation to human subjects research, and then they are given time during class to discuss research ideas with their group members. The first assignment for the groups is to put together a research proposal and presentation to the class summarizing their research ideas and plan for the project. They are tasked with developing a novel hypothesis related to the course material, and developing a correlational or experimental research design to test that hypothesis. Students then present their ideas to their classmates and submit an official research proposal to me for grading and approval prior to data collection. The remainder of the semester continues in a similar fashion, alternating between short lectures on the next stage of the process and students working together to complete the next step. I discuss scientific writing, participant recruitment, data analysis, and students are given class time to work with their groups to accomplish each of these steps. On group work days, I talk to each group to assess where they are in the research process and provide feedback on research design and data analysis as needed. Toward the end of the semester, they also spend class time reviewing drafts of their classmates' final papers. Finally, one of our last class periods is

devoted to a poster session where the students present their projects both to each other and to faculty and other students in the department.

Course Activities Outside of Class

Outside of class, students have a number of individual assignments over the course of the semester, including assigned readings, reaction papers, short research assignments, a take-home midterm exam, and a final research paper. During the research methods portion of the class, students complete short research assignments designed to reinforce what we have discussed in class. The take-home midterm exam also focused on research methods and provided a way for me to assess student understanding from that first section of the course. During the second section of the class, students read journal articles and submit reaction papers on those articles prior to class. The reaction papers help to shape class discussion and allow me to assess how well students are understanding the research articles. With their groups, they complete a research proposal, program their research study, analyze and present the results in a poster. While the students do have some class time to work on group projects, most of the groups end up spending additional time outside of class meeting with their groups and working on various aspects of their projects.

Course Materials

This semester, I did not use any textbooks for the class. The first time I taught the class I required a research methods textbook, but many of the students said they either did not find it useful or did not really use it, so this semester I made it optional, but still listed the relevant sections on the syllabus in case students wanted additional background reading. For our discussion of research methods, students' primary resource was my lecture slides, which were posted on Blackboard after class and could be referenced again as they work through related stages of their research projects. During the second part of the class, students read a number of peer-reviewed journal articles that were made available through Blackboard. I also prepare handouts related to data analysis and use of statistical analysis software.

Rationale for Teaching Methods

This course incorporates a variety of teaching methods and course activities to reinforce the 4 objectives outlined above and on the syllabus. Students learn about the stages of the research process, apply that information through short assignments and the take-home midterm exam, and to their group research projects. Analyzing the existing research literature in terms of these principles of research methods helps to improve students' ability to analyze research they encounter outside of class. The group project provides a way for students to gain hands-on experience with research methods used by political psychologists. Through completion of the group proposal presentation and poster presentation students gain confidence in presenting their ideas through public speaking. Finally, developing a research plan and analyzing data provides the students with real-world skills that may be applicable should they decide to pursue graduate school or a research-related career.

I modeled this course after how research laboratory courses are structured in psychology departments, so the structure of the course is certainly influenced by my academic background and training (which was primarily in psychology). This format is less common in political science

departments, but makes sense for an interdisciplinary course focused on the intersection between political science and psychology.

Connection to the Broader Curriculum

As mentioned above, this course is part of a sequence in the Political Science Department focused on biology, psychology, and politics. When putting together this course, I consider what other information students are getting if they have taken other courses in the sequence and try to make sure POLS 450 serves to supplement those other courses without providing too much overlapping information. For example, I try to make sure we read different journal articles and focus on a research area different from what they have read or learned about in other classes. The discussion and application of research methods and data analysis may complement what they have learned in these other classes, as well as our research methods class (POL 286) if students have taken that course. For example, this semester the students analyzed data using R Studio, which some other faculty and graduate students have had students use in POLS 286 or other courses in the sequence, so the use of this software package serves to supplement experiences from other related courses and in their future research careers.

4. Analysis of Student Learning

Student learning was assessed through a series of individual assignments, including short research assignments, a take-home midterm exam, reaction papers, and the final research paper. Students also completed a number of group assignments for the research project, including a research proposal, proposal presentation, and poster presentation. To supplement the data from classroom performance, students also responded to a survey at four time points during the semester: at the start of the semester (week 3-4), after completing the take-home midterm exam (week 7), after completing the group research proposal and presentation (week 9), and after turning in final papers at the end of the 16-week semester. Below, I examine a number of metrics to evaluate student learning, organized in terms of the four course objectives.

Objective 1: Identify and apply the scientific methods that are used by researchers in political psychology.

In order to analyze the first objective, I focused on examining how students performed on the group assignments for the research project, including the research proposal and final poster presentation. For each of these assignments, students received one grade as a group. There were nine students in the course, split up into three groups of three students each. Grades for the research proposal presentation, written research proposal, poster draft, and poster presentation are summarized by group in Table 1.

	Research Proposal Presentation (40 points)	Written Research Proposal (40 points)	Poster (80 points)	Poster Presentation (20 points)
Group A	38	39	75	20
Group B	33.5	37	70	20
Group C	36	38	75	20

Table 1. Grades for group project component assignments.

Research Proposal

Prior to data collection, students gave a group presentation in class on their research plan and submitted a research proposal to me for grading and final approval. Each group received a grade both for the presentation and for the written proposal—worth 40 points each. As shown above in Table 1, Group A earned an A on the presentation and A+ on the written proposal. Group B earned a B on the presentation and an A- on the proposal. Finally, Group C earned an A- on the presentation and A on the proposal. Each of the three groups earned a better grade on the written proposal compared to the oral presentation, perhaps suggesting that they put more time into the written proposal or that I was a bit more critical in grading the oral presentations or less clear in my expectations.

Final Poster

At the end of the semester, the groups prepared a final poster for the final poster session held the last week of class. Prior to the poster session, students submitted a poster draft to me for

grading and approval. They also received a grade for participation in the poster session itself. Groups A and C received A grades on their posters, while Group B received a B+. All of the students attended and participated in the poster session, so all three groups received 20 out of 20 points for that assignment. At the poster session, I also asked those who attended (including faculty, graduate students, and other undergraduate students in the department) to rate each of the three groups on: *how well they explained their project, how well they addressed questions, and the quality of the group’s poster*. Each of these questions was rated on a 7-point scale from 1 = *Poor* to 7 = *Excellent*. Twelve people responded to the survey. Group ratings from the attendees are summarized below in Table 2.

	Explain Research	Answer Questions	Poster Quality
Group A	6.4 (.79)	6.7 (.65)	6.3 (.98)
Group B	5.5 (.93)	6.2 (.98)	6.0 (.77)
Group C	5.9 (1.04)	6.2 (.98)	6.3 (.90)

Table 2. Summary statistics for poster session ratings from attendees. Standard deviations in parentheses.

Group A received the highest ratings for explaining their research and answering questions, followed by Group C, and then Group B. The ratings of poster quality were similar to how I graded the poster drafts—posters for Groups A and C were rated a bit higher than the poster for Group B. Overall, though, it is worth noting that all of these ratings were well above the scale midpoint (3.5), again suggesting that all of the students did quite well at the poster session and that those in attendance agreed with my assessment.

Objective 2: Understand the steps involved in good research: beginning with asking good questions and ending with dissemination of results.

To analyze the second objective, I focused on completion of individual research assignments and the take-home midterm exam. Each of these assignments focused on understanding the steps of the research process.

Short Research Assignments

Over the course of the semester, students completed four short assignments designed to reinforce various aspects of the research process (understanding variables, experimental design, finding references, and interpreting data). Each of these assignments was completed individually and graded out of a possible 20 points. Descriptive statistics for the assignments are provided in Table 3. Overall, students did well on each of these assignments. If anything, they struggled a bit more with the final assignment on interpreting data, but that is often the most challenging portion of the course for students to master.

Overall, grades on the four short assignments were not necessarily strongly related to one another, given that the assignments focused on different aspects of the research process. Grades on assignments 1 and 2, which both dealt with aspects of research design, were strongly correlated in a positive direction ($r = .97, p < .05$). The first two assignments were positively correlated with the third (both $ps < .05$), but assignments 1 through 3 were all

negatively related to performance on assignment 4, although none of these relationships were statistically significant.

	Mean	Median	Standard Deviation
Short Assignment 1	19.44	20	1.33
Short Assignment 2	19.67	20	0.71
Short Assignment 3	19.56	20	1.01
Short Assignment 4	18.89	19	1.05

Table 3. Summary statistics for short research assignment grades.

Midterm Exam

During weeks 5 and 6 of the course, students completed a take-home midterm exam designed to assess their understanding of research methods, which I covered during weeks 1 through 3 of the course. Students completed the midterm exam individually, and grades were determined out of a possible 80 points. The mean score on the exam was 73 out of 80 points (91.25% / A-). Scores ranged from 65 (81.25% / B-) to 78 (97.5% / A+).

Next, I looked to see if performance on the midterm exam was related to performance on the earlier assignments. Only assignments 1 and 2 were completed prior to the exam and scores on these two assignments were highly correlated, so for this analysis I created a composite measure of scores on those two items. Doing well on the first couple assignments predicted higher performance on the midterm exam ($b = 2.80, se = 1.29, t = 2.17, p = .067$).

I also looked to see if performance on the midterm predicted performance on later assignments, but assignments 3 and 4 were uncorrelated so I treated these as separate variables. Performance on the midterm exam was not significantly related to scores on either assignment 3 (finding references) or assignment 4 (interpreting data).

Objective 3: Gain confidence in your ability to conduct research.

For the third objective, I focused on examining students’ self-reported confidence in their research abilities over the course of the semester, as indicated by their survey responses. At each of four time points, students responded to the prompt: “Please rate your confidence in your own ability as it relates to each of the following areas” using a 5-point rating scale ranging from 1 = Poor to 5 = Excellent. Summary statistics for all items are provided below in Table 4.

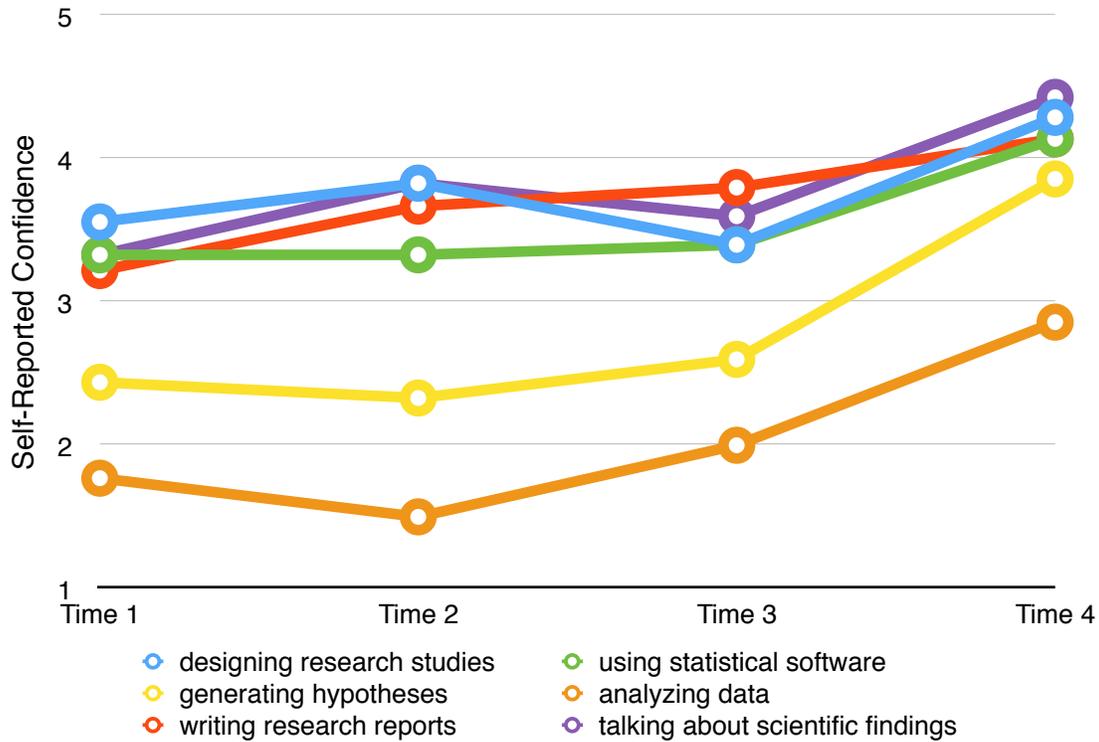
Confidence	Time 1	Time 2	Time 3	Time 4
designing research studies	3.56 (.53)	3.83 (.98)	3.40 (.89)	4.29 (.49)
using statistical software packages (ex: SPSS, R)	3.33 (.71)	3.33 (.52)	3.40 (.55)	4.14 (.69)

Confidence	Time 1	Time 2	Time 3	Time 4
understanding news reports on scientific research	2.44 (1.01)	3.00 (.89)	3.00 (.71)	4.00 (.58)
generating hypotheses*	2.44 (.88)	2.33 (1.21)	2.60 (.55)	3.86 (.69)
analyzing quantitative data	1.77 (1.09)	1.50 (.84)	2.00 (1.22)	2.86 (1.21)
understanding journal articles*	3.22 (.83)	2.67 (1.03)	3.20 (.84)	4.14 (.69)
writing research reports*	3.22 (.97)	3.67 (.52)	3.80 (.45)	4.14 (.69)
talking about scientific findings	3.33 (.50)	3.83 (.98)	3.60 (.55)	4.43 (.53)
critiquing journal articles*	2.78 (.67)	3.00 (1.10)	3.60 (.55)	4.57 (.53)
finding journal articles or conducting literature reviews*	3.33 (1.12)	3.67 (.82)	3.80 (1.10)	4.43 (.79)

Table 4. Students' mean self-reported confidence, rated on a 5-point scale from Poor to Excellent. Standard deviations are provided in parentheses. *statistically significant change over time at $p < .05$.

Given that this objective focused on ability to conduct research, I focused on the items most closely related to that goal: designing research studies, using statistical software, generating hypotheses, analyzing data, writing research reports, and talking about scientific findings. For all 6 of these items, confidence increased from the beginning to the end of the semester (see Figure 1). There were some small increases from Time 1 to Time 2, or Time 2 to Time 3, but it appears that the largest increases happened from Time 3 (right after the group research proposal) to Time 4 (after completion of projects at the end of the semester). Given the small sample size, inferential statistics are less likely to be informative here, but I did run repeated measures Analysis of Variance to examine whether the effect of time on confidence was significant, using student as a within-subject factor. The effect of time was marginally significant for using statistical software ($F(3,19) = 2.57, p = .08$), and significant for generating hypotheses ($F(3,19) = 5.02, p = .01$) and writing research reports ($F(3,19) = 3.77, p = .03$). These effects were similar in models just comparing Time 1 to Time 4. Time was not significant in the other models. Interestingly, confidence was lower overall for two of these items—generating hypotheses and analyzing data. This may suggest that political science students would benefit from additional training in hypothesis generation and data analysis, both in this class and in other course in the sequence. It is also consistent with the idea that a research methods course that provides additional training on these topics may be a useful prerequisite for POLS 450.

Figure 1: Self-Reported Confidence Conducting Research



Objective 4: Improve your ability to think critically about the research that you encounter in day-to-day life.

To analyze the fourth objective, I looked at student performance on reaction papers during the second part of the course, as well as some of the self-report confidence items discussed above.

Reaction Papers

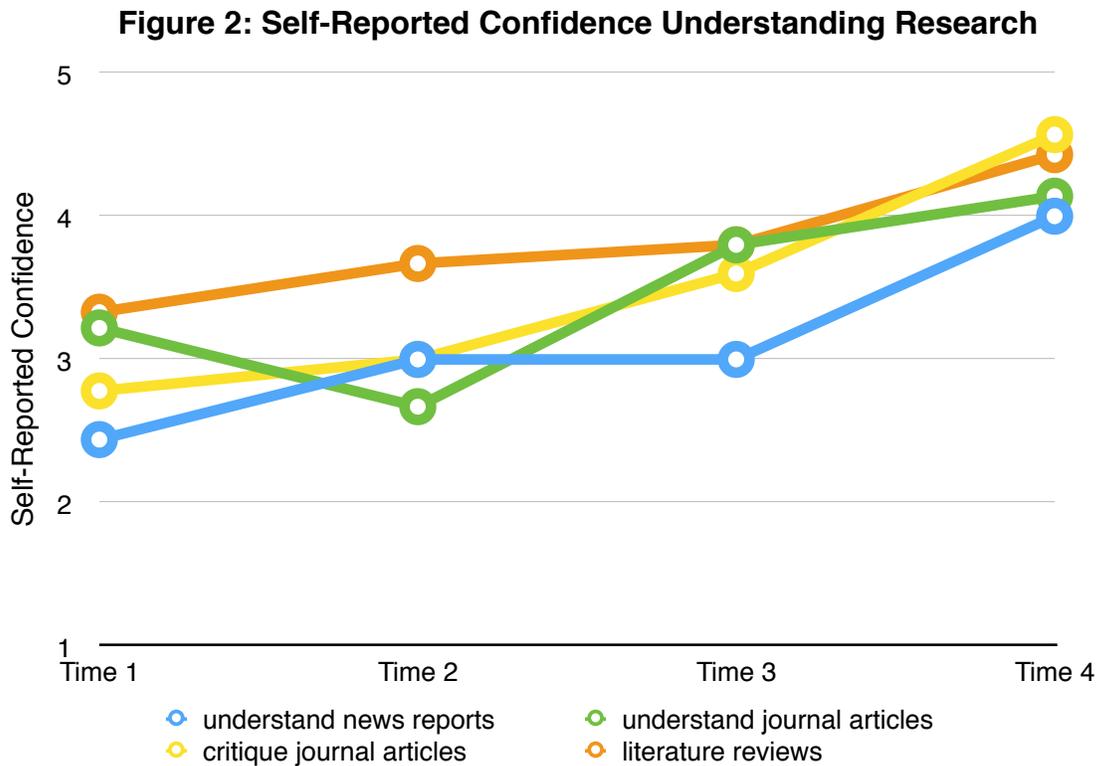
Students submitted reaction papers for each of the four class periods focused on discussion of journal articles. Reaction papers were graded out of 10 possible points. All of the students did well with this assignment, suggesting that they completed the reading and engaged in some analysis of the strengths and weaknesses of the research design (see Table 5 for summary statistics). Completion of the reaction papers prior to class means that students come to class more prepared for class discussion, and that was evidenced by their class participation as well.

	Mean	Median	Standard Deviation
Reaction Paper 1	9.8	10	0.67
Reaction Paper 2	9.5	10	0.66
Reaction Paper 3	9.0	9	0.71
Reaction Paper 4	9.8	10	0.44

Table 5. Summary statistics for reaction paper grades.

Self-Reported Confidence

For this objective, I analyzed self-reported confidence related to reading and understanding research. Students rated how well they understood news reports of research, understanding and critiquing journal articles, and conducting literature reviews (see Table 4 for summary statistics). Confidence for each of these items increased over the course of the semester (see Figure 2). I ran similar repeated measures ANOVAs to above, examining the effect of time on confidence with student as a within-subject factor. The overall effects of time on confidence were not statistically significant, but when I ran separate models including only Time 1 and Time 4 there were significant increases for understanding journal articles ($F(1,12) = 6.38, p = .03$), critiquing journal articles ($F(1,12) = 6.85, p = .02$), and conducting literature reviews ($F(1,12) = 6.85, p = .02$).



5. Reflection on the Course

Participating in the Peer Review of Teaching Project this year has been a valuable experience. I have begun to focus more on the principle of backward design—starting by identifying course objectives and goals and working backwards to make decisions about teaching methods and assessment strategies. In analyzing my POLS 450 course this year, I realized that I have not always specified clear objectives that are easily tied to specific learning outcomes, and that is something I will think more carefully about when updating this course and constructing future courses.

Future Plans for the Course

As a result of this analysis, I have many ideas for possible changes to the course in the future. I plan to work on streamlining the course objectives and making sure I have a clear sense of how each of the assignments fits with the course objectives. Overall, the students do very well in this course so I do not anticipate making any major changes to the structure of the course. However, this analysis illustrated that there are certain areas where the students have more difficulty. For example, they rated their confidence in relation to hypothesis generation and data analysis quite a bit lower than confidence in other areas related to ability to conduct research. Confidence in both areas did increase over the course of the semester, but this effect was not statistically significant for data analysis.

Data analysis is always the task that students struggle with the most, given that many of them do not have much background with statistics, programming, and related software. The previous time I taught the course I had the students use SPSS, which is a statistical software package with a Graphical User Interface (GUI), or menus that one can navigate to run analyses. This semester, I had them use R (and R Studio) instead. R has many benefits in that it is quite flexible and it is open source, but requires more programming expertise in that most analyses are command line based (as opposed to GUI). I did spend some time in class talking about how to install and use R and R Studio and provided the students with written handouts and resources for learning R, but not until relatively late in the semester and I think the students were hesitant to experiment with learning R on their own. As a result, I think many of them were overwhelmed when it came time to dive into learning the software. In fact, the students expressed this to me and told me that not everyone even tried to learn it—some individuals just relied on their group members to run analyses, while they worked on other aspects of the project. In the future, I may try to introduce them to R earlier in the semester, and ease them into it a bit more with an easier assignment prior to having them analyze their own data. I also allow the students quite a bit of freedom in designing their research projects, which means that some of their projects end up being more difficult to analyze. I may consider suggesting they simplify their designs even more in the future to help ease the burden when it comes time to analyze the data. I think this issue will also be helped by the fact that the department plans to offer a research methods course (POLLS 286) on a more regular basis and make it a requirement for political science majors. Ideally, these students would have some basic exposure to statistical analysis and programming prior to taking POLLS 450, as these skills are also likely to benefit students after graduation.

The other issue that tends to arise in courses heavily reliant on group work is that some groups inevitably work better together than others. This was evident in my analysis of POLLS 450 this semester in that one of the groups tended to struggle a bit more than the other two with various

aspects of the research project. I do attempt to discourage social loafing by having students rate each of their group members at the end of the semester. These ratings get factored in to participation grades. However, I am not convinced that this serves as enough of an incentive (or deterrent) to motivate all students to be engaged in the group research projects throughout the entire semester. I suspect that there was some imbalance in the workload in all three of the groups, and the students expressed as much in their final group evaluations. So, while I am not sure exactly what the solution is, this is certainly something I will think more about next time I teach the course. I think group work is important in that it really is a necessary skill for students to develop prior to their entrance into the real world, so perhaps I can do more to convey that to students by explicitly labeling ability to work in a research team as a course objective, and stressing the importance of equal contributions more throughout the entire semester.

Appendix A: Course Syllabus

Political Science 450 | Research in Biology, Psychology, and Politics

University of Nebraska-Lincoln

Spring Semester 2016 | Section 001

Mondays & Wednesdays 9:30-10:45am | Oldfather Hall Room 538

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Course website: Accessible through <http://my.unl.edu>

INTRODUCTION

This course acts as the capstone for the “Biology, Psychology, and Politics” area of emphasis in the Political Science Department. The goals of the course are two-fold: expose students to current research on the psychological and biological underpinnings of political behavior, and train students to design, conduct, and analyze research in this interdisciplinary area. We will divide our time between reading contemporary theory and research from political science and psychology, discussing research design and methods, and preparing for and conducting original research projects over the course of the semester. Projects will be conducted in small groups of students. The course format will be a mix of lectures, student presentations, and group workshops. In this course all student projects are developed around a focused area of investigation. This semester, the topic will be “Political Attitudes.”

Note: This course is open to political science majors and minors, as well as any other interested student. The only prerequisite for the course is POLS 286 (Political Analysis), but I am waiving it this term.

ACE (GENERAL EDUCATION) PROGRAM REQUIREMENTS

By passing this course, you will fulfill ACE Learning Outcome 6: “Use knowledge, theories, methods, and historical perspectives appropriate to the social sciences to understand and evaluate human behavior.” Through this course, you will have several opportunities to acquire the knowledge and skills necessary to achieve the ACE Learning Outcome(s). Your work will be evaluated by the instructor according to the assignments described in this course syllabus. You may be asked to provide samples of your work for ACE assessment as well.

COURSE OBJECTIVES

By the end of the course, you should be able to:

- Identify and apply the scientific methods that are used by researchers in political psychology.
- Understand the steps involved in good research: beginning with asking good questions and ending with dissemination of results.
- Gain confidence in your ability to conduct research.
- Improve your ability to think critically about the research that you encounter in day-to-day life.

COURSE REQUIREMENTS

Reaction Papers

On the days that we discuss research articles, you will be assigned to read the two assigned papers for that particular day. You will be asked to write a 1-2 page reaction paper relating to this reading.

Reaction papers must be uploaded to Blackboard by NOON the day before the discussion occurs (see course schedule). These reaction papers should briefly summarize the readings, offer your own thoughts on the readings (what did you like? not like? problems with the research? ideas for

follow-up research?). You should also offer some questions for discussion. These questions should not be of the variety that can be answered with a simple “yes” or “no”; rather they should be ones that stimulate discussion. So, send in questions that you’d like to hear others’ reactions to. Good discussion questions will be ones that require your fellow students and discussion leaders to think critically about the material, consider how it relates to other articles we have read, and/or generate novel research hypotheses.

Short Assignments

There are four short assignments to be completed during (when time permitting) or after class. These are designed to reinforce concepts discussed in class. These are to be done INDIVIDUALLY, unless otherwise noted.

Midterm

There will be an open-book, open-notes, take-home midterm in this class to assess how well you have learned the basic concepts discussed in class, in the text, and practiced in the assignments.

Research Project

The ultimate goal in this class is to perform a research study. To do so, you will need to generate a hypothesis, design a study, collect & analyze data, and then present the work to others in both verbal and written formats. Your performance on this project will be evaluated at various stages in a number of ways.

Study Materials & Ethics Application. You will be responsible for generating your own study materials and procedures, whether they are observations of natural behavior, surveys, computer programs, and/or physiological measurements. Part of your grade will be determined by both the creativity and appropriateness of the materials and procedures you decide to use. You will also be responsible for maintaining the highest ethical standards and practices. As such, you will be expected to document ethical safeguards.

Group Presentation. You will be asked to present your research idea and study materials as a group to the class. All members of the group will be expected to contribute in some way to this presentation. The presentation should present the theoretical and conceptual ideas behind the study, the study hypotheses, and proposed methods. The other members of the class will be expected to provide feedback to the presenters, asking questions to help them clarify their thinking and improving their study materials.

Data Preparation. A lot of work goes into analyzing data. You will learn how to use statistical software to analyze and understand your data. You will be expected to bring your data to class in a way that facilitates efficient data analysis and discussion. More details of how to work with data will be provided throughout the semester.

Conference Style Poster Presentation. You will be expected to create a conference style research poster, a visual display of your research findings. Members of the Political Science Department will be invited to view these at the end of the quarter and ask you questions. Although there is only one poster per group, all members of the group are expected to help prepare and present the poster.

Final Paper. Each student is responsible for writing up their own final paper. This paper is to describe the research performed in an APA-style research article, detailing the conceptual background, materials and procedures, data analysis, discussion of results, and references.

Participation/Attendance

Your active involvement in discussions and at various phases of the research process will be evaluated as part of your grade. Research is challenging, and will require active participation by all

group members. On a related point, as you cannot participate if you are absent, attendance in each class will be carefully monitored and evaluated. If you cannot attend a class, you **MUST** notify the instructor **IN ADVANCE** for excusal. **Unexcused absences will result in a “0” for participation on that day.**

***Note on “Free-Loading”:**

Although assigning projects by groups may suggest the possibility of “free-loading” and allowing others to do your work, there are several safeguards to prevent this. First, much of the work in this class will be performed individually (i.e., assignments, critique, midterm, final paper, participation). Moreover, all members of the group will each be asked to document who did what throughout the research process. The instructor will also be observing you throughout the process to monitor individual contributions to the research effort.

***Note on Missed Assignments:**

You are responsible for turning in all assignments on time. The assignments in this course build upon one another very closely, so getting behind can have disastrous effects on your ability to complete the course successfully. For this reason, there is a very strict policy regarding late assignments: **late assignments (turned in after class time on the due date) will receive a “0”**. This penalty will be waived *only under extreme circumstances* (e.g., for severe medical reasons and/or family emergencies). **Should such circumstances arise, the student must contact the instructor immediately and submit suitable documentation.**

GRADING

Grading will be based on the various elements of the course, as listed below. All assignments will be graded on an individual basis, except for discussion-leading, the group research proposal presentation, and assignments marked, "1 per group."

Final grades will be determined using the following scale: 97-100% = A+, 93-96% = A, 90-92% = A-, 87-89% = B+, 83-86% = B, 80-82% = B-, 77-79% = C+, 73-76% = C, 70-72% = C-, 67-69% = D+, 63-66% = D, 60-62% = D-, below 60% = F. Pass/Fail grades require at least a C to pass. Incompletes are at the discretion of the instructor, and will only be considered under extreme circumstances.

Assignments (20 points each)	
Assignment 1: Variables	20 points
Assignment 2: Experiment vs. Non-Experiment	20 points
Assignment 3: References	20 points
Assignment 4: Interpreting Data	20 points
Discussions	
Reaction Papers (4 x 10 points each)	40 points
Participation/Aattendance in class throughout semester	100 points
Midterm	80 points
Project Materials	
Study Materials (1 per group)	40 points
Ethics Application (1 per group)	20 points
Dataset Preparation (1 per group)	20 points
Project Presentations	
Group Presentation (1 per group)	40 points
Conference Style Poster (1 per group)	80 points
Poster Presentation Participation	20 points
Paper Presentation	
Draft of Introduction & Methods	25 points
Peer Editing of Introduction & Methods	15 points
Draft of Results & Discussion	25 points
Peer Editing of Results & Discussion	15 points
Final APA Style Paper	150 points
TOTAL	750 points

ADDITIONAL COURSE POLICIES

Communication

The best way to reach me is through email. I check it often (more often than I check voicemail) and will do my best to respond to your questions within 24 hours. You are also welcome and encouraged to stop by my office during office hours, or make an appointment to meet with me at another time. I will send announcements electronically, so please check your email and the course website often.

Academic Misconduct Warning

All work must be your own. Plagiarism and all other forms of cheating outlined by the University's Student Code of Conduct (Section 4.2) will not be tolerated in this class. Cheating or plagiarism will be reported through official university channels, and the consequences will be severe. The minimum punishment is usually failure in the course. No one exam or assignment is ever worth this penalty. To avoid missing out on a good college GPA, or even your degree, keep your eyes on your own test and write your own papers.

Students with Disabilities

Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.

READINGS

Additional articles may be assigned throughout the semester at the instructor's discretion.

Optional Background Reading

Leary, M. R. (2011). *Introduction to Behavioral Research Methods* (6th ed.). Pearson.
[ISBN-13: 978-0205203987]

Required Readings (will be posted on Blackboard)

- Bem, D. J. (2004). Writing the empirical journal article. In J. M. Darley, M. P. Zanna, & H. L. Roediger (Eds.), *The Compleat Academic* (pp. 185-219). Washington, DC: American Psychological Association.
- Bizer, G. Y., & Petty, R. E. (2005). How we conceptualize our attitudes matters: The effects of valence framing on the resistance of political attitudes. *Political Psychology, 26*, 553-568.
- Fazio, R. H., & Williams, C. J. (1986). Attitude accessibility as a moderator of the attitude-perception and attitude-behavior relations: An investigation of the 1984 presidential election. *Journal of Personality and Social Psychology, 51*, 505-514.
- Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology, 50*, 229-238.
- Jordan, C. H., & Zanna, M. P. (1999). How to read a journal article in social psychology. In R.F. Baumeister (Ed.). *The Self in Social Psychology: Essential Readings* (pp. 461-470). Philadelphia: Psychology Press.
- Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology, 37*, 2098-2109.
- Lundberg, K. B., & Payne, B. K. (2014). Decisions among the undecided: implicit attitudes predict future voting behavior of undecided voters. *PLoS One, 9*(1), e85680. doi: 10.1371/journal.pone.0085680
- Schwarz, N. (1999). Self-reports: How the questions shape the answers. *American Psychologist, 54*, 93-105.
- Sweeney, P. D., & Gruber, K. L. (1984). Selective exposure: Voter information preferences and the Watergate affair. *Journal of Personality and Social Psychology, 46*, 1208-1221.
- Zaller, J., & Feldman, S. (1992). A simple theory of the survey response: Answering questions versus revealing preferences. *American Journal of Political Science, 36*, 579-616.

POLS 450 | COURSE SCHEDULE

Due dates for assignments and exams, as well as required readings, are listed below. Readings should be completed prior to class. Please note that this schedule represents a tentative plan and is subject to change at the instructor’s discretion. Any changes will be announced in class.

Note: All readings are required unless labeled as “optional.”

WEEK	DATE	TOPIC	READING	ASSIGNMENTS
1	M 1/11	Introduction & Course Overview		
	W 1/13	Theories, Hypotheses, & Variables	Optional: Leary Ch. 1 & Ch. 9 (pp. 184-189)	
2	M 1/18	NO CLASS (MLK Day)		
	W 1/20	Research Design Reliability & Validity	Optional: Leary Ch. 7 (pp. 140-151, 154-156), Ch. 8 (pp. 163-170), Ch. 9, & Ch. 10	Assignment 1: Variables due in class
3	M 1/25	Research Design Reliability & Validity	Optional: Leary Ch. 7 (pp. 140-151, 154-156), Ch. 8 (pp. 163-170), Ch. 9, & Ch. 10	Assignment 2: Research Design due in class
	W 1/27	Topic Overview Article Discussion: Attitude Function	Jordan & Zanna (1999) Fazio et al. (1986) Bizer & Petty (2005)	Reaction Paper 1 due on Blackboard by noon T 1/26
4	M 2/1	Article Discussion: Attitude Measurement	Schwarz (1999) Zaller & Feldman (1992)	Reaction Paper 2 due on Blackboard by noon 1/31
	W 2/3	Article Discussion: Impact of Attitudes on Perception and Judgment	Lord, Ross, & Lepper (1979) Sweeney & Gruber (1984)	Reaction Paper 3 due on Blackboard by noon 2/2
5	M 2/8	Article Discussion: Impact of Attitudes on Behavior	Fazio & Williams (1986) Lundberg & Payne (2014)	Reaction Paper 4 due on Blackboard by noon 2/7
	W 2/10	Topic Selection		Study Topic Preferences
6	M 2/15	Group Formation & Discussion		Midterm Exam due on Blackboard by 5pm
	W 2/17	Ethics Group Discussion	Optional: Leary Ch. 15	Assignment 3: References due on Blackboard by 5pm
7	M 2/22	Group Meetings: Design & Materials Preparation	Optional: Leary Ch. 3, 7, 8, 9, 10, 13 (as relevant for project)	
	W 2/24	Tips on Writing Group Meetings: Design & Materials Preparation	Bem (2004) Optional: Leary Ch. 16	
8	M 2/29	Group Meetings: Design & Materials Preparation		
	W 3/2	Group Presentations		Study Materials (script, ethics, materials, debriefing) due on Blackboard by 5pm
9	M 3/7	Group Presentations		Study Materials (script, ethics, materials, debriefing) due on Blackboard by 5pm
	W 3/9	Basics of Data Analysis		

WEEK	DATE	TOPIC	READING	ASSIGNMENTS
10	M 3/14	Selecting Participants Peer Editing: Intro & Method	<u>Optional</u> : Leary Ch. 5	Introduction & Methods draft due for peer-edit (bring 2 copies to class)
	W 3/16	Data Collection (<i>meet with your group outside of class</i>)		Start collecting data outside of class Introduction & Methods draft due for grading by 5pm (submit on Blackboard)
11	3/21-3/25	NO CLASS (Spring Break)		
12	M 3/28	Data Collection (<i>meet with your group outside of class</i>)		Continue collecting data outside of class
	W 3/30	Factorial Designs & Data Interpretation	<u>Optional</u> : Leary Ch. 11 & 12	
13	M 4/4	Analyzing Data		Bring dataset to class!
	W 4/6	Analyzing Data		Assignment 4 - Interpreting Data due on Blackboard by 5pm
14	M 4/11	Analyzing Data & Poster Design		
	W 4/13	Analyzing Data & Poster Design		
15	M 4/18	Finish Analyzing Data & Finalize Poster Design		Final posters need to be uploaded to Blackboard <u>and</u> printed / prepared for the poster session on 4/25!
	W 4/20	Peer Editing: Results & Discussion		Results & Discussion draft due for peer-edit (bring 2 copies to class) Results & Discussion draft due for grading by 5pm on Friday 4/22 (submit on Blackboard)
16	M 4/25	Poster Session!		
	W 4/27	Course Wrap-Up		
***	W 5/4	Final APA-Style Papers due by 12:00pm on Blackboard		