FIELD EXPERIMENTS IN A COURSE ON BEHAVIORAL ECONOMICS: NUDGING STUDENTS AROUND CAMPUS

Carolina Castilla*

Abstract: In experiential education, the student learns through experience by observing a concept or phenomenon and applying this knowledge in a real-world context. A research project conducted by undergraduate students at a U.S. private liberal arts college is described in this article. The project provided opportunity for students to think about their decision-making processes, compare them to existing literature, and apply this knowledge in examining their own hypotheses through primary data collection on campus. While the research design’s simplicity ensured that the project could be completed in time for a final grade and sacrificed lecture material in favor of feedback opportunities, this behavioral field experiment was a rewarding experience because of students’ enthusiasm and their ability to defend and think critically of their own ideas.

Keywords: field experiment, nudge, teaching behavioral economics

JEL codes: A12, A22, D03

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In this article, I describe a research project carried out by undergraduate students at a private liberal arts college in the United States. For my undergraduate introduction to behavioral economics course, I asked students not only to propose but to conduct a field experiment around campus to test whether a “nudge” had an impact on behavior. Nudges are the use of findings from psychology research to increase the likelihood of people making choices that reflect their underlying interests. For instance, to increase retirement savings, the use of opt-out investment accounts have been found to be more effective than opt-in accounts (Thaler and Sunstein 2009).

The contribution of this article is to provide instructors with an example of a semester-long project consisting of a field experiment targeted at first- and second-year students with no prior knowledge of economics, psychology or statistics. The behavioral field experiment offered students a unique opportunity to put theoretical learning into practice through hands-on primary data collection and analysis.

Recent literature on teaching undergraduate economics has focused on developing research projects in order to get students more actively involved in the knowledge generation process (Singh and Russo 2013; Griffin 2011). Singh and Russo (2013) required students in an undergraduate development economics course to develop a proposal for a “dream experiment,” the best of which had the potential to be funded. Griffin (2011) developed a series of assignments for her upper-level undergraduate course in political decision-making using the book *Nudge* by Thaler and Sunstein (2009). Students were asked to develop a proposal in which a nudge was used to solve an assigned social or political problem, defend the proposal, and finally write a paper describing and critiquing their own ideas incorporating the feedback obtained from the class. The proposal assignments allow students to think about complex problems that involve innovation and that can have policy relevance, such as Singh and Russo’s
(2013) dream experiment. However, in neither of these projects were students asked to follow through with the implementation of the proposed experiment, data collection and analysis, and interpretation of results.

There are differences between the behavioral field experiment described in this article relative to Singh and Russo’s (2013), Griffin (2011) and the existing literature. First, students were asked to do field work which required data collection and analysis in addition to developing a research design. Further, the projects of Singh and Russo (2013) and Griffin (2011) were part of advanced undergraduate courses in economics or political science, while the behavioral field experiment here was designed for students who had not previously taken courses in economics, statistics or psychology. While developing a research proposal requires students to take an active role by identifying relevant research questions, it does not provide students with the experience of taking it to the field and having to overcome the potential for failure.

The goals of the behavioral field experiment were to provide students with the opportunity to think about their own decision-making processes, to compare them to what has been found in the literature and then to apply this knowledge to examine a hypothesis of their own through primary data collection on campus. There are pedagogical arguments to justify the learning benefits of taking the role of an active researcher in conducting a field experiment. In experiential education, the student learns not only by observing a concept or phenomenon, but also via application of this knowledge in a real world context (Hoyt and McGoldrick 2012). Over the last decade, experiential learning has proven relevant to learning of economics either through service learning (Bednar and Simpson 2014), classroom experiments (Carter and Emerson 2012; Frank 1997; Emerson and Taylor 2004, 2007; Dickie 2006; Ball, Eckel, and Rojas 2006; Holt and Capra 2000; Durham, McKinnon, and Schulman 2007) or participation in faculty research
(McKeachie 1999). Experiential learning has been found useful to generate meaningful learning across disciplines (Lewis and Williams 1994), and it has resulted in improving retention, problem solving and decision-making skills (Millenbah and Millsapugh 2003).

There are costs involved in asking students to conduct a field experiment over the course of a semester. The entire course has to be designed around the final project such that early in the semester students read material that will allow them to come up with their own ideas, while providing enough opportunities for feedback. For instance, additional course material was sacrificed in favor of student presentations of their proposed research. The research design had to be simple enough to ensure that the project could be completed in time to assign a final grade while avoiding the need of securing funding for the recruitment or for a more extensive intervention. Nonetheless, the behavioral field experiment project was a rewarding experience from the instructor’s perspective because of the students’ enthusiasm, as well as their ability to defend and think critically of their own ideas. In what follows, I describe and reflect on the field experiment project and discuss some of the specific outcomes.

**THE COURSE CONTEXT**

Although the course was designed for students with no prior knowledge of economics, psychology, or statistics, in practice most students had taken either an Introduction to Psychology or an Introduction to Economics course prior to enrolling. The first two weeks were devoted to exposing the students to basic statistics and providing them with a hypothesis testing toolkit. In order to assist students in designing their own experiment, the lectures and class discussions of readings were structured to first establish a baseline of how rational individuals would make decisions, followed by the choices that individuals actually make, and how experiments are designed to isolate specific variables to identify the mechanism (explanation)
driving observed behavior.\textsuperscript{1} As a result, over the course of the semester students were exposed to a wide range of laboratory and field experimental designs and results. There were two problem sets on hypothesis tests so that students could practice in an environment where they knew the outcome. Most of the students in the course are familiar with Excel; however, this is something to take into account at different institutions where class time may have to be devoted to teaching basic use of statistical software.

I used the book \textit{Nudge} (Thaler and Sunstein 2009, Parts I and II) as an introductory reading to motivate the material to be covered in the course and to get students thinking early in the semester about relatively simple hypotheses to be tested through field experiments around campus. This book was chosen to allow students to grasp the basic behavioral mechanisms observed in the literature prior to their studying the underlying reasons why observed behavior was not consistent with individual rationality. Most importantly, the book \textit{Nudge} provides examples of simple and clever experimental designs to test behavioral hypotheses where the treatment group is the one being “nudged.” It is my belief that using the book \textit{Nudge} to introduce the course was a crucial factor in the success of the field experiment project.

The axioms of rationality were first covered in the context of consumer choice, as well as preferences, budget constraints, and choice, to construct a basic framework of the concept of rationality. We then discussed behaviors that violate the most basic principles of completeness and transitivity such as menu dependence, preference reversal, other-regarding preferences, and the sunk cost fallacy. The next couple of weeks were used to analyze choice under risk and uncertainty, followed by prospect theory, loss aversion, and the Allais paradox. We then moved to intertemporal choice where we contrasted the model of exponential discounting with hyperbolic discounting. The last two weeks were spent on the concepts of strategic interaction
and the Nash equilibrium in the dictator, ultimatum, trust, and public goods games. Finally, we
examined the evidence of altruism and discussed the mechanisms and experimental designs used
to explain deviations from the Nash equilibrium. Students were also asked to participate in two
experimental sessions as subjects: one at the beginning of the semester and one at the end. The
purpose of student participation in laboratory experiments was twofold: (i) to learn about the
research process from the experimental subject perspective; and (ii) to participate in experiments
and discussion of those results as a way to improve retention (consistent with findings in the
literature in pedagogy in economics).

DEVELOPMENT OF THE BEHAVIORAL FIELD EXPERIMENT

The behavioral field experiment was a high-stakes assignment worth 40 percent of the students’
grades, divided in the following parts: the research proposal (10 percent), the presentation of
results (10 percent) and the final paper (20 percent). The goals of the behavioral field experiment
were to provide students with the opportunity of hands-on learning by examining a hypothesis of
their own choosing through primary data collection and analysis, and to encourage them to
contrast their own decision-making to the way other people make choices. Successful completion
of the project required students to take an active research role by designing an experiment,
collecting data, and using (simple) statistical analysis to test whether a nudge resulted in
statistically significant differences on average behavior between the treatment (nudged) and
control groups.

Asking students to conduct a field experiment instead of a laboratory experiment has its
benefits. In field experiments subjects are not aware that their actions are being recorded, thus
the observed behavior is more likely to reflect subjects’ actions in the “real world” (Levitt and
List 2007). Further, field experiments allow recruitment from a target population for which the
behavior being examined is of relevance, facilitate random sampling and larger sample sizes, and do not require subject payments. In contrast, in laboratory experiments subjects enter an artificial environment where they are aware that their behavior is being monitored and recorded. Also, in small undergraduate institutions, recruitment of subjects for laboratory experiments is very difficult and selection into the experiment is more likely (Levitt and List 2007).²

Students, in teams, were asked to think about a nudge that could be tested around campus (or in the local community). Each team designed a simple experiment identifying treatment and control groups to test whether the nudge of choice changed behavior. Groups were expected to negotiate with the appropriate authorities and collect primary data which then would be used to conduct a simple hypothesis test of differences in means of quantifiable outcomes between individuals who were nudged (treatment) and the control group. In order to be able to test their hypothesis of interest, students had to think about an appropriate target population and to randomly assign subjects to a treatment or a control group. At the end of the semester, each group had to present the results to the class, incorporate the feedback and then turn in a 2,000-word research paper along with an abstract, tables, and references.

The timeline of the field experiment is presented in table 1. From the first day of classes, students were made aware they had to form groups of three to develop a research proposal for a field experiment that would be conducted in town or around campus. The rationale for choosing team size was to minimize free-riding while still making it feasible for the groups to successfully complete the project. Each group had to develop and defend a research proposal, collect primary data with a minimum sample size of 80 individuals, analyze it and write a research paper. This in itself is a considerable amount of work, but what made it significantly more difficult was that the class comprised first- and second-year students without any prior knowledge of statistics,
psychology, or economics. Letting students choose their own teammates proved successful in this course (and has proven successful in the rest of the courses I teach) as peer pressure is more effective the closer (socially) you are to your teammates. The trade-off is that it allows for the possibility of good students self-selecting into groups with strong teammates, creating disparities across groups. Alternatively, instructors may prefer to randomly assign students to teams or form teams based on common interests.

[Insert table 1 about here]

There were four opportunities for feedback from the instructor before the final paper was due. First, students were asked to turn in a one-page abstract containing the names of the group members, the research question and hypothesis they intended to test, and a brief description of how and where they would implement the experiment. The professor met with students to evaluate the feasibility of the project, and provide advice as needed. Proposal presentations (week 9) and final results presentations (week 15) took place during class, and the teams obtained comments from students and the professor.

At the end of week 9, the groups had to turn in a seven-page document incorporating feedback from the class, which was graded, providing further feedback. It must be noted that the format and timing of the proposals allowed for possible submission for Institutional Review Board (IRB) approval, if needed, given that the proposals would involve human subjects by design. Because the data collected had only pedagogical relevance, it was not necessary for proposals to be submitted for approval (which was not obvious to me). However, in upper-level courses it may be desirable to obtain IRB approval so the data can be used for publication. The proposals submitted for grading were of the quality required for approval, with perhaps a couple of exceptions, in which case a revision would have been necessary. Providing very specific
guidelines was the reason no significant revisions were needed. The research proposal included the following sections:

**Research Design:**

a. *Objectives:* Should contain a brief outline of the research question, the outcome being tested, why it is interesting and how you will go about implementing it.

b. *Background and Rationale:* Begin with a brief literature review (complete with citations) centered on the research question and your specific nudge.

c. *Experimental Design:* Should provide a full description of what participants will be asked to do during the course of the field experiment. All survey questions (if any) should also be included in this section.

d. *Expected Outcomes:* Describe the expected findings/results and explain the reasons why you expect those findings.

**Steps taken to protect the participants:** This section should contain a full account of how the researchers plan to maintain participant confidentiality or anonymity.

**Manner of obtaining participants:** This section should briefly outline how you plan to acquire participants.

   Students had to fine-tune the details of their experimental design, recruitment strategy, and negotiate with the relevant campus authorities in order to be able to implement their treatments and collect the data. In particular, students had to be able to explain the reason why the data collection had to occur in a way such that subjects in the treatment and control groups were randomly chosen. For instance, projects involving the dining halls had to make a convincing argument as to why the menu should be kept exactly the same over the week during which the experiment on visual priming was being conducted, or what data the group needed the
dining hall to record in order to be able to test whether a visual aid illustrating portion sizes had an effect on individual consumption of self-serving items (such as ice cream and peanut butter). In other cases, students had to obtain permission to place a stand on campus, be lent the credit card reading machine to record charitable donations, or even negotiate with faculty regarding their classroom set-up in order to test whether a circular setting influenced participation more than a standard row setting.

As most social scientists know, any time a research project involves humans, either as authorities or subjects, plans will have to be adjusted. The behavioral field experiment was no exception. One group had to rethink its proposal three times before it was finally able to successfully collect the data. Other teams trusted that the dining hall administrators would record the data they required, to later find out that was not the case. The need to adjust to different circumstances resulted in a great opportunity for first-hand learning of how research in social sciences is conducted and the challenges researchers face.

By the end of week 15, the data had been collected and analyzed and the research paper was ready to be submitted. In addition to the motivation, literature review, and experimental design (which were developed for the proposal), the final paper had to include a descriptive statistics section, a results section containing the hypothesis test conclusions, and a section where they were critical about the limitations of the results and issues faced during the data collection. As it often happens, the discussion of limitations was most developed in teams that had inconclusive or null results, as well as those who experienced difficulties in conducting the experiment.
OUTCOMES

By the end of the semester, about half of the research papers and presentations were quite strong and all but one group were successful in obtaining the data they needed to test their hypotheses. Interestingly, about half of the projects exhibited unexpected results, which meant students had to put even more time into thinking about the reasons why their findings did not reflect what was found in previous literature. This was one of the main factors that contributed towards a set of good quality papers. While all of the projects had limitations, it was particularly encouraging to read the final papers and find that most groups were successful in identifying the key limitations of their results. They were also able to point towards ways in which these limitations could be corrected. In the following paragraphs, I present a sample of summaries of the group projects.

“COOPing with Social Pressure”

In this experiment, the group sought to test the effects of social pressure through verbal prompting on candy bar sales at one of the university’s cafeterias (the COOP). The experiment took place over two days during lunch time, between 11:30 am and 12:30 pm. The first day served as control where a box of candy bars and a visible sign that read “Add a Candy Bar to your meal for $1.17” were placed next to the cashier. During the treatment day, in addition to the box and sign, the cashier verbally prompted students by asking “Would you like to add a Candy Bar to your Meal for $1.17?” By keeping constant the box and the sign over the two days, the group was able to isolate the social pressure effect on the purchase of candy bars.

From an inconspicuous location, one of the students in the group kept track of the number of people that went through the line, while another one kept track of the number of people who purchased a candy bar on each day. They collected data on a random sample of 126 people who purchased some item at that cafeteria over the two days. The proportion of candy bar sales in the
control group was compared to the proportion of candy bar sales in the treatment group. Consistent with DellaVigna, List, and Malmendier (2012), the results indicated that there was a small but statistically significant effect of social pressure through verbal prompting on the customer’s willingness to buy a candy bar. Interestingly, female customers in the treatment group felt compelled to provide an excuse for not purchasing a candy bar.

“Herding Effect on Charitable Donations”

Popularity of products such as movies, books, and music is in part dependent upon the proneness of individuals to determine their own preferences by following the crowd. This phenomenon is commonly known as the “herding effect.” In this experiment, the group tested whether herding could influence the contribution rate of college students to a school-sponsored charity meant to benefit a micro-finance project in Argentina. The students varied the number of previous donors in the sign-up sheet: the treatment group had 200 previous donors signed up while the control group had none.

The group set up a stand at the student center between 11:30 am and 12:30 pm for three days. It had to obtain a student credit card machine from the university to charge the subjects’ cards in the event that they chose to donate money. The stand had a sign stating free candy, meant to attract subjects to the stand. Once at the stand, the group members asked subjects whether they were interested in donating $5 towards the aforementioned charity while showing them the sign-up sheet. They randomly chose which sign-up sheet to show. They found that among the 85 subjects that approached the stand, there was no statistically significant effect of herding on the proportion of students who made charitable donations.
“Anchoring Students’ Study Hours”

This group tested the effects of anchoring on the average number of hours studied per week of a sample of 193 undergraduate students. In the study, students were randomly given one of three different versions of a one-question survey. Subjects in the control group were asked how many hours they studied in an average week. In the first treatment group, subjects were provided with an arbitrarily low anchor of an average of 7 hours studied per week and were asked to report their own average. In the second treatment, subjects were anchored with an arbitrarily high average of 25 hours studied per week and asked to state their own average.

The group found that students in the high anchor treatment reported a statistically significantly larger average of study hours than the control group. Likewise, the students in the low-anchor treatment reported a significantly lower average of study hours than the control group, suggesting anchoring did have an effect on students’ answers. Further, the group found that average study hours among students in the low-anchor treatment were 86.9 percent greater than the anchor, whereas average study hours reported by students in the high-anchor treatment were 12.6 percent below the anchor. Overconfidence would imply that across all treatments, students would report above average study hours, in this case an arbitrary anchor. Convergence towards the mean would result in the average difference of study hours reported relative to the mean in the low-anchor group being proportional to the average difference of study hours reported in the high-anchor treatment. The results suggest that neither overconfidence nor convergence towards the anchor can explain the results.

The research projects were successful from a pedagogical perspective. First- and second-year students developed a field experiment designed to test whether a nudge would result in a change in behavior, implemented the experiment, collected the data and analyzed it. From the
sample of projects presented above, it is evident that the research questions had to be simple in order to be manageable, there was little to no room for innovation, and there were issues with the experimental designs even in the best papers. For instance, the results in the project on social pressure have been previously found in the literature under higher stakes by DellaVigna, List, and Malmendier (2012) where individuals were more likely to contribute to a charity under face-to-face requests. Findings from behavioral economics and psychology research have consistently found evidence of anchoring even when primed with a number that has no relevance to the decisions. Further, the experimental design of the project on anchoring did not take precautions to avoid contamination as students standing next to each other could have drawn questions with different anchors at the same time and commented on the differences aloud. In the project on herding, given that the experiment was conducted in a small campus, students had the potential to realize the sign-up sheet in the control group (no signatures) was artificial as their friends could have commented on having contributed. However, one of the most rewarding elements was when students realized some of the issues with their implementation and took the criticism in a constructive way.

The goals of the behavioral field experiment were to provide students with the opportunity to reflect on their own decision-making, and compare it to what has been found in the literature and the results from their experiments. Students’ responses to the question “What did you get out of this course?” in the anonymous evaluations of teaching consistently state that they learned “...new interesting things about the way people think” and “...why people make certain decisions.” In some cases, students mention applying the concepts learned in the course in their everyday lives; for instance, some students wrote “I found myself applying a lot of what I learned outside of class which was cool,” “the terms, ideas and theories taught in this course are
extremely applicable to my everyday life now as well as my future life” and another student stated the course has made him more conscious of his own decision-making. These comments provide evidence of experiential learning. One student (out of 24), though, commented explicitly on the project stating he or she learned “… how to propose, plan, conduct and conclude experiments.” While this suggests that the course led students to better understand the way people make decisions and to apply the course content in the real world, few of their answers mention the field experiment as a mechanism for learning. It is possible that a questionnaire directly asking about the project would have resulted in more specific feedback about the experience of conducting a field experiment.

DISCUSSION

Requiring undergraduate students to collect a random sample of primary data for a project worth 40 percent of their final grade was risky. Students in the course were first- and second-years, with limited or no prior experience in social science research, which could have resulted in no proposal, no data to support the hypothesis being tested, or both. For this reason, an important component of course design was to remind students that evaluation was going to be dependent upon effort and not necessarily the outcome, while not altering the incentives to produce high quality papers.

Fortunately, most groups were able to successfully follow through with the data collection, but that does not imply they did not have to overcome adversity. At times, students had to deal with inconclusive results or data that did not allow them to conduct meaningful comparisons between treatment and control groups, and for some of them this was the first time they were faced with a “failure” (at least in their minds). Throughout the semester, I reminded students that there is as much value in finding statistically significant differences in behavior
between treatment and control groups as there is in finding no statistical differences. When needed, conversations were held with groups to help them realize that the benefit of the project was in the experience and learning process that had led them to know what had gone wrong.

The costs of the field experiment project relative to a course on behavioral economics without it are twofold: instructor’s time outside of class and lecture time used on student presentations. Students are quick to come up with research ideas; the additional time commitment rests on aiding them to make the ideas feasible and to develop the treatments to adequately test their hypotheses. I would compare the additional instructor’s time to a mid-level economics elective where students have to write independent research papers.

Lectures equivalent to 13 percent of class time were used for student presentations of the proposals and results. The rationale for proposal presentations was for groups to obtain feedback both from the instructor and their classmates prior to implementation. Results presentations allowed students to learn further topics not discussed in detail in class. Had there not been a research project, these lectures would have been used to introduce a couple more topics or to expand the discussion on strategic interaction (a subject covered at the end of the course). However, some of the lecture-time costs were somewhat mitigated. When students chose research topics early in the semester, the instructor skipped those topics knowing that the class will be exposed to them during their peers’ presentations.

The benefits of the field experiment, on the other hand, were that students got the opportunity to collect primary data to test a hypothesis using experimental methods. While the literature has found learning benefits through in-class experiments and participation in laboratory experiments, Buckles and Hoyt (2006) advocate for students taking an active role in learning economics, such as reading, writing and applying economics concepts. Additionally, there is
room in economics pedagogy to develop assignments that allow students to identify applications to their academic and future professional lives (Becker 2000, 2004). Additionally, McGoldrick and Ziegert (2012) argue experience is not enough to generate learning without students going through a reasoning process of the knowledge gained from the experience (Hoyt and McGoldrick 2012, Chapter 6).

The project was designed for an introductory course for first- and second-year students at a small private liberal arts college. There were 24 students registered in the course, who worked in teams of three. Scaling the project to larger classes would require several adjustments. The number of group members would likely have to increase at the risk of incurring a higher probability of free-riding. As the number of teams increases, so does the course content costs of the project unless the instructor decides to sacrifice some opportunities for feedback by reducing student presentations. The field experiment can be scaled to larger classes. In schools with larger enrollments, instructors can take advantage of recitation sessions lead by teaching or research assistants to minimize the additional instructor’s time burden, while still providing students with enough feedback opportunities. In low-enrollment schools with large class sizes, the most worrisome aspect of scaling the field experiment project is the risk with groups interfering with one another in the recruitment of participants around campus. The behavioral economics field experiment can also be adjusted for upper-level courses such as game theory or electives on experimental economics, where students can take on more complex research questions, such as testing underlying theoretical assumptions.
The behavioral field experiment was a high-stakes assignment where students in an introductory course on behavioral economics were asked to propose, design and conduct a field experiment on campus. The field experiment project allowed students to participate in the learning process as active researchers by formulating a testable hypothesis and developing an experimental design in the context of the course material. Students had to convince administrators and/or students around campus to cooperate with them in order to collect the data and when having to make adjustments to the design to adapt to the context. Finally, students engaged with the human condition by contrasting their findings with the existing literature and their own behavior to be able to defend their results in front of other students and faculty.

The project provided students with a unique opportunity for experiential learning via hands-on primary data collection and analysis. Developing a research proposal requires students to take an active role by identifying relevant research questions, but it does not provide students with the experience of conducting an experiment or to overcome the risk of failure. Evidence from the comments in students’ anonymous evaluations of teaching suggests student learning was a result of the experience as active researchers that led them to think about the way people make decisions. While there were costs associated with incorporating such an ambitious project in a one-semester course, it is my belief that students benefited both academically and personally during the project. From an instructor’s perspective, the behavioral field experiment project was a rewarding experience because of the students’ enthusiasm, as well as their ability to defend and think critically of their own ideas.
NOTES

1 For the rest of the semester, Kahneman (2011) “Thinking Fast and Slow,” and Thaler (1992) “The Winner’s Curse” were used for assigned readings. The lecture material on rationality and behavioral decision-making was based on Angner (2012).

2 For instance, 300 subjects, which would constitute a good sample size, could represent 10 percent of the student population.

3 The team randomly selected a sample of subjects that made a purchase during lunch time by using a random number generator.
REFERENCES


APPENDIX

Proposal Guidelines:

The proposal should be at most 7 pages long, double spaced, with 1-inch margins on each side. Font size 12 pts. and font type: Times New Roman, Garamond or Arial.

1. Purpose of investigation and procedures

a. Objectives:
   Briefly outline what you plan on doing, what you are interested in testing, why it is interesting and how you will go about doing it.

b. Background and Rationale:
   Begin with a brief background literature review (complete with citations) centered on the research question at hand. Focus the literature review only on stuff that is relevant to your specific nudge. You should look for journal articles, books, etc.

c. Research Design:
   Then provide a full description of what the anticipated participants will be asked to do during the course of the study. If you are asking a survey questionnaire, you should mention the objectives, the main questions of interest and what you are measuring (or getting at) with them. If you are implementing a change in prices, placement of items, size of garbage containers, etc., you must fully describe the treatment and control groups, the choices they are being asked to make, the timeline of the project, the location, basically all the specifics. For example, if in-depth interviews will be employed, the researcher must address where the interviews will take place, along with whether or not the interviews will be recorded. Any nonstandardized material used in a given study (e.g., questionnaires, interview protocols, vignettes, etc.) should be included with the proposal in an appendix, and referenced in this section.

d. Expected Outcomes:
   Describe what you expect to find and explain the reasons why. You can draw on some of the literature to provide foundations for your expected outcomes.

2. Steps taken to protect the participants

This section should contain a full account for how the researcher plans on maintaining participant confidentiality or anonymity. Please be sure to use the terms “confidential” and “anonymous” carefully (see University’s IRB proposal guidelines).

Finally, should your study require a debriefing statement, the debriefing statement should be included in the appendix, and referenced in this section.
3. Manner of obtaining participants

This section should briefly outline how you plan on acquiring participants. If participants will be recruited from campus, how they will be approached should be described in this section.

Final Project Guidelines:

You should think about the nudge that you would like to test around campus. You will then design a simple experiment that will allow you to test your hypothesis. You will negotiate with the appropriate authorities and collect data which then you will use to implement a hypothesis test on. You will then turn in a paper (specifics below) and present it to the class. The presentations are meant for you to get feedback on your paper before you turn it in. You will be working in groups of 3.

There are three assignments you must complete related to your final project:
- Proposal that will be presented in class and submitted for IRB approval (if needed).
- Presentation of your nudge and your results to the class.
- Final paper

The body of the paper must include the following sections:
- Introduction
- Literature Review
- Experimental Design
- Descriptive Statistics
- Statistical Test and Results
- Conclusions

You MUST be concise! I will not read any word after word 2,000 and you MUST provide a word count with your paper. This does not imply that your analysis should be less thorough and you MUST use data and use hypotheses tests in your paper.

The paper must also include an abstract and references (not included in the word number limit) in Chicago style.

Specific Guidelines:
- The papers should be 1.5 spaced, 1-inch margins (all four), 12 pts. font (Times New Roman, Arial or Garamond).
- The body of the text (excluding Abstract and References) should not exceed 2,000 words.
- The experimental design section should describe what you did, how you selected participants and any other details about your experiment. It should be detailed enough that someone could replicate it.
- The descriptive statistics section must include at most 2 tables or graphs. You must describe the information portrayed in your graph or table.
- The results section: You must state the hypothesis test or tests you are implementing, the test statistic, p-value or critical value, and conclusion. Make sure to elaborate on what the
result of your hypothesis means and any potential issues that may have arisen during the implementation. Think critically!

- The conclusions section must briefly sum the goals of your paper, what you did, what you found and why it is interesting or important. No new information here.
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<tr>
<th>Weeks</th>
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| 3     | Read and class discussion of Part I and II of *Nudge*  
*Students know they have to start thinking about the nudge they want to test and find group members* |
| 4     | Lecture on “How to write a Research Proposal and Paper”  
*In class discussion among groups of hypothesis to be tested, where and how* |
| 5     | Turn in a one-page abstract of research question, the nudge being tested, where and how  
*Meetings with instructor to obtain feedback and delimit topic if needed* |
| 6–8   | Contact and negotiate with campus authorities to make sure project is feasible  
*Develop proposal as if it were to be submitted for IRB approval* |
| 9–14  | Present proposal in class, obtain feedback and turn in written copy by the end of the week |
| 10–14 | Implementation of field experiment, data collection and analysis |
| 15    | Present final project results in class and obtain feedback  
*Turn in a 2,000-word research paper on the field experimental results by the end of the week* |