Science of Behavior Change

Suggested answers

December 14, 2015

(2 hours, closed book, written exam at computers)

Answer to Question 1:

Question 1 aims to assess the following two learning objectives:

- Students will review the most recent developments and theories of human decision-making both from *Economics and Psychology*.
- Students will analyze the tools of behavioral science (namely incentive, regulation, persuasion and nudging) and they will compare their effectiveness to change specific behaviors.
- a) An implementation intention is a self-regulatory strategy in the form of an "if-then plan" that can lead to better goal attainment, as well as help in habit and behavior modification. While goal intentions have the structure "I intend to reach X!" with X relating to a desired future behavior or outcome, implementation intentions have the structure "If situation X is encountered, then I will perform the goal-directed response Y!" Thus, implementation intentions define when, where, and how one wants to act on one's goal intentions. Studies showed that the use of implementation intentions can result in a higher probability of successful goal attainment, by predetermining a specific and desired goal-directed behavior in response to a particular future event or cue.
- b) <u>Vaccination</u>: Milkman et al. (2011) evaluate the results of a field experiment designed to measure the effect of prompts to form implementation intentions on realized behavioral outcomes. The outcome of interest is influenza vaccination receipt at free on-site clinics offered by a large firm to its employees. All employees eligible for study participation received reminder mailings that listed the times and locations of the relevant vaccination clinics. Mailings to employees randomly assigned to the treatment conditions additionally included a prompt to write down either (i) the date the employee planned to be vaccinated or (ii) the date and time the employee planned to be vaccinated. Vaccination rates increased when these implementation intentions prompts were included in the mailing. The vaccination rate among control condition employees was 33.1%. Employees who received the prompt to write down just a date had a vaccination rate 1.5 percentage points higher than the control group, a difference that is not statistically significant. Employees who received the more specific prompt to write down both a date and a time had a 4.2 percentage point higher vaccination rate, a difference that is both statistically significant and of meaningful magnitude.

<u>Voting</u>: Nickerson and Rogers (2010) present a field experiment conducted during the 2008 presidential election showing that facilitating the formation of a voting plan (i.e., implementation intentions) can increase turnout by 4.1 percentage points among those contacted, but a standard encouragement call and self-prediction have no significant impact. Among single-eligible-voter households, the formation of a voting plan increased turnout among persons contacted by 9.1 percentage points, whereas those in multiple-eligible voter households were unaffected by all scripts.

Answer to Question 2:

Question 2 aims to assess the following two learning objectives:

- Student will reflect on how experiments and randomized controlled trials work and why this methodology is critical for making inference about causal relationships.
- Student will debate and discuss critically several interventions that have been conducted to change people's behavior in the domain of energy efficiency, health and well-being, dishonesty, charitable giving, education and work performance.

a) There is still a large gap between high and low-income students' college attendance rates in the United States. This gap has remained even after decades of government efforts to reduce it through large amounts of federal and state financial aid. However, availability of financial aid has not proved to be enough to improve college attendance for low-income students. Recent research suggests that the financial aid *process* might prevent eligible students to apply for it. This means that having long and complex application procedures could be stopping low-income students from applying to aid, and thus being able to attend college. In addition, research also suggests that students (particularly from low-income backgrounds) often overestimate tuition levels and underestimate financial aid opportunities. According to the study participants overestimated the average costs of college by 300%.

b) The authors study the effects of simplifying the process, providing assistance, and delivering information about eligibility to financial aid on college enrollment and aid receipt. For this, they conduct a randomized field experiment in the states of Ohio and North Carolina. The authors developed the experiment in collaboration with H&R Block, an accounting firm that provides tax return assistance to over 20 million households per year. The experiment targeted low and middle-income families (yearly income < \$45,000) where at least one member was between 17 and 30 years old and did not have an undergraduate degree. After families completed their tax return at H&R Block, they were randomly assigned to one of three groups in which more or less assistance was provided to fill the Federal Application for Financial Aid Form (FAFSA). FAFSA contains more than 100 questions and it is estimated that it takes four times longer to fill than the regular tax return.

The groups were the following:

- <u>FAFSA Treatment</u>: In this group the firm helped individuals complete the FAFSA. Since the
 individuals had already filled their tax return form, they used this information to pre-fill two-thirds
 of the FAFSA form. The firm then calculated and provided a written description of the amount the
 individual was eligible to receive from federal and state funds. In addition, they presented the tuition
 prices of four nearby public colleges. Finally, for those that completed the form, the firm offered to
 submit the FAFSA electronically free of charge.
- 2. <u>Information only treatment</u>: In this group the firm calculated and provided the written description of financial aid eligibility, and presented the tuition prices of four nearby public colleges. The individual was then encouraged to fill the FAFSA on his/her own, but was not given any assistance.
- 3. <u>Control group</u>: This group did not receive any assistance or personalized aid eligibility information. They only received a brochure with the general information about the importance of college and costs.

c) Table 3 shows their results on FAFSA filling. More in detail: to estimate the results the authors distinguish between dependent participants (younger than 24 years old), independent participants with no prior college experience, and independent participants with prior college experience. For the FAFSA treatment the authors find positive and significant effects for every sub-group: those that were provided with assistance and information were more likely to fill and submit the form. However, there was no significant effect for the information only treatment: those who only received eligibility information were not more likely to submit a form than the control group.

The main message of this paper is that simplifying the process and providing assistance during the application process to financial aid can have large effects on enrollment and the amount of aid received. It is thus important to reduce complexity and time required to complete the process. Interestingly, only providing information about the amount of aid eligibility did not increase applications and enrollment on its own.

Answer to Question 3:

Question 3 aims to assess the following two learning objectives:

- Student will examine cases where people make decisions that are inconsistent with the assumptions of rational decision making and they will identify the consequences of this irrational behavior for the society.
- Students will design experiments and develop policy intervention aiming at ameliorate societal wellbeing and improve people's life.

This question has not a correct answer *a priori*. This question gives the student the possibility to show that s/he can use the knowledge for solving practical problem.

Students should:

- 1. define the context in which the nudging is going to happen (when and where).
- 2. briefly think through the behavior change and articulate the specific behavior that you want to change as a result of the nudge (specific and measurable behavior).
- 3. map the decision making process: different stages that people go through; various frictions and bottlenecks; identify nudges that would actually help you address those bottlenecks.
- 4. make a linkage between that map that you've just drawn, the process that you've just identified, and some of the concepts that you've talked about in this class.
- 5. describe the intervention and/or the nudge (precision)
- 6. describe the design of an experiment that can test the nudge and briefly how to do the data analysis (internal and external validity).