Written Exam at the Department of Economics winter 2020-21

Science of Behavior Change

Final Exam

December 15, 2020

(2-hour open exam)

Answers only in English.

This exam question consists of xx pages in total

Be careful not to cheat at exams!

You cheat at an exam, if during the exam, you:

- Make use of exam aids that are not allowed
- Communicate with or otherwise receive help from other people
- Copy other people's texts without making use of quotation marks and source referencing, so that it may appear to be your own text
- Use the ideas or thoughts of others without making use of source referencing, so it may appear to be your own idea or your thoughts
- Or if you otherwise violate the rules that apply to the exam

Question 1:

a) Define "Implementation Intentions".

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.

b) Describe two interventions seen during the course using "Implementation Intentions" as a tool to change people's behavior.

- Milkman et al. (2011) evaluate the effect of prompts to form implementation intentions to foster influenza vaccination. All employees eligible received reminder mailings that listed the times and locations of the relevant vaccination clinics. Employees were randomly assigned to different groups. Those in a control group received a mailing with only the personalized clinic information described above. Those in the plan-making condition also received a prompt urging them to (privately) write down in a box printed on the mailing the date and time they planned to attend a clinic. Clinic attendance sheets were used to track the receipt of flu shots. This subtle prompt to make plans cost little but increased flu shot uptake from 33% of targets in the control condition to 37% in the plan-making condition. - 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 multipleeligible voter households were unaffected by all scripts.

c) Explain why Implementation Intentions can increase follow-through.

- Making an action plan overcomes people's tendency to procrastinate when they intend to behave in beneficial ways that fail to provide instant gratification.

- Making an action plan overcomes people's tendency to be overly optimistic about the time it will take to accomplish a task.

- Making a concrete action plan also helps people overcome forgetfulness.

- Committing to behaving in a certain way and then failing to follow through on this explicit commitment causes discomfort. Anticipating such discomfort probably contributes to why planning prompts increase follow-through.

- Planning prompts become even more effective when they require a person to inform someone else of a commitment, such as reporting the plan to a friend or family member (social pressure)

Question 2:

During Part 2 of the course we have seen the following paper: Charness and Gneezy (2009) "Incentives to Exercise", *Econometrica*, 77 (3), 909-931.

a) Summarize the research question and the experimental design of this paper explaining in particular the difference between Study 1 and Study 2.

The research question that the authors address in this paper is the following: *can monetary incentives be useful to help people develop a good habit such as exercising?* There are in fact two competing hypotheses.

1) **Crowding-out**: paying someone for an activity might destroy his intrinsic motivation to perform the task once the incentives are removed.

2) **Habit-formation**: one's utility from engaging in an activity depends on his experience in the past.

In **Study 1**, students are promised payment if they came to the lab once on a given date and again a week later, they have to sign a consent form that allowed the researchers to access to data on their past and future gym visits (on campus) and they were given a handout about the benefits of exercise. Participants are randomly allocated to three groups.

- Control group: no further requirement or activity.

- One-time group: Each subject gets \$25 for attending the gym at least once during the following week.

- Eight-times group: Each subject gets \$25 for attending the gym at least once during the following week, plus \$100 for attending the gym at least eight more times during the next four weeks.

In **Study 2**, students are paid to go to a meeting room three times for biometric tests (weight, height, body fat percentage, waist, pulse, and blood pressure). They are paid \$75 for the first visit and \$50 for each of the two other visits. In total 175\$. Again, participants are randomly allocated to three groups:

- Control group: no further requirement or activity.

- One-time group: Subjects were asked to attend the gym at least once in the next month.

- Eight-times group: Subjects were asked to attend the gym at least eight times in the next month.

The difference between these two studies is that subjects in Study 2 were paid the same amount regardless of which group they were in. The authors conduct these two different studies to control for the possibility that it was the monetary payment, rather than a habit acquired by the experimenters, that caused the effects.

b) Discuss the result presented in the figure below.



FIGURE 1.—Average weekly gym visits. Error bars reflect 1 standard error.

The Figure graphically presents the rate of gym attendance before and after the intervention period for Study 2. "Before" refers to the period before the first lab visit, while "After" refers to the period after any incentives were removed. We observe a positive trend in attendance for all treatment groups. The average attendance rate for the control group increased from 0.81 visits per week in the 12 weeks before the intervention period to 1.10 visits per week in the 13 weeks after the intervention period (+36%). The corresponding change for the one-time group was from 0.62 visits per week to 0.87 visits per week (+40%). The change for the eight-times group was much greater, with an average of 0.52 weekly visits before the intervention period (+181%).

c) The paper reports different effects for "regular" and "non-regular" attendees. Summarize the findings and discuss why study "heterogeneous" effect is important for policy.

Paying people to go to the gym is an effective way to create an habit of exercising. However, the authors show that almost the entire effect of the incentive for the eight times groups comes from those who had not been regular attendees. group. In fact they report a large and highly significant effect for nonregulars in the eight-times group.

Studying the "heterogeneity" of the effect(s) of the intervention is particularly interesting for policy makers for two reasons:

1) interventions can be tailored according to individual characteristics to get the highest efficacy. The choice of the tool and the implementation of the intervention should be designed taking into consideration individual characteristics.

2) When the policy makers have a budget constraint they may opt to focus their intervention only to the sub-population where they expect the highest results.

Question 3:

Design an intervention to increase the use of face masks for the prevention of COVID-19 among university students. Remember to use the scheme we have used in class:

- Give a brief description of the context in which the behavioral intervention is going to happen.
- Articulate the specific behavior that you want to change as a result of the behavioral intervention.
- Map the decision making process and the various bottlenecks.
- Make a linkage between that map, the process that you have identified, and some of the concepts seen during the course.
- Describe your behavioral intervention.
- Explain how you want to test the efficacy of your intervention: output measure, number of treatments, sample size, predictions and statistical analysis you intend to use.

This question has not a correct answer *a priori*. This question gives the student the possibility to demonstrate his/her competence in designing a behavioral intervention aiming at solving a practical problem.

For more information about this task, see the dedicated course webpage: https://mpiovesan.com/sbc20-activity/