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Dishonesty and Future Public Servant's Identity

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Abstract

The injustice caused by public-sector workers can cause great harm to society. In this study, we conducted an experiment to investigate the misconduct of public-sector workers. We divided prospective public servants into two groups: treatment and control groups. To measure their cheating behaviors in the treatment group, participants were required to carry out a priming task to strengthen their awareness as future public servants, before conducting a cheating task (20 rounds). In the control group, participants conducted a cheating task after carrying out a task unrelated to public service. We found a non-monotonic effect of the treatment on misbehavior. We believe that our treatment had an effect on mitigating dishonest behaviors as well as promoting loss-averse behaviors. We infer that the priming effect promoted the dishonest behavior in future public servants in the loss domain.

JEL codes: C91, D73, K42

Keywords: Decision making, Laboratory experiments, Cheating, Public sector, Priming, Dishonesty

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1. Introduction

The corruption of workers in the public sector causes great losses to society. Studies have long reported that increased fraudulent behavior in the public sector reduces a country's economic growth (Mo, 2001). This problem has led to numerous theoretical studies on fraudulent behavior in the public sector and the proposal of various policy implementations to keep such behaviors in check (e.g., Acemoglu & Verdier, 1998; Becker & Stigler, 1974; Besley & McLaren, 1993; Wadho, 2016). According to the results of a survey conducted by the Ministry of Internal Affairs and Communications of Japan, in the 2018 fiscal year, disciplinary proceedings were initiated against 1,782 people for general service violations, against 106 people for bribery, and against 76 people for cheating in examinations and recruitment. Therefore, it is important to investigate effective fraud prevention measures to bring such instances in check. Even though measures in economics, such as wage systems, monitoring of corruption, and employee selection have previously been devised, there is still a need to deepen our understanding of prevention measures.

To this end, this study aimed to investigate the priming effect of future public servants' dishonesty. In our experiment, a group of aspiring public servants were given a priming task to strengthen their awareness of their status as future public servants. First, we recruited students taking a public service examination course at Fukushima University. Then, we divided the participants into two groups: the treatment and the control group. In the former, participants completed the priming task and were then engaged in a cheating task so their cheating behavior could be measured. The participants were not required to inform the experimenters of their cheating behavior. Participants could, therefore, cheat without their social image being impacted. We found a non-monotonic effect of the treatment on cheating behaviors. We hypothesized that the treatment mitigates dishonest behaviors and promotes loss-averse behaviors. Therefore, we inferred that the priming effect promoted dishonest behaviors of future public servants in a loss domain.

In the context of public administration, van der Wal et al. (2008) demonstrated that lawfulness and incorruptibility are more valued by managers in the public sector compared to the private sector. Additionally, Olsen et al. (2018) noted that behavioral dishonesty has a strong negative correlation to public service motivation. The present study is the first to investigate the priming effect of future public servants on dishonest behaviors. Our findings may suggest policies for the monitoring of the public sector in the loss domain or the introduction of a wage system that supports richer compensation at the time of loss.

Hanna and Wang (2017), who recruited Indian university students and engaged them in cheating tasks, found that dishonest students, who had high scores on the cheating task, are more likely to aspire to work in the public sector and in civil service. On the other hand, in the context of developed countries with low levels of corruption, we inferred that high ethical standards have been achieved in the public sector. The novelty of our paper is that we conducted the experiment

with students who aspire to work in the public sector in the context of a developed country and investigated the priming effect of future public servants' dishonesty.

Hanna and Wang (2017) also measured the absenteeism rate of nurses in the Indian civil service and conducted an experiment on cheating tasks among nurses. The results explained nurses' absenteeism rates—high scores on the cheating tasks indicated high absenteeism rates. Based on their findings, we analyzed new methods to deter misbehavior among students who aspire to become public servants.

There are many analyses in economics that focus on the priming effect, where prior stimuli unconsciously influence subsequent behavior (e.g., Benjamin et al., 2010, 2016; Chen et al., 2014; Cohn et al., 2015; Callen et al., 2014). The priming method employed in this study is based on the method of Cohn et al. (2015), who investigated the priming effect on the dishonest behavior of prisoners. In their experiment, half of the participants were asked questions that reminded them that they were incarcerated criminals, to prime the salience of their criminal identity. Subsequently, participants performed a cheating task. The results showed that priming promotes the cheating behaviors of prisoners.

2. Experimental Design

In this study, we employed the cheating task developed by Fischbacher and Föllmi-Heusi (2013). We recruited 66 students who took a public service examination course at Fukushima University and conducted the experiments from August to November 2019. During the experiment, participants were moved into a room simultaneously and given envelopes containing the surveys and a single dice in a cup. They were not privy to the actions of the other participants because they were all partitioned off. The participants were presented with a payoff structure of the dice number and a corresponding reward: each point on the dice corresponded with a gift certificate worth JPY 300.[1] Thus, number one on the dice corresponded to one gift certificate (JPY 300); the number two corresponded to two gift certificates (JPY 600); number three corresponded to three gift certificates (JPY 900); number four corresponded to four gift certificates (JPY 1200), and number five corresponded to five gift certificates (JPY 1500); number six corresponded to 0 gift certificates (JPY 0). Hereafter, we will refer to the number 6 on the dice as 0 for convenience.

We used the paper and pencil experiment. After receiving the instructions, the participants completed the experimental questionnaire, the priming task, the cheating task, and the post-

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[1] While cash rewards would have been preferable, it was not permitted at Fukushima University. However, gift certificates sufficed, because there is a convenience store near the campus, where these gift certificates are accepted.

experimental questionnaire in that order. To investigate the priming effect on dishonest behavior, the priming task for the participants in the treatment group comprised questions related to the future public servant's identity, while the questions in the control group were unrelated. These questions can be found in Appendix A.2. They were then asked to indicate their current emotional state using the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988).[2] Subsequently, we conducted a manipulation check comprising six questions. The cheating task consisted of 20 rounds—in each round, participants rolled the dice, wrote down the number they rolled on a sheet of paper, and placed the paper in a sealed envelope. They had the option of cheating by writing down a higher number than they actually rolled. After the experiment, they went into another room one by one and rolled a 20-sided dice. The number they rolled on the 20-sided dice would be the round that dictated their payoff. An experimenter opened the corresponding envelope (out of 20 envelopes) from the dice roll, and the number in the sheet was the reward the participants would receive. The show up fee was JPY 900 and the experiment lasted approximately 45 minutes.

3. Theory and hypothesis

We adopted the identity framework from Chon et al. (2015) and assumed that students have two identities. The first is a future public servant's identity (FPSI) that does not cheat and the second is an economic identity (EI) that might cheat. Let x_{dice} denote the number on the dice. As mentioned above, the number 6 on the dice is referred to as 0; that is, $x_{dice} \in \{0,1,2,3,4,5\}$. x_{dice} corresponds to the amount of reward. $x_{P,report}$ represents the number which FPSI wants to report whereas $x_{E,report}$ represents the number which EI wants to report. For simplicity, let $x_{P,report}$ and $x_{E,report}$ be continuous variables in $[0,5]$. We assume that FPSI desires to report the true number on the dice

$$x^*_{P,report} = x_{dice}.$$

Next, we assume that EI desires to report a higher number than they actually rolled for the higher corresponding reward and also suffer the psychological cost of their lying $\lambda(x_{E,report} - x_{dice})^2$.[3] Given the dice number x_{dice}, we assume that EI's utility is:

$$U(x_{E,report}|x_{dice}) = x_{E,report} - \lambda(x_{report} - x_{dice})^2,$$

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EI's optimal reporting number is determined to maximize the utility as:

$$x_{E,report}^* = \begin{cases} \dfrac{1}{2\lambda} + x_{dice}, & if \quad \dfrac{\lambda}{2} + x_{dice} < 5 \\ 5, & others. \end{cases}$$

The student reports the number $x_{report} \in [0,5]$ to maximize the following utility:

$$\max_{x_{report}} -w(s)\left(x_{P,report} - x_{report}\right)^2 - \left(1 - w(s)\right)\left(x_{E,report} - x_{report}\right)^2$$

where $w(s) \in [0,1]$ is the weight placed on the FPSI and s represents the current strength of the FPSI, that is, $w' > 0$. Thus, each optimal action lies between the optimal actions of the two identities:

$$x_{report}^* = w(s)x_{P,report}^* + \left(1 - w(s)\right)x_{E,report}^*.$$

Priming FPSI salience has the effect of moving their optimal action toward that identity. Therefore, we hypothesize that priming would mitigate future public servants' dishonest behaviors. However, the results show that (i) on average, priming had no effect on mitigating dishonest behaviors; (ii) it did, however, have an effect on promoting loss-averse behaviors.

4. Results

We excluded an envelope from one person since the number written on the sheet was illegible. Thus, the sample size for this study was 1319 (20 rounds × 66 persons - 1). As observed in Table 1, which shows the descriptive statistics for the subjects in the control and treatment groups, there is no significant difference in personal attributes between control and treatment groups. The part-time income refers to the value of monthly income (in thousands of yen) earned from a part-time job. Cognitive ability is the number of correct answers given to three questions on the cognitive reflection test (Frederick, 2005). Positive and negative emotions were measured using a questionnaire with the PANAS scale after priming. Altruism is calculated by the answer provided in the dictator game without monetary reward in the post-questionnaire. Specifically, the question is "Suppose that you are going to get JPY 1000 and you can distribute some of it to an anonymous student who participates in the same experiment. How would you distribute the money?". We used the answer as a measure of altruism.

[Table 1]

Not only did the priming remind them of their aspirations to work in public service, it also reminded them of their aspirations to become working members of the society.[4] They believed that they need to be prepared to be a working member of the society when they obtain a job after graduating from college. For example, they believed that they need to be proactive in their work, be punctual with their work schedule, share information in the workplace, and work smoothly and cooperatively with coworkers. To identify the effect of salience of awareness of a working member of society, we asked them two questions, "In general, what kind of attitude do you think is necessary to become a working member of society? Please select from the following the attitudes based on your preferences." and "Based on the above answers, how much are you currently prepared to be a working member of society?". We used their response to the second question in the post-questionnaire as a measure of their awareness of a working member of society.

[Figure 1]

[Table 2]

Figure 1 and Table 2 show the average reported number in control and treatment groups. In Figure 1, the red dashed line indicates the theoretically expected value that all participants reported honestly. The average reported number was not significantly different between the control and treatment groups (one-sided t-test, $t = 0.4273$, $p = 0.3346$). Thus, on average, priming had no effect on mitigating dishonest behaviors.

[Figure 2]

[Table 3]

Figure 2 indicates the distribution of reported numbers by treatment condition and control condition. The red dashed line indicates the theoretical distribution that all participants honestly reported their results (a uniform distribution of 1/6). Table 3 shows the descriptive statistics of the reported number. We find that most of the participants were honest. We assumed that all of the participants who reported 0 did so truthfully. The proportion of participants who reported the number 0 was 13.64%. In contrast, Abeler et al. (2019), who combined data from 429 experiments in 90 papers involving over 44,000 participants from 47 countries, found that the mean proportion of participants reporting the lowest outcome was around 7%.

[Table 4]

As observed in Figure 2, both the control and treatment groups have a high percentage of reported numbers with high reward amounts and a low percentage of reported numbers with low

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[4] Many students work a part-time job but they spend most of their time on their studies. Therefore, their awareness as a student is stronger compared to their awareness as a working member of society.

reward amounts. A binomial test was conducted for both the groups independently to see if the percentage of reported numbers was different from 1/6 when the value was honest. The results, summarized in Table 4, found that the percentage of reported numbers for the control group was significantly different from 1/6 for the reported numbers of 0, 1, 4, and 5; the treatment group was significantly different from 1/6 for the reported numbers of 0, 2, and 3. Therefore, we presumed that there were two directions of the treatment effect. First, the distribution was slightly flattened. Second, the proportion of those reporting 2 decreased, while the proportion of those reporting 3 increased. The latter effect implies that priming promoted cheating behavior only in situations where students reported number 2 without priming. We performed a multinomial probit regression to focus on this priming effect.

[Table 5]

The sample size N is 1319 and the estimation results are shown in Table 5. Let the selected reported numbers be x_i $(i = 1, \dots, N)$ and the vector of explanatory variables be $\mathbf{z_{ij}}$ $(j = 0, 1, 3, 4, 5)$. The multinomial probit model based on the reported number of 2 can be expressed as:

$$x_i = j, \quad \text{if} \max_{j \in \{0,1,2,3,4,5\}} u_{ij}^*$$

$$u_{ij}^* = \alpha_j + \boldsymbol{\beta}' \mathbf{z_{ij}} + v_{ij}, \qquad j = 0, 1, 3, 4, 5.$$

Here, u_{ij}^* represents the utility for each reported number, which is normalized to $u_{i2}^* = 0$. $\boldsymbol{\beta}$ is the regression coefficient, and $\boldsymbol{v_i} = (v_{i0}, v_{i1}, v_{i3}, v_{i4}, v_{i5})$ is the error term following a five-variate normal distribution with mean $\mathbf{0}$ and variance-covariance matrix $\boldsymbol{\Sigma}$.

In Table 5, Treatment is a dummy variable indicating the presence of FPSI salience priming. As shown in Table 5, the probability of reporting 1 and 3 is higher in the treatment effect, which shows a non-monotonic effect on the participants' cheating behaviors. We presumed that treatment would have two effects: mitigating the cheating effect and intensifying loss-averse preference. The detailed discussion is provided in Section 5.

The other dummy variables include a female dummy variable and a dummy variable indicating the student's major. The round indicates the number of tasks out of a total of 20. In this experiment, the probability of reporting a 1 decreased with the each passing round, which can be inferred as an increase in lying. The higher the monthly part-time income, the lower the probability of reporting 0, and the higher the probability of reporting 5. This might be because people who earn higher part-time income have a higher opportunity cost per unit of time. They might expect more compensation for participating in the experiment and be more strongly incentivized to lie. We can confirm from Table 5 that people with a stronger awareness of their status as a working member of society were less likely to lie; however, those who were more altruistic were no less likely to lie. Thus, the treatment effect is still significant, even with altruism and the awareness of being a working member of society. Furthermore, while we instructed the

subjects not to share the contents of the experiment with each other, we also controlled for the session because the later the session was, the more the subjects shared the contents of the experiment with each other, which may have influenced their behavior. Finally, similar to Cohn et al. (2015), we controlled for emotion and cognitive ability.

5. Discussion

As shown in Section 2, two directions were reported for the treatment effect. First, the proportion of those reporting number 2 decreased while those reporting 1 increased. Second, the proportion of those reporting 2 decreased while the proportion of those reporting 3 increased. There was a non-monotonic effect on the cheating behaviors exhibited by the participants. We presumed that the treatment had two effects: mitigating the cheating effect and intensifying the preference for loss-aversion. We now explain why loss-averse participants were less likely to report number 2 and are more likely to report number 3. Consider a participant comparing payoffs between reporting number x and $x + 1$. The marginal benefit is JPY 300, and the marginal cost is the psychological cost of cheating. We assume that the reference point is expected dice number 2.5. Then, the loss domain is $\{0,1,2\}$ and the gain domain is $\{3,4,5\}$. When $x = 1$, the marginal utility from JPY 300 is small because the reported number remains in the loss domain. In contrast, when $x = 2$, the marginal utility from JPY 300 is relatively large because the reported number moves from a loss to a gain domain. Therefore, when $x = 2$, the marginal utility is likely to be larger than the disutility from the psychological costs. Thus, loss-averse participants were less likely to report number 2 and more likely to report number 3.

Our conjecture is well-supported by several existing papers. Garbarino et al. (2019) showed that loss-averse agents were more likely to lie to avoid receiving a low payoff, both theoretically and empirically. Likewise, Deslatte et al. (2020) also showed that public employees have a higher tendency for loss-aversion. These results implied that priming the salience of their FPSI activated their traits, high tendency for loss-aversion as well as incorruptibility, and promotes the cheating behaviors of subjects.

In our experiment, we needed to demonstrate that priming would promote loss-averse behavior and that students would have a reference point of 2.5. However, while we found no concrete evidence (which we shall re-examine in a future study), we did manage to find weak evidence for the same. While recruiting participants for the experiment, we presented an expected amount of rewards (JPY 1650). However, we did mention that their rewards would depend on their performance, which could range anywhere from JPY 900-2400. In the instructions, participants were also informed that their fee for taking part in the experiment was JPY 900. As such, participants should have been easily able to calculate that their expected reward, without a show up fee, was JPY 750. Therefore, it was possible that participants believed they would receive

JPY 1650, and that they had a reference point of 2.5. As such, it is possible that cheating was used as a loss-aversion tactic, and that priming future public servants increased the tendency of loss aversion, thus resulting in a decrease in those reporting 2 and an increase in those reporting 3.

In manipulation check, we asked the students to solve five fill-in-the-blank questions for Chinese characters, e.g., 自＿. Priming was assumed to be effective if they answered 自治体 (municipality), which is related to the public sector, and ineffective if they answered 自分 (myself), which is completely unrelated. The number of answers related to the public sector was used as the score. Unfortunately, this manipulation check did not work and no significant difference in the scores between the control and treatment groups was observed. To check the validity of results for priming effects, we removed the subjects with a score of zero (10 people) and analyzed the results again.

[Table 6]

[Figure 3]

[Table 7]

Table 6 shows that there is no significant difference in personal attributes between control and treatment groups after removing the samples. As shown in Figure 3, the treatment effect persists. The distribution was slightly flattened, with a decrease in the proportion of those reporting 2, and an increase in those reporting 3. From the results of a multinominal probit regression in Table 7, the removal of the subjects with a score of zero highlights the treatment effects. The probability of reporting one and three was higher in the treatment effect and the coefficient was larger than the previous result in Table 5. Thus, we can conclude that the manipulation check did not work; However, our results are robust.

6. Conclusion

We found that priming future public servants increased the tendency toward loss-aversion, which resulted in a decrease in the proportion of those reporting number 2 and an increase in those reporting 3. While priming future public servants mitigates dishonest behavior, it also promotes cheating behavior as a loss-aversion tactic. Therefore, on average, priming had no mitigating effect on dishonest behavior. The policy implication is that fraud prevention measures in the loss domain probably effective. In any future work building from this study, it is necessary to compare the degree of loss aversion between workers in the private and public sector, to clarify the conditions under which a worker in the public sector is more likely to take risks, and to clarify that cheating is indeed a loss-aversion tactic.

A. Appendix

A.1 Explanation of the Experiment
- This is an experiment on economic behavior.
- Before the experiment, please read these instructions carefully. If you have any questions, please raise your hand and call the experimenter.

Gratuity for the experiment
- You will receive QUO cards (gift cards) worth JPY 900 as a reward for participating in the experiment.
- In this experiment, you will first answer Form A, B, and C, in that order. Next, you will roll the dice in the cup on your desk, write the results on a small sheet of paper, and place them in the small envelopes. Finally, answer the questionnaire in Form D. Please ensure that all forms are placed in their respective envelopes.
- Your final reward will be JPY 900 (the participation reward) plus the result of one of the 20 tasks randomly selected after the experiment.
- You will not know in advance result will be chosen. Please note that the 20 tasks are all weighted equally.

A.2 Priming task

A.2.1 Treatment group

1. On average, how much time per week do you spend studying for the civil service exam?
2. What job would you to work in after you become a public servant?
3. Why do you want the said job?
4. What do you think should be changed in the current work system, in terms of salary, duties and other factors? Please give up to 3 answers.
5. What kind of personality do you think is suitable for a civil servant? Please give up to 3 answers.
6. What do you think is the probability that you will pass the civil service examination?

A.2.2 Control group

1. On average, how much time per week do you spend on the Internet (including SNS,

video sites, applications, and online games) for entertainment purposes? If you answered "0 hours", please proceed to question 6.

2. What kind of websites (applications) do you browse on the Internet for entertainment?

3. Why you use such sites (applications)? Please provide up to three reasons.

4. What, if any, improvements can be made to the sites (applications) that you prefer? Please provide give up to three suggestions.

5. What attributes (e.g., gender, age, occupation) do you think are common among people who like your preferred site? Please provide up to three answers.

6. What, in your opinion, is the percentage of college students who do not use the Internet for entertainment purposes?

A.3 Answer sheet for the cheating task (below is the answer sheet for Round 1)

Task ①

ID No.____

As shown below, place the dice in the cup and cover it. Shake the

cup to roll the dice, check the number that comes up (the top side)

and fill it in the sheet of paper.
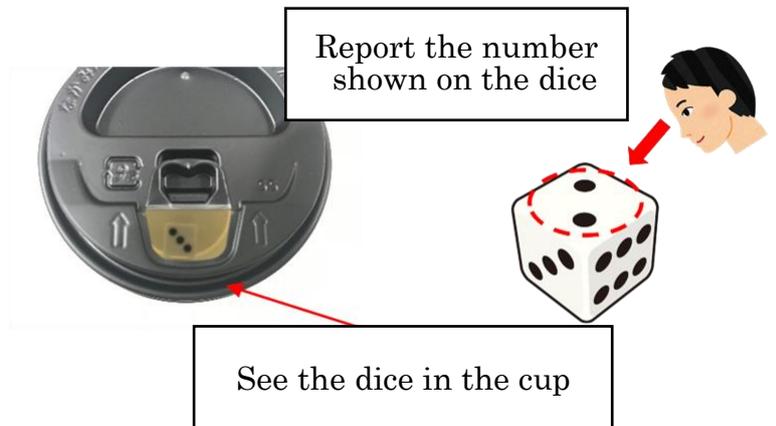
Payoff structure of dice number and a corresponding reward

Number shown on the dice	1	2	3	4	5	6
Reward (yen)	300	600	900	1200	1500	0

Number shown on the dice is _____

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B. Tables

Table 1. Descriptive statistics for subjects in the control and treatment groups

	Control group	Treatment group	t-test two-sided P value
Number of females	10	11	
Number of males	23	22	
Female percentage (%)	30.303	33.333	$t = -0.2604$ $p = 0.7954$
Average reported number	2.742	2.703	$t = 0.4273$, $p = 0.6692$
Average part-time work income (in thousands of yen)	33.879	35.424	$t = -0.2431$, $p = 0.8087$
Average cognitive skills	1.848	1.576	$t = 1.0884$, $p = 0.2805$
Average positive emotions	2.370	2.458	$t = -0.4285$, $p = 0.6697$
Average negative emotions	2.057	2.136	$t = -0.2967$, $p = 0.7676$
Average awareness as a working member of society	3.455	3.758	$t = -1.6357$, $p = 0.1068$
Average altruism	418.182	392.424	$t = 0.4882$, $p = 0.6271$

Table 2. Descriptive statistics for reported number by conditions

	Observations	Mean	S.D.	Min	Max
Control group	660	2.742	1.698	0	5
Treatment group	659	2.703	1.688	0	5
Total	1319	2.723	1.693	0	5

Table 3. The proportion of reported numbers by conditions

		統制群	処置群	合計
0	Observations	90	90	180
	(%)	(13.64)	(13.66)	(13.65)
1	Observations	92	102	194
	(%)	(13.94)	(15.48)	(14.71)
2	Observations	108	92	200
	(%)	(16.36)	(13.96)	(15.16)
3	Observations	111	132	243
	(%)	(16.82)	(20.03)	(18.42)
4	Observations	126	116	242
	(%)	(19.09)	(17.6)	(18.35)
5	Observations	133	127	260
	(%)	(20.15)	(19.27)	(19.71)
Total	N	660	659	1,319
	(%)	100	100	100

Table 4. The result of binominal test (p-value)

Control group							
Reported number		**0**	**1**	**2**	**3**	**4**	**5**
One-sided test	**X＜1/6**	0.986	0.975	0.599	0.475	0.055*	0.011**
	X＞1/6	0.019**	0.032**	0.442	0.567	0.956	0.992
Two-sided test		0.037**	0.060*	0.876	0.917	0.095*	0.019**
Treatment group							
Reported number		**0**	**1**	**2**	**3**	**4**	**5**
One-sided test	**X＜1/6**	0.975	0.806	0.975	0.019**	0.233	0.060*
	X＞1/6	0.032**	0.225	0.032**	0.985	0.798	0.952
Two-sided test		0.063*	0.458	0.063*	0.034**	0.427	0.111

**, * indicate statistical significance at the 5 and 10 percent levels, respectively.

Table 5. The result of multinomial probit regression

	(1)	(2)	(4)	(5)	(6)
Reported number	0	1	3	4	5
Treatment	0.0631	**0.173***	**0.278****	0.0814	0.107
	(0.112)	(0.103)	(0.113)	(0.108)	(0.0990)
Female	-0.189	-0.299**	-0.259*	-0.384***	-0.286**
	(0.137)	(0.148)	(0.137)	(0.132)	(0.128)
Rounds	-0.00550	-0.0261***	-0.00651	-0.0116	0.00708
	(0.0105)	(0.00977)	(0.00989)	(0.0103)	(0.00982)
Income	-0.00545**	-0.000407	0.000135	0.000784	0.00432**
	(0.00240)	(0.00217)	(0.00215)	(0.00241)	(0.00200)
Negative emotion	0.0224	0.144***	0.0612	0.0631	0.0109
	(0.0547)	(0.0448)	(0.0626)	(0.0492)	(0.0667)
Positive emotion	-0.0296	-0.133**	-0.147**	-0.100	-0.130**
	(0.0704)	(0.0667)	(0.0631)	(0.0733)	(0.0594)
Cognitive ability	-0.0942	-0.0559	-0.0674	-0.0790	-0.0162
	(0.0574)	(0.0623)	(0.0608)	(0.0625)	(0.0551)
AWMS	-0.0225	-0.0441	-0.138**	-0.102	-0.161**
	(0.0727)	(0.0726)	(0.0689)	(0.0763)	(0.0820)
Altruism	−2.16e-06	-0.000199	-0.000214	-0.000138	-4.08e-05
	(0.000264)	(0.000231)	(0.000242)	(0.000190)	(0.000274)
Sessions	-0.0838***	-0.0554**	-0.0407*	-0.0298	-0.0510***
	(0.0193)	(0.0245)	(0.0247)	(0.0247)	(0.0189)
Symbiotic Systems	0.145	-0.218	-0.310	-0.0851	0.136
Science	(0.174)	(0.201)	(0.245)	(0.170)	(0.168)
Economics and business	0.219	0.293**	0.0942	-0.0292	0.287**
administration	(0.166)	(0.133)	(0.146)	(0.152)	(0.122)
Human development and	0.172	0.117	0.181	0.107	0.243*
culture	(0.146)	(0.168)	(0.193)	(0.200)	(0.135)
Constant	0.687*	0.782**	1.220***	1.104**	0.977**
	(0.399)	(0.377)	(0.314)	(0.441)	(0.388)
Observations	1,319	1,319	1,319	1,319	1,319

Base outcome is reported as number 2. Standard errors in the parenthesis are clustered by individual level.

*** , ** , * indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

Table 6. Balance Check after removing sample with a score zero

	Control group	Treatment group	t-test two-sided P value
Number of females	10	9	
Number of males	23	14	
Female percentage (%)	30.303	39.13	$t = -0.2604,$ $p = 0.7954$
Average reported number	2.742	2.678	$t = 0.6337,$ $p = 0.5264$
Average part-time work income (in thousands of yen)	33.879	37.043	$t = -0.4650,$ $p = 0.6438$
Average cognitive skills	1.848	1.609	$t = 0.8394,$ $p = 0.4049$
Average positive emotions	2.370	2.505	$t = -0.5683,$ $p = 0.5722$
Average negative emotions	2.057	2.179	$t = -0.4059,$ $p = 0.6864$
Average awareness as a working member of society	3.455	3.739	$t = -1.3086,$ $p = 0.1962$
Average altruism	418.182	347.826	$t = 1.2219,$ $p = 0.2271$

Table 7. The result of multinomial probit regression after removing sample with a score zero

	(1)	(2)	(4)	(5)	(6)
Reported number	0	1	3	4	5
Treatment	0.0355	0.265**	0.285**	0.00726	0.101
	(0.134)	(0.122)	(0.121)	(0.115)	(0.112)
Female	-0.137	-0.386**	-0.118	-0.356***	-0.310**
	(0.163)	(0.160)	(0.140)	(0.134)	(0.139)
Rounds	0.00230	-0.0237**	-0.00399	-0.0140	0.00921
	(0.0114)	(0.0102)	(0.0111)	(0.0115)	(0.0107)
Income	-0.00371	-0.000322	-0.00147	0.00200	0.00330*
	(0.00282)	(0.00246)	(0.00222)	(0.00217)	(0.00182)
Negative emotion	0.0212	-0.151**	-0.140**	-0.0464	-0.153**
	(0.0750)	(0.0691)	(0.0681)	(0.0680)	(0.0632)
Positive emotion	0.00688	0.142***	0.0130	0.0480	0.0492
	(0.0722)	(0.0515)	(0.0658)	(0.0474)	(0.0763)
Cognitive ability	-0.101	-0.0653	-0.0341	-0.104	-0.0357
	(0.0703)	(0.0657)	(0.0648)	(0.0642)	(0.0647)
AWMS	-0.0371	-0.0419	-0.0987	-0.0672	-0.150*
	(0.0758)	(0.0616)	(0.0666)	(0.0677)	(0.0798)
Altruism	4.43e-05	3.29e-05	-0.000554**	-0.000249	-0.000143
	(0.000316)	(0.000234)	(0.000222)	(0.000213)	(0.000290)
Sessions	-0.0923***	-0.0755***	-0.0542**	-0.0664***	-0.0585***
	(0.0229)	(0.0248)	(0.0233)	(0.0223)	(0.0213)
Symbiotic Systems Science	0.210	-0.274	-0.136	0.0238	0.0353
	(0.260)	(0.229)	(0.255)	(0.161)	(0.204)
Economics and business administration	0.148	0.363**	0.0958	-0.0767	0.412***
	(0.186)	(0.149)	(0.159)	(0.151)	(0.142)
Human development and culture	0.192	0.252	0.365***	0.360*	0.345**
	(0.166)	(0.166)	(0.138)	(0.195)	(0.147)
Constant	0.525	0.777**	1.233***	1.044**	1.004**
	(0.407)	(0.362)	(0.336)	(0.417)	(0.406)
Observations	1,119	1,119	1,119	1,119	1,119

Base outcome is reported as number 2. Standard errors in the parenthesis are clustered by individual level. ***, **, * indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

C. Figures

Figure 1. The average reported number
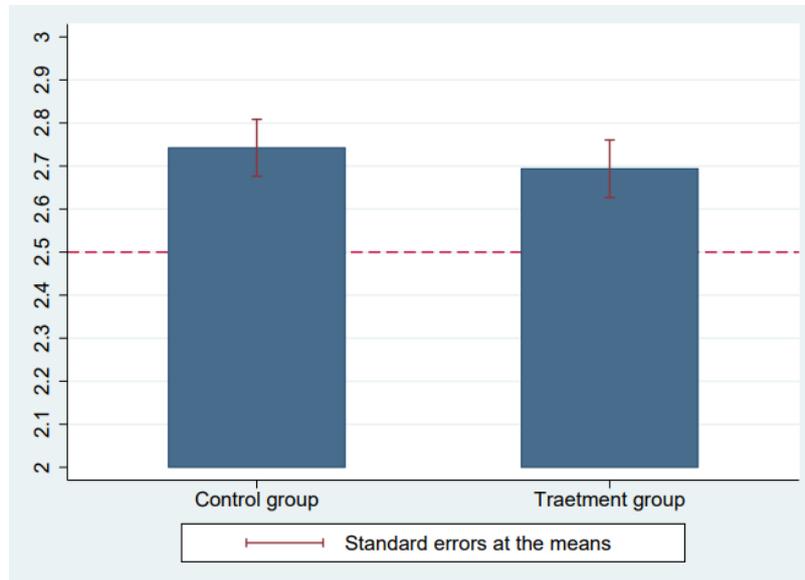
Figure 2. The proportion of reported numbers by conditions.
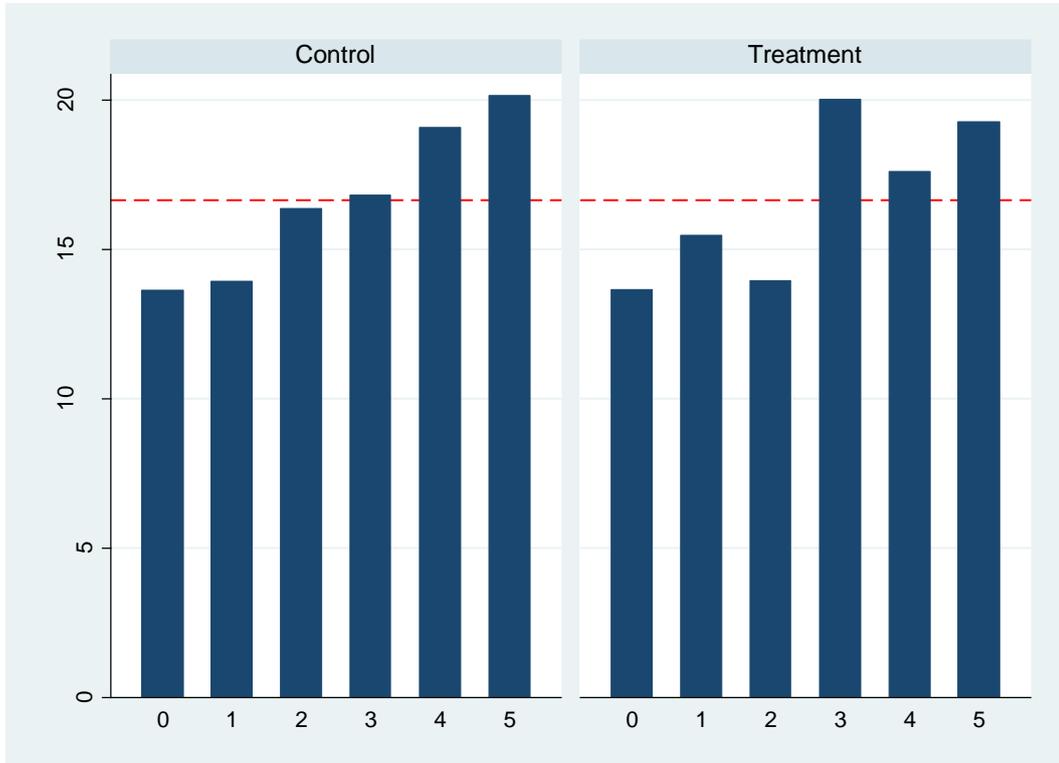
Figure 3. The proportion of reported numbers after removing sample with a score zero

Graphs by treat