

Public Health Voucher, Psychological Value, and Persuasion

Yidian Liu, Peng Wang, Nan Guo, Yuxi Jia, Yakun Hu, Junyang Cao, Jiayi Chen¹

Abstract

Inefficient public health intervention is a universal problem. Several provinces in China have pioneered a public health voucher system, issuing voucher to residents for them to claim free public health services. Although not its original intention, we deem that the voucher system could increase the utilization of these services through a behavioral way. This paper experimentally tests whether introducing public health voucher could add the psychological value people attach to health service and thus persuades more of them to take the service. We give out first aid kits to people either with or without a voucher and elicit their willingness to pay for the kit and willingness to accept for giving up the kit. We find that simply a piece of voucher does induce more demand and raise the psychological valuation. The findings have significant policy implications on public health intervention and some other fields related to persuasion as well.

Keywords: public health voucher, psychological value, persuasion

JEL Classification: C91, C93, D03, I18

1. Introduction

Insufficient utilization of public health services is a universal problem. A group of social psychologists in U.S. Public Health Service developed a Health Belief Model in 1950s, trying to explain why few people participate in disease prevention or detection programs (Hochbaum, 1958; Rosenstock, 1960; Rosenstock, 1966). Fifty years have passed, but insufficient utilization of health care services remains a severe

¹ Yidian Liu, corresponding author, Central University of Finance and Economics, email: edan.yd.liu@gmail.com. Peng Wang, Nan Guo, Yuxi Jia, Yakun Hu, Junyang Cao, Jiayi Chen, Central University of Finance and Economics.

problem. In China, for example, though its government has been struggling to enhance the efficiency of health service delivery for decades, numerous programs are routinely failed (Hsiao, 1995; Tang et al., 2008). Little awareness of preventive health behavior such as immunization, especially among rural population, has been cited as a vital factor driving the inefficiency (Gong et al., 2012). According to the 2008 report of national health services survey conducted by Chinese Ministry of Health, 37.6% of respondents fall sick but do not see a doctor within two weeks (Center for Health Statistics and Information MOH, 2008). In fact, some, or most, Chinese residents have not even heard of the nation's free public health services.

Several provinces in China, including Chongqing, Qinghai, Jiangxi, etc., have started to explore a *public health voucher* system some years ago. Government issues a certain amount of vouchers to residents, and people can use these vouchers to accept some specified free public health services at local community health service centers or township hospitals. Then these preventive health care institutions apply to the government for grants based on the amount of vouchers they have received which is identical to the amount of services they have provided. Before the operation of voucher system, government funded the institutions in advance and then residents voluntarily came to accept those services without charge or voucher. The old system seemed inefficient and had some potential problems such as discrimination and corruption (Health Bureau Chongqing, 2007).

The original intention of issuing voucher to residents for them to claim services is to promote the equity and efficiency of public health services. However, we deem that, from a behavioral perspective, this system might also help more people to learn about these free services and efficiently persuade residents to make use of them.

Our hypotheses are that: (1) voucher could persuade more people to accept public health service which they do not make sufficient use of before, because (2) voucher increases the psychological value people attach to these free services (i.e., people's valuation of these services is higher than there is no voucher). The hypotheses are quite astonishing, since simply a piece of voucher should lead to higher valuation and more demand. If it does, this finding would have important

policy implications to various fields of public health intervention and other areas involved efficient persuasion as well.

This paper presents a field experiment and a laboratory experiment to test the two hypotheses. We divide them into three steps. The first two steps are involved in field experiment, and the last one is an endowment effect experiment conducted in laboratory. In the field experiment, we provide a free public health service to two groups of students. Students in one group are endowed with a voucher to claim the service, and those in the other group should just come to our office and accept the free service without voucher. The result shows that more people with a voucher come than those without a voucher. When people come to claim the service, we tell them that now they have a chance to give up the service and get some monetary compensation. According to our hypothesis, students with a voucher demand more compensation than those without a voucher. In the laboratory experiment, we follow Kahneman et al.'s (1990) design to do an endowment effect experiment. We find that both people's willingness to pay (WTP) and willingness to accept (WTA) for the voucher (voucher offers people an opportunity to claim the service) are higher than WTP and WTA for simply an opportunity (offering them a free opportunity to claim the service).

The remainder of the paper is organized as follows. Section 2 to Section 4 present the three steps of our experiments and analyze their results. Section 5 concludes.

2. Step One: Field Experiment

The first step was to see if voucher could attract more people to accept free public health service. We chose six undergraduate classes in School of Insurance at CUF², each had about 40 students. They all majored in insurance or actuarial science. The first day, the monitor informed the class that a volunteer team of public health

² In China's universities a "class" can mean both a teaching class where lessons are given and an administrative class. Administrative class is an organization. Dozens of students make up an administrative class and several administrative classes make up a school or institute. Students in the same administrative class may take different teaching classes. Here we mean six administrative classes.

service would give out free first aid kits whose market price was 6 Yuan to some selected classes in the school tomorrow, from 6pm to 10pm, at the Students Activity Center. The information was sent by Fetion, a popular instant messaging client in China, which is pervasively used in CUFE and some other China's universities for monitors and tutors to deliver message to students. All students in these classes did not have any class or other class activity during the time we issued kits.

We gave each class two samples of first aid kit for everyone to check and determine if they would like to get the kit next day. As all same-sex students at the class lived in adjoining rooms in the same dormitory, one sample was given to men's dormitory and the other was given to women's. Hence it was convenient for students to check the sample. Inside the kit were a bag of cotton swabs, a bag of PBT bandage, six band-aids, two non-adherent pads, two alcohol pads, and a roll of medical tape.

Three of these six classes were told that student cards were required when they went to claim the kit the next day, and every person could only get his or her own kit, not on behalf of others. In other three classes, a voucher was given to everyone, and both student card and the voucher were required in these classes. The voucher was a simple stiff paper in light green, with the word VOUCHER FOR FIRSAID KIT and some other instructions on it. We called the three classes without vouchers as the *free treatment*, and those with vouchers were the *voucher treatment*. All students, no matter they came to take the kit or not, were asked to finish an additional questionnaire one day after experiment.

Note that the student card was required for both treatments. Hence the two treatments were the same except for our manipulation of the voucher variable. Students in different classes were not likely to communicate about what was required to claim the kit, because they always had various activities to participate in and this one was too tiny to talk about. In fact, our additional questionnaire showed that no student talked about this activity with students in other classes before we gave out the kit. Therefore the difference between two treatments was not revealed to people before the experiment.

Students did not often go to Students Activity Center, and they had no special

reason to go or pass by there in the experiment day. Hence coming to claim a kit worth 6 Yuan seemed not so attractive considering the inconvenience. Public health interventions usually also have this character: accepting some kinds of services seems worth less than using the time to do something else.

Figure1 shows that about 35% (47 out of 133) of students in voucher treatment came, and only 24% (29 out of 121) in free treatment showed up. Although most students in both treatments did not come, voucher did increase about 50% of the utilization rate.

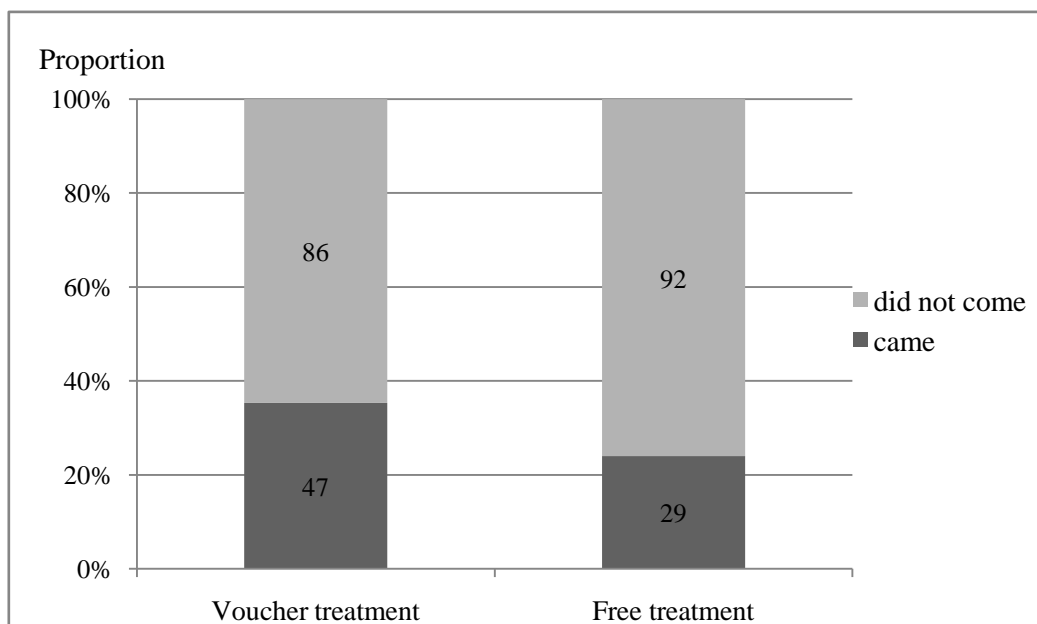


Figure 1. Participation rate in two treatments.

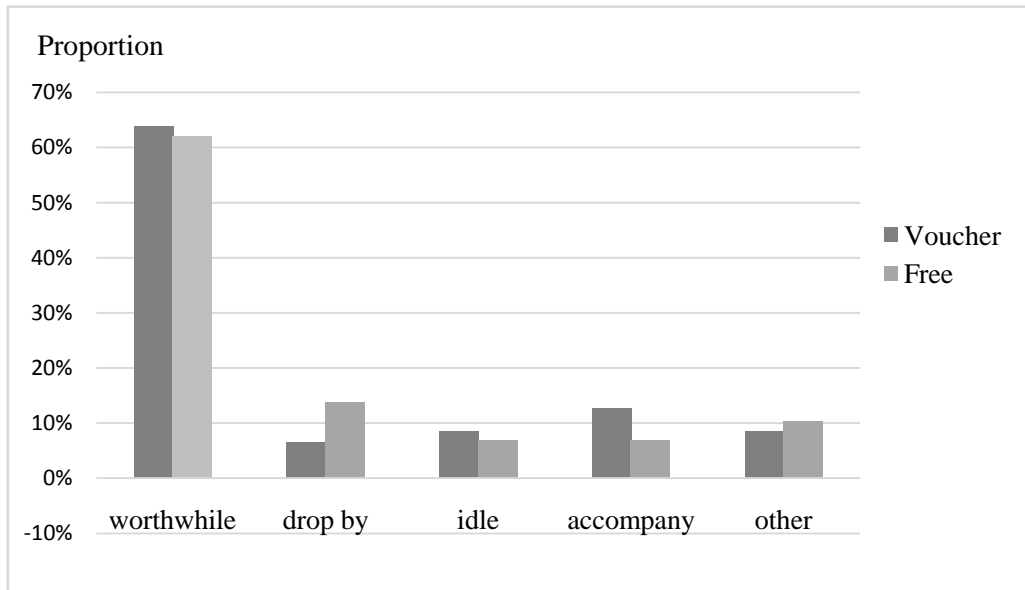
Note: Numbers in columns are the number of students who came or not. The height of each part is determined by the proportion.

In theory, if people are totally rational, voucher actually adds some inconvenience to them. Students in free treatment should only bring their student card when they come to take the kit, while those in voucher treatment should also give us their voucher besides the student card. Therefore, the voucher with this kind of inconvenience must have other aspects of merits to offset the disadvantage and persuade more people to come.

We did an additional questionnaire to investigate the reason why people came or

not. Figure 2 shows that the main motivation for coming is “I think it is worthwhile” (63.83%, 30 out of 47, in voucher treatment, 62.07%, 18 out of 29, in free treatment), and the reason for not coming, similarly, is also mainly related to the value they judge (56.34%, 40 out of 71, in voucher treatment, 72.06%, 49 out of 68, in free treatment).

(A)



(B)

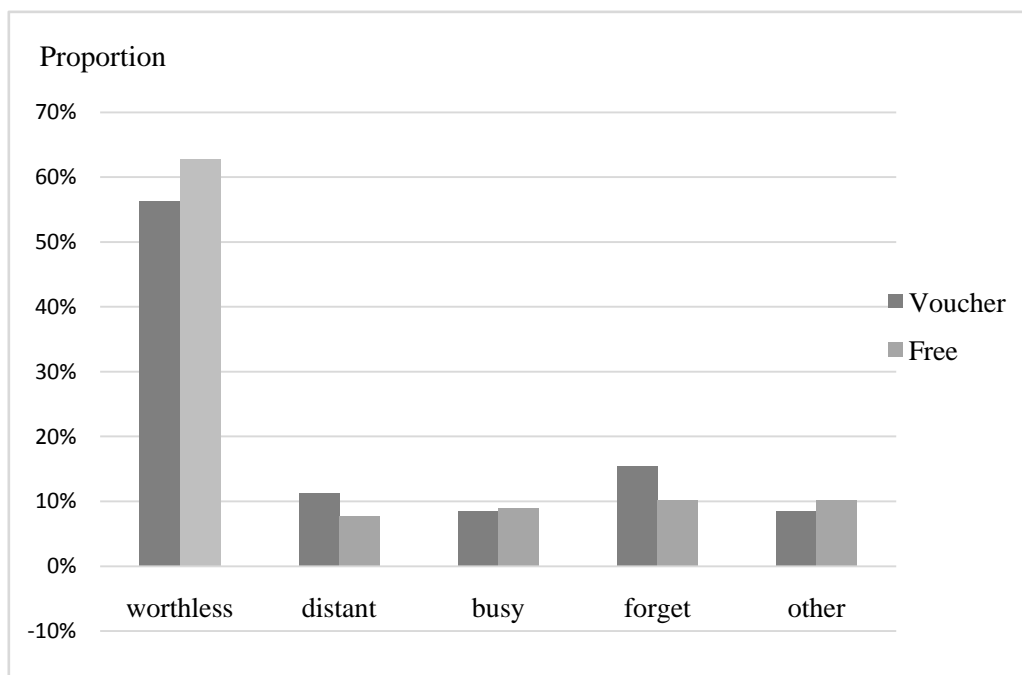


Figure 2. Reason for (A) coming and (B) not coming to claim the kit.

For students came to claim the kit, they finish the questionnaire at the time they get the kit, so we got all questionnaires returned. For students did not come, they finish the questionnaire after the field experiment and returned to us the next day, so we only got 71 effective questionnaires out of 86 samples in voucher treatment, and 68 effective questionnaires out of 82 samples in free treatment. See Supplementary Materials for more details of these options.

The first hypothesis was proved. As the additional questionnaire suggests, whether people come or not is mainly determined by the value of the service they judge. Hence our second hypothesis about the psychological valuation could serve as a potential explanation for this phenomenon. If the voucher could increase the value people attached to the service, more students in voucher treatment would come since the kit was more valuable for them than for students in the free treatment. However, other factors, like the voucher might just provide people with a reminder to pick up the kit, may also contribute to the higher participation rate in voucher treatment. To test whether the value of service is regarded higher with the voucher, we executed the next step when people came to get the kit.

3. Step Two: WTA in the Field Experiment

In this step we asked people's willingness to accept (WTA) for giving up the kit. We set two separate tables with some distance in office to serve the two treatments in order to avoid people finding out their different requirements, i.e., voucher vs. no voucher. Before the kit was given out, we told people who came that now they could sign away the opportunity to claim the kit and got some monetary compensation instead, and for the voucher group they should also give the voucher back. We now informed them that this was also an experiment besides a voluntary service.

A form listed with prices ranging from 1 Yuan to 10 Yuan by increments of 1 Yuan was shown to people, and they were asked to indicate if they would like to give up the kit and accept compensation at each price. We then randomly picked up a number from the list and any possible compensation would be made at that price. For

example, if 8 Yuan was selected at random, students who indicated they would like to accept this compensation (they put a tick after 8 Yuan) would get 8 Yuan and signed away the opportunity to claim kit. This method is usually called the BDM mechanism (Becker et al., 1964) which is widely used by experimenters to reveal people's valuation of good or service. As most normal students were not familiar with the BDM mechanism, we required them to think these questions as ten separate ones, and later one of the ten would be selected at random to execute according to their indications. We also told them that the reasonable answers should be accepting all compensations above a certain price and rejecting all at and below that price. They could also accept or reject at all ten offers. WTA is usually used in eliciting people's valuation of an object. By comparing WTA of the two treatments, we could preliminarily test whether the voucher increased the psychological value of the kit.

There was a possibility that people who came earlier may communicate with those had not come and leaked some information, like the there had an opportunity to win money or this was an experiment etc. We offered each class two samples in advance to inspect to make sure that everyone got the same information about the items in the kit. Although people came later may saw the kit others brought back, it did not offer them additional information. The problem might be that the monitor informed the class that it was a voluntary service but not an experiment, and they did not know that there was a chance to give up the kit and got some monetary compensation instead. When people came, however, they would find these out. To prevent people came earlier leaking these information to those who had not come, we told them that this was a serious experiment and asked them to keep what not mentioned in the prior message from others until 10pm. It only lasted for four hours, and the monetary compensation was not huge, so we believed that no important information was leaked during this period.

Figure 3 shows WTAs in two treatments. People with a voucher demanded an apparently higher compensation. We stretch the maximum of curve in free treatment from 29 to 47 in order to compare it with WTAs in voucher treatment.

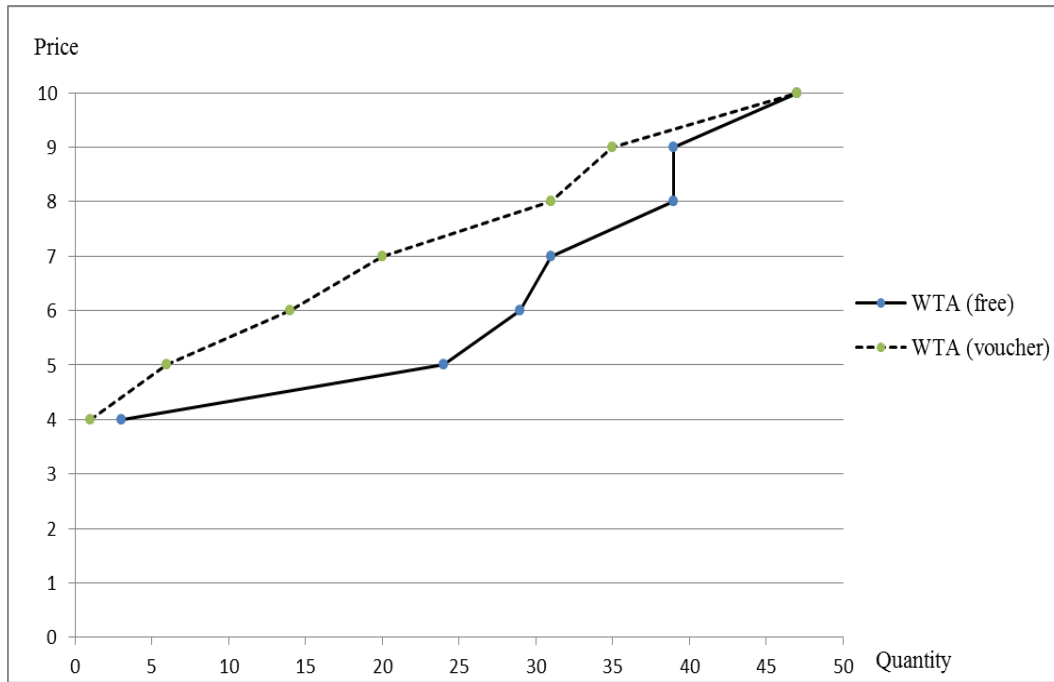


Figure 3. WTAs (supply curves) in voucher treatment and free treatment

Among students who came, mean WTA in voucher treatment was 7.72 Yuan. In free treatment, mean WTA was 6.48 Yuan. Table 1 indicates that this difference is statistically significant at the level of 5% ($p=.000$) according to t Test. Hence the null hypothesis of equal mean is rejected. If a student indicated he or she would not give up the kit at all possible prices listed, which was not a common case (4 in voucher treatment and 2 in free treatment), we count it as the highest price 10 Yuan when calculate means. This does not affect our conclusion, because more students in voucher treatment refused to sign away the kit and accept any compensation, which meant that more students in voucher treatment demanded a higher compensation than 10 Yuan than students in free treatment. Hence counting this sort of WTA as 10 Yuan only lowers the mean WTA in voucher treatment more greatly than it in free treatment, but we still observe a higher WTA in voucher treatment.

Tables 1. A Between-WTAs Comparison of Voucher Treatment and Free Treatment

	Voucher treatment	Free treatment	P value of difference	
			T-test	Wilcoxon-Mann-Whitney
Number of Observations	47	29		

Mean WTA	7.72	6.48	.000	.000
Median WTA	8	5		

We also test medians. Median WTA in voucher treatment was 8 Yuan and in free treatment was 5 Yuan. This difference is also statistically significant at the 5% level according to the Wilcoxon-Mann-Whitney test ($p=.000$). Hence we reject the null hypothesis of identical median and convince that difference between the two valuations exists.

However, as we do not test if the willingness to pay (WTPs) in these two groups were different, one might argue that the voucher just gave people more of an entitlement to the kit and thus a greater reluctance to lose it, but not higher valuation.³

The discrepancy between WTP and WTA has been long discussed by both psychologists and economists. Endowment effect, an application of loss aversion and the base of prospect theory (Kahneman and Tversky, 1979), is one of its main explanations and is regarded as “the most robust findings of the psychology of decision making” (Knetsch et al., 2001). It attributes the discrepancy to the seller’s hesitation to sell which is owing to his entitlement to the good and loss aversion. Therefore we could not fully convince that the voucher let people attach more value to the service, because more entitlement could also result in higher WTA. Besides, only people who came were tested here. Thus another additional experiment was needed.

4. Step Three: Endowment Effect Experiment and Valuation

The third step was to conduct an endowment effect experiment to elicit both buyers and sellers valuations of the service. Another two sessions, containing 50 subjects in each one, also in School of Insurance at CUFU but did not participate in previous experiments, were selected to test (experiment 1). The trading object was a voucher (in the *voucher session*) or simply an opportunity to claim the kit (in the *opportunity session*) respectively. Other information about the kit, like what it contained and its market price, was also revealed and was identical to prior two steps.

³ We thank Jack Knetsch for this advice.

Like conventional endowment effect experiment under BDM mechanism (Knetsch 1989; Kahneman et al., 1990; Plott and Zeiler, 2005), one-half of the subjects randomly selected were endowed with the opportunity/voucher and were referred to as sellers. Others were buyers and had a chance to buy the opportunity/voucher. Everyone was given a form listing prices ranging from 0.5 Yuan to 10 Yuan by increments of 0.5 Yuan. At each price, subjects were supposed to indicate whether they would sell or buy the item. Then a random number was selected from these listed prices as the market price, and all trades would be made under that price according to subjects' prior indication. For the opportunity session, subjects who got the opportunity would be registered, and other rules, including the student card was required and not on behalf of others, were identical to step one. Subjects who finally got the voucher also had to register their names, and both student card and voucher were required to claim the kit, too. The same experiments had also been repeated in another two sessions using 96 subjects from School of Taxation at CUFU (experiment 2, 48 students in voucher session and 48 in opportunity session).

There are two major merits for introducing endowment effect experiment. First, as we argued before, if both WTA and WTP were higher in voucher session at a roughly identical degree in this experiment, and the gap between WTA and WTP in two sessions had no significant difference, it meant that the voucher did not give people more entitlement to the service (otherwise the gap in voucher session would be larger than that in opportunity session), and thus the possibility that voucher increased people's entitlement to the kit could be ruled out. As people would like to sell the voucher at a higher price whilst were willing to pay more for it than just selling or buying an opportunity, the hypothesis that voucher increased people's psychological value to the service seemed reasonable. Second, we could see all buyers' valuations of the opportunity/voucher as well as sellers'. In the prior two steps, the service, claiming a first aid kit, was endowed to students and was totally free for all, so everyone seemed like a seller or owner. While in this step, the service is not free for those buyers. This allows us to extend our conclusions from free goods, like some public services, to more general ones, like coupon promotion in some way.

Table 2 summarizes the result of experiment 1 and experiment 2. They do not have significant difference.

Table 2. Mean and Median WTA and WTP in Two Sessions in Two Experiments

Groups	Subjects	WTA		WTP		Trading Volume	
		Mean (Yuan)	Median (Yuan)	Mean (Yuan)	Median (Yuan)		
Exp 1	Voucher session	50	6.92	7.00	5.00	5.00	10
	Opportunity session	50	5.42	5.00	3.42	3.50	11
Exp 2	Voucher session	48	6.87	6.50	4.96	5.25	10
	Opportunity session	48	5.08	4.75	3.71	3.50	10
Pool	Voucher session	98	6.62	6.5	4.98	5	31
	Opportunity session	98	5.26	5	3.56	3.5	27

For a larger database, we explore the possibility of combining the statistics of two experiments by applying the Kruskal-Wallis equality-of-populations rank test (Table 3). The results of the tests show that under 5% level, the medians of two experiments are identical, so we can combine the statistics of two experiments.

Table 3. Results of Kruskal-Wallis equality-of-populations rank tests

	χ^2	p-value	Conclusion (at 5 percent level)
WTA (Free treatment)	0.737	0.391	Can't reject the null
WTP (Free treatment)	0.242	0.623	Can't reject the null
WTA (Voucher treatment)	0.020	0.992	Can't reject the null
WTP (Voucher treatment)	0.000	0.888	Can't reject the null

First, we compare median WTP in voucher session and opportunity session (Table 4). Median WTP of voucher session is 5.00 Yuan in experiment 1 and 5.25 Yuan in experiment 2, and that of opportunity session is 3.50 Yuan in two experiments. The null hypothesis that the two medians are identical is rejected at a 5% level (Exp 1: $z=-2.748$, $p=.006$; Exp 2: $z=-1.956$, $p=.050$). The result also holds in pooled data

($z=-3.374$, $p=.001$). It suggests that subjects would like to pay more money for the service if it gives people a voucher rather than an invisible right to claim.

Table 4. Wilcoxon-Mann-Whitney test (Null hypothesis: identical median)

	Z	P-value	Conclusion ($\alpha=0.05$)
Experiment 1	-2.748	.006	Can reject null
Experiment 2	-1.956	.050	Can reject null
Pool	-3.374	.001	Can reject null

Then the same test has been performed to examine median WTA in two sessions (Table 5). Median WTA is 7.00 Yuan in voucher session and 5.00 Yuan in opportunity session in experiment 1, and it is 6.50 Yuan and 4.75 Yuan in voucher session and opportunity session respectively in experiment 2. Wilcoxon-Mann-Whitney test shows that in both experiments, there is also a significant difference between the two medians at a 5% level (Exp 1: $z=-1.977$, $p=.048$; Exp 2: $z=-2.564$, $p=.010$). When in the pool, Wilcoxon-Mann-Whitney test still shows that there is a significant difference between the two medians under the same level ($z=-4.043$, $p=.000$). It means that subjects also require more compensation to give up the service when they are endowed with a voucher than simply an opportunity.

Table 5. Wilcoxon-Mann-Whitney test (Null hypothesis: identical median)

	Z	P-value	Conclusion ($\alpha=0.05$)
Experiment 1	-1.977	.048	Can reject null
Experiment 2	-2.564	.010	Can reject null
Pool	-4.043	.000	Can reject null

To eliminate the possibility that entitlement leads to a higher WTA, we test for the endowment effect in every session. Two indexes are often used to measure the effect. The first is the comparison of median WTP and median WTA. Wilcoxon-Mann-Whitney test is again performed here. Table 6 shows that the null hypothesis that no significant gap between median WTP and WTA is not substantiated by data in both voucher session, opportunity session in two experiments and when we combine the numbers of two experiments at 5% level. Another index is V/V^* , where V^* stands for the theoretical trade volume – half of the objects will change hands–

and V is the actual volume which is always much smaller than V^* if there is an endowment effect. In experiment 1, V/V^* is 10/12.5 for voucher session and 11/12.5 for opportunity session. They are both 10/12 in two sessions in experiment 2. Like many other endowment effect experiments, the WTP-WTA gap is observed, although not so large here.⁴

Table 6. Wilcoxon-Mann-Whitney test (Null hypothesis: identical median)

		Z	P-value	Conclusion($\alpha=0.05$)
Exp. 1	Voucher session	-2.096	.036	Can reject null
	Opportunity session	-3.534	.000	Can reject null
Exp. 2	Voucher session	-1.956	.050	Can reject null
	Opportunity session	-2.261	.024	Can reject null
Pool	Voucher session	-3.244	.001	Can reject null
	Opportunity session	-3.261	.001	Can reject null

WTP-WTA gap is not of our real interest. We are concerning if the gap or endowment effect in voucher session is different from that of opportunity session, which could tell us whether voucher gives subjects more entitlement to the service. The ratio of median WTA to median WTP for voucher and opportunity session is 1.40 (7/5) and 1.43 (5/3.5) respectively in experiment 1, and they are 1.24 (6.5/5.25) and 1.36 (4.75/3.5) in experiment 2. Both these indexes and V/V^* do not vary greatly between sessions. Hence we believe that the strength of endowment effect has no significant difference between the two sessions in each experiment.

⁴ The fact that the gap is not so large is not abnormal. Knetsch and Sinden (1984) conducted an earlier experiment that involved cash payments and bribe offers for a lunch that showed a small difference between WTP and WTA. Bribe offers for a lunch is somewhat like an opportunity to claim our kit. Hence we conjecture that maybe the gap has something to do with the trading object used in experiment.

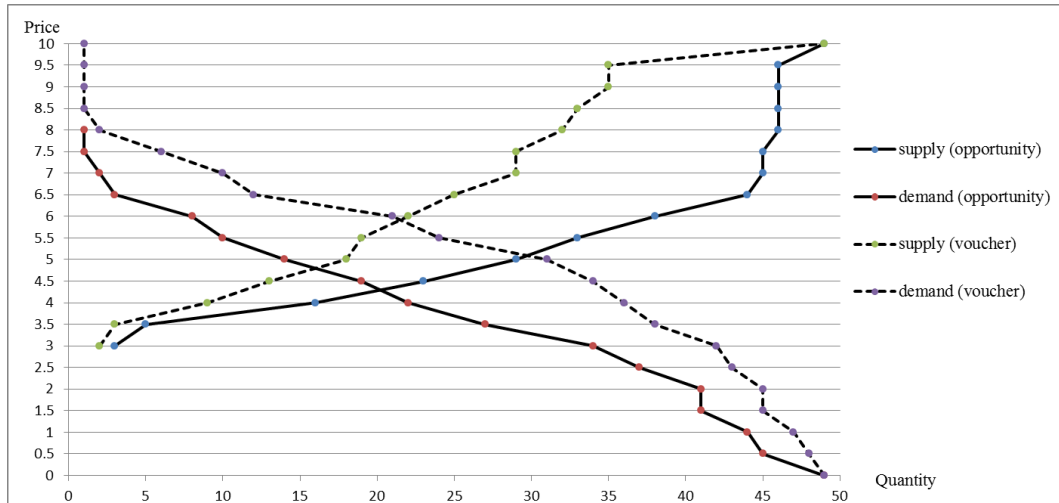


Figure 4. Supply and demand curves in two experiments

We refer to the two voucher sessions as voucher market, and two opportunity sessions are opportunity market. Figure 4 presents the supply and demand curves, revealing valuations in the two markets clearly. When the service is accompanied with a voucher, it is valued 1.61 Yuan higher than it is traded in an opportunity market (the market clearing price is 5.91 Yuan and 4.3 Yuan in two markets respectively). On the other hand, the trade volumes at the equilibrium are roughly identical in the two markets (21.46 in voucher market and 20.2 in opportunity market), suggesting the strength of endowment effect has no significant difference between two markets. Hence it is reasonable to draw the conclusion that voucher raises people's valuation of the service.

5. Conclusion

An effective public health intervention is like a skillful persuasion, since it requires people to change some of their accustomed behavior (Glanz and Bishop, 2010). Cialdini (2001) point out six basic tendencies of human behavior that could be taken advantage of to let others be eager to do what is requested of them. Some of these tricks are also aiming at enhance the psychological value of a certain thing. Economic man is always chasing benefit. They do what they think is worthwhile. Behaviorally, however, the valuation of a thing is not unchangeable. Many tricks such

as framing (Tversky and Kahneman, 1981) have been developed to manipulate individuals' valuation and preference.

This study is also related to coupon promotion, which is widely used by the manufacturers as part of their promotion strategy since late 1980s. Research has proved the effect of couponing on sales and brand switching (Neslin, 1990; Kumar et al., 2004; Venkatesan and Farris, 2012). However, it has not been discussed from a psychological perspective for now. Our finding may contribute to this body of literature by studying it behaviorally.

Inducing demand through raising psychological value is a plausible method to perform more efficient persuasion. It is quite surprising to find out that just a piece of voucher should lead to higher valuation and more demand. Public health care, policy implementation, and most domains in commercial business could all get some lessons from this finding.

References

- Hochbaum, G. M. (1958). *Public participation in medical screening programs: A sociopsychological study*. (Public Health Service, PHS Publication 572). Washington, DC: U. S. Government Printing Office.
- Rosenstock, I. M. (1960). What research in motivation suggests for public health. *American Journal of Public Health and the Nations Health*, 50(3_Pt_1), 295-302.
- Rosenstock, I. M. (1966). Why people use health services. *The Milbank Memorial Fund Quarterly*, 94-127.
- Hsiao, W. C. (1995). The Chinese health care system: lessons for other nations. *Social science & medicine*, 41(8), 1047-1055.
- Tang, S., Meng, Q., Chen, L., Bekedam, H., Evans, T., & Whitehead, M. (2008). Tackling the challenges to health equity in China. *The Lancet*, 372(9648), 1493-1501.
- Gong, P., Liang, S., Carlton, E. J., Jiang, Q., Wu, J., Wang, L., & Remais, J. V. (2012).

- Urbanisation and health in China. *The Lancet*, 379(9818), 843-852.
- Center for Health Statistics and Information, MOH. (2008). An Analysis Report of National Health Services Survey in China, 2008. Beijing: Publishing House of China Peking Union Medical University, 2009.
- Health Bureau, Chongqing. (2007). Guidance of the Implementation of Rural Public Health Service Voucher System. Chongqing: Health Bureau, 2007.
- Becker, G. M., DeGroot, M. H., & Marschak, J. (1964). Measuring utility by a single - response sequential method. *Behavioral science*, 9(3), 226-232.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 263-291.
- Knetsch, J. L., Tang, F. F., & Thaler, R. H. (2001). The endowment effect and repeated market trials: Is the Vickrey auction demand revealing?. *Experimental Economics*, 4(3), 257-269.
- Knetsch, J. L. (1989). The endowment effect and evidence of nonreversible indifference curves. *The American Economic Review*, 1277-1284.
- Kahneman, D., Knetsch, J., & Thaler, R. (1990). Experimental Tests of the Endowment Effect and the.
- Plott, C. R., & Zeiler, K. (2005). The willingness to pay-willingness to accept gap, the " Endowment effect," Subject misconceptions, and experimental procedures for eliciting valuations. *The American Economic Review*, 95(3), 530-545.
- Kruskal-Wallis equality-of-population rank test indicates that WTPs in the two experiments were drawn from the same population, and so were WTAs. Hence it is appropriate to pool the data together.
- Glanz, K., & Bishop, D. B. (2010). The role of behavioral science theory in development and implementation of public health interventions. *Annual review of public health*, 31, 399-41
- Cialdini, R. B. (2001). Harnessing the science of persuasion. *Harvard Business Review*, 79(9), 72-81.
- Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211(4481), 453-458.

Neslin, S. A. (1990). A market response model for coupon promotions. *Marketing Science*, 9(2), 125-145.

Kumar, B., Madan, V., & Srinivasan, S. S. (2004). Price discounts or coupon promotions: does it matter? *Journal of business research*, 57(4), 933-941.

Venkatesan, R., & Farris, P. W. (2012). Measuring and managing returns from retailer-customized coupon campaigns. *Journal of marketing*, 76(1), 76-94.