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Be a Good Samaritan to a Good Samaritan: Field evidence of other-regarding preferences in China

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ABSTRACT

We conducted a large-scale lost letter experiment in Beijing, a megacity with >21 million residents, to test if the observed altruistic attribute of the letter recipient would induce more passersby to return the lost letters. The treatment letters were addressed to a nationally renowned charitable organization in China, while the control letters were intended to an invented individual. A total of 832 ready-to-be-posted letters were distributed in 208 communities across eight districts in the city. The overall return rate was 13%. Yet, the return rate of the treatment letters (17%) was nearly twice as high as that of the control letters (9%). The finding adds large-scale field experiment evidence in support of the other-regarding preferences theory. In addition, we also found that the lost letters were more likely to be returned if they were dropped in communities with a relatively higher income or a postal box located closer.

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1. Introduction

Since Adam Smith, many prominent economists have pointed out that people are often concerned about the well-being of others and such other-regarding preferences may have important economic consequences (Smith, 1759; Becker, 1974; Arrow, 1981; Samuelson, 1993; Simon, 1993; Sen, 1995).[1] In the past few decades, behavioral economists have gathered a large body of laboratory evidence against the self-interest hypothesis on which modern economics theory still hinges. Unfortunately, the laboratory evidence was mainly based on game experiments of small scale.[2] It is thus unclear how the findings derived from small-scale experiments apply to the population at large.

Instead of using game experiments, we conducted a large-scale field experiment in China to test whether an individual's other-regarding preferences vary across subjects of different traits. In particular, we adopted the *lost letter technique* (LLT), which was originally devised by Stanley Milgram, an American social psychologist (Milgram, Mann, & Harter, 1965). The LLT intentionally leaves ready-to-be-posted letters on the ground or any visible place for people who pass by to pick up and drop into a postal box. Returning the lost letter is an altruistic act of the passerby indicating that she not only cares about but also actually helps

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[1] In general, other-regarding preferences refer to that the well-being of others is a determinant of one's utility. However, the effect of others' well-being on one's utility can be either positive or negative. If the effect is positive, one is considered to have altruistic preferences. On the contrary, if the effect is negative, one is then viewed as having spiteful preferences.

[2] Game experiments often provide participant financial rewards. The number of participants is thus restricted by the budget.

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other people. Therefore, the return rate of the lost letters can be used to measure the other-regarding preferences of the passersby.

This field experiment was carried out in Beijing, the capital of China, where traditionally individuals are positioned in a web of countless personal relationships organized through a differential mode of association (Fei, 1992). Moral rights and duties are defined differently in accordance with one's position in a given relationship. In general, suspicion and hostility increase with social distance and may even become dominant when dealing with strangers (Chen, 2005). In recent years, several high-profile social incidents in contemporary China involving rescuers of accident victims being extorted by the very victims who they helped were immensely publicized by the media and internet.[3] Such stories hint at the risks in helping strangers in rapidly transforming China and may even discourage people from becoming Good Samaritans (Yan, 2009).[4] It is helpful to recognize that our field experiment was conducted under such social atmosphere.

In this study, we focused on whether people with other-regarding preferences treat subjects of different traits differently. In particular, we tested whether people are more likely to help those who appear to be an altruistic subject. To do that, we designed two types of letters. The first type was addressed to a nationally renowned charitable organization in China to serve as the treatment letter. The second type was intended to an invented individual with a gender-neutral name as the control letter. The letters were all stamped and sealed. From the envelope, people can only observe the intended recipients and a postal office box number, which was shared by both the treatment and control letters. In other words, the only difference that can be observed on the envelope is the recipient. There was no information about the sender on the envelope, either.

We carried out three rounds of lost letter experiment in Beijing, one of the most populous megacities in the world with >21 million residents. A total of 832 letters, of which half were treatment letters and the other half control letters, were distributed in 208 residential communities across eight districts in the city.[5] A residential community in Beijing typically consists of residential buildings, public facilities and a management committee. The number of residents in a community ranges from hundreds to thousands.

Our main experiment result shows that the overall return rate was only 13%, which is not difficult to comprehend given the current social atmosphere in China. Yet, the return rate of the treatment letters, 16.83%, was almost twice as high as that of the control letters, 9.13%. This stark difference suggests that people are more willing to help altruistic subjects than those without such trait, even though nowadays Chinese people are worried about the risks of helping strangers. This finding is also consistent with the other-regarding preferences theories that were proposed in the past two decades.

In addition, we also found that the return rate was positively associated with the community's income but negatively related to the distance to the postal box. The timing of letter dropping also matters as we found that the return rate increased steadily for letters dropped between 7 and 10 AM and then suddenly plummeted after 10 AM. This finding is likely to be correlated with the changing number and composition of the passersby across hours.

Restricted by our experimental design, we were unable to directly observe the characteristics of the passersby as well as the process that mediated the return of the letters. Although we collected information on the income of the community residents via pre-experiment survey, we could not rule out the possibility that non-residents could also come across the lost letters, which could have clouded the effect of the income on the return rate. Despite these limitations, our paper contributes to the literature by adding, to the best of our knowledge, the first large-scale field experiment evidence in China in support of other-regarding preferences.

The rest of this paper is organized as follows. The second section reviews the related literature. The third section delineates the experiment design in details. The fourth section reports the experiment results. The fifth section discusses the motives and alternative explanations. We then conclude in the last section.

2. Other-regarding preferences: theories and experimental evidence

2.1. Theories of other-regarding preferences

Variants of other-regarding preferences models were mostly developed in the last two decades such as the *outcome-based social preferences models* (Fehr & Schmidt, 1999; Bolton & Ockenfels, 2000), the *interdependent preferences models* (IPMs) (Levine, 1998; Gul & Pesendorfer, 2006; Rotemberg, 2008), the *intention-based reciprocity models* (Rabin, 1993; Dufwenberg & Kirchsteiger, 2004). The outcome-based models assume that a person's utility is a function of the resources allocated to her

[3] For example, on 11 July 2005 in Ningbo City of Zhejiang province, a high-school student voluntarily escorted a woman hit by a truck to a local hospital and paid 200 Yuan for her medical treatment. However, the woman eventually accused him of complicity with the runaway truck driver and demanded an additional 500 Yuan in compensation. She argued that if the student did not know the truck driver, he would not have sent her to the hospital and paid for her medical expenses. The policeman investigating this incident did not dispute the woman's argument and asked the student to prove that he indeed did not know the truck driver (Yan, 2009).

[4] A shocking tragedy in Foshan city of Guangdong province in 2011 serves as an indication. A two-year-old girl was run over by two vans in a hardware market district. As she lay on the ground, a total of 18 people passed by but none came to her rescue. The girl was eventually sent to a hospital but died days later. This incident was widely broadcast by both national and international media (Wines, 2011).

[5] The eight districts include all six districts in central Beijing and two in the suburban area. According to the Bureau of Statistics in Beijing, the population of the eight districts in 2013 amounts to 15.7 million or 74% of the total population in Beijing. In our study, the number of the residents living in the 208 communities is estimated to be at least 40,000.

and others. The interdependent preferences models (IPMs) allow an individual's other-regarding preferences to depend on the "types" of other people. Intention-based models assume that an individual cares about other people's intentions and motives. In lieu of providing a comprehensive review of the theories, this section only briefly demonstrates one example of the IPMs, which we argue is the most relevant theory in explaining our experiment results.[6]

In the simplest case of two players, a modified model based on Levine (1998) is illustrated as follows.[7]

$$u_i = x_i + \frac{a_i + \lambda a_j}{1+\lambda} x_j, i \neq j, 0 \leq \lambda \leq 1, -1 < a < 1, \quad (1)$$

where u_i is the utility for individual i; x_i, x_j are measure of well-being for i and j respectively; a_i and a_j are the coefficient of person i's and j's other-regarding preference.

Person i is considered as being altruistic if $a_i > 0$. Yet, her marginal utility derived from j's well-being depends on whether j is altruistic, i.e. $a_j > 0$, indifferent, i.e. $a_j = 0$, or spiteful, i.e. $a_j < 0$, as well as the value of λ. Let λ be positive, then person i's marginal utility of x_j is higher if j is altruistic and lower vice versa. This implies that an altruistic person will be more willing to help improving the well-being of an altruistic subject than an indifferent or spiteful subject. Even for a spiteful person, his spitefulness will be offset by the altruism of the other player and he will even help an altruistic player if $a_j > -a_i/\lambda$.

2.2. Game experimental evidence

Since the early 1980s, behavioral economists have been collecting a large body of evidence against the self-interest hypothesis via various laboratory games such as the ultimatum game, the dictator game, the power to take game, the third party punishment game, the gift exchange game, the trust game etc. (Roth, Malouf, & Murningham, 1981; Güth, Schmittberger, & Schwarze, 1982; Fehr, Kirchsteiger, & Riedl, 1993; Forsythe, Korowitz, Savin, & Sefton, 1994; Berg, Dickhaut, & McCabe, 1995; Bosman & van Winden, 2002; Fehr & Fischbacher, 2004). In all these games, one player has a strictly dominant strategy if he is purely selfish. Yet, a robust result from these experiments is that people often deviate away from the selfish strategy, suggesting the existence of other-regarding preferences.[8]

3. Experiment design

3.1. The lost letter technique

In their famous experiment in 1965, Stanley Milgram and his associates distributed 100 ready-to-be-mailed envelopes addressed to each of the following four subjects: 1) Friends of the Communist Party, 2) Friends of the Nazi Party, 3) Medical Research Associates and 4) Mr. Walter Carnap in the city of New Haven, Connecticut. They used the return rates as a behavioral measure of attitudes for that they can be influenced by the intended subjects written on the envelopes. They coined the term the *lost letter technique* (LLT) for such experimental design.

The overall return rate in their study was 48%. However, the return rate was much higher for the Medical Research Associates (72%) and Mr. Walter Carnap (71%) than for the two extremist political groups, the Friends of the Communist Party (25%) and the Friends of the Nazi Party (25%). The results suggested that when a person came across a lost letter, the likelihood that she would return it depends on her attitude on the intended subject. In particular, a low return rate would indicate a negative attitude and vice versa. It is worth noting that the Medical Research Associates as an organization and Mr. Walter Carnap as an individual had almost the same return rate while the other two organizations had much lower return rates. This suggests that compared to an individual, the return rate for an organization could be either higher or lower, depending on the characteristics of the organization of interest.

Since their study, the LLT has been widely used, mainly in Sociology and Psychology, to study a wide range of issues such as discrimination (Ahmed, 2010; Montanye, Mulberry, & Hardy, 1971), altruistic behavior (Forbes, Tevault, & Gromoll, 1971; Deaux, 1974), marijuana (Georgoff, Hersker, & Murdick, 1972), election (Bouchard & Stuster, 1969), homosexuality and gay marriages (Levinson, Pesina, & Rienzi, 1993; Waugh, Plake, & Rienzi, 2000), cooperation in neighborhoods (Koopmans & Veit, 2014; Volker, Mollenhorst, Steenbeek, Schutjens, & Flap, 2016) etc.

[6] Read Fehr and Schmidt (2006) for a recent review of the theories.

[7] In the original model, Levine allows n players and the second component on the right-hand-side in Eq. (1) sums over all players $j \neq i$.

[8] Take the ultimatum game for instance, player A proposes a division of a fixed sum of money with player B, who then can either accept or reject the proposal. In case of rejection, both players receive nothing. In case of acceptance, the proposal is implemented. If both players are rational and selfish, the subgame perfect equilibrium prescribes that player B accepts any positive amount of money and player A gives player B the smallest amount to B and keeps the rest to himself. However, hundreds of experiments show that a vast majority of the player A offers 40 to 50% of the fixed sum. In addition, about 40% to 60% of the offers lower than 20% of the fixed sum are rejected. See Fehr and Schmidt (2006) and Cooper and Kagel (2013) for a review.

Table 1
Dates, times and communities of the three experiments.

	Date (1)	Day (2)	Time (3)	Communities (4)
1st wave	Jan. 1st, 2012–Jan. 4th, 2012	Sun–Wed	7:05 AM–13:20 PM	48
2nd wave	Nov. 18th, 2013–Nov. 21st, 2013	Tue–Fri	7:25 AM–9:06 AM	60
3rd wave	Mar. 26th, 2014–Mar. 29th, 2014	Wed–Sat	7:10 AM–9:52 AM	100

Notes: time indicates the dropping time of the earliest and latest in each wave.
Source: data collected from the experiment.

Table 2
Number of treatment and control letters.

	Treatment letters (1)	Control letters (2)	Total (3)
1st wave	96	96	192
2nd wave	120	120	240
3rd wave	200	200	400
Total	416	416	832

Notes: a total of two treatment and two control letters was dropped in each community in four consecutive days. The dropping order of the four letters was randomized.
Source: data collected from the experiment.

Fig. 1. Map of Beijing. Notes: 1. *Xicheng* District; 2. *Dongcheng* District; 3. *Fengtai* District; 4. *Shijingshan* District; 5. *Chaoyang* District; 6. *Haidian* District; 7. *Changping* District; 8. *Tongzhou* District. Districts 1–6 are in central Beijing. Districts 7 and 8 are in the suburban area.

Table 3
Distribution of communities by district.

District	Area (1)	First (2)	Second (3)	Third (4)	Raw sum (5)	High income communities (6)	Disposable income (7)
1. *Changping*	Suburb	6	0	4	10	10%	32,495
2. *Chaoyang*	Central	7	15	16	38	47%	41,035
3. *Dongchen*	Central	0	12	0	12	58%	41,676
4. *Fengtai*	Central	0	20	4	24	29%	37,886
5. *Haidian*	Central	32	0	64	96	60%	45,953
6. *Shijingshan*	Central	0	0	4	4	50%	38,657
7. *Tongzhou*	Suburb	3	0	0	3	0%	33,662
8. *Xicheng*	Central	0	13	8	21	57%	43,479
Total		48	60	100	208		

Notes: number of communities in columns (2)–(5). Percentage of communities with self-reported average monthly income above 5000 Yuan in column (6). Annual disposable income per capita (Yuan) for residents with urban *Hukou* in 2013 in column (7).
Sources: annual disposable income per capita for residents with urban *Hukou* in 2013 is from the website of the Beijing City Bureau of Statistics http://www.bjstats.gov.cn/.

Table 4
Weather indicators.

Wave (1)	Date (2)	Temp high (3)	Temp low (4)	Wind speed (5)	Weather (6)
1st wave	Jan. 1, 2012	2	−4	2.45	Cloudy
	Jan. 2, 2012	2	−6	8.1	Cloudy
	Jan. 3, 2012	1	−8	5.65	Sunny
	Jan. 4, 2012	1	−10	2.45	Sunny
2nd wave	Nov. 18, 2013	3	−4	2.45	Cloudy
	Nov. 19, 2013	2	−6	8.1	Sunny
	Nov. 20, 2013	1	−8	5.65	Sunny
	Nov. 21, 2013	1	−10	2.45	Sunny
3rd wave	Mar. 26, 2014	22	10	5.65	Sunny
	Mar. 27, 2014	21	13	5.65	Cloudy
	Mar. 28, 2014	21	11	8.1	Cloudy
	Mar. 29, 2014	22	8	5.65	Sunny

Notes: the highest and lowest temperature in °C in columns (3) and (4). Wind speed in meters per second in column (5).
Source: data collected from the experiment.

3.2. Treatment and control letters

In our experiment, half of the letters were assigned to the following recipient and address, originally written in Chinese, as the treatment letters.

China Youth Development Foundation Hope Project
P.O. Box 100081-XXX

Table 5
Main experiment results: return rates (%).

	Overall (1)	Treatment (2)	Control (3)	Diff (4) = (2) − (3)
Panel A: Full sample				
Full sample	12.98	16.83	9.13	7.7
	(832)	(416)	(416)	[3.31]
Panel B: Subsample by wave				
1st wave	7.81	10.41	5.21	5.2
	(192)	(96)	(96)	[1.34]
2nd wave	13.33	15	11.67	3.33
	(240)	(120)	(120)	[0.76]
3rd wave	15.25	21	9.5	11.5
	(400)	(200)	(200)	[3.23]

Notes: observations in parentheses. *t* statistics for two-tail test in brackets.
Source: data collected from the experiment.

The other half was assigned to the following recipient and address as the control letters.

Yang Yang
P.O. Box 100081-XXX

The *China Youth Development Foundation* (CYDF) is a nationally renowned charitable organization in China and famous for its *Hope Project* initiated in 1989 that aims to help poor students. To present, the *Hope Project* has funded >4.9 million poor students and built 18,335 primary schools and 20,640 libraries across China. On the contrary, *Yang Yang* is an invented person with a gender-neutral Chinese name and no known altruistic attribute.

A one-page thank you letter was included in every envelope intended to CYDF. Likewise, a one-page commercial advertisement was inserted into the envelopes for *Yang Yang*. The purpose of including the fabricated letters was to make them look like real lost letters. All envelopes were tightly sealed so that we could easily detect if a returned letter was ever opened. To make the letters ready to be posted, we stamped them all. For tracking purpose, we marked a unique code on the back of and inside each envelope to indicate the type of letter, date and community.

3.3. Letter dropping location and randomized sequence

In each community, two treatment and two control letters were dropped on the ground inside the community near the entrance in four consecutive days. The purpose of placing the letters inside the community was to make the letters more likely to be seen and picked up by the community residents instead of strangers who just walked by. The dropping sequence of the letters was randomized based on the postal box location, district and the self-reported average monthly income of the residents.

3.4. Recruiting and training of volunteers

We recruited 15, 14, and 24 volunteers in the first, second and third round of experiment respectively. All volunteers were master students majoring in Labor Economics at the Central University of Finance and Economics located in the *Haidian* district in Beijing. Prior to each experiment, volunteers were required to attend two training sessions. In the first session, students were exposed to the details of the experiment design and assigned to search for a number of residential communities with a postal box either inside or nearby. They were also trained to conduct a pre-experiment survey to collect community information such

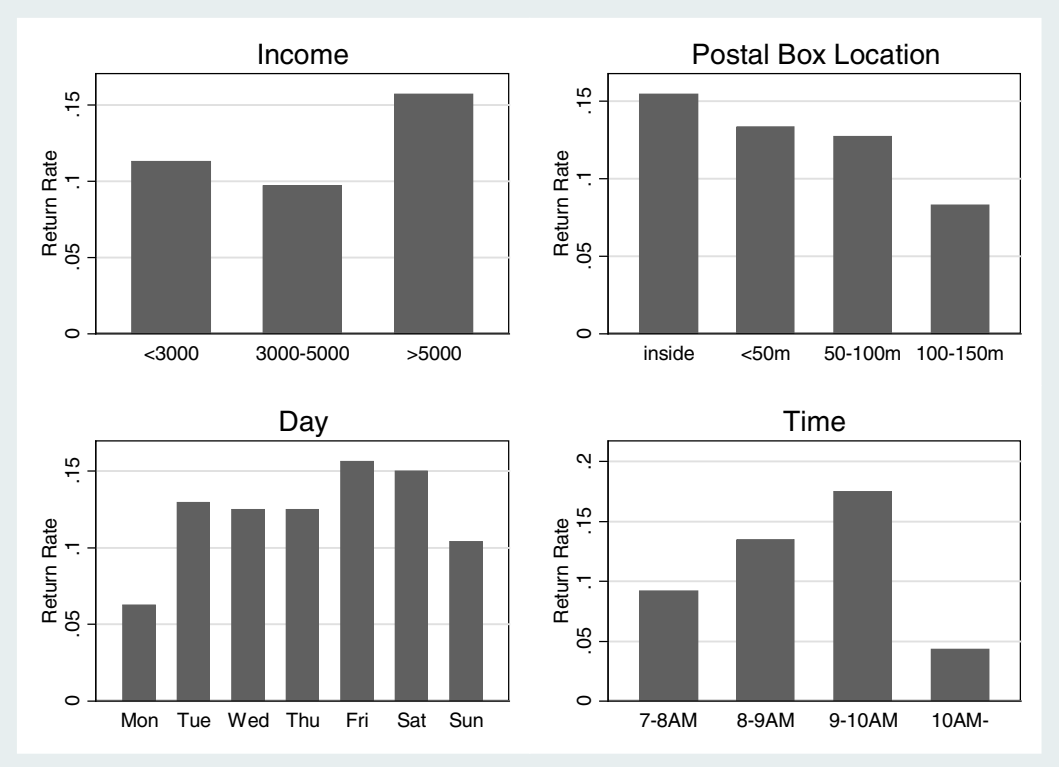

Fig. 2. Return rate by subgroups. Notes: income is self-reported average monthly income in terms of Chinese Yuan. Postal box location is the distance between the postal box and the main entrance of the community in terms of meters. Source: data collected from the experiment.

as community name, address and district, postal box location relative to the entrance, and average monthly income of the residents. Students were instructed to interview one or two members of the residents committee in each community, because in Beijing the committee members are generally the most knowledgeable regarding the above information. In the second session, volunteers prepared the stamped letters and received training on dropping techniques such as where to drop the letters and how to avoid suspicions of the residents. More importantly, they were told to record the dropping time and date as well as various weather indicators for each letter they dropped.

3.5. Summary of the three rounds of experiment

As a pilot study, the first round was conducted during January 1st–4th in 2012 in 48 communities in Beijing (Table 1). The second round was carried out during November 18th–21st in 2013 in 60 communities. At last, the third round, also the largest one, took place during March 26th–29th in 2014 in 100 communities. The dropping days covered all seven days in a week. As for dropping time, most of the letters were dropped between 7 AM and 10 AM with only 30 letters being dropped after 10 AM in the pilot experiment.

Four letters—two treatment and two control—were dropped in each community in a randomized sequence. The randomization was based on the self-reported average monthly income of the community residents, postal box location and district. A total of 832 letters were dropped in the three rounds of experiments, including 192, 240 and 400 in the first, second and third wave respectively (Table 2). Half of the letters were assigned as the treatment letters and the other half as the control letters.

The 208 communities were located across eight districts in Beijing, including six in central Beijing and two in the suburban area (Fig. 1). It is worth noting that the number of communities in each district does not reflect its population size. The selection of the communities was primarily based on whether a community has a postal box inside or nearby and the transportation cost. Since our volunteers were based in the *Haidian* district, it is not surprising that a disproportionately large cluster of communities were located there.

Column (5) in Table 3 reports the percentage of communities in each district that had a self-reported average income of the residents above 5000 RMB per month. In our sample, the three richest districts are *Haidian*, *Dongchen* and *Xicheng* district in central Beijing, while the poorest two are the suburban districts of *Tongzhou* and *Changping*. To check if this income ranking of our sample is consistent with the population, we acquired the data on per capita disposable income of residents with urban *Hukou*,

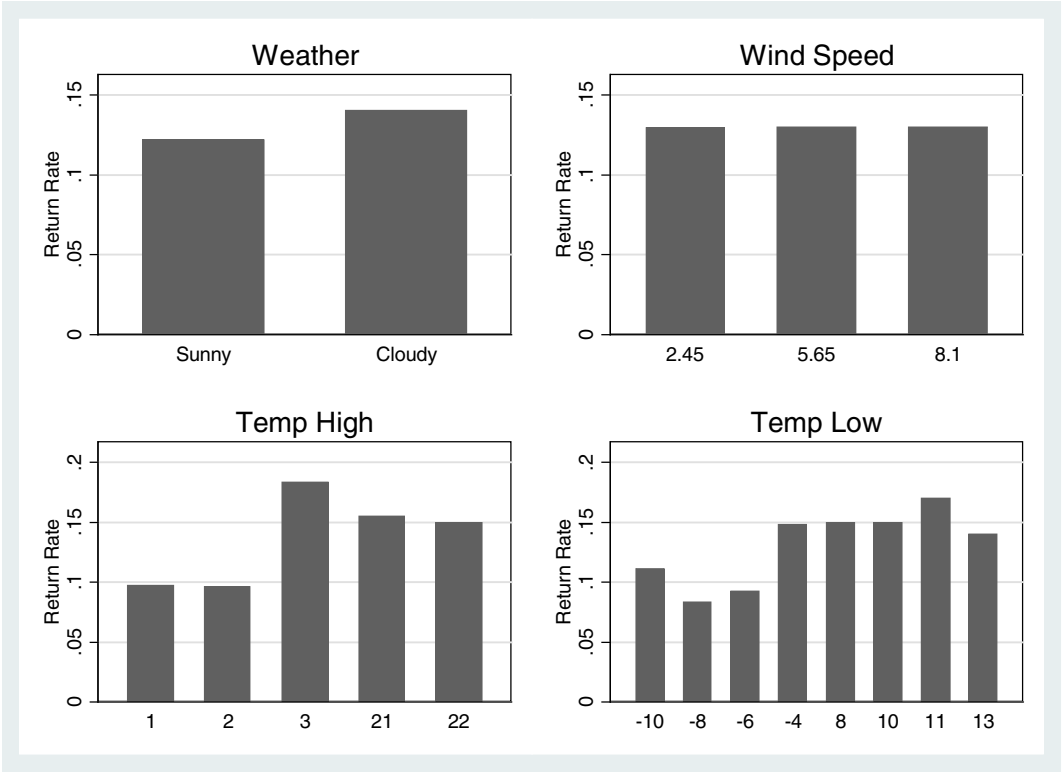

Fig. 3. Return rate by weather indicators. Notes: unit of wind speed is meters per second. Temp high and temp low refer to the highest and lowest temperature in terms of °C. Source: data collected from the experiment.

i.e. household registration, in 2013 from the Bureau of Statistics of the Beijing City. As shown in column (7), the disposable income ranking is similar to the ranking in column (6).

Since the three experiments were conducted in different seasons, there was a large variation in the temperature (Table 4). The first two waves were carried out in winter with the highest temperature ranging between 1 and 3 °C. The third wave took place in the early spring with the highest temperature between 21 and 22 °C. There was also some variation in the wind speed from day to day, but the wind was generally rather mild. The sky of the day was either sunny or cloudy.

4. Experimental results

4.1. Main results

Of the 832 letters, only 13% of them were eventually returned (Panel A in Table 5). To interpret this result, one should consider that our experiment was conducted during a time when the general public could possibly have been influenced by the aforementioned high-profile incidents involving Good Samaritans being extorted by the very victims that they helped. If people were concerned about the risk of helping strangers, the 13% return rate is not too surprising.

The more important finding is that the return rate of the treatment letters was almost twice as high as that of the control letters. More specifically, the return rate was 16.83% for the treatment letters, while it was only 9.13% for the control letters. The difference was as large as 7.7 percentage points and statistically significant. The pattern that treatment letters had a higher return rate that control letters was consistently observed across all three waves of experiments, although the difference in return rates also varied across experiments (Panel B in Table 5). The stark difference suggests that people are more willing to help the charity than the invented individual.

Table 6
Main regressions.

	(1)	(2)	(3)
Treatment	0.078***	0.078***	0.060**
	(0.019)	(0.019)	(0.028)
High income (>5000 RMB)		0.044*	0.025
		(0.021)	(0.027)
Treatment × high income			0.036
			(0.038)
Postal box location (ref = inside)			
<50 m	−0.011	−0.011	−0.011
	(0.031)	(0.033)	(0.032)
50–100 m	−0.054*	−0.056*	−0.056*
	(0.029)	(0.028)	(0.028)
100–150 m	−0.079*	−0.071*	−0.071*
	(0.041)	(0.039)	(0.039)
Time (ref = 7–8 AM)			
8–9 AM	0.036	0.030	0.031
	(0.024)	(0.025)	(0.025)
9–10 AM	0.132***	0.127***	0.127***
	(0.030)	(0.031)	(0.031)
10 AM–	0.049	0.043	0.042
	(0.040)	(0.041)	(0.040)
Weekend	−0.018	−0.018	−0.019
	(0.028)	(0.028)	(0.028)
Sunny day	−0.043	−0.042	−0.042
	(0.037)	(0.037)	(0.038)
Temp high	0.022	0.022	0.022
	(0.029)	(0.029)	(0.029)
Temp low	−0.006	−0.006	−0.006
	(0.010)	(0.010)	(0.010)
Wind speed	−0.005	−0.005	−0.005
	(0.004)	(0.004)	(0.005)
Observations	832	832	832
R-squared	0.05	0.05	0.05

Notes: dependent variable is a dummy variable indicating if a letter was returned. High income is defined as self-reported community average monthly income above 5000 Yuan. Temp high and low refer to the highest and lowest temperature in °C. Wind speed is meters per second. The reference postal box location group is the postal box located inside the community. The reference group of dropping time is 7–8 AM. A full set of wave and district dummies is included in both regressions. Robust standard errors clustered at district and time in parentheses.
Source: data collected from the experiment.
*** Significant at 1%.
** Significant at 5%.
* Significant at 10%.

Table 7
Heterogeneity across time.

	7 AM–8 AM (1)	8 AM–9 AM (2)	9 AM–10 AM (3)	After 10 AM (4)
Treatment	0.047***	0.085***	0.046	0.096
	(0.010)	(0.025)	(0.054)	(0.052)
Observations	98	505	160	69

Notes: specification is the same as in column (2) in Table 6 except for the time dummies. The samples used in the regressions are subsamples divided by the time.
Source: data collected from the experiment.
*** Significant at 1%.

4.2. Return rates by subgroups

If we break down the return rates by subgroups, some interesting variations are revealed. The upper-left panel in Fig. 2 shows that the return rate was the highest for the highest income group, which is consistent with the findings by Lowe and Ritchey (1973) and Brown and Reed (1982). The upper-right panel shows that the return rate decreased with the distance to the postal box. There are two possible explanations for this observation. One is that the distance to the postal box is a major cost of the altruistic act. The longer the distance, the higher the cost and the less likely an individual would like to help. The other explanation could be that the farther away the postal box, the more difficult for an individual to find it, thus lowering the return rate.

The lower-left panel reveals a variation in return rate across the seven days in a week. The return rate appeared to be the highest on Friday and Saturday and the lowest on Monday. As for time in the lower-right panel, the return rate increased steadily over time until 10 AM when there was a significant drop. The variation in return rate over day and time may have been caused by the variation in the number or the composition of people who walked by the lost letters.

Fig. 3 displays the variation by weather indicators. The upper-left panel shows that the return rates in cloudy days were higher than in sunny days. To the contrary, the wind speed did not seem to cause much variation in the upper-right panel. In the bottom two panels, the return rate was general higher when it was warmer. This is likely because more people would walk by the letters when it is warm.

4.3. Regression results

Previous analysis is based on unconditional return rates. To estimate more precise ceteris paribus partial effects of the variables, we regress a dummy variable indicating if a letter was returned on a set of explanatory variables. The key explanatory variable is a treatment dummy indicating if a letter was a treatment letter. Other control variables include income, postal box location, dropping time and day, a set of weather indicators and a full set of wave and district dummy variables. The regression results are reported in Table 6. The differences between columns (1), (2) and (3) are the inclusion of a dummy variable indicating the self-reported average monthly income of the residents was above 5000 RMB as well as an interaction term of the income dummy and the treatment dummy.

In both columns (1) and (2), the treatment effect is 7.8 percentage points and statistically significant, suggesting that the return rate of the treatment letters is higher than that of the control letters by 7.8 percentage points, which is almost identical to the unconditional estimate in Panel A in Table 5.

The estimate of the high income dummy in column (2) suggests that the return rate of the high income group is 4.4 percentage points higher than that of lower income group (<5000 RMB). Yet, it is only marginally significant at 10%. In column (3), we further added an interaction of the treatment dummy and the high income dummy to see if the treatment effect varies by income. The interaction term suggests that the return rate of the treatment letters dropped in higher income communities is 3.6 percentage points higher than their counterparts in lower income communities. However, the estimate is not statistically significant.

The estimates of the postal box location dummies in all three columns are consistent with our previous observation in Fig. 1. Compared with the case where the postal was located inside the community, the return rate decreases with the distance to the postal box. The remaining estimates suggest that the return rate is higher in week days, cloudy days, with higher temperature and lower wind speed. However, none of these estimates is statistically significant.

As for the dropping time, the letters dropped during 9–10 AM has the highest return rate. Relative to those letters dropped during 7–8 AM, the return rate of 9–10 AM is 13.2 percentage points higher in column (1). Notably, the return rate of 10 AM and afterwards is also higher than 7–8 AM, although it is not statistically significant. To further check if the treatment effect also varies across time, we run separate regressions using subsamples divided by time. The results are reported in Table 7. Interestingly, the largest treatment effect does not occur during 9 AM–10 AM when the overall return rate was the highest. Instead, the treatment effect appears to be larger during 8 AM–9 AM and 10 AM and afterwards.

5. Discussions

All three strands of other-regarding preferences theories described in Section 2 can explain either directly or indirectly the stark difference in the return rate between the treatment and control letters. The interdependent other-regarding preferences

theory offers the most intuitive and direct explanation, because it explicitly postulates that other-regarding preferences depend on the characteristics of other people and predicts that people are more willing to help altruistic people.

Yet, the other two strands of theories also hint at other possible explanations. For example, the passersby could have been contemplating that the treatment letter possibly carried a donation to the charity, while it was less likely so for the control letters. Then the outcome-based theory can explain the difference in return rate. Another possibility is that the passersby could have been suspecting that the "invisible" sender of the treatment letter intended to do something good, e.g. donation, while it is less likely to think so for the sender of the control letter. Then the difference in return rate is also consistent with the intention-based theory. Note that our goal is not to test any of these other-regarding theories against others.

It would invalidate the other-regarding preferences theories were the passersby actually motivated by desires to become praiseworthy or to avoid scorns of surrounding people by returning the letters. However, we argue that these desires to garner praises or avoid scorns are unlikely to cause the return rate of the two types of letters to be so different. The reason is that surrounding people at a distance could at best observe whether a passerby picked up the letter without knowing to whom the letter was intended. Therefore, the passerby should not expect more praises or fewer scorns from surrounding people should she return the treatment letter instead of the control letter or vice versa.

Admittedly, there were other differences between the charitable organization and the invented individual. First, the former was an organization, while the latter was an individual. Yet, prior studies do not suggest such distinction alone would necessarily lead to significant differences in the return rate. Based on the results in Milgram et al. (1965), the return rate of an organization can be either higher or lower than that of an individual, depending on the characteristics of the organization. As another example, instead of measuring the return rate of the lost letters, Farrington and Knight (1980) studied whether the passersby would "steal" unsealed lost letters that contained a small amount of cash. In their study, the "non-return" rate of letters intended for an individual was not significantly different from that of the letters for an association, either. Moreover, organizations are always established for reasons that define their nature. It would seem impossible to imagine a "neutral" organization without any attribute.

Second, the CYDF is nationally renowned, while *Yang Yang* is an invented individual with no known reputation. It is possible that the passersby may have found the CYDF trustworthy due to its national reputation and thus be more willing to help it. Such trustworthiness may make a person feel the CYDF more worth of her help. However, this trustworthiness argument is not inconsistent with the interdependent other-regarding preferences theory.

At last, the finding that the return rate decreases with the distance to the postal box suggests that people do take into account the cost of becoming a Good Samaritan. A policy implication can be drawn out of this is that the government could encourage people to help strangers by lowering the associated costs. For example, the recent incidents that Good Samarians being extorted by the victims who they helped suggest that the Chinese government can adopt laws to protect Good Samaritans from the risk of extortion. In particular, such Good Samaritan laws seem necessary more than ever as China is going through a rapid urbanization process, which greatly increases the likelihood that people have to deal with strangers in their daily life.

6. Concluding remarks

As Fehr and Fischbacher (2003) pointed out "*some of the most fundamental questions concerning our evolutionary origins, our social relations, and the organization of society are centered around issues of altruism and selfishness. … However, there is much individual heterogeneity and the interaction between altruists and selfish individuals is vital to human cooperation*." This paper sheds some light on the individual heterogeneity and the interaction between altruists and egoists. Our lost letter experiment results show that a person becomes more altruistic and willing to help if she knows *ex ante* the beneficiary of her help is an altruistic subject.

Our evidence was collected in Beijing, a megacity in the world's largest developing country. The external validity of our results depends on contextual factors such as culture, demographic environment, and technology, which may have to some extent weighed in the results. How general our findings can be applied to other settings require more research in other cultural and environmental settings in the future.

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