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Media and Cheating: An Experimental Study in Thailand

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Abstract

This paper conducted an experimental study on media and cheating in two universities and three villages in Thailand. Our experiment results suggest that approximately 30% of the subjects cheated. It is found that media reports have a significant effect on the cheating behavior of subjects. Subjects adjusted their cheating level toward that indicated in the media report. Moreover, the media had different impact on cheaters and non-cheaters. Cheaters were quite independent of the media, but non-cheaters were more sensitive to the media.

Keywords: behavior, cheating, corruption, experiment, media

1. Introduction

Cheating and corruption are significant problems in Thailand and other developing countries. Different countries have different campaigns to fight against these problems. Thai policy campaigns against cheating include promoting honest behaviors through various medias such as TVs, bedtime stories for kids and various social medias. We conducted an economic experiment to study how media reports affect the cheating behavior of Thai subjects.

Classical economists assume that people would do anything to maximize their benefits. They would not hesitate to cheat to increase their payoffs. Croson (2005) conducted a meta-analysis of basic economic experiments on cheating and concluded that people are selfish and their behaviors are broadly consistent with the classical economic model. However, Charness and Dufwenberg (2006), Sánchez-Pagés and Vorsatz (2007), and Vanberg (2008) find that people do cheats but they are also concerned with self-respect. This concern may prevent them from cheating. The existing studies above show that people cheated to get higher payoffs at the cost of losing self-respect. These studies do not give much policy implication on how to fight against cheating and corruption.

The other strand of literature studies the effects of cultures on cheating. Several studies report that social perception on cheating affect individual behavior on cheating and corruption. Fisman and Miguel (2007) investigates parking violations of diplomats who were protected by diplomatic immunity in New York City. Fisman and Miguel (2007) finds that diplomats from low-corruption countries have significantly lower violation rates than those from high-corruption countries. The results suggest that diplomats' native perception on cheating affect their parking violation behavior. Similarly, using both micro-level and macro-level data sets, Dong, Dulleck and Torgler (2009) and Gatti, Paternostro and Rigolini (2003) show that individual corruption is affected by the perceived corruption activities of others.

To our knowledge, this study is the first experimental study to investigate the impact of media reports on cheating. Our experiments were conducted using pens and paper. The subjects were college students and villagers. In our experiment, the experimenter promoted the good or bad perception by reporting simple but relevant information. For example, the experimenter promoted good (bad) perception by reporting the behavior of subjects who cheated less (more) than the average. We find that subjects adjusted their cheating behaviors toward the reports of the experimenter. Our experimental results are consistent with the existing studies and could be interpreted as media reports could affect individual cheating behavior through his/her social perception. Moreover, we find that high and low cheaters responded differently to the reports. Low cheaters were more responsive than high cheaters.

2. Experimental Design

Our experimental design is motivated by Fischbacher and Föllmi-Heusi (2013). The experiment consisted of five sessions. This study employed college and villager subjects to form a sample with diverse backgrounds. Three sessions were conducted in three different villages in three provinces in Thailand. The other two sessions were conducted in two colleges in different cities. Each session had approximately 30 subjects. A total of 150 subjects were included.

This study adopted a simple experimental design to ensure its applicability to villagers with primary school education. Experiments were conducted using pens, paper, cups, and dices. Technological devices were not applied because of the limited capability of villagers. The experiment is completely anonymous to mimic cheating in the real world. Each subject was only identified by his or her experiment ID. Subjects were informed that the purpose of the experiment was to study luck and uncertainty. Each session lasted for approximately

30 to 40 minutes. Each subject received 300 baht (8.6 USD) for participating in a session. The 300-baht payment was based on the minimum wage rate of a Thai worker per day.

Each session consists of the two identical 18-period rounds. Each session had 36 periods. The two 18-period rounds were separated by a short report, as shown in Figure 1. The details of the report will be explained later. Trial periods and investigated questions were applied.

Each subject sat separately in his cubical partition during the experiment. Each subject rolled his dice and marked in his marking form whether his dice matched the matched number. The marking form for the first 18 rounds is shown in Table 1. The marking form for each subject was identical. Experimenters emphasized that only the subject could see his dice. It clearly implied that the experimenters could not find out the number a subject actually rolled.

Figure 1. Basic Experiment

Table 1. Marking Form for the First 18 Periods

Period	Matched Number	Matched/Unmatched	Points Received If Matched
1	**3**	☐ Matched ☐ Unmatched	**3**
2	**4**	☐ Matched ☐ Unmatched	**4**
3	**1**	☐ Matched ☐ Unmatched	**1**
:	:	:	:
18	**3**	☐ Matched ☐ Unmatched	3
		Total Matches =	Total Points =

The subject obtained points equal to the matched number if a subject rolled his or her dice and checked the *matched* box. A subject could cheat and mark the matched box even though his dice did not match. For example, a subject who marked the matched box in period 1 would obtain three points. However, if he marked the unmatched box, he would not obtain points. Similarly, if he marked the matched box in period 2, he would obtain four points.

Experimenters then collected the marking forms at the end of the 18th period. An experimenter announced a short report about the numbers of matches in the first 18 periods. Variations were observed in the reports in different treatments. The details are explained below. The experiment continued for 18 periods after the announcement. Each subject filled received payment when the experiment ended.

The payment in baht that subject *i* obtained was calculated using the following formula:

$$payment_i = \frac{point_i}{average\ point}.300$$

where

$point_i$ = the sum of all matched numbers in 36 periods of subject *i*.

average point = the average point of all subjects in the session.

For example, suppose subject *i* marked matched for three rounds and the matched numbers in the three rounds were 6, 4, and 1, the subject would obtain 6+4+1 = 11 points in the experiment. The payment for subject *i* depended only on his point relative to the average point of all subjects. Given this payment rule, the average payment of all subjects is exactly 300 baht. Therefore, the other subjects would receive less payment if a subject cheated and received

more payment. The payment rule mimics a cheating situation in which a person gains from cheating at the cost of others.

Different Reports in Different Treatments

The experiment has three different treatments: neutral (average), good, and bad report treatments. The differences in these treatments pertain to differences in the mid-session report. In the neutral report treatment, the experimenter publicly reported the average number of matches of all subjects in the first 18 periods. In the *bad* report treatment, experimenters announced the average number of matches of the 10 subjects with most matches. In the *good* report treatment, experimenters reported the average number of matches of the 10 subjects with the least matches. Table 2 shows the messages reported in all treatments.

The messages reported in the middle of each treatment represented how cheating news is reported in society. The bad and good report treatments respectively represented the situation where the media covered cheating news more and less frequently. Different results between treatments would reflect how differences in media coverage influence cheating behavior. It is expected that the reports would have an effect on cheating behavior. No cheating punishment was imposed to maintain a simple design and to reflect the Thai legal system in which the chance of being punished for corruption and cheating is low.

Table 2. Reports in Different Treatments

Treatment	Message Reported
Neutral report	Average number of matches of *all subjects* is ….
Bad report	Average number of matches of *10 subjects with most matches is* ….
Good report	Average number of matches of *10 subjects with least matches is* ….

3. Experimental Results

Basic Results on Cheating

We initially investigated the experimental results from the first 18 periods. The experimental design of the first 18 periods in all treatments is identical and comparable. Subsequent sections studied the effect of media reports by comparing the first 18 periods and the second 18 periods of each treatment.

Table 3. Match Probabilities and Cheating in Each Session

Sess.	Place	Province	Subjects	# of Subj.	# of Obs.	Match prob.	t-stat	p-value
1	Village center	Kanchanaburi	villagers	30	540	0.302	8.429***	1.000
2	Village center	Ratchaburi	villagers	29	522	0.320	9.396***	1.000
3	Village center	Phitsanulok	villagers	31	558	0.333	10.564***	1.000
4	Classroom	Bangkok	students	30	540	0.307	8.776***	1.000
5	Classroom	Pathum Thani	students	30	540	0.224	3.580***	1.000
All	All	All	All	150	2700	0.297	18.229***	1.000

*, **, *** are significantly at 90, 95 and 99% confidence level

Table 3 summarizes the results from the five sessions. Columns 2 and 3 report the places and provinces where each session was conducted. The first three sessions were conducted in villages outside Bangkok. The last two sessions were conducted in colleges in the Bangkok Metropolitan Region. Column 3 shows that the subjects are villagers and college students. The number of subjects in each session is approximately 30. Column 6 shows the number of observations

from each session. This section only investigated the first 18 periods. Therefore, the number of observations in each session is the number of subjects multiplied by 18. Column 7 reports match probability in each session. Match probabilities are the total number of matches reported divided by the number of observations. The average match probability is about 30%.

The following hypothesis test is conducted to investigate whether or not the subjects cheated. The null hypothesis states that all subjects did not cheat. The matched is a Bernoulli variable with the match probability equal to one-sixth. We applied the central limit theorem to find the rejection region of the hypothesis test under the null hypothesis. The t-stat and p-value of the hypothesis test are reported in the last two columns of the table. The p-value at the 99.99% confidence level implies cheating subjects in all five sessions.

Figure 2. Density Match Probabilities (%)

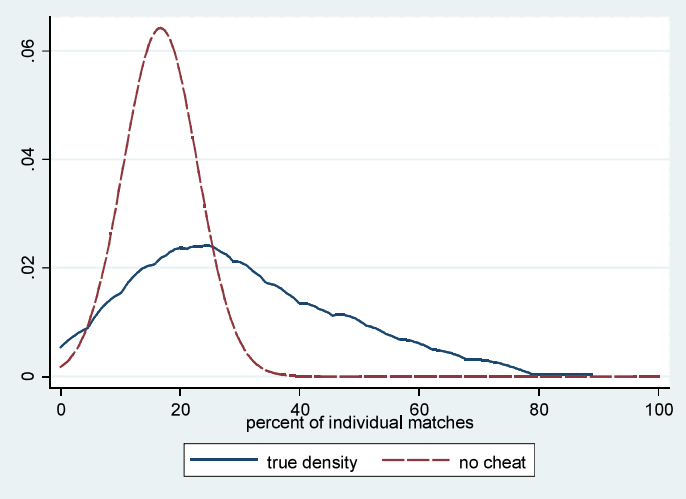

Figure 2 plots the kernel density of empirical match probabilities of 150 subjects in the first 18 periods of the five sessions. The unbroken line in the figure shows the empirical density function of match probabilities of all 150 subjects in all five sessions. The dashed line shows the theoretical density function under the null (no cheating) hypothesis. The difference between the unbroken and dash lines confirms the evidence of cheating reported in Table 3.

To estimate the number of cheaters, we performed the following hypothesis test. Under the null hypothesis, the number of matches of an honest subject is Bernoulli distributed with the match probability equal to one-sixth. The expected number of match is 3 (18/6) if the subject was honest. We define a cheater as a subject whose number of matches is greater than the critical value. Identifying a cheater this way suffers a type-I error. The null hypothesis suggests that the subject was honest, the number of matches is a binomial variable with $n = 18$ and $p = 1/6$. Thus, we directly calculated this type-I error from the cumulative density function of the binomial distribution. Table 4 shows the number of cheaters in each session with three critical values, namely, 6, 7, and 8. These critical values correspond to type-1 errors from 0.5% to 6.5%. Type-I errors that correspond to each critical value are shown in the last row. The third column shows the number of subjects whose numbers of matches were greater than or equal to 7. Type-I error is 2.1% if we mark these subjects as cheaters. With this critical value, the total numbers of cheaters in all sessions are 46 from 150 subjects, which mean that approximately 30% of the subjects cheated at the 98% confidence level.

Table 4. Number of Cheaters in Each Session

Session	Subjects with # of matches ≥ 6	Subjects with # of matches ≥ 7	Subjects with # of matches ≥ 8
Session 1	12	9	5
Session 2	16	15	11
Session 3	8	8	7
Session 4	10	8	8
Session 5	9	6	0
Total	55	46	31
Type-I error	6.5%	2.1%	0.5%

4. Effects of Media Reports on Cheating

Now we study how cheating responds to media reports. Table 5 summarizes matches in the first and second 18 periods and the reported values in each session. Column 2 shows the treatment applied in each session. Columns 3 and 5 respectively show the average number of matches in the first and second 18 periods of each session. Column 3 shows the reported value in each session. Experimenters respectively reported the average matches of all subjects: that of the top 10 subjects and that of the bottom 10 subjects in the neutral, bad, and good report treatment.

Table 5. Media Reports and Cheating

Session	Treatment	Avg # of matches (first 18 periods) (2)	Reported values (3)	Avg # of matches (second 18 periods) (4)
1	Neutral Report	5.43	5.43	5.23
2	Bad Report	5.76	9.50	6.34
3	Good Report	6.00	2.50	5.58
4	Good Report	5.53	1.90	5.17
5	Bad Report	4.03	5.90	3.80

Figure 4 plots the graph of the distance from the report (Column 3 - Column 2 in Table 5), the change in the numbers of matches (Column 4 - Column 3), and the least squared line. This graph suggests a positive relationship between distance from the reported values and the changes in the numbers of matches.

Figure 4. Distance from the Report and Change in Matches (Session Level)

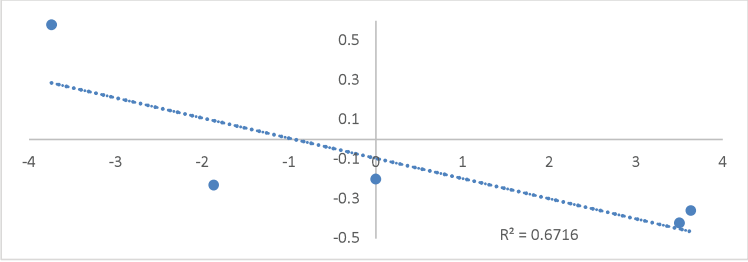

Figure 5. Distance from the Report and Change in Matches (Individual Level)

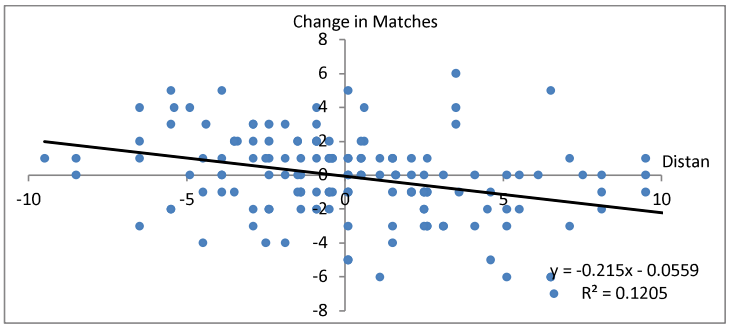

Figure 5 depicts the same relationship at an individual level. The horizontal axis shows the distance from the report (*dist*) and the change in the number of matches of each subject (Δ*match*), where

$$\Delta match_{i,j} = nmatch^2_{i,j} - nmatch^1_{i,j}$$

$$dist_{i,j} = nmatch^1_{i,j} - report_j$$

The subscripts *i* and *j* denote the subjects and sessions, respectively. $nmatch^1_{i,j}$ and $nmatch^2_{i,j}$ are respectively the number of matches in the first and second 18 periods. $report_j$ is the reported value in the middle of each session.

Figures 4 and 5 show that subjects with $nmatch^1$ higher (lower) than $report_j$ would decrease (increase) their matches. Each subject adjusted his level of matches (cheating) toward the reported values. Subjects who cheated more than the report would cheat less, and subjects who cheated less than the report would cheat more. Therefore, media reports have significant effects on cheating behavior.

The following equation was estimated to statistically confirm the effect above.

$$\Delta match_{i,j} = \beta_0 + \beta_1 dist_{i,j} + \theta_i + \epsilon_j \quad (1)$$

where θ_i is a session fixed effect. The estimation results are shown in Table 6. Models (1)–(5) in the table show the estimation result for Sessions 1 to 5. The last column shows the estimate using all samples. Coefficient θ_i's in all models are negative and mostly significant. All session fixed effects in the last column are insignificant. This result indicates that only reported values matter and the way the values were reported did not matter. For example, reporting that the average matches of the *top* 10 subjects are 5.6 and reporting that average matches of the *bottom 10* subjects are 5.6 have no different effects.

Table 6. Media Report and Cheating

Variable/Models	(1)	(2)	(3)	(4)	(5)	(6)
Distance from the report	-0.552***	-0.123	-0.227*	-0.325***	-0.768***	-0.319***
	(0.000)	(0.458)	(0.058)	(0.008)	(0.007)	(0.000)
Session 2 effects						-0.416
						(0.529)
Session 3 effects						0.885
						(0.166)
Session 4 effects						0.980
						(0.103)
Session 5 effects						-099.639
						(0.285)
Constant	-0.182	0.128	0.375	0.815	-1.666**	-0.189
	(0.606)	(0.850)	(0.453)	(0.148)	(0.026)	(0.606)
Observations	30	29	31	30	30	150
R-squared	0.420	0.022	0.089	0.226	0.240	0.157

Note: Numbers in parentheses are robust p-values. *** p<0.01, ** p<0.05, * p<0.1

Asymmetry of Media Effect

Figure 5 shows an asymmetric relationship between and with respect to the vertical axis ($dist = 0$). We separated the subjects into two groups to investigate this asymmetry. The first group is the subjects whose numbers of matches are less than the reported value ($dist < 0$). The other group is the subjects whose numbers of matches are higher than or equal to the reported value ($dist \geq 0$). We estimated Equation (1) using samples from these two groups. The estimates are shown in Table 7. Columns 2 and 3 of Table 8 show the estimate of Equation (1) for the first and second groups, respectively; the coefficient of each group is -0.443 and -0.242, respectively. The first coefficient is approximately twice that of the second. This result confirms the asymmetric relationship. The low match (first) group adjusts toward the media report more than the high match (second) group. Under such asymmetry, the low cheaters tend to imitate high cheaters more than the reverse. An interesting implication of this asymmetry is that an unbiased (average) report on cheating would promote more cheating.

Table 7. Asymmetry of Media Effects

Variables/Models	Low match subjects	High match subjects
Distance to the reported value	-0.443***	-0.242**
	(0.005)	(0.020)
# of obs.	73	77
R-squared	0.166	0.129

Note: Constants and session fixed effects are suppressed. Robust p-values are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

6. Conclusion

We conducted an experimental study on the impact of media reports on cheating in three villages and two colleges in Thailand. The experiment results suggest that 30% of subjects cheated. We then studied how different media reports on cheating affect cheating behavior. It is found that media reports have a significant effect on cheating. Subjects adjusted their cheating toward the cheating level in the reports. The subjects who cheated more than the reported level cheated less after the report. The subjects who cheated less than the level reported cheated more. Therefore, the level of media coverage on cheating has a significant impact on individual cheating.

Moreover, we found asymmetric effects of media in different groups of subjects. Subjects who cheated less were more sensitive to media reports, whereas subjects who cheated more were less sensitive. Media reports are more effective in persuading the goods to behave badly than the opposite.

References

Croson, R. (2005). The method of experimental economics. *International Negotiation 10*(1): 131-148.

Charness, G., & Dufwenberg, M. (2006). Promises and partnership. *Econometrica 74*(6): 1579-1601.

Dong, B., Dulleck, U., & Torgler, B. (2009). Social norms and corruption. In *Proceedings of the European Economic Association and the Econometric Society European Meeting* 1-48. Barcelona Graduate School of Economics.

Fischbacher, U., & Föllmi-Heusi, F. 2013. Lies in disguise—an experimental study on cheating. *Journal of the European Economic Association 11*(3): 525–547.

Fisman, R., & Miguel, E. (2007). Corruption, norms, and legal enforcement: evidence from diplomatic parking tickets. *Journal of Political Economy 115*(6): 1020-1048.

Gatti, R., Paternostro, S., & Rigolini, J. (2003). *Individual attitudes toward corruption: do social effects matter?* The World Bank.

Sánchez-Pagés, S., & Vorsatz, M. (2007). An experimental study of truth-telling in a sender–receiver game. *Games and Economic Behavior 61*(1): 86–112.

Vanberg, C. (2008). Why do people keep their promises? an experimental test of two explanations. *Econometrica 76*(6): 1467–1480.

Appendix

Experiment Instruction (Translated from Thai)

Welcome to an economic experiment. Each participant will get a pen, a dice and 2 pieces of paper for recording points and a cup with dice. The experiment will proceed as the following. In each round, each participant rolls his dice and mark in this paper whether the face of his dice matches the target number in his paper in that round or not. The participant gets points equal to the target number if the face of his dice is the same as the target number.

Table 8. Marking Paper

Round	Target	Does your dice match the target number?		Points received if you dice matches
1	3	☐ yes	☐ no	3
2	4	☐ yes	☐ no	4
3	1	☐ yes	☐ no	1
4	6	☐ yes	☐ no	6
5	2	☐ yes	☐ no	2
:	:	:	:	:

For example in the first round the target number is 3. Somchai gets 1 from his toss. He marks *no* and gets no point from this round. On the other hand, Somsri gets 3 from her toss, she marks *yes* and gets 3 points in this round.

The experiment consists of 36 rounds. After the 18th round, experimenters will collect your marking paper and make some announcement. Experimenters then give each participant a new piece of marking paper for the last 18 rounds. The payment of participant *i* is calculated by the following equation:

payment of participant i = (total points of participant i)/
(the average points of all participants) x 300 baht.

On average, each participant would get 300 baht. For example, suppose the average point of all participants is 8 and Somchai gets 16 points. Somchai would get 16/8 x 300 = 600 baht. After, the experiment end you have to fill in a short questionnaire and receive your payment in envelope with your participant number.

If you have any questions about the experiment, please raise your hand.