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Replication: Cheating, loss aversion, and moral attitudes in Vietnam☆

Toan Luu Duc Huynh*

Chair of Behavioral Finance, WHU - Otto Beisheim School of Management, Germany
School of Banking, University of Economics Ho Chi Minh City, Vietnam

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ABSTRACT

We use the coin-flip paradigm and a short survey about moral attitudes under three conditions to answer three questions: (i) Do people cheat more when financial incentives are present in comparison with no incentives? (ii) Do they find it more difficult to maintain their ethical standards when they have been given a small amount of money? and (iii) Do moral attitudes predict cheating behavior? Using a sample of Vietnamese college students, we discover that a financial incentive does not matter until people feel that they are facing a loss. In addition, we do not find any evidence that moral attitudes could predict the unethical behavior in our sample. Our findings shed further light on cheating behaviors and loss aversion through an experimental investigation.

1. Introduction

Imagine that someone gives you a small amount of money and then asks you to flip a coin privately, under a cup, so that you are the only one who can see the outcome–"heads" or "tails." You will get to keep the money if you report the result as "heads"; otherwise, you must return the money to the person conducting the experiment. You probably think that the small amount of money that was given to you is partly "yours," which induces a sense of loss if the money is taken away. Unfortunately, the result is "Tails," so you are faced with the trade-off between telling the truth and losing the money or lying to keep it. Thus, cheating allows you to keep what you have been given, but at a moral cost. This leads to one of our three experimental conditions. We use the coin-flip paradigm introduced by Bucciol and Piovesan (2011) with the following three primary conditions: (1) Control–no money involved; (2) Treatment 1–includes money; (3) Treatment 2–includes money and loss framing. Our goal in performing these experiments is to see how a monetary incentive influences cheating behaviors when subjects are framed in a context of loss with a financial manipulation. In particular, in the control (baseline) treatment, subjects' payoffs are not impacted by the outcomes of the coin toss. In Treatment 1, the subjects receive money after tossing a coin and reporting "Heads." In Treatment 2, subjects receive the money first and can keep it, provided that the outcome is "Heads"; if not, they have to return the money.

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* Corresponding author at: Toan Luu Duc Huynh, Chair of Behavioral Finance, WHU - Otto Beisheim School of Management, Campus Vallendar, Burgplatz 2, 56179 Vallendar, Germany.

E-mail addresses: toan.huynh@whu.edu, toanhld@ueh.edu.vn.

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Table 1
Chronological summary of the extant literature about experiment on honesty under loss frame.

No	Study	Paradigm	Observations	Notes	Results
1	Grolleau et al. (2016)	Matrix task	600 French university students	Receive their payoffs at the end of the matrix task.	16.67% of the participants re-ported the maximum performance
2	Garbarino et al. (2019)	Coin flip	978 American subjects	Before reporting the results, participants are asked to predict the findings. They will receive $0 if they report 0, 1, 2 correct answers (Treatment 0002). They will receive $0 if they report 0 or 1 correct answers and $2 if they report 2 or 3 correct answers (Treatment 0022). They will receive $0 if they report 0 correct answers and $2 for at least 1 correct answer (Treatment 0222). Payoffs are made online.	75.88% lied in Treatment 0002; 66.26% lied in Treatment 0022; 44.18% lied in Treatment 0222
3	Cameron et al. (2008)	Anagram task	86 American students	Participants lose money for each unsolved anagram and earn money for each solved one. Payoffs are received after completing the experiment.	53% cheated once in the loss aversion domain
4	Ezquerra et al. (2018)	10-sided die rolling	261 American participants	Online reporting with payoffs depending on reported results. Baseline (receiving $2.5 for each reported outcome). Gain ($0 for nothing and $5 for "9"). Loss treatment (endowment with $5 and deductible if differing from "9").	People cheat more in loss domain
5	Charness et al. (2019)	10-sided die rolling	426 Spanish subjects	Online reporting with payoffs depending on reported results. Baseline (receiving $2.5 for each reported outcome). Gain ($0 for nothing and $5 for "9"). Loss treatment (endowment with $5 and deductible if differing from "9").	No evidence that people cheated more in loss frame
6	Schindler and Pfattheicher (2017)	3 Dice-roll	86 participants (loss n = 39, gain n = 47)	Gain frame: every rolled "4," they would gain 10 cents. Loss frame condition, participants read that for every rolled number except "4," they would lose 10 cents of the EUR 7.50. Payoffs in loss frame are given before experiment.	Cheated in loss framing (56.4%)
7	Schindler and Pfattheicher (2017)	Coin-flip	300 Mturk participants (loss n = 146, gain = 154)	Given $0.25 as a baseline. In the loss framework, participants were told that they would be given a $0.5 bonus and will then perform a coin-flip task (if heads, lose $0.5; if tails, keep the bonus). In the gain framework, participants are told they would not receive a bonus for "heads" and would receive bonus if the outcome was "tails."	Prepared to cheat ratio in loss frame (53.4%)

The existing literature has mentioned the role of loss aversion in unethical behavior by varying the distribution of outcomes. In contrast to prior studies, this study only uses a one-time coin flip and asks subjects to report the result using paper and pencil with a time constraint. Garbarino, Slonim, and Villeval (2019) asked the subjects to toss a coin three times using an online platform; Grolleau, Kocher, and Sutan (2016) used a matrix task; Schindler and Pfattheicher (2017) used dice-rolling; Balasubramanian, Bennett, and Pierce (2017) employed an online coin-flip with wages changes to frame. These studies confirmed that greater dishonesty was found in a loss domain. In addition, Cameron, Miller, and Monin (2008) contributed "the idea of deservingness" to the literature, which means that it is more difficult for subjects to maintain their positive self-image and ethical standards after having been given the money. In other words, people cheat more due to a "sense of ownership" (Charness, Blanco-Jimenez, Ezquerra, & Rodriguez-Lara, 2019). Furthermore, extant research on incentives and cheating (for example, Gneezy & Rustichini, 2000; Kajackaite & Gneezy, 2017) concludes that incentives influence motives and behaviors in different and unexpected ways. Belot and van de Ven (2019) also confirm that (dis) honest behaviors are not persistent. Hence, studying the relationship between incentives and dis (honest) behaviors is promising, especially under loss framing. Before discussing our key contribution, Table 1 offers the chronological presentation of the previous experiments on dishonesty in a loss framework.

The purpose of this replication is to assess the likelihood of cheating given a small financial incentive, and how loss aversion affects cheating tendencies in Vietnam. How does our study differ from these previous experiments? First, we employ simple, single coin-flip tasks based on a paper-and-pencil experiment with a restricted amount of time for subjects' self-reflection?[1] Second, we prove that the moral cost lies in the range between monetary gain and loss by using a moral cost as the theoretical framework. Third, while the extant literature focuses on developed countries, our sample comes from Vietnam.[2] Fourth, our results confirm a positive and finite "moral cost" among Vietnamese participants, which is consistent with the previous literature (see Kajackaite & Gneezy, 2017; Potters & Stoop, 2016). Thus, using "moral cost" with a simple utility function could explain our Vietnamese subjects' behaviors. Fifth, we do not find any evidence that moral attitudes could predict the unethical behavior, which is consistent with the study of Hugh-Jones (2016).

The remainder of this study is organized as follows. In Section 2, we summarize the experimental design and procedures. Section 3 describes the results and discusses our findings. Lastly, we offer our conclusions.

2. The experiment and survey

2.1. Experimental design and procedures

The experiment was conducted in three randomly different classes in the School of Banking at the University of Economics in Ho Chi Minh City, Vietnam. We used the experimental design of a coin-flip task devised by Bucciol and Piovesan (2011), consisting of two primary parts: (i) reading the rules and completing a questionnaire, described in Section 2.2, and (ii) flipping a coin in a cup and reporting the result (Heads or Tails) and receiving the payoff. Our design consists of three possible treatments as follows. The Control treatment (CT) asks students to flip a coin without any financial incentive. Treatment 1 (T1) is similar to CT, but participants have a chance to win money for the "Heads" outcome. Treatment 2 (T2) gives financial incentives to participants before tossing a coin; afterwards, if "Tails" is the outcome, participants must return the money to the experimenter. Students are randomly assigned to each treatment. The experiment was conducted in different rooms to avoid the concerns about dependency of observations within classroom, e.g., due to peer effects. The time required for each participant to complete the questionnaire, flip a coin, and receive the payoff was two to three minutes.

We designed our experiment using a paper-and-pencil, double-anonymous setting. Participants privately tossed a coin in a cup with a small hole that allowed only them to see the outcome. Thus, the experiments could not track the actual outcome of the coin toss through the participants' attitudes or expectations; moreover, participants are never reminded of the concept of "honesty" by the experimenter. As in previous studies (Abeler, Becker, & Falk, 2014; Bucciol & Piovesan, 2011; Fischbacher & Föllmi-Heusi, 2013), the coin-flip paradigm generates a dichotomous outcome that allows us to estimate the difference between the percentage of students reporting "Heads" and the 50% expected proportion as the level of dishonest behavior. Furthermore, we have a condition treatment as a benchmark to compare. Although no one would lie in the CT, our motivation in conducting the CT is to examine whether or not participants systematically report in the experimental setting. Furthermore, we aim to test whether the number of observations is large enough to achieve the expected distribution of 50% "Heads" and 50% "Tails."

A total of 149 students[3] participated in our experiment. The payoff for a "Heads" outcome was 5000 Vietnamese Dong (VND); the reason for choosing this amount is convenience. Participants can use this amount to cover small expenses such as parking fee, a bottle of mineral water, a pen, etc. On average, the experiment for one session lasted from three to four hours.

[1] Capraro, Schulz, and Rand (2019) concluded that people are most honest under time pressure. Hence, we only offer a single opportunity to toss a coin.

[2] In meta-analysis of 565 experiments from the study of Gerlach, Teodorescu, and Hertwig (2019), only one dice-roll paradigm was conducted in Vietnam from Gerlach et al. (2019)'s work. In addition, we only found one study from Vietnam in study of Abeler, Nosenzo, and Raymond (2019).

[3] There are 54, 46, and 49 students in Control Treatment, Treatment 1, Treatment 2, respectively.

2.2. Questionnaire

The primary questionnaire consists of two chief parts: (i) socio-demographic factors (age, gender, university entrance grade, and the current grade point average [GPA]) and (ii) attitudes toward cheating behaviors from the previous field experiments. In doing so, we offer judgments about unethical behaviors from the classical "lost or misdirected items" studies. In this genre of experiments, honesty is treated as a binomial option; returning items is seen as ethical behavior and keeping them implies unethical action, which is similar to our experimental setting regarding the coin-flip paradigm. Hence, asking participants about their attitudes toward others' behaviors from previous experimental evidence (for example, misdirected letters in studies of Franzen & Pointner (2013), Hellmann et al. (2019), Yezer, Goldfarb, & Poppen (1996); the lost wallet in Cohn, Maréchal, Tannenbaum, & Zünd (2019), West (2005); picking up pennies dropped on the street in Frazer & Van der Touw (2010), Furnham (1985)) supports the rational expectations that these attitudes can be used to predict their own behaviors. Instead of asking respondents whether or not they engaged in unethical actions within the last 12 months (Hugh-Jones, 2016), our questionnaire uses the five-point Likert scale to understand how they judge unethical behaviors, with responses ranging from "never justified" to "always justified." We asked the participants the following questions: *Consider these behaviors and indicate whether you think they are justified or not.*

- Keeping money that you found on the street.
- Failing to return a wallet containing no money that you found on the street.
- Failing to return a wallet containing money that you found on the street.
- Failing to return a misdirected package that you received in your mail box.
- Failing to return a misdirected package containing money that you received in your mail box.

The Likert scale ranges from "never justified" (the lowest value) to "always justified" (the highest value).

These questions are based on the unethical behaviors we can observe directly and experimental designs from previous studies. Moreover, we examine whether the nexus among unethical behaviors are predictors or not. Therefore, our hypothesis is that the higher justification in these behaviors would more likely report "Heads" outcome in the experiment. Our data is available at https://doi.org/10.17632/p5z5hhm736.1.

3. Results

3.1. Loss-aversion effects

The subject pool for our experiments consists of all undergraduate students majoring in banking and finance, with 22.8% males and 77.2% females, ranging from 19 to 23 years old. The majority of our subjects have no religious affiliation (87.24%), while the remainder are Buddhists (10.05%) and Catholics (2.68%).

Fig. 1 shows the percentage of students reporting "Heads" and the percentage reporting "Tails" within the Control group and in both treatment groups. For the total sample of 149 students, we used the one-sample test of proportion to see if the percentage of students (86 out of 149 students, 57.71%) reporting "heads" is statistically equivalent to 0.5. The null hypothesis (H_{01}: proportion $= 0.5$) is rejected at the 5% significance level (proportion > 0.5, p-value < 0.05) in a binomial test. Our test for differences across treatments (using ANOVA) indicates significant ($p < 0.01$) differences among our three settings.

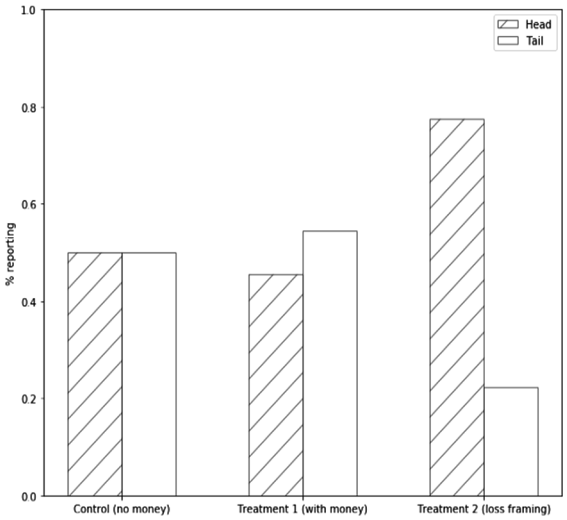


Fig. 1. Experimental measures of honesty by different sessions.

Taking a closer look at each treatment group, we observe a more interesting story. First, the proportions of "Heads" and "Tails" in the control condition are both 50%. Undoubtedly, we fail to reject the null hypothesis (H_{01}: proportion = 0.5) for the Control group. This implies that there is no dishonest behavior when there is no financial incentive. This finding is also consistent with Charness et al. (2019)'s study, which indicates that in the absence of financial incentives, there is no significant evidence of cheating. When a financial incentive is introduced in Treatment 1, the "Heads" reporting proportion is 45.65% (21 out of 46), which fails to reject the null hypothesis H_{01} (p-value = 0.5553). It turns out that the Vietnamese subjects are not likely to cheat even though they have an opportunity to gain a payoff by lying about the outcome. We did not expect that there is no cheating with monetary incentive. However, our results provide counter-intuitive evidence, which we would discuss in detail. First, the monetary incentive may be too small even convenient to use, and cheating could rise with higher incentives. Second, the evidence seems quite robust that men report higher outcomes than women (Abeler et al., 2019). This implies that females cheat less than males. Our sample primarily comprises females, which might lower down the cheating rate. In addition, it could be a reason that the males in our sample may cheat less because they are in the same space as the less-cheating females.[4] Differing from the results of the dice-roll experiments in Ezquerra, Kolev, and Rodriguez-Lara (2018), Charness et al. (2019) that incentivized subjects to cheat more in comparison with a baseline (without money), this paper confirms that cheating behavior is contextual and paradigm-dependent. Second, the "Heads" reporting proportion in Treatment 2 (giving participants money before the coin toss and having them return it if the outcome is "Tails") is 77.5% (38 out of 49). Here, we reject the null hypothesis H_{01} (p-value < 0.001) at the 1% significance level. It implies that Vietnamese subjects do not cheat because of money (T1), but because they feel a loss (T2).

According to the Moshagen and Hilbig (2017), an estimated 55% [(0.775 – 0.50)/(1 – 0.50)] of those in our Vietnamese sample were prepared to cheat if they did not legitimately win. We can also estimate that 27.5% (0.775 – 0.5) of the participants in our sample actually cheated. Lastly, the estimated proportion of illegitimate wins is 35.48% [(0.775 – 0.5)/0.775]. Our findings are similar to the previous experiments conducted in the United States; namely Cameron et al. (2008), Garbarino et al. (2019), France Grolleau et al. (2016), and on an online platform Schindler and Pfattheicher (2017). These findings offer two interesting implications. First, our experimental design that modifies the procedure to provide the financial incentive upfront with a small amount of money (5000 VND) is enough to trigger loss aversion, inducing people to cheat when "Tails" is the actual outcome. Second, although everyone could report "Heads" to keep the money, not all subjects cheat, with the percentage of "cheaters" similar to the finding from an earlier study Mazar, Amir, and Ariely (2008) indicating the self-concept maintenance. To sum up our primary findings, we found no cheating behavior in the Control and Treatment 1 groups, while participants significantly cheat to keep the money provided upfront in the Treatment 2 group. We did not find any evidence of differences in terms of age or gender. Lastly, we discovered that the moral cost of cheating is between the gaining and losing of money.[5] Our findings are in line with earlier studies that used a deception game as well as donation activities as in Dreber and Johannesson (2008), Gneezy, Imas, and Madarász (2014), Gneezy and Rustichini (2000), Sutter (2008). These studies revealed that the subjects set high internal moral constraints, which manifests itself as feelings of guilt when telling a lie. Furthermore, our study explains the moral cost of cheating using the coin-flip paradigm with a simple explanation for its boundary constraints.

3.2. From beliefs to behaviors

Fig. 2 represents the differences in moral attitudes toward the dishonest behaviors of those who reported "Heads" and "Tails" as outcomes. The higher values represent attitudes that justified these unethical behaviors. We do not find any statistical evidence of differences for those who reported "Heads" versus those who reported "Tails."

However, we do find differences in attitudes by gender. In our full sample, female students were more tolerant to the behavior of keeping the wallet containing money they found on the street (Mann-Whitney test, $p < 0.01$) and the package containing money delivered to the wrong home (Mann-Whitney test, $p < 0.01$). By using a one-way ANOVA, we found differences in moral attitudes toward keeping the package containing money that was delivered to the wrong mail box among the different age groups ($F(3, 148)$, $p < 0.05$). Hence, we discovered heterogeneous attitudes over different groups of age and gender in our samples. This implies the necessity of adding control variables to our regression models.

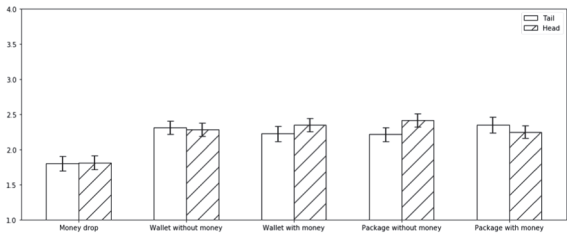
Since our study measures moral attitude with the five statements, having five variables included in the specification of the same regression might induce two types of problem. First, each variable may capture only a component of moral attitude, rather than the general trait. Second, the five variables are probably highly correlated, which may give rise to quasi-collinearity and, in turn, inflate standard errors. Hence, we would perform an exploratory factor analysis for further examination.[6] Unexpectedly, we found two indicators representing the characteristics of moral attitude.[7] Moral attitude 1 consists of behaviors related to identical person; for example, a wallet or a package, while the other factor refers to unknown person; for instance, money dropped on the street. Nonetheless, both factors explain 64.12% of the total variance observed. Finally, our moral attitude variables are constructed by multiplying the factors loadings and factor rotation. In doing so, we can define the "moral attitude" variables that we would add in the specification of regression models with the full sample to avoid the small sample size bias.

[4] We thank the anonymous referee for suggesting the insightful explanation why Vietnamese subjects cheat less under the monetary incentive in our sample.

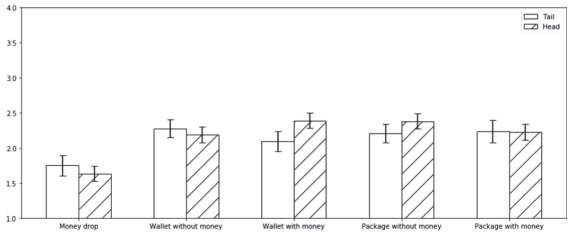
[5] See the Appendix A.1 for proof of this point.

[6] We thank an anonymous referee for suggesting the insightful analysis, which substantially improves our manuscript.

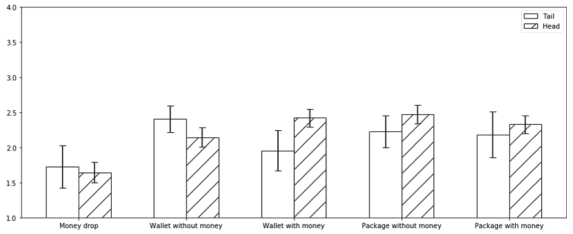
[7] See the Appendix A.2 for our indicators built from the raw variables.



(a) Full sample



(b) Incentive group (Treatment 1 and 2)



(c) Loss-aversion (Treatment 2)

Fig. 2. Moral attitudes differences between "Heads" and "Tail" subjects.

Table 2
Logit Regression Explaining the (Self-Reported) Head outcomes for payoffs.

Variables	Model 1	Model 2	Model 3
Loss aversion	0.395***	0.389***	0.401***
	[4.85]	[4.68]	[4.79]
Moral attitude 1		-0.026	-0.026
		[-0.49]	[-0.48]
Moral attitude 2			0.051
			[1.17]
Other control variables	Yes	Yes	Yes
Marginal effects	0.624	0.635	0.637
Observations	124	122	122
Pseudo R-square (%)	13.45	13.00	13.71

Notes: ***p < 0.001; **p < 0.01; *p < 0.05. Robust standard errors are shown in parenthesis. The dependent variable takes the value of 0 or 1 if the reported outcomes are Tails and Heads, respectively. The control variables are age, gender, the university entrance grade, and GPA. This table reports the average marginal effects in which "loss aversion" is for discrete change of dummy variable from 0 to 1.

3.3. Regression

Table 2 presents a comprehensive analysis using logit regression with binary choices (Heads and Tails) with the report of average marginal effects. We ran a regression for three models to examine the relationship between loss aversion, moral attitude and the likelihood of reporting the "Heads" outcome.

We found that loss aversion is the factor that best predicts the likelihood of reporting the "Heads" outcome, while the all moral attitudes are not predictive. Our model predicts that subjects in the loss domain. Our findings are also consistent to the results in Hugh-Jones (2016) that reveal no link between an individual's expression of his or her moral attitudes and actual behavior. Although other studies have found that the coin-flip paradigm can predict real-world dishonest behavior (Cohn & Maréchal, 2017; Dai, Galeotti, & Villeval, 2018), this relationship is still not clearly evident in the Vietnamese sample.

4. Conclusions

We use the coin-flip approach to study dishonesty. Our findings confirm that people do not lie in the absence of financial incentive, while loss framing reduces the moral cost of cheating and is positively correlated with dishonest behavior. These results imply that if people are given money and hold it in their possession, they may feel they have a good reason to keep it rather than return it. We also confirm the discussion of Charness et al. (2019) that people tend to cheat more when given money at the beginning of experiment. In addition, as in Andreoni (1989), Andreoni (1990), these papers emphasize the appearance of impure altruism by asking participants to return the money they were given before the coin toss. Moreover, the coin flip has a dichotomous outcome, which causes people to realize loss immediately (while other tasks require much more time to deliberate; for example, dice roll, matrix task, trust-game, etc.). Therefore, subjects are likely to lie to keep the money that was given to them. The effect of loss aversion is also clear in our loss framing treatment. It is worth noting that the Vietnamese participants in our sample are more sensitive to loss framing and have higher levels of risk aversion than the subjects in Spain (as shown in Charness et al. (2019)). Our results have ethical implications for loss framing and cheating decisions. For example, an employer could be cautious when employees are fired, which is considered a loss from the employee's reference point. In this situation, people may be more likely to engage in unethical behaviors that they may not view as cheating under the circumstances, and employers should be prepared. Another example is behaviors linked to tax compliance in a loss domain, as in Engström, Nordblom, Ohlsson, and Persson (2015).

By posing five question regarding expressed moral attitudes, our study found that there are no differences between attitudes of those who reported "Tails" in the coin toss (the non-cheaters), and those who reported "Heads" (the possible cheaters). Furthermore, these expressions of moral attitude do not appear to be good predictors of cheating behavior as in Hugh-Jones (2016).

Although there is mounting evidence that the moral cost of dishonest behavior factors in human decision-making, there is still a need for further research about the associated guilt feelings or a desire not to disappoint the experimenter. In our experiments, the experimenters are anonymous; future studies could consider the identity of the experimenter, which might adjust the moral cost of cheating by subjects.

Appendix A

We assume that subjects have a material utility of 5000 VND (financial incentive) (v) associated with the report, while (c) denotes the moral cost of cheating (see Table A.1).

Table A.1
Moral cost based on utility.

	Cheat		Does not cheat
Treatment 1	v(5000) – c	<	0
Treatment 2	0 – c	>	v(-5000)

This means that v(5000) < c < —v(-5000)—. We can interpret this to mean that people do not cheat under Treatment 1 because of a higher moral cost, while this value is not large enough to prevent cheating under the loss framing effect (see Table A.2).

Table A.2
Rotated factor loadings of the final two factors from the five statements.

Variables	Moral attitude 1	Moral attitude 2
Money drop	–	0.939
Wallet containing no money	0.625	–
Wallet containing money	0.784	–
Package without money	0.790	–
Package with money	0.720	–

Notes: Our method is principal-component factors and the rotation is based on orthogonal varimax (Kaiser on). Number of observation is 147 with 2 retained factors and 9 parameters. We choose the loadings < 0.5 omitted for our study. Factor rotation matrix between "Moral attitude 1" and "Moral attitude 2" is −0.1799. We find no correlation between "Moral attitude 1" and "Moral attitude 2".

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