The role of framing on probabilistic outcomes: do we lie more in order to avoid losses than to achieve gains

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Abstract

This research presents a novel experimental design to measure lying in a probabilistic paradigm. The probabilistic paradigm is an adapted version of the anonymous die-under-cup task, adding another task after the dice rolling which determines the payoff. The influence of framing on the paradigm was investigated to find out whether people are willing to lie more in a loss frame than in a gain frame based on research showing that people are loss averse. It was expected that people in a loss frame would lie to obtain certainty, while people in a gain frame would not report the highest number to leave room for justification for their lies. The results show that no lying could be found in the overall probabilistic paradigm. Also, no significant differences were found between the loss frame and the gain frame. Alternative explanations for the results are discussed.

Introduction

Imagine you are applying for your dream job. Unfortunately, the vacancy has a requirement that you do not meet, nevertheless you are sure you are capable of doing the job anyways. Would you sneak in a little lie on your CV, so you do meet the requirements? You will not be sure whether this will make you get the job. However, you might feel like this would increase the chance of getting the job. Although this might be an example of a rather small lie, history has taught us that people do not always act as ethically as we would like. An example which did the economy a lot of damage was the banking crisis in 2008. Bankers did not act very ethically, which turned out in a near collapse off the monetary system. Understanding more about the motives, reasoning, and contexts around lying and/or cheating will help behavioral psychologists with better understanding the nature of human behavior and can also be of great benefit to the economy and even public services. For example, the economy suffers a great deal under people who commit insurance fraud (Mazar & Ariely, 2006) or who cheat on their taxes (Jacobsen & Piovesan, 2013). Previous research has already shown that people are willing to lie to gain a better economic outcome, however, these researches also showed that people do not lie to the fullest extent, even when they know they cannot be caught (Gino et al., 2013; Shalvi et al., 2011b; Fischbacher & Föllmi-Heusi, 2013).

Previous studies on lying

In recent years the research on ethics has changed from a normative approach to a rather descriptive approach. This approach, concerning several fields such as psychology, economics, and management, is now commonly referred to as behavioral ethics (Bazerman & Gino, 2012). The goal of the science on behavioral ethics is to understand more about the determinants and underlying processes of unethical behavior, such as lying and cheating. Numerous studies have been done in this subject (e.g., Fischbacher & Föllmi-Heusi, 2013; Gino, Ayal & Ariely, 2013; Grolleau, Kocher & Sutan, 2016; Jacobsen & Piovesan, 2016; Mazar & Ariely, 2006; Mazar, Amir & Ariely, 2008; Schindler & Pfattheicher, 2017; Shalvi, Dana, Handgraaf, & De Dreu, 2011a; Shalvi, Eldar, & Bereby-Meyer, 2012; Shalvi, Handgraaf, & De Dreu, 2011b). A commonly used paradigm in studies on cheating revolves around the use of a randomization device, such as rolling a die or tossing a coin (Moshagen & Hilbig, 2017). The difference between the expected scores and the reported scores can indicate cheating or dishonesty. This kind of setup gives participants anonymity, since they are the only ones to know what the true outcome was. Thus, the actual outcome of the paradigm stays unknown to the experimenters, however, the distributions of all reported outcomes gives an indication of dishonest behavior.

One of the first experiments making use of dice to study cheating was performed by Fischbacher & Föllmi-Heusi (2013). They let participants throw a die while they were alone in a room and made them report the number of eyes on the die they rolled. Participants were allowed to roll the die as many times as they pleased, but they were instructed to report the first die roll. The goal of this study was to find out whether people would report the actual number they had rolled, or rather, would cheat and report a higher number to obtain a higher payment. Their results showed that their sample consisted of people who lied, people who were honest and also some subject who lied partially. Shalvi et al. (2011b) altered the experiment used by Fischbacher & Föllmi-Heusi (2013) slightly, and turned it into the 'anonymous *die-under-cup* paradigm'. Different from the original paradigm, Shalvi et al. (2011b) placed the die under a cup with a tiny hole in the bottom, to ensure participants complete anonymity. The findings of the anonymous die-under-cup paradigm showed that people avoided lies for a minor profit, even when they are in a completely private and anonymous setting. The results

indicated that people prefer to maintain a positive self-concept, and will only lie when the psychological costs caused by lying will be less than the materialistic gains.

Self-interest and self-concept

What causes people to not be completely self-interested and what prevents them from lying to the fullest extent? Standard economics argue that people will always lie when they can benefit from lying. However, the previous discussed researches have shown that this is not the case. Honesty is widely considered as one of the main components of being a moral person (Chadwick, Bromgard, Bromgard & Tramfimov, 2006). Mulder and Aquino (2013) suggested that lying would affect the average person who is motivated to be morally good, since they want to keep a positive self-concept. Their results showed that a moral identity can be seen as a source of self-regulation. When people lied, they would compensate their dishonesty afterwards. Suggesting people want to keep up their positive self-image of being a moral person. Balancing these two, self-interest and self-concept, many people choose to restrict their lying behavior to a degree they can still justify for themselves. For example, when someone rolls a 2 with a die, and reports a 4, it might feel like he/she is lying to a lesser degree than when reporting a 6. In this example, the participant has certainty that reporting a higher number will increase their financial outcome. It would be interesting to find out whether people are also willing to cheat when their outcome is not certain, but rather probabilistic as outlined in the CV example in the introduction.

Probabilistic cheating paradigm and external attributions

Previous research has shown that people are willing to lie to increase their economic outcomes when that outcome is certain. To get back to the CV example in the introduction of this study, are people also willing to lie to only increase the possibility of gaining a better economic outcome? The majority of research until now has focused on a certainty paradigm; when you lie you will obtain a better outcome. However, it is also very common to be in a situation where there is no certainty about whether your lie will lead to your desired outcome per se. Therefore, in the current study the anonymous die-under-cup paradigm by Shalvi et al. (2011b) will be modified into a probabilistic

paradigm. After the participant has rolled the die, a random ball draw will take place which determines whether the participant will get the desired outcome (which is a cash amount of €6). This ball will be drawn from a bowl containing six balls. At first there will be six white balls in the bowl. Depending on the participants die roll, the white balls can be replaced by yellow balls. For instance, the participant rolls a 4, then four white balls will be replaced by four yellow balls, leaving two white balls and four yellow balls in the bowl. After rolling the die, the participant can blindly pick one ball from the bowl. In case the participant picks a yellow ball, the desired outcome is obtained (€6). In case the participant picks a white ball, no money will be obtained (€0). Concluding, in this paradigm people can only increase the likelihood of obtaining their desired outcome with lying about their die roll.

In this paradigm, there might be different motivations to lie than in the certainty paradigm. For instance, reporting a 6 in the probabilistic paradigm gives you certainty. Since this will replace all white balls by yellow balls, which means you automatically obtain the €6. As described by Hofstede (1980), people tend to be uncertainty avoidant which could be a motive to report a 6, to know for sure the €6 can be obtained. Therefore, it is expected that people will over-report 6's (because this will remove the uncertainty), and under-report all outcomes below 6 (Hypothesis 1).

Although reporting a 6 might remove the uncertainty of not knowing whether you will obtain the desired outcome. It also means the participant might by lying to the fullest extent. Which according to earlier research studies, has not been demonstrated by their results. Mulder & Aquino (2013) demonstrated that a moral identity is a sort of self-regulating process, wherein people balance their self-interest and their self-concept. In order to maintain a positive self-concept, people need to have justifications for their lies. In the probabilistic version of the die-under-cup paradigm, participants might feel that reporting a 6 is a major lie, since this will remove the uncertainty. While reporting a 4 of a 5 will increase the likelihood obtaining the desired outcome, while still leaving room for an external attribution to luck. Since participants still have to draw a ball from the bowl after the die roll, they are not certain whether they will obtain the money by reporting anything under the outcome of 6. Therefore, it is predicted that people will under-report 6 (because this removes the possibility to attribute the desired outcomes to luck), and over-report 5 and maybe also 4 (as 5 and 4 increase the chances to win, yet leaving attribution to luck possible) (Hypothesis 2).

Framing

Hypotheses 1 and 2 are very much contradicting each other. On the one hand, we expect uncertainty avoidance by participants, which will result in an over-report of 6's. While on the other hand, we expect influence of external attributions which will lead to an under-report of 6's. We propose that both hypotheses can be true, depending on the context of the altered die-under-cup paradigm. This study proposes that the moderator of these hypotheses is framing. Especially, framing a gain or a loss context. Numerous studies have shown that people tend to prefer avoiding losses to acquiring equivalent gains, also known as the prospect theory (Khaneman & Tversky, 1979). It was also found that people are willing to take more risk to avoid a loss than to increase possible gains (e.g., Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). More recently, Schindler and Pfattheicher (2017) tested whether cheating also occurs in non-performance situations, in particular when people can avoid losses. Their results showed evidence for the idea that people show higher levels of dishonesty behavior to avoid a loss than to acquire an equivalent gain. Therefore, it is expected that in a loss frame, more people will report a 6 (which removes the uncertainty) than people in a gain frame (Hypothesis 3). While in a gain frame, more people will report 5's and 4's because this gives the possibility to attribute the desired outcome to luck) than people in the loss frame (Hypothesis 4).

Overview and predictions

The goal of this study is to find out whether people will still cheat when their lie does not automatically lead to an increase in their outcomes. Instead, cheating will only increase the likelihood of a better outcome. Earlier research has shown that framing is a possible moderator in this process, therefore, we explore the differences between cheating behavior in a setting in which lying can increase the likelihood of achieving a gain and behavior in a situation in which lying can reduce the likelihood to suffer a loss. The following hypotheses will be tested:

1. Due to uncertainty avoidance, people will over-report 6 (which removes the uncertainty), and under-report all outcomes below 6.

2. People will under-report 6 (because this removes the possibility to attribute the desired outcomes to luck), and over-report 5 and maybe also 4 (as 5 and 4 increase the chances to win, yet leaving attribution to luck possible).
3. In a loss frame, more people will report a 6 (which removes the uncertainty) than people in a gain frame.
4. In a gain frame, more people will report 5's and 4's (because this gives the possibility to attribute the desired outcome to luck) than people in the loss frame.

Method

Participants and design

To test the predictions, a lab experiment has been conducted. The experiment has a between subjects design. The lab experiment consisted of an edited version of the die under cup task (Shalvi et al., 2011b) and a questionnaire. The details of the (edited) die under cup task and the questionnaire can be found under the procedure paragraph.

To conduct this research participants were recruited at Leiden University. The recruiting was done by ads on the university's website and the use of flyers. 150 participants have been recruited. Participants could earn a variable compensation, depending on the results of the edited die under cup task. The compensation was either €0 or €6. All participants had to sign the informed consent before taking part in the research. The protocol of this research has been approved by the ethical committee of Leiden University.

Procedure

The experiments were conducted in the lab of Leiden University. At first, the participants were welcomed in the lab. 75 participants were randomly assigned to a gain condition, and 75 participants to a loss condition. Before the experiment started, they first read the informed consent and signed it. In case participants were assigned to the loss condition, they were immediately given €6 in cash (one €5 banknote and one €1 coin) and instructed to put the money away in their wallets. Thereafter, participants were assigned to a cubicle. In case participants were assigned to the gain condition, they were immediately assigned to a cubicle after signing the informed consent. They now received the questionnaire, this questionnaire consisted of the 'Work Locus of Control Scale' (Spector, 1988) and the 'FAD-plus' (Paulhus & Carey, 2011). After finishing the questionnaire, participants received the instructions for the rest of the experiment (either in English or Dutch, see Appendix A). Both the gain and the loss condition consisted of the edited die under cup task. In both conditions, participants rolled a die under a cup with a hole in the top. Participants shook the cup to roll the die and looked into the hole to report the result. This to ensure participants nobody else could see the results. They were also

sitting in a cubicle by themselves with the door closed, so anonymity was guaranteed. Participants were instructed to roll the die three times in total, but to report the first die roll. Participants were told the additional two times were to ensure them the die was fair, but these additional rolls were actually to provide participants with extra justification for lying (Shalvi et al., 2012).

The die under cup task we used was slightly edited from the one used by Shalvi et al. (2011b). In the original one, people receive money according to the number of eyes they roll (certainty paradigm). In this experiment, people first rolled the die under the cup, and after that had to pick a ball from a bowl. In this bowl, there were six white balls. According to the number of eyes a participant rolled with the die under the cup, a white ball could be changed into a yellow ball. For example, when a participant rolls a number of six eyes, all six white balls will be replaced by six yellow balls. When a participant rolls a number of two eyes, two white balls will be replaced by two yellow balls, leaving 4 white balls in the bowl. After rolling the die, participants reported their rolled number on a decision sheet. They handed the decision sheet over to the experimenter, who prepared the bowl for the participant. Participants could blindly pick a ball from the container. This turned the certainty paradigm of the original die under cup task into a probability paradigm. Only reporting a 6 would give them certainty to obtain the €6. In the gain frame participants would win €6 when they picked a yellow ball, and nothing happened when they picked a white ball (they did not receive anything). In the loss frame, participants had to hand in their €6 when they picked a white ball, and nothing happened when they picked a yellow ball (they could keep their money). Afterwards they signed for receiving money in case they did, were thanked and could leave their e-mail addresses if they were interested in the results of this research. In total, the experiment took approximately 15-20 minutes per participant.

Instruments

To conduct this research a questionnaire is needed consisting of the 'Work Locus of Control Scale' (Spector, 1988) and the 'FAD-plus' (Paulhus & Carey, 2011) (see Appendix B). Official match dice are needed, these dice are transparent and known to be fair. The dice were placed in paper cups,

which were closed with paper on the upside. A hole was made in the bottom of the cup, for participants to look at the die. Also, a bowl including 6 white balls and 6 yellow balls was used and decision sheets for the participants to report their die roll.

Data-analysis

SPSS version 23 has been used to perform the statistical analyses for this experiment. At first the general characteristics of the participants of this study were analyzed by exploring the frequency distributions with the means and standard deviations. Also, the descriptive statistics and the normality were analyzed with a Kolmogorov-Smirnov test and scatterplots. For all used tests, the assumptions were checked. An alpha of .05 has been used for testing for significance. For testing the hypotheses Chi-Square tests and a two sample Kolmogorov-Smirnov test have been used. The results can be found under the results section.

Results

Participants and normality

The demographics of the participants in this study (N = 150) and the normality tests for the conditions have been summarized in Table 1.

Table 1. Demographics participants (*M* ± *SD*) and normality test K-S[1]

Variable	Condition		
	Gain frame	Loss frame	Total
N	75	75	150
Age	21.38 ± 2.62	21.44 ± 3.37	21.41 ± 3.01
Gender (Male) (Female)	(36%) (64%)	(26.7%) (73.3%)	(31.3%) (68.7%)
Reported Dice roll	3.57 ± 1.57	3.39 ± 1.79	3.48 ± 1.68
K-S (*p*)	< .001	< .001	< .001

[1]: Kolmogorov-Smirnov test

Statistical analyses

To test whether participants in the experiment cheated, the observed scores of the dice rolls were compared to the expected dice rolls. In case the participants did not cheat during the experiment, it would be expected that every possible number of eyes on the die would be rolled 25 times (150/6 = 25). As can be seen in Figure 1, the observed scores deviated slightly from the expected scores for the total of participants.

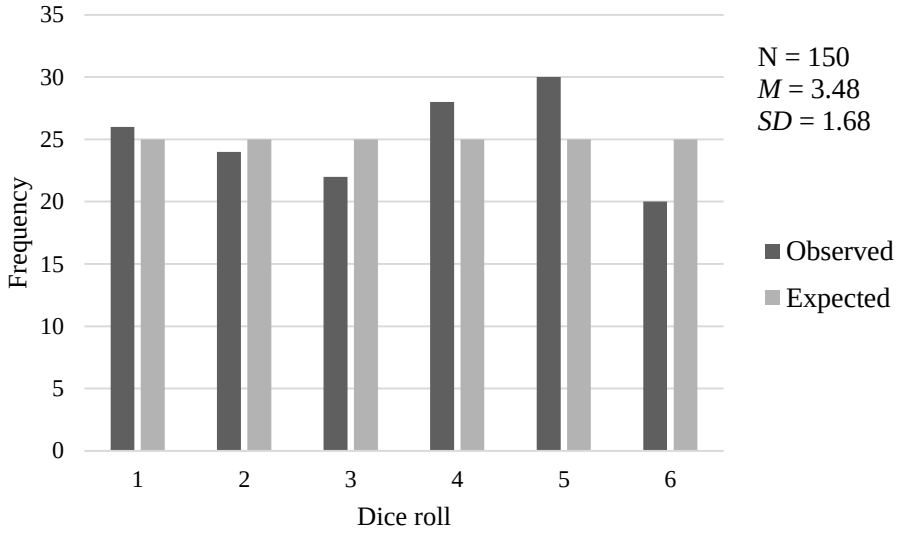

Figure 1. The frequency of dice rolls stated by all the participants compared to the expected frequency of 25

A Chi-Square test was used to test the relationship between the observed and the expected scores. The deviation between the observed and the expected scores was not significant, X^2 (5, N = 150) = 2.80, p = .731. This means there is no evidence found for either Hypothesis 1 (people will over-report 6 and under-report all outcomes below 6) nor Hypothesis 2 (people will under-report 6, and over-report 5 and maybe also 4). The observed and expected scores were also measured for the two different conditions (gain and loss). In the gain condition, the observed and the expected scores also did not significantly differ, X^2 (5, N = 75) = 7.48, p = .187. In the loss condition no significant deviation was found as well, X^2 (5, N = 75) = 1.40, p = .924. For the scores in the gain condition see Figure 2, for the scores in the loss condition see Figure 3.

In case the loss frame induces more lying than the gain frame, it would be expected to find less lying in the gain frame compared to the loss frame condition. No significant difference was found between the gain frame distribution and the loss frame distribution expected from a fair die (Kolmogorov-Smirnov Z = .49, p = .970).

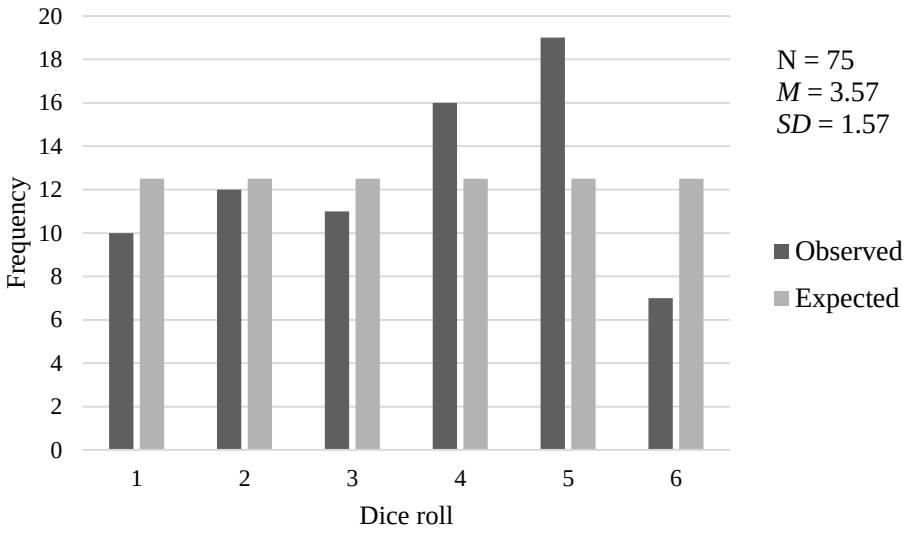

Figure 2. The frequency of dice rolls stated by participants in the gain condition compared to the expected frequency of 12.5

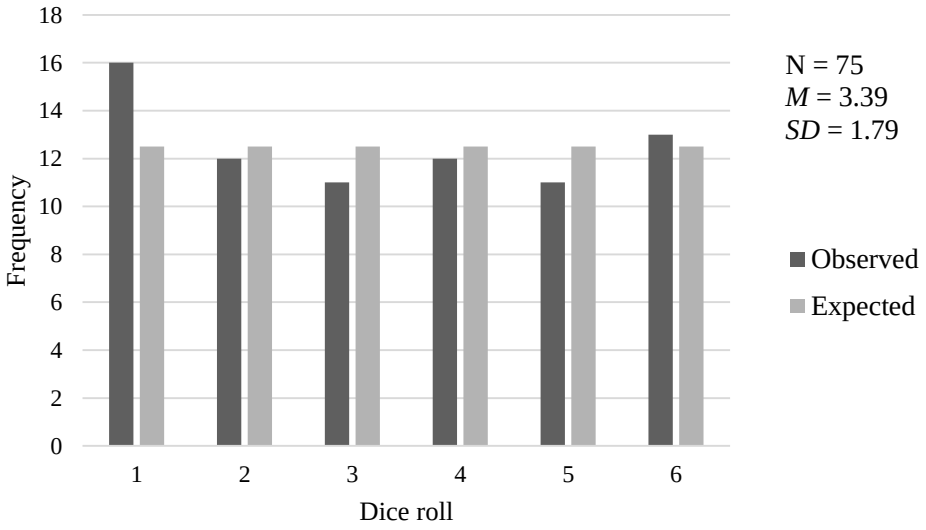

Figure 3. The frequency of dice rolls stated by participants in the loss condition compared to the expected frequency of 12.5

For the hypothesis that in a loss-frame people will report more 6's than in the gain frame (Hypothesis 3), a different Chi-Square test was carried out. The Chi-Square test is a 2x2 table, therefore the continuity correction was used. The percentage of participants reporting a 6 in the loss condition was higher (17,3%) than in the gain condition (9,3%). However, the relationship between reporting a 6 and the conditions (gain/loss) was not significant, X^2 (1, N = 150) = 1.44, p = .230.

Hypothesis 4 (people will report more 5's and maybe also 4's in a gain frame than in a loss frame) was also tested with Chi-Square tests with continuity correction. The percentage of participants reporting a 5 in the gain condition was higher (25,3%) than in the loss condition (14,7%). However, the relationship between reporting a 5 and the conditions (gain/loss) was not significant, X^2 (1, N = 150) = 2.04, p = .153. The percentage of participants reporting a 4 in the gain condition was higher (21,3%) than in the loss condition (16,0%). However, the relationship between reporting a 4 and the conditions (gain/loss) was not significant, X^2 (1, N = 150) = 0.40, p = .530. The percentage of participants reporting a 4 or a 5 in the gain condition was higher (60,3%) than in the loss condition (39,7%). However, the relationship between reporting a 4 or a 5 and the conditions (gain/loss) was not found to be significant, X^2 (1, N = 150) = 3.40, p = .065.

Correlations

Correlations were measured between the constructs of the questionnaires (locus of control, free will, scientific determinism, fatalistic determinism, and unpredictability) and the 'condition' (loss or gain frame) variable. Since the condition variables are not normally distributed a Spearman's rank correlation has been used. No significant results were found, as can be seen in Table 2. Correlations were also measured between the constructs of the questionnaires and the reported numbers (6, 5, 4 and 4 or 5) with a Spearman's rank correlation. No significant results have been found, as can be seen in Table 2. At last, correlations were run between the condition variable and the reported numbers variables. The results can be found in Table 2. One significant result was found, a negative correlation between condition and reporting a 4 or 5, $r_s = -.164$, $p = .045$. Indicating there is an association between the frame and reporting a 4 or 5.

Table 2. Correlations between constructs of questionnaires, the condition and the reported numbers

	Condition	Reported 6	Reported 5	Reprted 4	Reported 4 or 5
Locus of control	-.006	.129	-.086	-.069	-.126
Free will	.037	.075	.100	-.085	.014
Scientific determinism	-.059	-.094	.119	-.102	.015
Fatalistic determinism	.047	.098	-.017	-.071	-.070
Unpredictability	.135	-.003	.117	-.136	-.015
Condition	-	.118	-.133	-.068	-.164*

* $p < .05$ (2-tailed)

Discussion

The main goal of this study was to explore whether people would cheat in a setting in which they could enlarge their likelihood of obtaining a better financial outcome in comparison to a setting in which people are certain they can gain a better financial outcome by cheating. Previous research has shown that people are willing to lie to obtain a better financial outcome when this outcome is certain, in the current research we found no evidence for lying when the outcome is probabilistic rather than certain. We had expected that participants would over-report 6's and under-report all outcomes below 6. Due to the preference to remove uncertainty of not gaining/losing money. No significant results were found for this hypothesis. On the other hand, it was also suggested that people would under-report 6's, and over-report 5's and maybe also 4's. This was expected considering the results of earlier studies suggesting that people do not lie to the fullest extent. People prefer to have justifications when lying to preserve a positive self-image, while still increasing their chance of gaining a better (financial) outcome. Therefore, the hypothesis presumed that people would under-report 6's, since this would remove the possibility of attributing the desired outcome to luck, and an over-report of 5's and maybe also 4's, since these numbers would increase the likelihood of winning, yet leaving the attribution to luck possible. Also for this hypothesis, no significant results were found during this study.

The other hypotheses suggested that framing would influence the amount of lying by participants. The third hypothesis predicted that in a loss frame, more people would report a 6 than in a gain frame. Since people tend to be loss averse, it was predicted that people would prefer to eliminate the uncertainty and would report more 6's to create certainty about keeping the money in the loss frame. The results did show more reported 6's in the loss frame than in the gain frame, however this result was not found to be significantly different. It was also expected that in a gain frame, more people would report 5's and 4's than in a loss frame. Since this gives people the possibility to attribute their desired outcome to luck, while still increasing the likelihood of obtaining their desired outcome. The results did show this pattern; however, it was found to be not significant.

Considering there is no significant evidence for lying by the overall sample it is difficult to discuss whether the framing in this experiment worked. Previous research has shown that framing had

an influence on the amount of cheating by participants, however, during this research no such results were found. In comparison to other research on cheating and framing, the main difference in the current study was the probabilistic paradigm. Therefore, the results of this research have made an additional contribution to the current work on cheating and framing. Further research is needed to investigate whether people are willing to cheat when their outcome is probabilistic rather than certain. The role of framing has been shown in previous research, but has not come forward in the probabilistic paradigm of this study.

There are several alternative explanations discussable for the results that were found during this study. First, research by Shalvi et al. (2012) has shown that people tend to lie more when they have to make a decision under time pressure and have no justifications for their lies. The instructions of the current experiment stated that participants should roll the die three times, after which they should report the number of their first die roll on the decision sheet. During the experiment, the experimenters noticed that some people did not sufficiently understand the instructions. Some people would for instance only roll the die once, because they believed it was a fair die. Or they directly reported the number on the decision sheet after the first roll, leaving no room for justification by the other two additional die rolls. Shalvi et al. (2012) showed in their experiment that people are honest when there is enough time and a lack of justifications. During the current experiment, the participants had a lot of time, since there was not any time pressure. They could take all the time they needed in the cubicle. In case the participant did not take the instructions literally, and reported the first die roll immediately after rolling for the first time, there would be no justification for lying either. This could explain why we did not find any evidence for cheating in the current experiment. For further research, it could be advised to state the importance of rolling the die multiple times, although it is discussable how representative this would be for a real-life situation. It would be an idea to first let the participants roll the die three times where after they receive the decision sheet to report their roll. This will prohibit people from already writing down their die roll after the first roll, leaving out room for justification. Also, a time limit during the experiment could evoke a more natural context, since many decisions in life are made within a split second without much consideration.

Secondly, the way the framing was created in the current study could have influenced the participants. In comparison to the study of Schindler and Pfattheicher (2017), participants in the current study had to communicate about the money with the experimenters. While in the study by Schindler and Pfattheicher (2017), participants had to leave their money in a box. The method of the current study might have given the participants a feeling of less anonymity.

Not only the used method of this study can have influenced the results, also the sample could give an alternative explanation for what has been found. The results of the study by Grolleau et al. (2016) showed that female participants cheated to a lesser degree than male participants. And even more interestingly, the gain/loss differences influenced females much less than the male participants. Since 68.7% of our sample was female, this might have had consequences for the role of framing. During the current study, we have not explored the differences in gender and their influence on the results. For future research, it would therefore be interesting to take the gender differences into account and to make use of a more weighted sample to find out whether gender indeed has an effect.

At last, the use of a different questionnaire in future research can provide more clarity. During the current experiment, it was decided to not ask people afterwards about their decisions. Since this could have prevented them from lying in the first place, by knowing they should fill in a questionnaire after the task. This could also be done in another way, for instance by making use of scenarios. Fischbacher and Föllmi-Heusi (2013) made us of a control group which had to guess what the distribution of the experiment would look like. Something similar can also be done with scenarios. For instance, it would be an idea to give out a survey to respondents and make them think about what other people would do in the case of the experiment and ask them about underlying motives. This can give us a more detailed insight into the reasoning behind cheating.

Concluding, the current research has found no evidence for a relation between cheating and a probabilistic paradigm. Also, the influence of framing on cheating in a probabilistic paradigm could not be confirmed. For further research, it could be interesting to investigate whether cheating does happen in a probabilistic setting without taking the influence of framing into account. Also, the effects of gender on cheating and framing could further enlarge the current knowledge. At last, for future

research into the subject of framing it would be interesting to develop different ways of creating the gain and loss frames.

References

Bazerman, M. H., & Gino, F. (2012). Behavioral ethics: Toward a deeper understanding of moral judgment and dishonesty. *Annual Review of Law and Social Science, 8,* 85-104.

Chadwick, R. A., Bromgard, G., Bromgard, I. K., & Trafimov, D. (2006). An index of specific behaviors in the moral domain. *Behavior Research Methods, 38*(4), 692–697.

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

Gino, F., Ayal, S., & Ariely, D. (2013). Self-serving altruism? The lure of unethical actions that benefit others. *Journal of Economic Behavior & Organization, 93,* 285-292.

Grolleau, G., Kocher, M. G., & Sutan, A. (2016). Cheating and loss aversion: Do people cheat more to avoid a loss?. *Management Science, 62*(12), 3428-3438.

Hofstede, G. (1980). Culture's consequences. Beverly Hills, CA: Sage Publications.

Jacobsen, C., & Piovesan, M. (2016). Tax me if you can: An artifactual field experiment on dishonesty. *Journal of Economic Behavior & Organization, 124,* 7-14.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47,* 263–292.

Mazar, N., & Ariely, D. (2006). Dishonesty in everyday life and its policy implications. *Journal of Public Policy & Marketing, 25*(1), 117-126.

Mazar, N., Amir, O., & Ariely, D. (2008). The dishonesty of honest people: A theory of self-concept maintenance. *Journal of Marketing Research, 45,* 633-644.

Moshagen, M., & Hilbig, B. E. (2017). The statistical analysis of cheating paradigms. *Behavior Research Methods, 49*(2), 724-732.

Paulhus, D. M., & Carey, J. M. (2011). The FAD-Plus: Measuring lay beliefs regarding free will and related constructs. *Journal of Personality Assessment, 93*(1), 96-104.

Schindler, S., & Pfattheicher, S. (2017). The frame of the game: Loss-framing increases dishonest behavior. *Journal of Experimental Social Psychology, 69*, 172-177.

Shalvi, S., Dana, J., Handgraaf, M. J., & De Dreu, C. K. W. (2011a). Justified ethicality: Observing desired counterfactuals modifies ethical perceptions and behaviour. *Organizational Behavior and Human Decision Processes, 115*, 181–190.

Shalvi, S., Eldar, O., & Bereby-Meyer, Y. (2012). Honesty requires time (and lack of justifications). *Psychological Science, 23*(10), 1264-1270.

Shalvi, S., Handgraaf, M. J., & De Dreu, C. K. (2011b). Ethical maneuvering: Why people avoid both major and minor lies. *British Journal of Management, 22*, 16–27.

Spector, P. E. (1988). Development of the Work Locus of Control Scale. *Journal Of Occupational Psychology, 61*(4), 335-340.

Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty, 5*, 297–323.

Appendix A – Instructions

The instructions were presented on paper. There was an English and a Dutch version.

A.1. Instructions loss frame

"Please read the instructions entirely and carefully.

In this experiment, your payoff will depend upon your decisions. All your decisions will be anonymous. You will indicate your decisions on a decision sheet that will be given by the experimenter during the experiment. There is no good nor bad answer.

From now and until the end of the experiment, we ask you to remain silent. If you have any questions, open the door and the experimenter will come to answer your questions privately.

General framework of the experiment

You just received €6 which is now yours. ***A ball draw will determine whether you lose this money.*** In this experiment 6 colored balls, either white or yellow, will be placed into a bowl. You have to randomly draw one ball which determines whether you lose your €6. If the ball you draw is yellow you may keep your €6; if the ball you draw is white you lose your money and you need to hand in your €6. At the beginning of the experiment, there will be 6 white balls in the bowl. The number of yellow balls that will replace these white balls depends on your dice roll.

Before randomly drawing a ball, you will have to roll a regular, six face dice. More precisely, you have an opaque cup with a cover. The small hole located in the cover allows you to see the dice. You

must shake the cup to throw the dice. Then put it down and, without moving the cup, take a look through the hole to observe the outcome of your throw. The number displayed by the dice will determine the number of yellow balls that will replace the white balls in the bowl (the decision sheet indicates the number of yellow and white balls according to each possible outcome of the dice).

The first roll will determine the number of yellow balls located in the bowl. After the first roll, we ask that you roll the dice under the cup 2 more times so that you can verify for yourself that the dice is legitimate.

Open the door after you are done reading these instructions, then the experimenter will give you a "decision sheet" as well as the cup so you can roll the dice. After rolling the dice three times, tick on the "decision sheet" the number displayed by the first roll. Leave the cup next to the computer. Give the decision sheet to the experimenter, so the experimenter can prepare the draw (i.e., replace as many white balls by yellow ones as the number you have rolled in the first dice roll), then you may randomly draw a ball from the bowl. If this ball you draw is yellow you keep your €6 and sign for the money. If the ball you draw is white you will have to give your €6 to the experimenter."

A.2. Instructions gain frame

"Please read the instructions entirely and carefully.

In this experiment, your payoff will depend upon your decisions. All your decisions will be anonymous. You will indicate your decisions on a decision sheet that will be given by the experimenter during the experiment. There is no good nor bad answer.

From now and until the end of the experiment, we ask you to remain silent. If you have any questions, open the door and the experimenter will come to answer your questions privately.

General framework of the experiment

In this experiment, ***you can win a prize of €6***. There will be 6 coloured balls, either white or yellow, which are placed into a bowl. You have to randomly draw one ball which determines whether you win €6. If the ball you draw is yellow you win €6; if the ball you draw is white you win nothing. At the beginning of the experiment, there are 6 white balls in the bowl. The number of yellow balls that will replace these white balls depends on your dice roll.

Before randomly drawing a ball, you will have to roll a regular, six face dice. More precisely, you have an opaque cup with a cover. The small hole located in the cover allows you to see the dice. You must shake the cup to throw the dice. Then put it down and, without moving the cup, take a look through the hole to observe the outcome of your throw. The number displayed by the dice will determine the number of yellow balls that will replace the white balls in the bowl (the decision sheet indicates the number of yellow and white balls according to each possible outcome of the dice).

The first roll will determine the number of yellow balls located in the bowl. After the first roll, we ask that you roll the dice under the cup 2 more times so that you can verify for yourself that the dice is legitimate.

Open the door after you are done reading these instructions, then the experimenter will give you a "decision sheet" as well as the cup so you can roll the dice. After rolling the dice three times, tick on the "decision sheet" the number displayed by the first roll. Leave the cup next to the computer. Give the decision sheet to the experimenter, so the experimenter can prepare the draw (i.e., replace as many white balls by yellow ones as the number you have rolled in the first dice roll), then you may randomly draw a ball from the bowl. If this ball you draw is yellow you receive €6 and sign for receiving the money. If the ball you draw is white you will receive no money."

Appendix B – Questionnaire

The questionnaire was presented on paper.

Experiment: Uncertain Events

Participant number: _____

Please give us the following information about yourself

I am a
- □ Man
- □ Woman
- □ Different *or* I don't want to tell

I am _____ years old.

How often have you participated in similar experiments at the Faculty of Social Sciences?

- □ Never: This is my first time
- □ Once before: This is the second experiment i participate in
- □ Twice before: This is the third experiment i participate in
- □ Three times before: This is the fourth experiment i participate in
- □ I have been participating in more than three experiments before

How much do you agree with the following statements?	***strongly disagree***					***strongly agree***
A job is what you make of it.	1	2	3	4	5	6
On most jobs, people can pretty much accomplish whatever they set out to accomplish.	1	2	3	4	5	6
If you know what you want out of a job, you can find a job that gives it to you.	1	2	3	4	5	6
If employees are unhappy with a decision made by their boss, they should do something about it.	1	2	3	4	5	6
Getting the job you want is mostly a matter of luck.	1	2	3	4	5	6
Making money is primarily a matter of good fortune.	1	2	3	4	5	6
Most people are capable of doing their jobs well if they make the effort.	1	2	3	4	5	6
In order to get a really good job you need to have family members or friends in high places.	1	2	3	4	5	6
Promotions are usually a matter of good fortune.	1	2	3	4	5	6
When it comes to landing a really good job, who you know is more important than what you know.	1	2	3	4	5	6
Promotions are given to employees who perform well on the job.	1	2	3	4	5	6
To make a lot of money you have to know the right people.	1	2	3	4	5	6
It takes a lot of luck to be an outstanding employee on most jobs.	1	2	3	4	5	6
People who perform their jobs well generally get rewarded for it.	1	2	3	4	5	6
Most employees have more influence on their supervisors than they think they	1	2	3	4	5	6

do.	
The main difference between people who make a lot of money and people who make a little money is luck.	1 2 3 4 5 6

Please turn over.

How much do you agree with the following statements?	***strongly <u>dis</u>agree***				***strongly agree***
I believe that the future has already been determined by fate.	1	2	3	4	5
People's biological makeup determines their talents and personality.	1	2	3	4	5
Chance events seem to be the major cause of human history.	1	2	3	4	5
People have complete control over the decisions they make.	1	2	3	4	5
No matter how hard you try, you can't change your destiny.	1	2	3	4	5
Psychologists and psychiatrists will eventually figure out all human behavior.	1	2	3	4	5
No one can predict what will happen in this world.	1	2	3	4	5
People must take full responsibility for any bad choices they make.	1	2	3	4	5
Fate already has a plan for everyone.	1	2	3	4	5
Your genes determine your future.	1	2	3	4	5
Life seems unpredictable—just like throwing dice or flipping a coin.	1	2	3	4	5
People can overcome any obstacles if they truly want to.	1	2	3	4	5
Whatever will be, will be—there's not much you can do about it.	1	2	3	4	5
Science has shown how your past environment created your current intelligence and personality.	1	2	3	4	5
People are unpredictable.	1	2	3	4	5
Criminals are totally responsible for the bad things they do.	1	2	3	4	5
Whether people like it or not, mysterious forces seem to move their lives.	1	2	3	4	5
As with other animals, human behavior always follows the laws of nature.	1	2	3	4	5
Life is hard to predict because it is almost totally random.	1	2	3	4	5
Luck plays a big role in people's lives.	1	2	3	4	5
People have complete free will.	1	2	3	4	5

Parents' character will determine the character of their children.	1	2	3	4	5
People are always at fault for their bad behavior.	1	2	3	4	5
Childhood environment will determine your success as an adult.	1	2	3	4	5
What happens to people is a matter of chance.	1	2	3	4	5
Strength of mind can always overcome the body's desires.	1	2	3	4	5
People's futures cannot be predicted.	1	2	3	4	5

When I am in conflict with someone else, the BEST outcome for me occurs when:	
□ I behave competitively and they behave cooperatively.	□
□ We both behave cooperatively.	□

When I am in conflict with someone else, the WORST outcome for me occurs when:	
□ I behave cooperatively and they behave competitively.	□
□ We both behave competitively.	□