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TITLE: The effect of loss aversion on cheating behavior: an experimental study.

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Preface

This thesis concludes our 2-year long journey as master students at the University of Stavanger. We can look back at a challenging and interesting semester, where we have gained a better insight into the world of economic behavior. Our interest and curiosity of this topic has grown throughout the process, which have led to many eye-opening realizations and interesting conversations outside of the school environment.

We would like to thank our thesis advisor, Kristoffer Wigestrand Eriksen for giving us the chance to conduct our own experiment. Eriksen have given us solid, constructive feedback throughout the process and inspired us with his level of insight on the topic. Also, we want to thank Niaz Bashiri Behmiri for pointing us in the right direction when analyzing the data. Lastly, we want to thank the University of Stavanger for funding our research.

Stavanger, 14.06.2019

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Abstract

In this thesis our main objective is to investigate how loss aversion affects cheating and dishonest behavior. We conduct a lab-experiment built on the experimental design of Mazar, Amir, and Ariely (2008) where we manipulate the framing by paying the treatment group ex-ante to create a higher reference point. Regarding loss aversion and its effect on cheating behavior, limited research has been done. Grolleau, Kocher, and Sutan (2016) also conducted an experiment built on Mazar et al (2008) and found evidence that loss aversion has a substantial impact on cheating. We contribute by designing the experiment in a way that enables us to examine cheating on an individual level, allowing us to investigate how other factors such as social pressure and demography affect cheating.

The experiment was conducted at campus, consisting of one control and one treatment group. There was a total of 59 participants. First, the participants got 2,5 minutes to solve simple but time-consuming search tasks. After the time limit, the subjects threw away their answers, and reported the number of correctly solved exercises on a small report slip. The last part of the experiment consisted of answering a questionnaire, before the formalities of the payment were finalized. The subjects didn't know that all the papers were marked with invisible ink. This allowed us to identify how many matrices each participant solved correctly, and how many they reported to have solved.

Our results indicate that loss aversion increases the willingness to cheat, in line with prospect theory and the notion that losses loom larger than gains (Kahneman & Tversky, 1979). However, our results indicate significantly smaller effects than that of Grolleau et al. (2016). We also see that the overall willingness to cheat is negatively correlated with performance of the participants. In addition, our results suggest that participants who believe they performed worse than the average, are more willing to act dishonest. The main findings of our experiment have applications for policy enforcement where resources are limited, enforcers may want to focus on monitoring individuals that risk losing something. Also, managers in companies should be aware that gain-loss framing could have an impact on cheating and dishonest behavior and that poor performers often are more likely to act dishonest in order to avoid losing face.

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1 Introduction

Cheating and dishonest behavior is generally looked down upon in most societies, yet people cheat all the time. Dishonest behavior is found in all walks of life. Cheating in a board game to one-up your friends is an innocent example. High schoolers cheating on the math test is a normal, yet less innocent one. In the sport of elite cycling we have seen countless scandals where professional athletes try to gain an advantage by turning to performance enhancing drugs. Other forms of cheating can have more serious socio-economic consequences, like for example tax-evasion, inside trading and benefits fraud. People often cheat to gain an advantage or benefit in society, but people also cheat in order to avoid losing. One example is benefits fraud, where people act dishonest in order to gain benefits, but also cheat in order to avoid losing them. Another example is tax evasion, where research suggests that when tax-payers pay taxes on arrears, they are more motivated to avoid taxes (Rees-Jones, 2017). In this thesis we aim to investigate if people are more willing to cheat to avoid a loss, than to secure a gain.

Becker (1968) created a model of economic crime which attempts to explain how individuals decide whether to cheat or not. He argues that rational individuals will cheat if the benefit of cheating is equal to or greater than the cost of cheating, suggesting that everyone will cheat if the expected utility of cheating is positive. In recent years, this outlook has been challenged by Dan Ariely and his colleagues. Ariely argues that people don't really like cheating, and that in a situation where people get the opportunity to cheat, they tend to do a tradeoff between monetary incentives and the loss of self-concept (Mazar, Amir, & Ariely, 2008). Lab experiments seem to confirm this theory, as subjects in labs tend to consistently limit their cheating, despite low probabilities of getting caught (Grolleau, Kocher, & Sutan, 2016; Kajackaite & Gneezy, 2017; Pascual-Ezama, Prelec, & Dunfield, 2013). Yaniv and Siniver (2016) argues that the main reason people tend to restrict their cheating is not because of their self-concept. They use an extended version of Becker's model to show that it's not necessarily the tradeoff between loss of self-concept and incentives that explains the restriction to cheat. They argue that it's the costs and benefits tied to the experimental setting itself that causes people to limit their cheating. Yaniv and Siniver (2016) followed up by conducting their own experiment where they eliminated the experimenter's role and the level of dishonesty skyrocketed.

When conducting a lab-experiment on cheating, subjects naturally make risk assessments on the probabilities and consequences of getting caught. A lab experiment on cheating examines how people make decisions under risk. Over the last few decades, both economists and psychologists have tried to get a better understanding of how humans behave when making decisions under risk. A central pillar of economic theory is the assumption of rational profit maximizing individuals. Classic economic models are built on the assumption that humans are able to collect all relevant information and make rational decisions which maximizes their expected utility (Ackert, 2010). However, recent developments in the field of behavioral economics have revealed that people systematically make irrational choices rooted in biases and heuristics. Kahneman and Tversky (1979) introduced prospect theory as an alternative to the classic expected utility theory, arguing that people are in fact systematically irrational. People don't make decisions based on final outcomes but evaluate gains and losses relative to a reference point. One important aspect of prospect theory is the tendency for people to be loss averse. The negative psychological effect of a loss is more powerful than that of an equally sized gain, resulting in a value function that is steeper in the loss domain than in the gain domain. This means that if a prospect with identical payoffs and identical probabilities are framed differently, people often change their preferences (Tversky & Kahneman, 1986). Loss aversion is observed amongst traders in the stock market where traders typically are reluctant to realize losses because they tie their investments up to the buying price (Odean, 1998). The effects of loss aversion in markets of goods is also documented by several researchers (Tunçel & Hammitt, 2014). Loss aversion creates an asymmetry in markets because people place a higher value on a good that they own, than on identical goods which they do not own. This is referred to as the endowment effect.

The main objective of this thesis is to investigate how loss aversion affects cheating behavior. We do this by conducting a lab experiment with incentives where subjects were instructed to solve simple matrices and report how many they solved. We created an endowment effect by paying the treatment group up front and instructing them to pay back the amount corresponding to the number of tasks they did not solve. Our findings indicate that the willingness to cheat was higher in the treatment group than in the control group, but the effects were substantially smaller than in Grolleau et al (2016). The design of our experiment allowed us to look at each individual's answer sheet and compare it to their self-reported answers which enabled us to examine other factors that could affect cheating. We found that the subjects who performed poorly, were more willing to cheat than the good performers.

Also, the participants' willingness to cheat was highly dependent on their predictions on how well the others did.

The structure of this thesis is as follows. In chapter 2, relevant theories and previous research are presented. Chapter 3 discusses the chosen method of research and ethical issues regarding the experiment. Chapter 4 presents the experimental design and procedure including possible limitations. The empirical results will be presented and discussed in chapter 5, before a short conclusion rounds up the thesis in chapter 6.

2 Theory overview

Over the last few decades, both economists and psychologists have tried to get an understanding of how humans behave when making decisions under risk. In this chapter we will not only go through the relevant theories from the literature of behavioral finance, but we will also review some of the most relevant research that relates to cheating and dishonest behavior.

2.1 The St. Petersburg paradox

The St. Petersburg paradox was introduced in 1713 by Nicholas Bernoulli. He presented a hypothetical scenario which show that the fair price of a bet is not always equal to the expected monetary payoff. Bernoulli examined a bet with an entrance fee between a player and a casino where a fair coin is tossed until it lands with tails up. The payoff is given by 2^n. If the first flip ends on tails the game ends and the payoff is 2, if not, the game continues. If the coin lands "tails" up in the next sequence the payoff is $2^2 = 4$ and so on. The expected payoff of the gamble is

$$E(V) = \frac{1}{2} * 2 + \frac{1}{4} * 4 + \frac{1}{8} * 8 \ldots$$
$$= 1 + 1 + 1 \ldots$$
$$= \infty$$

The expected payoff of the bet is infinite, therefore, if people where completely risk neutral, they would be eager to put all their wealth into the wager (Joyce, 2011). However, in the real world, very few people would be willing to pay more than 25$ into the bet (Hacking, 1980). Risk assessment is ingrained in human nature, and humans considers risk both consciously and subconsciously (Trimpop, 1994). The St. Petersburg paradox is a simple example of how simply multiplying the expected return with the corresponding probabilities comes up short when it comes to decision making and that factors such as risk preferences, utility and biases also must be included in order to get a better understanding of economic behavior.

2.2 Expected utility theory (EUT)

One central component in economics, is the assumption that people will make decisions based on self-interest. They are acting from a homo economicus perspective, meaning that they only care about their own well-being, and has no concern whatsoever about other people.
Homo economicus is in other words hyper rational, calculating, individuals that always seeks to maximize their own well-being (Mullainathan & Thaler, 2000). This description and assumption is advantageous to use in the paradigm of expected utility theory.
The classical approach to explaining economic decision making under risk is the expected utility theory. It states that every economic actor is rational and seeks to maximize their expected utility. This theory includes that risk preferences are determined by the utility function. Von Neuman and Morgenstern (1953) developed the expected utility theory to describe how people make decisions under risk. The expected utility theory is a normative theory, meaning that it describes how rational people *should* behave, as opposed to a "positive" theory which describes how people really behaves.

The expected utility of a choice is calculated by multiplying the expected utility of each outcome with the corresponding probability of the outcome and then summarizing them.

$$\textbf{expected utility} = \sum_{i=1}^{\infty} \pi_i U(x)_i$$

One assumption is that people only make decisions based on the final outcomes of the prospect. Another one is tied to people's ability to correctly estimate probability, in other words that the probabilities are equally weighted.

Expected utility theory builds on four main assumptions for rational decision making under uncertainty, these four are completeness, transitivity, independence and continuity. Completeness is the assumption that people will not be paralyzed by indecision, a rational individual will always be able to work out preferences between prospects. For example, a person is either going to A: prefer apples over oranges, B: prefer oranges over apples, or C: be indifferent between the two. The assumption of transitivity states that the choices of an individual are internally consistent, this means that if they prefer apples over oranges and oranges over pears, they will prefer apples over pears. Continuity is the assumption that if an individual prefers situation A over situation B, a similar situation to A will always be preferred over B. Independence is the assumption that if any irrelevant prospect added to the choices of a rational individual, it will not affect the decision making.

Regarding cheating in lab experiments, previous research suggests that a substantial number of people cheat. However, cheaters tend to limit their cheating, very few maximizes their monetary payoff by cheating. The utility function captures the disutility of cheating, causing people to make a tradeoff between the utility of the monetary payoffs and the disutility of acting dishonest. The expected utility theory does not capture framing effects. It's built on the assumption that people exclusively make decisions based on the final outcomes. Based on this theory, we should expect no treatment effect in our lab experiment.

2.3 Prospect theory

The prospect theory was created as a contrary to expected utility theory regarding decisions under risk. Decision makers systematically violate basic tenets from the expected utility theory. In prospect theory, individuals may choose outcomes that are inconsistent with EUT, due to logical errors and biases (Tversky & Kahneman, 1992).

The Allais paradox is a popular example of how people tend to make decisions that are inconsistent with expected utility theory. The paradox is as follows: Consider a prospect with alternatives 1A and 1B. 1A: You win 1 000 000 with 100 % certainty. 1B: There is 1 % chance of winning nothing, 89 % chance of winning 1 000 000, and 10 % chance of winning 5 000 000. In this scenario, most people tend to choose alternative 1A. In the second prospect, you might choose between the alternatives 2A or 2B. Alternative 2A has an 89 % chance of winning nothing, and an 11 % chance of winning 1 000 000. Alternative 2B has a 90 %

chance of winning nothing, and 10 % chance of winning 5 000 000. In this scenario, most people tend to choose alternative 2B. This choice pattern of 1A and 2B is not consistent with expected utility theory, because it implies that: 0.11 u(1 000 000) > 0.1 u(5 000 000) and 0.1 u(5 000 000) > 0.11 u(1 000 000) (Kahneman & Tversky, 1979).

Experiment 1				Experiment 2			
Gamble 1A		Gamble 1B		Gamble 2A		Gamble 2B	
Winnings	Chance	Winnings	Chance	Winnings	Chance	Winnings	Chance
$1 million	100%	$1 million	89%	Nothing	89%	Nothing	90%
		Nothing	1%	$1 million	11%		
		$5 million	10%			$5 million	10%

Table 1: Allais Paradox (Selden, 2018)

Kahneman and Tversky (1979) introduced the value function, which is a graphic representation of how people tend to perceive gains and losses, relative to a reference point. The value function considers changes in welfare or wealth, rather than the final state of it. The function also has the following properties: The pain you feel from a loss is stronger than the pleasure you get from a gain of the same amount, because the value function is steeper for losses than for gains. Also, the value function is concave in the domain of gains, and convex in the domain of losses, meaning that it is ideal to segregate gains and integrate losses.

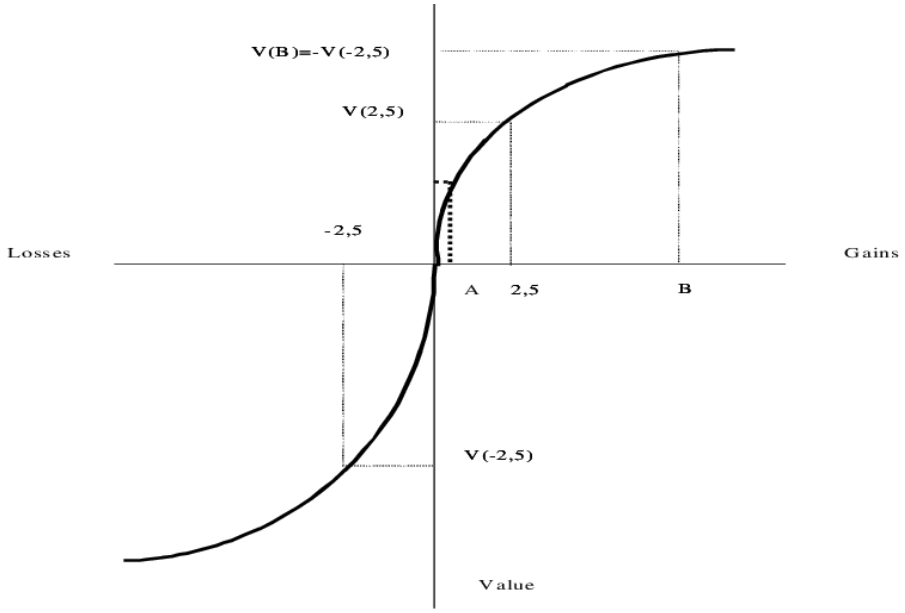

Figure 1: Value function (Kahneman & Tversky, 1979)

Because of the slope of the value function, gains are often psychologically accounted separately. For example, the perceived overall pleasure of winning 100 dollars, is greater when it's split up to winning 50 dollars at two separate occasions. On the other hand, the overall pain of losing 100 dollars is minimized if it's lost at once.

Another central part of prospect theory is the tendency for people to interpret probabilities incorrectly. People tend to overweight small probabilities, and underweight moderate to high probabilities. Consequences of this are the certainty effect and the possibility effect. The decision weight function typically is steepening when the probability gets closer to 0 and 1, causing people to make irrational decisions when met with prospects of either small possibilities or large possibilities. Kahneman and Tversky argues that the possibility effect could explain why so many people buy lottery tickets and the certainty effect could explain why many people are willing to pay high premiums for insurance (Kahneman & Tversky, 1979).

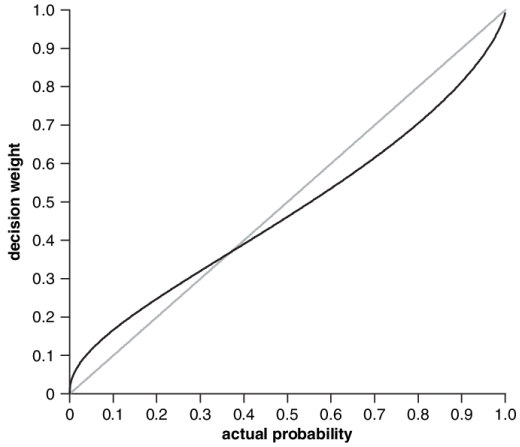

Figure 2: A typical decision weight function (Irwin, 2007).

Loss aversion is a central part of the prospect theory, and arguably the most central theory for our thesis, because we are conducting an experiment that seeks to investigate the effects of loss aversion on morale. Loss aversion is the idea that losses loom larger than gains, meaning that a loss of a said amount of money hurts more than a gain of the same amount. Many researchers have reached the conclusion that a common λ is in the area of 2,25. This means that the possible gain must be at least 2,25 times the possible loss in a 50/50 bet for the gamble to be considered attractive (Gächter, Johnson, & Herrmann, 2007), (Tversky & Kahneman, 1992).

Loss aversion creates an asymmetry in markets because people place a higher value on a good that they own, than on identical goods which they do not own. This is referred to as the endowment effect and may also be applied to our experiment. When the test subjects see the money on their desks, the brief expectation of keeping all the money will most likely create a higher reference point in the treatment group. Because of this, subjects in the treatment group will most likely experience a disutility of the possible loss, that is greater than the utility of the possible gain in the control group.

Some of the main differences between expected utility theory and prospect theory are:

Expected utility theory	**Prospect theory**
Humans are rational and seeks to maximize expected utility (based on different axioms)	Humans are not universally risk averse, it depends on the situation.
The utility function decides if an individual is risk seeking or not (concave for risk averse and convex for risk seeking)	Humans are risk averse for most gains, and risk seeking for most losses.
Decision makers are rational and typically risk averse.	Different framing may result in different preferences violates invariance.
The framing of a prospect is irrelevant for the preferences.	Loss aversion: A loss of a certain sum hurts more than a gain of the same amount.
Choices only reflects final outcomes.	Decision makers valuate gains and losses relative to a reference point.
Introduction of a common outcome in two prospects should not alter the preferred option.	Introduction of a common outcome typically changes the preferences.

Table 2: The main differences between EUT and prospect theory.

2.4 Becker's simple model of economic crime

Classic economic theory suggests that rational profit maximizing individuals will cheat if the benefit of cheating is equal to or greater than the cost of cheating (in equilibrium, marginal cost equals marginal benefit). Becker (1968) defines the expected utility of economic crime and opportunistic behavior in a simple model:

$$EU=(1-p) *U(g) + pU(g-f)$$

Where p denotes the probability of getting caught, g denotes economic gain of cheating and f denotes the punishment of getting caught. Becker argues that the entry level condition for committing a crime is at the point where EU>U*, where U* denotes the utility of putting resources into other activities.

The decision to cheat or not in a lab-experiment is highly dependent on the perceived risk of getting caught. Also, the participants do not know the punishment associated with getting caught because experimenters typically must use deception in order to observe cheating. Participants typically do not know if they lose their entire earnings if they get caught, or if they just lose the profit gained from cheating. In a real-life setting, criminals have an idea of the punishment of the crime they are considering. Becker's model is a good foundation for explaining economic crime, but we would argue that this model is a bit simplistic in an experimental setting. If we were to make predictions using this model, subjects will either be completely honest, or they will maximize their cheating. This prediction is based on the assumptions that subjects are on average risk neutral and that the perceived probability of getting caught is constant. We would argue that the latter assumption is reasonable in our experiment because we throw away all the answers. If subjects suspect that we are going to check the answers, they will be exposed regardless of their magnitude of cheating. Lastly, the model is rooted in the expected utility theory and is built on the assumption that decisions are made based on final outcomes and not based on gains and losses relative to a reference point. If we were to use this model to predict cheating in our experiment, cheating would be equal in the treatment and control group, regardless of the framing.

2.5 The shame-adjusted model of economic crime

Most research on dishonesty shows that when people get the opportunity to cheat, they tend to cheat, but they do so moderately. One problem with this research is that most of it is done in controlled lab-experiments where there are several factors that could make the subjects hesitant to cheat. For example, the participants are often unsure of the main purpose of the experiment and because of the limited time spent in the lab, they don't get the opportunity to thoroughly estimate the probability of getting caught.
Another big component is the human interactions with both fellow participants and the experimenters. For example, in most of the experiments done by Mazar et al. (2008) the subjects must report their results to an experimenter. This might include talking to them and looking them in the eyes, which could potentially result in uncomfortable situations in the future if they bump into them on campus. Yaniv and Siniver (2016) created an extended model of crime which includes the denoted shame of reporting a better result on the matrices in a typical lab experiment on cheating. In the extended model, the utility from cheating is given by:

$$W(U,S)=U(gm) – P(m – m^*)\delta S$$

U(gm) denotes the utility of overreporting or cheating, p denotes the probability of suspicion by the experimenter, m is the reported result and m* denotes the actual result for the individual. If the experimenter is suspicious when the subjects reports their results, there is a probability δ that the experimenter will let the subject know that they are suspicious with a gesture. This suspicion will lead to shame S which will increase the disutility of cheating. Under the assumption that the probability p is linear, and the subjects are on average risk neutral, this model is consistent with Mazar's findings.

Yaniv and Siniver (2016) also conducted an experiment showing that when the subjects did not face the experimenters at all, the extent and magnitude of cheating skyrocketed. In their experiment they gave students similar matrices to the ones given in Mazar's experiments, but instead of doing the experiments in a controlled lab, they told the students to do it at home and report their results in an envelope which they could deliver in a mailbox on campus. Almost half of the participants (46,9%) reported to have solved 20 matrices within the time limit. The average in the control group was 4,2 correctly solved matrices while the treatment group

reported to have solved 16 matrices. These results are consistent with Becker's simple model of crime.

2.6 Cultural aspects

When looking at human behavior, it is important to keep in mind that there could be large differences between cultures. This is important to be aware of before comparing relevant literature and previous experiments. Hofstede (2010) came up with a model for understanding national culture along 6 dimensions. These 6 dimensions are: Power distance, individualism, masculinity, uncertainty avoidance, long term orientation and indulgence. Since most of the relevant research on cheating is done in the USA, and the most comparable experiment is conducted in France (Grolleau et al., 2016), we include a comparison of the cultural differences below.

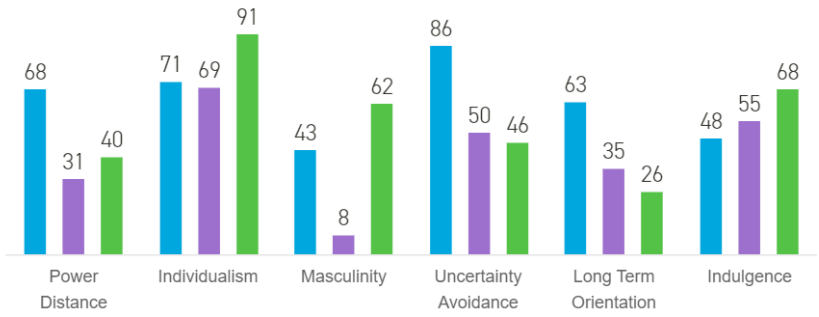

Figure 3: Hofstede's 6 dimensions. (France is the blue bar to the left, Norway is the purple bar in the middle, and the US is the green bar to the right)

The most noteworthy difference between Norway and the other countries, is the masculinity dimension.

> "The Masculinity dimension represents a preference in society for achievement, heroism, assertiveness, and material rewards for success. Society at large is more competitive. Its opposite, Femininity, stands for a preference for cooperation, modesty, caring for the weak and quality of life. Society at large is more consensus-oriented.» (Hofstede, 2010)

Masculine societies are more competitive, which could increase the willingness to cheat (Cartwright & Menezes, 2014; Schwieren & Weichselbaumer, 2010). Also, masculine society puts emphasis on status and material reward for success, which could make these cultures more likely to cheat in an experiment with monetary incentives. Since our experiment is conducted in Norway, which clearly is more feminine, a reasonable prediction could be that our experiment would yield less overall cheating.

2.7 Previous research

Several empirical studies have been done in order get a better understanding of how people behave in the domains of gains and losses. There is strong evidence suggesting that most people are more risk seeking in the loss domain. The research on human dishonesty is also comprehensive, both social scientists, psychologists and economists are interested in understanding the drivers of lying and opportunistic behavior. In most lab-experiments people tend to be dishonest when the risk of getting caught is low, but they tend to limit their cheating. In this chapter we explore some of the most relevant studies done to explain these aspects of human behavior.

2.7.1 Loss aversion

Kahneman and Tversky (1979) showed that people systematically violate EUT through simple questionnaires with hypothetical bets where they changed the framing of the prospects from a perspective of possible gains to possible losses. They show that people are

systematically more risk-taking when faced with a possible loss. This is consistent with the notion that the value-function is steeper in the loss domain than in the gain domain. Figure 4 shows one of many questionnaires showing how people change their preferences when the prospects are framed differently.

PROBLEM 13:

(6,000, .25), or (4,000, .25; 2,000, .25).

$N = 68$ [18] [82]*

PROBLEM 13′:

(−6,000, .25), or (−4,000, .25; −2,000, .25).

$N = 64$ [70]* [30]

Figure 4: Framing questionnaire (Kahnman & Tversky, 1979)

"Loss-averse individuals have a strong tendency to remain at the status quo, because the losses from a change are weighted more heavily than the gains" (Thaler, 2017, p. 5)

Loss aversion helps to explain why individuals will behave as if the objects they own have a higher value than similar objects they don't own. Richard Thaler referred to this as the endowment effect and conducted a simple experiment where subjects were given coffee mugs which they could sell to the other participants. They found that the selling price (WTA) for the mug was on average about twice as high as the buying offers (WTP). The experiment was repeated with ball pens which showed the same results (Thaler, 2017).The endowment effect has also been documented by Tunçel and Hammitt (2014) in their meta-analysis on the WTA/WTP disparity. They found an average ratio of 3,28 with the highest ratio on public and non-market goods and lower ratios on goods with known monetary values.

Grolleau et al. (2016) conducted an experiment investigating the effect of loss aversion on cheating where participants were instructed to solve simple, but time-consuming math tasks. Two gropus got paid at the end of the experiment, while the other two got paid beforehand and had to pay back an amount for each incomplete answer. This experiment included monitored and unmonitored conditions, both with a loss-frame and a gain-frame. In the monitored control conditions, the average number of solved matrices was 3.93 in the gain-frame, and 4.00 in the loss frame. In the unmonitored condition, where it was possible to

cheat, the average numbers of solved matrices were 5.42 for the gain frame and 9.56 for the loss frame. The results are consistent with prospect theory and the notion of a steeper value function in the loss frame (Kahneman & Tversky, 1979).

2.7.2 Cheating behavior, costs and benefits

A reasonable hypothesis is that an increase in incentives will increase the magnitude of cheating in lab experiments. Increasing incentives in lab experiments have shown to increase cheating behavior. Gibson, Tanner, and Wagner (2013) conducted an experiment with incremental increases in incentives for each treatment group and found that cheating increased with the incentives. Kajackaite and Gneezy (2017) found similar results when they conducted an experiment with a "cheating game" where there was a risk of getting caught and a "mind game" where the probability of getting caught was minimized. Cheating was identified in both games, but an increase in incentives did not affect the magnitude of cheating in the "cheating game". In the mind game, however, overall cheating increased significantly with higher incentives.
Regarding the form of incentives, Mazar et al. (2008) found that subjects respond differently to cash-prices than that of other material goods. For example, when the subjects were paid in cash-equivalent tokens, they cheated significantly more than when they were paid in cash. Numerous experiments have shown that increased incentives do not necessarily increase cheating (Fischbacher & Föllmi-Heusi, 2013; Mazar et al., 2008; Weisel & Shalvi, 2015). Higher incentives tend to lead to more cheating. However, the effects differ when factors like experimental design, probabilities of getting caught and cooperation are altered.

On the other side of the equation, it's reasonable to assume that if the probability of getting caught increases, the magnitude of cheating decreases. Research suggest that when there is a possibility to cheat, cheating will occur. However, decreasing the probability of getting caught, seem to have relatively small effects on cheating (Mazar et al., 2008) unless the probability is completely eliminated (Yaniv & Siniver, 2016). In Mazar et al. (2008), they conducted an experiment which explored how the probability of getting caught affects the magnitude of cheating. This experiment consisted of one control group and three different treatment groups, with high, medium and low probability of getting caught. The results showed that cheating was significant in all treatment groups compared to the control group,

but there was no significant difference between the three treatment groups. Abeler, Becker, and Falk (2014) conducted an experiment with different tweaks on how the results were reported to the experimenters. Either by phone at home, by phone in a lab, or by selecting a corresponding number on a computer screen in the lab. The tasks were simple; in one condition, the subjects were told to flip a coin once and report the outcome. Tails yielded a payoff of € 15, and heads yielded a payoff of zero. In the second condition, the subjects were told to flip a coin four times and then report the outcomes. The payoff were € 5 times the number of reported tails. The results suggested that people did not cheat in the phone at home conditions, but they cheated in both lab conditions. The reporting method in the lab had no significant impact on the magnitude of cheating except from the most profitable outcome of four tails. In this outcome the people who reported their answers on the screen cheated more than those who reported their answers on the phone directly to an experimenter. The research regarding how the probability of getting caught affect cheating behavior is limited.

2.7.3 Cheating and self-concept

The notion of self-concept is explored by Mazar et al. (2008). In one of the experiments, one group were told to write down 10 books they have read during high school, while the other group were told to write down as many of the 10 commandments as they could remember. The results showed that the 10-commandment group did not cheat significantly, but the book group cheated with a magnitude of 6.7 % of the maximum possibility. In a second version, half of the participants were told to sign an honor-code before completing a set of tasks. The honor code group did not cheat at all, regardless of the incentives. The group that did not sign the honor code cheated on average by 13,5 % of the possible average magnitude. In a third version they examined if the self-perception of the subjects changed if they cheated. First, the subjects were given a matrix task. Next, they took a personality test, then a prediction task, and finally a second matrix test. The conclusion was that the cheaters didn't change their perception about themselves, meaning that the magnitude they cheated weren't large enough to make them view themselves as dishonest people. Erat and Gneezy (2012) looked at the magnitude of lying when the consequences are afflicted on others. Interestingly, they found that people are reluctant to tell a pareto lie, a lie that benefit both the others and the liar. But a significant portion of the participants was willing to tell an altruistic lie which hurts them but benefit the others. When it comes to cheating behavior, there are some indicators that preservation of self-concept tends to limit cheating.

2.7.4 Cheating behavior and peers

When conducting a lab experiment on groups, it's reasonable to predict that factors like competition, social pressure and group affiliation may play a role on cheating behavior. Regarding group affiliation, Gino, Ayal, and Ariely (2009) conducted an experiment where participants were given the opportunity to cheat. They placed an actor which stood up after only 60 seconds and said he was finished, making it obvious that he cheated. In one group the actor wore a plain t-shirt and in the other group he wore a t-shirt with the name of a different college. Interestingly the cheating decreased significantly in the group where the actor wore a shirt from a different school, indicating that the participants decided to be more honest to distance themselves from the "outsider". In another experiment done by Mazar et al. (2008), they explored if cheating was influenced by the beliefs of average performance. Before the experiment started, they told one group that the average solved matrices were 4, while the other group were told that the average was 8. They found no significant difference in cheating between the groups. When it comes to competition, Schwieren and Weichselbaumer (2010) looked at how an increase in competition affected cheating and found that the competition treatment yielded a higher magnitude of cheating. They also found that poor performers cheated more than high performers. More specifically Cartwright and Menezes (2014) looked at three different levels of competitiveness. Interestingly they found that in the group with medium level of competition had the highest level of misreporting. Carrell, Malmstrom, and West (2008) concluded that peer effects influenced cheating behavior. They conducted a survey on military college alumnus and found out that for each cheater in high school that graduated into college, 0.33 to 0.47 extra college students cheated. For each new cheater in college, another 0.61 to 0.75 college students started to cheat. These results imply that for every two to three new graduates, one more student starts to cheat as a product of peer effects. The research on cheating in lab experiments indicate that cheating is highly dependent on peer effects and social dynamics.

3 Research method

In this chapter we address the reasoning behind the chosen research method.

Research method

"The term methodology refers to the way in which we approach problems and seek answers. In the social sciences, the term applies to how research is conducted". (Taylor, Bogdan, & DeVault, 2016, p. 14) .

There are two main approaches of scientific research method – qualitative and quantitative. The nature of the research question determines which method is most suitable. Qualitative research method typically involves collecting descriptive data from a limited amount of entities, where the objective is to understand their perspective on a certain phenomenon. This method is often used to answer open research questions and develop new hypotheses. Quantitative research method is commonly more extensive with a lot of entities. The purpose with this method is to collect information that can be standardized for the researcher to analyze a large sample of the population. Quantitative research is often used to dismiss or confirm a hypothesis or to look at how often a phenomenon occurs (Jacobsen, 2015)

In our thesis we are looking at the effects of loss aversion on cheating. The goal is to look at the magnitude of cheating when individuals are faced with the risk of losing. Therefore, we have chosen the quantitative approach.

3.1 Ethical issues

Our experiment included some deception. We did not tell the participants that we were able to link each answer sheet with every report sheet. This clearly has some ethical issues connected with it, but we concluded that what we did was fair practice. Singleton (1999) writes about four problems regarding the ethical treatment of human subjects. These four aspects are potential harm, lack of informed consent, deception, and privacy invasion.

The aspect of potential harm includes more than physical harm. Of course, there were no risk of physical harm in our experiment. However, aspects such as losing self-esteem, losing the trust in others, and being humiliated or embarrassed are considered aspects of harm. If the

participants didn't manage to solve a task, or just one or two, they might have lost some of their self-esteem, even though they didn't perform significantly worse than the average. They could also feel humiliated or embarrassed if they didn't perform as well as they hoped they would. Both these aspects are not worse than a normal examination situation, and the participants did not have to share their scores with anyone. The aspect of losing trust in others could be an issue, because we lead the participants to believe that their test sheets are thrown away, which was not true. The fact that the participants were unaware of this meant that they could not lose any trust because they didn't know that they were misguided.

Lack of informed consent is an aspect common for experiments were the true aim of the experiment must be held a secret to ensure that the participants act as they naturally would. We did not inform the participants that our research had the aim to uncover cheating behavior, but we told them that the general field of study was behavioral economics. According to Singleton (1999), there is no need to get the fully informed consent when the research involves minimal risk to subjects. Something we did, which is normal in medical and experimental research, was to inform the participants that we could not give them the full information about the experiment, but we gave them the opportunity to write down their e-mail address so we could write them in retrospect explaining what we really tested.

Deception is the most relevant aspect to our experiment, and we deceived the participants on two occasions during the experiment. First when we omitted information about the true purpose of the experiment, and second when we told them that they threw away their test sheets in order to secure full anonymity. Both the American Psychological Association (APA) and the American Sociological Association (ASA) have ethics codes that allows for deception under certain circumstances. These circumstances include, among others, that the use of deception must not harm the participant, it must not significantly affect the willingness to participate, and that the deception is revealed no later than at the conclusion of the research. The deception used in our experiment did not violate any of these concerns.

The concerns about privacy was also an issue we had to take into consideration. For instance, we included a question where the participants were told to write down their political position. We clearly stated that this question was optionable (all the questions were, but we had an additional reminder next to this one). Of the 59 participants, 11 didn't answer this question, implying that political views are a personal matter for a lot of people, as expected. We did not include any names in the study, and the results are anonymous. By introducing dummies for study area and geographical descent, there is no way that any readers can identify any of the

subjects. The payment forms the participants had to fill out in order for us to get financial funding from the university included full name and social security number. These forms were kept separately from the rest of the answer sheets and were handed directly to the faculty administration after the experiment was finished.

4 Experimental design and procedure

In our experiment we investigated if people tend to cheat more to avoid a loss, than they do to secure a gain. To induce the feeling of loss, the treatment group was paid up front and were instructed to pay back an amount of money for each matrix they didn't complete. The control group was paid at the end of the experiment.

This section will consist of the experimental design, the recruitment process, how the experiment was conducted and possible limitations.

4.1 Design

We conducted a simple lab experiment with one control group (gain) and one treatment group (loss). There were 6-10 participants in each session. We got a total of 59 participants, where 34 were male. 29 of the participants were in the gain group, and 19 of these were male. Of the 30 people in the loss group, 15 were male. All participants were students at the University of Stavanger, with an age span of 20 to 31 years. We used three days on the experiment, in two different rooms located in different buildings on campus. The rooms were of approximately the same size.

The experiment consisted of 10 simple, but time-consuming math tasks of the same nature as the ones in Mazar et al. (2008). These 10 tasks were matrices with 12 numbers in each matrix, where two of these numbers added up to 10. The reasoning behind using a search task was to avoid the use of answer sheets, which could lead to hindsight bias among the participants. Also, we wanted tasks that everyone could manage if they were given enough time, and not questions that they either knew or not. The payment was 20 NOK for each reported matrix, leading to a maximum possible payment of 200 NOK.

4.2 Procedure

When the participants entered the room, they were told to sit down at the desks which were spread out evenly in the room. We then told them that we appreciated their cooperation, that the experiment was anonymous, and that they should keep quiet during the experiment. Then we handed out the instructions (see appendix, 8.1-8.4) and told the participants to read these. When everyone was ready, we started the timer. After 2,5 minutes, the subjects were asked to count how many matrices they had solved correctly, and to memorize how many they managed to solve. When we saw that the participants were done with the self-correcting, they were instructed to curl up their sheets and throw them into a large bin. It was critical that the participants could see that their answer sheets got mixed well together with the other sheets in the bin. Next, the participants received a small note (see appendix 8.7) where they reported how many matrices they solved. After that, they got a questionnaire (see appendix 8.9) where they reported their age, gender, political views, field of study, and how many tasks they thought the average had solved. In the last part of the questionnaire they were given 3 hypothetical prospects, 2 of them which investigated if the framing of the prospects would make them deviate from EUT. The last hypothetical scenario was given to identify their loss aversion with the question "what would x have to be in order for you to accept a bet with a 50% of losing 250NOK and a 50% chance of winning x?". From the last question we could identify a lambda value of loss aversion. Finally, the participants walked up to one of the two experimenters in front of the classroom to hand in their questionnaires and receive their payment. In the loss group, subjects were told to pay back the cash which corresponded to the number of matrices they reported not to have completed. In the gain group they were payed the amount which corresponded to the number of matrices they reported to have solved. Before receiving the payment, they were told to fill out a form which ensured that the University administration got the documentation they needed in order to support the experiment financially (appendix 8.11).

Before the sheets were handed out, they were carefully marked with a UV-pen. By doing this, we eliminated the need for an additional monitored control group, because we could check how many matrices each participant managed to solve, and by this check how much each individual cheated. This also made it possible to analyze how other variables such as gender, age and political viewpoints affected cheating. We paired the corresponding sheets after the participants had left the room. In the loss group, there were two 100 NOK bills attached to the

task sheet. The intention was to create a sensation of loss when the participants had to pay back the amount corresponding to the unsolved matrices. In the gain group, participants could choose between a cash payment and digital payment through VIPPS. Table 3 display the variables we included in the further analysis.

Variable	Explanation
Cheat1	Number of reported minus number of marked matrices
Cheat2	Number of reported minus number of correctly solved matrices
Loss	Dummy for the loss treatment
Male	Dummy for male
Age	Age of the participants in years
Gradeaverage	Average grade from upper secondary school from 1 to 6
Peers	Numbers of tasks the participants thought the average would solve
Rogaland	Dummy for participants raised in Rogaland
Business	Dummy for studying business after the definition
Lambda	Measure for loss aversion
Cheater	Dummy for cheating after the Cheat2 definition
Goodperf	Dummy capturing those who correctly solved more than the average

Table 3: Overview of the different variables.

4.3 The recruitment process

All participants were recruited at campus, where we asked them if they would participate in an experiment that lasted for a maximum of 10 minutes with a possibility to earn up to 200 NOK. We chose this method because we thought it would be easier for people to join us straight away rather than having to plan for the participation with an already tight schedule. It was also important for us to keep the group size between 5-10 participants. Too many would make it hard to keep track of the papers and too few would reduce the feeling of anonymity and increase the perceived risk of getting caught. Recruiting directly at campus made it easier for us to control the number of participants. We told them that the tasks required no prior knowledge, that all results were completely anonymous and that we would be grateful if they could participate. We asked people in open workspaces and in the cafeteria, resulting in many of the participants already knowing each other. About 60% of the students we asked, agreed to participate in the experiment. We did everything in the process, everything from recruiting

the participants, to conducting the experiment, and to handle the payment. Both of us recruited participants and arranged payments, and one of us talked while the other handed out the sheets. Total number of participants were 59, with 29 in the control group and 30 in the treatment group. Table 4 shows means and standard deviations of the variables used in our analysis.

	Control (gain)		Treatment (loss)	
	Mean	SD	Mean	SD
Male	0,655	0,484	0,500	0,509
Age	22,793	2,555	23,633	2,580
Gradeaverage	4,359	0,432	4,452	0,614
Rogaland	0,552	0,506	0,345	0,484
Business	0,690	0,471	0,655	0,484
Lambda	1,914	1,296	2,314	1,570
Peers	4,276	1,510	4,633	1,671
Correct	2,862	2,295	2,900	2,234
Reported	3,448	2,131	3,967	2,482
Cheater	0,345	0,484	0,533	0,507
Goodperf	0,483	0,509	0,400	0,498

Table 4: Descriptive statistics

4.4 Limitations

It is important to be aware of the limitations of the experiment, and in this section, we will cover several limitations in our experiment, and some possible consequences of these limitations.

Perhaps the most important limitation in our experiment, is the relatively small sample size. With only 59 observations, we had to be careful running regressions with too many independent variables. In the literature of econometrics, there are many opinions and suggestions on how many observations required to draw conclusions from a multiple regression. Most authors agree that the number is somewhere between 10-20 observations per independent variable (Brooks & Barcikowski, 2012). A larger sample size would increase the probabilities of finding significant results and would've given us more possibilities to run multiple regressions including more variables.

By recruiting directly at campus, we gained control over the size of the groups, which was important for us in order to carry out the experiment. However, by doing it this way, we lost

control over other variables. For example, we couldn't control which faculty the subjects belonged to, resulting in a relatively heterogeneous sample. We controlled for this by creating a dummy for business students but realize that this might not be enough. The dummy for business only differentiates between business students and other students which in our sample consisted of some engineers, nursing students and teacher students. In addition, the dummy for business students include both finance majors and management majors and their math abilities might differ substantially. Because of this we can not draw any conclusion from this variable.

Another limitation is that the recruitment, the experiment and the payment afterwards was all done by the experimenters. Both experimenters are students at the university, which could be a limiting factor which most of the comparable studies have avoided. Optimally, in terms of anonymity and to avoid group affiliation, we would have hired experimenters which did not attend the university themselves to conduct the experiment from start to finish.

Naturally, as students, we had limited resources available to conduct the experiment. Optimally we would have liked to increase the incentives in the experiments to at least the equivalent of what Grolleau et al. (2016) paid in their experiment, adjusted for purchasing power.

4.5 Hypotheses

Hypothesis 1: We expect cheating in both groups, because of a relatively low probability of getting caught and limited costs of cheating. We expect a limited magnitude of cheating, based on previous experiments.

Hypothesis 2: The treatment group will cheat more than the control group because of the framing of the prospects. By paying the treatment group up front, we expect to create an endowment effect that will increase the magnitude of cheating.

We also investigate other effects, which are tied to social factors and the experimenter's role in the sessions.

5 Results

In this chapter we will provide our analysis of the data collected from the experiment and discuss our findings in the light of the relevant theory. The software used to process the data was STATA and Excel.

5.1 The cheat variable

The participants were not given answer sheets with the correct answers and had to go over their sheets themselves. When we inspected the answers from the participants and compared them to their report notes, we found that a lot of the participants had failed to correct themselves. Some of the participants could have made an honest mistake, or it could be deliberate. Therefore, we defined two different dependent variables.

Cheat1 is defined as the difference between the number of reportedly solved matrices and the number of matrices filled out. This variable captures the participants who we know for a fact deliberately overreported. If subjects cheat according to this definition they would have to admit to cheating if they were to get caught.

Cheat2 is defined as the number of reportedly solved matrices minus the number of correctly solved matrices. This variable capture both honest mistakes and deliberately not correcting the matrices. The participants were informed that the answer sheet was going to be thrown away, it would be reasonable to expect there to be a large resistance to correct the answer sheet. This problem seemed to be overlooked in many of the similar experiments we have seen (Grolleau et al., 2016; Kajackaite & Gneezy, 2017; Mazar et al., 2008). Cheat2 is a looser definition of cheating, but we consider this to be cheating because we gave the participants instructions to correct themselves and a lot of them did not. If subjects who cheat according to the cheat2 definition get caught, they could just claim that they made an error, despite having a relatively long time-window to correct themselves.

When using “cheat1” as the definition of cheating we found that out of 59 participants, 7 deliberately reported a higher number of solved matrices. 5 cheated in the loss group and 2 cheated in the gain group. Average overreporting according to cheat1 was 0,467 in the loss

group and 0,103 in the gain group. Overall, the average number of matrices filled out was 3,56 while the average of reported was 3,71. One person reported to have solved all matrices and overreported by 5.

Using "cheat2" as the definition of cheating, we found that 26 participants overreported, with 10 cheaters in the gain groups and 16 in the loss group. Average overreporting using cheat2 as the definition was 1,1 in the loss group and 0,586 in the gain group. Overall, the average number of reported matrices was 3,71 and the average of correctly solved matrices was 2,88.

5.2 Cheating and loss aversion

The Mann-Whitney U-test shows that there is no significant different in cheating between the treatment group and the control group when using both cheat1 and cheat2. This was expected due to the small sample size. When running regressions, first controlling for loss, then adding male, age and gradeaverage, we found no significant differences in cheating.

Dep. Var: Cheat2 VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
loss	0.480	0.512	0.408	0.523
	(0.335)	(0.356)	(0.390)	(0.405)
male		0.204	0.00705	0.0186
		(0.340)	(0.404)	(0.417)
age			0.0879	0.0466
			(0.0758)	(0.0871)
gradeaverage				-0.503
				(0.325)
Constant	0.586***	0.453	-1.422	1.706
	(0.208)	(0.286)	(1.537)	(2.696)
Observations	59	59	59	58
R-squared	0.035	0.041	0.065	0.102

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

After running OLS regressions on the variables that were unevenly distributed between the treatments, we found indications of significant differences between the gain group and the loss group using the cheat2 variable. Running several OLS regressions controlling for peers,

lambda, business, gradeaverage and Rogaland consistently gave a coefficient for the "loss"-variable ranging from 0,571 to 0,650. With only 59 observations, we had to be careful running regressions with too many variables.

Dep. Var: Cheat2 VARIABLES	(5) Model 5	(6) Model 6	(7) Model 7	(8) Model 8	(9) Model 9
loss	0.571*	0.650**	0.560*	0.637*	0.599*
	(0.333)	(0.318)	(0.308)	(0.319)	(0.322)
gradeaverage	-0.579*	-0.431	-0.438*	-0.430	-0.368
	(0.292)	(0.276)	(0.261)	(0.267)	(0.283)
business		0.983***	0.755**	0.824**	0.782**
		(0.262)	(0.315)	(0.339)	(0.320)
peers			0.168	0.184	0.153
			(0.145)	(0.150)	(0.146)
rogaland				0.597	
				(0.357)	
lambda					-0.0914
					(0.0835)
Constant	3.110**	1.788	1.258	0.777	1.172
	(1.344)	(1.261)	(1.233)	(1.188)	(1.249)
Observations	58	57	57	56	57
R-squared	0.094	0.228	0.259	0.290	0.268

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results from our experiment violates the assumptions that people are inherently profit maximizing and that people only considers final outcomes when making decisions under risk. The expected payoffs of cheating are equal in both groups. The expected payoffs are denoted below, where the perceived risk and costs are omitted because they are equal in both groups.

E(V)= reported*20NOK

Max(V)= 10*20NOK = 200NOK

And the loss group is denoted by:

E(V)= 200NOK-(200NOK-reported*20NOK)

Max(V)=200NOK-(200NOK-10*20NOK) = 200NOK

Where V denotes the monetary value.

The prospects have the exact same payoffs and from the expected utility theory, rational profit maximizing individuals would be indifferent between the prospects (Ackert, 2010). Our regressions indicate small significant differences between the treatment and control group, suggesting that the framing of the prospects influences cheating behavior. In line with Kahneman and Tversky (1979), our findings indicate that the subjects are willing to take more risk to avoid the feeling of loss induced by giving back the money. When the treatment group were handed the task sheets with the money attached, they started with the reference point of 200 NOK. If they had to pay back an amount, it would be coded as a loss. The gain group on the other hand, have a lower reference point when starting the experiment. It could be argued that their reference point was higher than 0, because they were told that they could win money by participating, but it's reasonable to assume that it was substantially lower.

By giving the treatment group money up front, it created an endowment effect for the participants. Tunçel and Hammitt (2014) explored the effects of the endowment effect in a market of goods and services. They found that the parity between selling price and buying price was 3,28, documenting the effects of a higher reference point. Similarly, we create a higher reference point by giving subjects an anticipation of keeping the money, but in our experiment, instead of facing the decision of a selling price, they are faced with the decision to cheat or not. The decision to cheat involves risk, and therefore, the parity of 1,88 between our treatment group and control group is not a surprise.

On the other hand, comparing our parity of 1,88 to the parity of Grolleau et al. (2016), the differences are substantial, despite similar experimental designs. Calculating a comparable parity from their experiment gives us a parity of 4,4. Grolleau et al. (2016) found that the gain group overreported by approximately 43 % while the loss group overreported by 296 %. In our experiment, the Cheat2 definition is the most comparable to this experiment, because it includes the participants who did not correct themselves. Our Cheat2 magnitudes are 36,8 % for the loss group and 20,5 % for the gain group. One part of the explanation could be the differences in the design of the experiments. The perceived risk of getting caught is one factor. In our experiment, the participants were told to curl their answer sheets and throw them in a large bin with the other answer sheets, while Grolleau used a fake shredder. It's reasonable to assume that the perceived risk is higher in our experiment. Another component is the number of matrices. We used 10 and Grolleau used 20. 10 matrices could mean a bigger threshold for cheating. Overreporting by one unit could feel like a larger step in our experiment than in Grolleau's. Also, because of the difference in number of matrices, the

participants spent twice the time in Grolleau's, 5 minutes compared to 2,5 minutes in ours. Spending 5 minutes on solving matrices could make the experiment feel substantially more tedious and exhausting, which again could result in a higher willingness to cheat. Spending more time on the experiment could also increase the feeling of deserving a higher reward.

5.3 Overall cheating

Regarding the overall cheating in our experiment, the magnitude of cheating was limited. Becker (1968) argued that cheating was mainly dependent on costs and benefits of dishonest behavior. Looking exclusively at the monetary costs and benefits of our experiment, it's hard to find a good explanation for why so few chose to act dishonest. The monetary gains of 200NOK within the time frame of 10 minutes is a relatively high hourly payment. The costs of cheating are uncertain for the participants, because they don't know if they stand to lose it all if they get caught, or just lose the profit from cheating. Using Becker's model to explain why so few cheated, we must assume that the risk of getting caught in our experiment was enormous, to offset the potential gains. We would argue that the probabilities of getting caught in our experiment was moderate because we pretended to throw away all the sheets. The model also falls short in explaining why the subjects who cheated limited their dishonesty. If they were to get caught, they would be exposed of cheating regardless of the magnitude.

We find the model of Yaniv and Siniver (2016) to be more applicable to our experiment. Their shame adjusted model is customized for cheating in lab experiments with an emphasis on the experimenters' role. This is applicable to our experiment because the experimenters were present throughout the sessions. Subjects talked to us prior to the experiment. More importantly, if they were going to cheat, they had to lie directly to us, risking the shame associated with us knowing that they lied. Even worse, we could have made a gesture to expose them in front of the others. These risks increase with every matrix overreported and could help explain why subjects limited their cheating.

Another reason why subjects limit their cheating, is to preserve their self-concept. Mazar et al. (2008) make the argument that people dislike cheating because when they do, it impacts their self-concept negatively. However, sometimes the incentives are tempting enough to accept a small loss of self-concept. This notion is an optimistic view on the topic of cheating behavior, but hard to prove through experimental research.

Lastly, we would assume that a lab-experiment is quite an unnatural setting to be in for most people. Our experiment gave the participants a lot of information to process in a limited amount of time. It's not unthinkable that some of the participants did not even realize that they had a possibility to cheat, regardless of which treatment group they were in.

5.4 Hypothetical prospects

We included 3 hypothetical prospects in the questionnaire to test if we could find any correlations between the behavior in the experiment and preferences displayed in the questionnaire.

5.4.1 Risk preferences

We included two questions from Tversky and Kahneman (1986) which looks at the influence of framing of the prospect. Prospect 1 was framed with payoffs in the gain domain with a secure option (A) and a risky option (B) and prospect 2 had identical payoffs, but with a loss framing. Our findings are illustrated in figure 5.

Consider yourself 3000 NOK richer than what you are today. You can choose between

A: A sure gain of 1000 NOK

B: 50% chance to win 3000 NOK and a 50% chance of winning 0 NOK

Consider yourself 5000 NOK richer than what you are today. You can choose between

A: A sure loss of 1000 NOK

B: 50 % chance of losing 0 NOK and a 50% chance of losing 2000 NOK

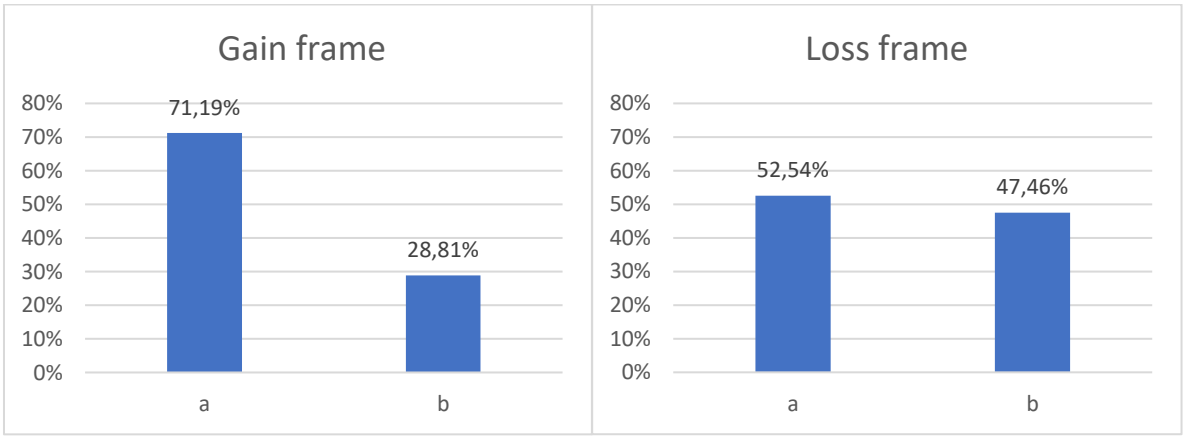

Figure 5: Results from the framing question

Compared to Tversky and Kahneman (1986), fewer participants deviated from EUT in our questionnaire. In the gain frame 71% of the participants chose option A, and in the loss frame, 53% of the participants chose option A, which was the secure option. We included the questionnaire to see if our sample answered in line with prospect theory. We also ran regressions testing whether there was any correlation between those who were consistently risk averse or risk seeking and the magnitude of cheating. OLS regressions showed no significant correlations between subjects who deviated from EUT in the questionnaire and cheating in either groups. We suspect that the students saw the question as a test with a correct answer, instead of thinking of the question and applying their own risk preferences.

5.4.2 The lambda of loss aversion

The questionnaire also included a question to identify loss aversion amongst the participants. We asked them a hypothetical question; "if you were to enter a 50/50 win/lose bet where you would lose 250 NOK if you lost and win a prize of x if you won, what would x have to be for you to accept the bet?". The median answer was 500 and the average lambda was 2,12 overall, which is consistent with Tversky and Kahneman (1986). We find it reasonable to assume that the answers in this question are more accurate than the answers from the question discussed in chapter 5.4.1 because there are no alternatives to mark and the participants had to think and apply it to their own feelings about loss and risk. We observe the effect of loss aversion with the lambda variable on overall cheating. The regression shows that if lambda increases by 1 unit, the magnitude of cheating decreases with 0,121 units, using the cheat2 variable, however not significant.

We find no correlation between behavior in any of the hypothetical prospects and the magnitude of cheating in the experiment. We expected that the risk averse subjects would cheat significantly less than the risk seeking subjects. This could be an indicator that hypothetical prospects given on paper might not reflect true behavior very precisely. Being risk seeking on paper is vastly different than being risk seeking in a real life situation.

5.5 Social aspects

In a lab experiment where subjects are from the same school and even the same social circles, some social factors might affect behavior.

5.5.1 Peer effects

The participants were informed that the matrices in the experiment were identical for all the other participants and were asked to guess the average of solved matrices of their peers. We found a substantial deviation between solved matrices and their guess of how well their peers did. The average guess was 4,46, which is about 1,5 matrices more than the average solved. In our analysis this variable is defined as "peers". Research have shown that in many situations people report to believe that they are better than the average. This seems to be true for individuals' beliefs in their own driving abilities (Delhomme, 1991) and investors' belief in their own abilities to beat other investors (Zíka & Koblovsky, 2016) In our experiment this is not the case, out of 59 participants, only 10 individuals reported that they believed that they had done better than the average.

Our OLS regression show indications of peer effects. Running regressions with Cheat2 as the dependent variable, show that if subjects reported 1 unit more on the "peer"-question, cheating tended to increase by a magnitude ranging from 0,290-0,470. This is contrary to what Mazar et al. (2008) found in their experiment where they found that a higher stated average did not affect cheating.

Dep. var: Cheat2	(10)	(11)	(12)
VARIABLES	Model 10	Model 11	Model 12
peers	0.290**	0.470***	0.379**
	(0.120)	(0.117)	(0.143)
goodperf		-1.309***	-1.323***
		(0.296)	(0.292)
business			0.782***
			(0.283)
Constant	-0.464	-0.687	-0.802
	(0.513)	(0.471)	(0.543)
Observations	59	59	58
R-squared	0.126	0.331	0.394

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Further analysis strengthens the indications of peer effects. It shows that the cheaters tended to believe that the average did better than what the non-cheaters believed. This could be an indicator of subjects using the average as a reference point when evaluating their own abilities and that this affects their willingness to cheat. Also, subjects who performed better than the average reported a higher number on the peer-question than the underperformers. It seems like the subjects used their own performance as a reference point when reporting what they believed the average solved number of matrices was.

Dep. Var: Peers	(13)	(14)	(15)
VARIABLES	Model 13	Model 14	Model 15
cheater	0.901**	1.303***	0.942**
	(0.409)	(0.379)	(0.442)
goodperf		1.692***	1.409***
		(0.386)	(0.412)
business			0.706
			(0.430)
Constant	4.061***	3.138***	2.988***
	(0.254)	(0.287)	(0.268)
Observations	59	59	58
R-squared	0.080	0.348	0.364

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Our findings could be an indicator that the need to perform better or as good as the rest of the group, stimulate cheating behavior. Since most of the participants were recruited in groups along with their study groups, it could be argued that a low payment from the experiment is an extra cost in the form of feeling less competent than their peers. The experiment was conducted in groups of 6-10. Naturally, there are social factors involved in the dynamics of our experiment. We know that some of the participants knew each other beforehand, because a lot of them studied together when we recruited them. Also, we noticed that some of the participants talked to each other before the experiment and were itching to know what the experiment was all about. This makes it reasonable to assume that some subjects also had to report their performance to their friends after the experiment, making it even more costly to perform poorly.

In our results we find that poor performers cheat more than good performers. We identified that for the dummy "cheater", the number of correctly solved matrices was significantly lower than for those who chose not to cheat with a coefficient of -1,301.

Dep. Var: Correct	(16)
VARIABLES	Model 16
cheater	-1.301**
	(0.558)
Constant	3.455***
	(0.402)
Observations	59
R-squared	0.084

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Schwieren and Weichselbaumer (2010) found similar results in their lab experiment on cheating behavior. The need to fit in and perform at least as good as the rest of the group could be strong for some individuals. This face-saving mechanism is also prominent in Cartwright and Menezes (2014). They investigated the intensity of competition and its effect on cheating. They tested three levels of competitiveness and found that the medium level of competition had the highest magnitude of cheating. In our experiment, no incentives were given exclusively to the best performers, but we would argue that there is a low to medium competitive component because we assume that most of the students were encouraged to report their results to their peers after the experiment was done.

5.5.2 Group affiliation

The fact that both the experimenters and participants are students at the university could have implications on cheating behavior. In the recruitment process we approached the participants in a school setting, most of them were working on their own projects and exams. We told them that we needed help with our thesis and asked them for 10 minutes of their time. Both

the environment and setting of the experiment could have created a group affiliation with the experimenters. Many of the students are soon to be in the same position as the experimenters and this could make them feel obligated to behave ethically. Erat and Gneezy (2012) concluded that people are more willing to cheat when others gain from it, in this case we argue that people are more hesitant to cheat when the negative consequences are inflicted on others. Gino et al. (2009) also looked at the power of group affiliation in a lab experiment and found that if you create a feeling of group affiliation in a lab experiment, this can decrease the magnitude of cheating tremendously.

5.6 Cultural differences

Comparing our results with other studies, we found significant differences in both instances and magnitude of cheating. For example, both Grolleau et al. (2016) and Mazar et al. (2008) found that more of the participants cheated, and that they cheated at a greater magnitude.

Many of the experiments we have studied have been conducted in different countries. Mazar et al. (2008), Ariely et al. (2008) and Thaler (2017) conducted experiments in the United States, while Grolleau et al. (2016) conducted theirs in France, and ours were conducted in Norway. There are cultural differences between these countries that may have an impact on the results.

Looking at the cultural differences between Norway, France and the United States we see that Norway stands out on the dimension of masculinity. Norway has a score of just 8 on the masculinity dimension, while France and the US scores much higher (43 and 62). A masculine society is driven by success and achievements, where success is defined by the winner (Hofstede, 2010). It's reasonable to expect that cheating and dishonest behavior is more prominent in a value system that puts emphasis on winning and being the "best in class".

Another cultural difference is that in Norway there is a high trust level towards the authorities compared to France. A publication from Statistics Norway confirms this. Norway has the highest trust level in Europe when it comes to the National Assembly, the political parties and the politicians. Norway also scores second in trusting the judicial system, and third in trusting the police. France on the other hand scores significantly lower in all these aspects, meaning

that the trust level in France is significantly lower than the trust level in Norway (Kleven, 2016). Edlund (1999) suggests that the trust level towards the government in Norway is higher than in the United States. Berg, Dickhaut, and McCabe (1995) tested the trust level between the participants in an experiment conducted in the US. The experiment consisted of two groups, A and B, where both groups received a show-up fee of $10. Then, subjects in group A should send a chosen amount of their 10 dollars to a random person in group B, which were seated in a different room. For every dollar person A sent, person B received 3 dollars. Finally, person B should send back an amount of their choosing to person A. The results from this experiment suggests that most people in group A (30 of 32) sent money, and that 11 of these 30 situations resulted in a higher repayment than the amount sent. This indicates that the general trust level in this society is high. Johnson and Mislin (2011) conducted a meta-analysis on experiments of the same nature of what Berg et al. did. There were no results from Norway, but both France and the United States were represented in the study, with a total of 1008 respondents from France, and 4552 respondents from the United States. The average fraction sent was 0,43 for France, and 0,51 for the United States. The average proportion returned was 0,33 for France and 0,34 for the United States. This indicates that France is less trusting than the United States, and that the two countries have as good as the same level of trustworthiness.

These cultural differences may influence the difference between the experiments, leading to some of the differences we found between ours and other experiments.

5.7 Incentives and standards of living

Looking at the results of our experiment compared to most of the well-known research done on students in other countries, we see that the number of cheaters and the magnitude of cheating is generally lower in our experiment. One explanatory factor could be the incentives and the wealth level of the students. Students in Norway on average have a higher median income than in most European countries. 80 % of Norwegian students receive financial support from the government in the form of student loans and scholarships. Comparing Norwegian students with other European students adjusting for purchasing power, Norwegian students have an income which is on average 22,5 % higher than students in Germany and 31,9% higher than in France (Keute, 2018). Most of Ariely's experiments were conducted in colleges in the US.

Students in the US also have a tight budget, with high tuition fees and high expenses. A lot of students are forced to work part time, and 27% of full time students work more than 20 hours a week (NCES, 2017). Norwegian students generally have a higher disposable income, which could be a part of the explanation to why we find less cheating in our experiment. Applying this into Becker's (1968) model of economic crime, the impact of the incentives in our experiment on the benefit side of the equation is smaller in Norway than in most other countries. On the other hand, research suggest that the size of the incentives in experiments does not necessarily affect the magnitude of dishonest behavior (Kajackaite & Gneezy, 2017; Mazar et al. 2008). Also, when the participants came into the lab, it became clear that we were going to pay them in cash. In 2018 all the cafeterias at the University of Stavanger stopped accepting cash as payment. In general, cash in Norway is becoming outdated, especially amongst the younger generation (Bech, Faruqui, Ougaard, & Picillo, 2018). For some participants, cash could be seen as an inconvenience, and again influence the willingness to cheat.

6 Conclusion

We find relatively small effects of loss aversion on cheating behavior, with a Mann-Whitney U-test showing no significant results. Multiple regression analysis indicates small differences between the control group and the treatment group, suggesting that cheating behavior is affected by loss aversion. By paying the treatment group beforehand, we created an endowment effect. The anticipation of keeping the payment in full, resulted in a higher reference point among the subjects in the treatment group. Tversky and Kahneman (1986) have identified that the value function typically is steeper in the loss frame than in the gain frame. This seem to also influence the willingness to cheat in this lab-experiment. Our results show significantly smaller effects than what we expected to find based on both the WTP parity (Tunçel & Hammitt, 2014) and the findings of Grolleau et al. (2016). We identify some possible reasons to why we find smaller effects, one of them being the perceived risk of getting caught in our experiment, another one being social factors, and a third one being cultural factors. One contribution of our research is that we were able to look deeper at demographics and social factors that affect cheating behavior. Age, gender and GPA in upper secondary school had no significance on cheating behavior. We found that subjects who performed worse than the average cheated significantly more than the good performers. We

also find strong indicators of peer effects on cheating behavior, as the magnitude of cheating seem to increase with the belief of how good the others performed. These findings indicate that cheating behavior is not exclusively tied to monetary costs and benefits as Becker (1968) suggests, but also on social pressure and group identity which are in line with some of the findings of Mazar et al. (2008). Lastly, we tested the subjects' risk preferences and loss aversion in hypothetical prospects and found no significant relationship between these preferences and cheating behavior in the experiment.

We would recommend that further research on this area aim to reduce the experimenters' role during the experiment, and to reduce the perceived risk of getting caught. We believe this would result in a more precise measurement of the effects of loss aversion on cheating. The main findings of our experiment have applications for policy enforcement where resources are limited, enforcers may want to focus on monitoring individuals that risk losing something. Also, managers in companies should be aware that gain-loss framing could have an impact on cheating and dishonest behavior and that poor performers often are more likely to act dishonest in order to avoid losing face.

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8 Appendix

8.1 Instructions for the control group in Norwegian

Hei og velkommen til dagens eksperiment!

IKKE SNU ARKET FØR DERE FÅR BESKJED OM DETTE!

- På baksiden av dette arket er det ti oppgaver.
- På hver oppgave skal du sette en ring rundt de to tallene som til sammen blir tallet 10. (se eksempel nedenfor)
- For hver oppgave løst får du 20 kroner.
- Du får 2,5 minutter til å løse oppgavene.

Dersom du har spørsmål så rekker du opp hånden, så kommer vi bort.

Lykke til!

Eksempel på et rutenett, med ring rundt de korrekte tallene.

4,12	5,29	4,99
4,73	4,65	4,28
4,03	4,07	4,94
5,56	5,17	5,27

8.2 Instructions for the control group translated into English

Hello and welcome to today's experiment!

DO NOT TURN THIS PAPER BEFORE YOU ARE NOTIFIED!

- On the other side of this paper, there are 10 tasks.
- For each of these tasks, mark the two numbers that adds up to 10 (see the example below)
- You will receive 20 NOK for each solved matrix.
- You have 2,5 minutes to solve the matrices.

If you have any questions, raise your hand and we will get to you.

Good luck!

Example of a matrix with the two correct numbers marked:

4,12	5,29	4,99
4,73	4,65	4,28
4,03	4,07	4,94
5,56	5,17	5,27

8.3 Instructions for the treatment group in Norwegian

Hei og velkommen til dagens eksperiment!

IKKE SNU ARKET FØR DERE FÅR BESKJED OM DETTE!

- Foran deg ligger 200 kr som er dine. Sjekk at det er to sedler.
- På baksiden av dette arket er det ti oppgaver.
- På hver oppgave skal du sette en ring rundt de to tallene som til sammen blir tallet 10. (se eksempel nedenfor)
- For hver oppgave som ikke er løst må du betale tilbake 20 kroner av pengene som ligger foran deg
- Du får 2,5 minutter til å løse oppgavene.

Dersom du har spørsmål så rekker du opp hånden, så kommer vi bort.

Lykke til!

Eksempel på et rutenett, med ring rundt de korrekte tallene.

4,12	5,29	4,99
4,73	4,65	4,28
4,03	4,07	4,94
5,56	5,17	5,27

8.4 Instructions for the treatment group translated into English:

Hello and welcome to today's experiment!

DO NOT TURN THIS PAPER BEFORE YOU ARE NOTIFIED!

- In front of you, there are 200 NOK which are yours. Please make sure that there are two bills.
- On the other side of this paper, there are 10 tasks.
- For each of these tasks, mark the two numbers that adds up to 10 (see the example below)
- For each matrix that are not solved, you must pay back 20 NOK of the money in front of you.
- You have 2,5 minutes to solve the matrices.

If you have any questions, raise your hand and we will get to you.

Good luck!

Example of a matrix with the two correct numbers marked:

4,12	5,29	4,99
4,73	4,65	4,28
4,03	4,07	4,94
5,56	5,17	5,27

8.5 Matrices, which were at the backside of the instructions

1	1,69	1,82	2,91
	4,67	4,81	3,05
	5,82	5,06	4,28
	6,36	5,19	4,57

2	0,49	0,74	1,17
	3,72	2,00	1,22
	3,75	5,22	5,67
	8,83	8,23	7,70

3	0,47	4,58	2,57
	3,15	3,82	4,38
	4,94	5,42	5,98
	2,95	4,86	7,54

4	0,17	2,46	2,44
	6,02	5,60	2,63
	6,05	6,21	6,60
	8,22	8,19	7,54

5	0,15	0,95	1,31
	4,98	2,90	2,88
	6,66	6,73	7,67
	9,75	9,85	8,17

6	0,63	0,65	1,02
	2,64	2,34	2,12
	2,89	5,98	8,89
	9,49	9,37	9,33

7	0,12	0,71	0,74
	4,27	3,07	2,27
	5,09	5,73	5,82
	9,27	7,03	6,79

8	0,74	1,93	2,76
	7,24	5,03	3,14
	7,71	6,38	3,80
	8,28	9,18	9,48

9	0,14	0,67	2,22
	5,96	5,58	5,22
	7,04	7,59	9,33
	9,77	9,50	8,52

10	3,24	1,54	7,28
	4,42	3,54	7,18
	5,54	4,78	5,55
	6,99	6,93	6,76

8.6 Self-reporting note (small slip), Norwegian

Hvor mange oppgaver løste du?

Antall løst	1	2	3	4	5	6	7	8	9	10
Gevinst	(20kr)	(40kr)	(60kr)	(80kr)	(100kr)	(120kr)	(140kr)	(160kr)	(180kr)	(200kr)

8.7 Self-reporting note (small slip), English

How many matrices did you solve?

Matrices solved	1	2	3	4	5	6	7	8	9	10
Payoff	(20kr)	(40kr)	(60kr)	(80kr)	(100kr)	(120kr)	(140kr)	(160kr)	(180kr)	(200kr)

8.8 Questionnaire in Norwegian

Spørreskjema

Vennligst fyll ut dette korte spørreskjemaet. (hopp over oppgaver du ikke ønsker å svare på)

Kjønn:

Mann	
Kvinne	

Alder	

Studieretning	

Snittkarakter fra VGS	

Hjemsted, by/fylke	

Politisk ståsted. Hvor på skalaen vil du si at du er? (sett ring rundt)

Venstresiden	Sentrum	Høyresiden

Alle som deltar i dette eksperimentet får nøyaktig samme oppgavesett, hvor mange oppgaver tror du gjennomsnittet klarer å løse?

1	2	3	4	5	6	7	8	9	10

Anse deg selv 3000 kroner rikere enn du er i dag. Du kan velge mellom

A: En sikker gevinst på 1000 kroner

B: 50 % sjanse til å vinne 2000 kroner og 50 % sjanse til å vinne 0 kroner.

Anse deg selv 5000 kroner rikere enn du er i dag. Du kan velge mellom

A: Et sikkert tap på 1000 kroner

B: 50 % sjanse for å tape 0 kroner og 50 % sjanse for å tape 2000 kroner.

Du får tilbud om å delta i et veddemål, der det er 50 % sjanse for å vinne eller tape. Dersom du taper så taper du 250 kroner. Hva må gevinsten være for at du skal være villig til å godta dette veddemålet?

8.9 Questionnaire in English

Questionnaire

Please fill out this short questionnaire. (Skip those questions that you don't wish to answer)

Sex:

Male	
Female	
Field of study	

GPA from upper secondary school	

Hometown, County	

Political views. Where on the specter would you say you are? (ring around your answer)

Left	Center	Right

Alle som deltar på dette eksperimentet får nøyaktig samme oppgavesett, hvor mange oppgaver tror du gjennomsnittet klarer å løse? (sett ring rundt)

All participants of this experiment get the exact same tasks, how many matrices do you think are solved at average? (ring around your answer)

1	2	3	4	5	6	7	8	9	10

Consider yourself 3 000 NOK richer than you are today. You can choose between:

A: A sure gain of 1 000 NOK

B: 50 % chance to win 2 000 NOK and 50 % chance to win 0 NOK

Consider yourself 5 000 NOK richer than you are today. You can choose between:

A: A sure loss of 1 000 NOK

B: 50 % chance of losing 0 NOK and 50 % chance of losing 2 000 NOK.

You are offered to participate in a bet where there is 50 % chance to either win or lose. If you lose, you lose 250 NOK. What must the potential gain be for you to be willing to accept this bet?

8.10 Receipt for the university of Stavanger in Norwegian

Utbetaling til deltaker i eksperiment

Prosjektopplysninger		
	ProsjektNavn	Oppdragsgiver(e)
		UiS
Kort beskrivelse av prosjekt		
	Forskningsprosjekt på økonomisk adferd	
Personalopplysninger for deltakere i eksperiment (*dokumentasjon for regnskapsavdeling*)		
Fødselsnr. (11 siffer)	Navn	Adresse
PC-nummer:		
Beløp (NOK)	Skattekommune (*oppgis selv om beløpet ikke er skattepliktig*)	Dato/signatur for mottak av kontanter

8.11 Receipt for the university of Stavanger in English

Payment to participant in experiment

Project information		
	Project name	Principal
		UiS
Description of project		
	Research project on economic behavior	
Personal information for participants (documentation for the accounting department)		
Personal number, 11 digits	Name	Address
PC-number:		
Amount (NOK)	Municipality (taxation)	date and signature

8.12 Excel data control group

loss	marked	correct	reported	male	age	cheat1	Cheat2	goodperf	grade average	peers	willing to bet	rogaland	business	lambda	cheater
0	2	2	2	0	22	0	0	0	3,9	3	500	0	1	2	0
0	2	1	2	1	20	0	1	0	4,2	4	375	1	0	1,5	1
0	5	5	5	1	23	0	0	1	3,9	4	500	0	1	2	0
0	4	1	6	1	24	2	5	0	4,1	4	500	1	1	2	1
0	4	2	2	0	20	0	0	0	4	5	250	0	1	1	0
0	3	3	3	0	23	0	0	1	4,6	4		0	1	0	0
0	4	3	4	0	22	0	1	1	3,7	6	600	0	1	2,4	1
0	1	0	1	0	21	0	1	0	3,9	5	500	0	1	2	1
0	3	0	3	0	29	0	3	0	4,3	7	250	1	1	1	1
0	4	3	3	0	22	0	0	1	4,5	2	1000	1	1	4	0
0	6	2	3	1	21	0	1	0	4,6	4	1500	0	1	6	1
0	5	5	5	1	26	0	0	1	3,3	4	250	0	1	1	0
0	2	0	2	1	31	0	2	0	4	3	500	1	1	2	1
0	2	1	2	0	20	0	1	0	4,7	5	500	0	1	2	1
0	6	6	6	1	24	0	0	1	4,3	4	750	1	0	3	0
0	6	6	6	1	23	0	0	1	4,9	6	500	1	0	2	0
0	3	3	3	1	23	0	0	1	5	4	1000	0	1	4	0
0	5	4	5	1	25	0	1	1	3,9	6	250	1	1	1	1
0	7	7	7	1	24	0	0	1	4,4	7	250	0	1	1	0
0	7	7	7	1	21	0	0	1	4,5	7	250	1	1	1	0
0	4	4	4	1	20	0	0	1	4,8	4	600	0	1	2,4	0
0	7	7	7	1	21	0	0	1	4,4	6	501	1	1	2,004	0
0	1	1	1	1	22	0	0	0	4,8	2	500	1	1	2	0
0	2	2	2	1	25	0	0	0	4,8	3	250	0	0	1	0
0	5	5	6	1	22	1	1	1	5	3	300	1	0	1,2	1
0	0	0	0	1	22	0	0	0	4,7	4	250	1	0	1	0
0	1	1	1	1	22	0	0	0	4,2	2	250	1	0	1	0
0	1	1	1	0	21	0	0	0	4,1	2		1	0	0	0
0	1	1	1	0	22	0	0	0	4,9	4	1000	1	0	4	0

8.13 Excel data treatment group

loss	marked	correct	reported	male	age	cheat1	Cheat2	goodperf	grade average	peers	willing to bet	rogaland	business	lambda	cheater
1	6	5	6	0	21	0	1	1	5	7	500	0	1	2	1
1	3	2	5	1	27	2	3	0	3,5	6	300	0	1	1,2	1
1	7	7	7	1	24	0	0	1	4,8	5	251	0	1	1,004	0
1	1	1	4	0	23	3	3	0	5,01	5	500	1	1	2	1
1	4	4	4	0	21	0	0	1	5,4	5	1000	1	1	4	0
1	6	5	6	0	25	0	1	1	4,3	7	1000	1	1	4	1
1	3	2	3	1	29	0	1	0	4,7	2	700	1	0	2,8	1
1	2	2	2	1	28	0	0	0	4,2	3	500	1	0	2	0
1	3	2	3	0	21	0	1	0	4,2	4	500	0	1	2	1
1	3	2	3	0	22	0	1	0	3,5	5	500	0	1	2	1
1	2	2	2	0	21	0	0	0		5		0	1	0	0
1	5	5	10	1	25	5	5	1	4	10	250	0	1	1	1
1	0	0	0	1	25	0	0	0	4	1	1000	1		4	0
1	6	5	6	0	20	0	1	1	5	5	1500	0	1	6	1
1	2	0	2	0	20	0	2	0	4	4	1000	0	1	4	1
1	5	2	5	1	25	0	3	0	5	4	250	0	1	1	1
1	2	0	1	1	26	0	1	0	3,4	4	500	1	1	2	1
1	2	0	3	1	25	1	3	0	4	5			1	0	1
1	8	8	8	1	24	0	0	1	4,7	6	500	0	0	2	0
1	6	6	6	1	28	0	0	1	4	5	251	1	1	1,004	0
1	1	0	1	0	26	0	1	0	4,2	4		0	0	0	1
1	3	3	3	0	21	0	0	1	4,9	5	250	0	1	1	0
1	8	6	8	0	21	0	2	1	5,1	6	500	0	1	2	1
1	3	2	6	1	21	3	4	0	4,2	4	500	1	1	2	1
1	1	1	1	1	23	0	0	0	4,2	3	1000	0	0	4	0
1	2	2	2	0	21	0	0	0	5,4	4	1500	1	0	6	0
1	2	2	2	0	24	0	0	0	3,9	4	1000	0	0	4	0
1	4	4	4	0	22	0	0	1	4,7	5	500	0	0	2	0
1	5	5	4	1	24	0	0	1	5,8	3	600	0	0	2,4	0
1	2	2	2	1	26	0	0	0	4	3	500	0	0	2	0