Erasmus School of Economics

Let's Be Honest: I Would Cheat If I Didn't Know You

An Online and Field Experiment on the Effect of Knowing the Experimenter and Priming with Benefits on Dishonesty

Master Thesis Behavioural Economics

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ABSTRACT

Dishonesty is an extensively studied subject. So far, no study had looked at the effect of prior familiarity of subjects with the experimenter on dishonesty. Subjects could act as if they are honest, because they know the experimenter. This is a potential confounding factor for research on dishonesty conducted with a convenience sample. This effect was investigated by this study. Additionally, the effect of priming subjects with potential benefits of cheating on the likelihood to act dishonestly was examined. Both an online and field experiment were conducted, to study the generalizability of results. 279 members of a student association participated, part of them were familiar with the experimenter. Subjects had to perform the matrix task and state their performance afterwards, which could not be checked. Their performance determined the amount of tickets earned for a lottery to win a gift card worth €50. Afterwards, an e-mail was send to verify the amount of lottery tickets earned. Half of the subjects were deliberately send an amount higher than was actually earned. Not replying to the e-mail was interpreted as cheating. Familiarity with the experimenter and priming both did not have a significant effect on dishonesty. Behavior in the online and field experiment were also not significantly related. More subjects behaved dishonestly in the field experiment than in the online experiment. A significant effect of gender was confirmed, men were more likely to be dishonest than women in the online experiment. Further research that overcomes the limitations of this study is necessary to draw more robust conclusions.

Keywords: dishonesty, cheating, lying, familiarity, experimenter, priming, online experiment, field experiment, gender

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Introduction

Instances of unethical behavior are widespread. A big scandal within the academic field was the discovery of academic fraud conducted by Dutch scientist Diederik Stapel. Stapel conducted a lot of popular and highly cited studies in the field of social psychology. However, in 2010 he was found guilty of fabricating and manipulating the data of over 50 of his studies (Bhattacharjee, 2013). A more frequently occurring example of deception is that of false insurance claims. On a yearly basis, these claims cost insurers millions of euros. In the Netherlands, 10.001 cases of false insurance claims were confirmed in 2016, which on average would have cost Dutch insurers 8.000 euro per claim ("CBV Factsheet", 2017).

In the media, most attention is given to large scandals like these. However, there are also a lot of examples of dishonest behavior that seem small, but happen all the time. For example, lying on your resume, buying clothes at a shop to return them after wearing them for a day ("*wardrobing*"), keeping excessive change money that was accidentally given to you, cheating on exams, illegally downloading movies and music and so on. People confess to tell one or two lies per day (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996). Taken together, these small instances of dishonesty potentially have a big impact on society.

A lot of research has been done on unethical behavior by studying it in a laboratory setting. An established finding is that dishonesty is often not the result of a few bad individuals that cheat maximally, but rather a lot of people that cheat a little (Ayal & Gino, 2011; Fischbacher & Föllmi-Heusi, 2013; Mazar, Amir, & Ariely, 2008; Shalvi, Dana, Handgraaf, & De Dreu, 2011). In several studies conducted by Ariely and his colleagues, they use the "Matrix task" to study dishonesty. Subjects receive a paper with 20 matrices filled with 12 three-digit numbers. Two of the numbers in each matrix add exactly up to 10. Subjects are instructed to find as many combinations as possible within a limited time. For every combination found, they are financially rewarded. In these experiments, subjects could cheat without getting caught, because their paper is shredded afterwards. The performance they state can therefore not be checked. In these situations, almost all subjects are dishonest. However, subjects only overstate their performance by two matrices on average, instead of cheating to the maximum amount (Gino, Ayal, & Ariely, 2009, 2013; Mazar et al., 2008; Mead, Baumeister, Gino, Schweitzer, & Ariely, 2009). Mazar et al. (2008) state that this 'partial dishonesty' can be explained by the fact that people are tempted to cheat when this leads to personal benefits, but at the same time want to maintain a positive self-concept. They find a balance between these factors by cheating a little.

There are many factors that influence where people draw the line regarding their unethical behavior. For example, the notion that the authority of which people can steal from is wealthy makes it more likely that people will behave dishonestly. When people are in the visible proximity of wealth (cash), they are more likely to cheat, compared to being in a setting of scarcity (Gino & Pierce, 2009).

Vohs, Mead, & Goode (2006, 2008) found that people behave more self-focused and self-serving after being primed with visuals of money. Priming is a technique whereby exposure to a stimuli may affect subsequent responses without conscious guidance or intention (Weingarten, Mcadams, & Hepler, 2015). Based on this literature, it could be that the tendency to cheat will increase when people are being primed with visuals of the benefits that they can earn by being dishonest. This has to the best of my knowledge not been researched so far. Therefore, this study will try to answer this question.

To look at the external validity of results found by laboratory studies, several field experiments on dishonesty have been conducted. After measuring dishonest behavior in the lab, participants of the study of Potters and Stoop (2016) unknowingly became part of a field experiment. In the lab, participants had – possibly dishonestly - earned an amount of money. This money would be paid on their bank account the next day. Potters and Stoop deliberately paid some participants too much and send them an e-mail asking to verify if payment was received successfully. Not replying to this e-mail and not mentioning the overpayment was interpreted as dishonest behavior. They found that behavior in the lab correlated to behavior in the field. The individuals who did not mention the overpayment, were the same individuals who were dishonest in the lab environment. Similar results were found by Dai, Galeotti and Villeval (2017). The current study will test if this is also the case for results found in an online experiment.

Knowing the person that you steal from or lie to decreases the extent of dishonest behavior displayed (Azar, Yosef, & Bar-Eli, 2013; van Swol, Malhotra, & Braun, 2012). Some researchers – especially students writing their thesis – use a convenience sample, since this is an easy, fast and cheap method to find respondents. A convenience sample often consists of people that the experimenter knows personally, such as family and friends. Using this kind of sample when studying dishonesty is a potential confounding factor. Participants that are acquainted with the experimenter could act as if they are honest, because they do not want to deceive the experimenter. To my knowledge this possibly confounding factor has not been researched before in relation to dishonesty. Taking all discussed literature into account, this research will therefore try to answer the following research question:

'Does being familiar with the experimenter influence the extent to which people display dishonest behavior in different types of experiments? Is this influenced by being primed with possible benefits?'

The research question will be answered by conducting an online and field experiment. Subjects are all members of a Dutch student association. Some of the subjects are familiar with the experimenter of this research whereas others are not. During the online experiment, subjects must complete the matrix task used by Ariely and his colleagues. They are instructed to solve as many matrices as possible within two minutes. Afterwards they must record the number of matrices they have solved. It is not possible to check if this amount is answered truthfully, therefore subjects can cheat without getting caught. The number of matrices solved corresponds to the amount of lottery tickets earned. With these tickets,

subjects take part in a lottery and have a chance of winning a Bol.com gift card worth 50 euro. This prize incentivizes subjects to lie about the number of matrices solved. Half of the participants will be primed with a picture of the prize they can win on all pages of the online survey. Based on the research of Potters and Stoop (2016), subjects will unknowingly become part of a field experiment after finishing the online experiment. All subjects will receive an e-mail with the amount of lottery tickets earned. Subjects are asked to send an e-mail when the number is incorrect. However, the amount of tickets stated is always incorrect. Subjects that do not mention the mistake will be seen as dishonest.

The outcomes of this research are important for the interpretation of previous research on dishonesty conducted with a convenience sample and for comparable upcoming research, especially that conducted by students. If people that are familiar with the experimenter indeed behave differently than people unfamiliar with the experimenter, future research on dishonesty should be conducted with subjects that are unfamiliar with the experimenter only. Furthermore, by doing both an online and field experiment, this research can demonstrate if results on dishonesty found in an online experiment are generalizable to a field environment. So far this has only been demonstrated for lab experiments. Next to that, we can observe if the effects of being familiar with the experimenter hold both in an online and a field setting. Studying the effect of priming with possible benefits of being dishonest could give us insights on how to make dishonest behavior less likely to prevail. For example, in situations where dishonest behavior is likely the focus should not be on the benefits that can be earned.

The remainder of this study is structured as follows. First, an overview of important literature on dishonesty is given. Based on the literature, hypotheses are formulated in the Hypothesis Development chapter. In the chapter Data and Methodology, the experimental design, variables, methodology and descriptive statistics are presented. Next, the results of the statistical analysis of the hypotheses are described. In the final chapter, the results and their implications are discussed and limitations and suggestions for further research are given. The study will end with a final conclusion.

Literature Review

In this chapter, an introduction to the existing literature on dishonesty is given. The fact that the decision to act dishonestly is often not rational is discussed and explained. Additionally, factors that influence dishonest behaviour are presented. Finally, a selection of studies on dishonesty that used a field experiment are discussed.

Simple Model of Rational Crime

According to the standard economic model of rational behavior (*homo economicus*), human beings are rational and make decisions based on trade-offs which choice lead to the most optimal outcome. Assuming that people are rational, being dishonest would only follow from a positive trade-off weighing the expected external costs and benefits from the act of being dishonest (Becker, 1968; Lewicki, 1983). Becker (1968) summarized this cost-benefit trade-off in his Simple Model of Rational Crime (SMORC). Mazar et al. (2008) describe the SMORC by using the example of passing by a gas station. A trade-off between the expected amount of cash that could be gathered by robbing the gas station, the probability of being caught, and the severity of the punishment when getting caught will be made. According to SMORC, people will rob the gas station – or engage in any other dishonest behavior - when expected external benefits are higher than expected external costs.

Everyone Cheats – a Little

If people indeed make trade-offs between costs and benefits, they would cheat maximally when there is no chance of getting caught or in absence of sanctions. However, many studies showed that this is not the case (Shalvi, Dana, Handgraaf, & De Dreu, 2011; Mazar et al., 2008; Gino, Ayal, & Ariely; 2009).

Mazar et al. (2008) conducted a series of six different experiments studying dishonest behavior. The results showed that when there was a possibility to cheat without getting caught, most subjects did. However, the magnitude in which subjects cheated was very small; they remained far below the maximum possible pay-off (6-20% of the possible magnitude).

Research of Gino et al. (2009) confirmed this finding. In their experiment subjects were divided into two groups, only differing in the possibility to cheat. Subjects had to do the "Matrix task", they received a paper with 20 four by three matrices filled with three-digit numbers (e.g. 1.23). Two of the numbers in each matrix added exactly up to 10. Subjects had to find as many combinations as possible within limited time. For every combination they found, they were financially rewarded. In the control group subjects had to hand in their matrices-paper and the experimenter rewarded them for every combination found correctly. In the other group, subjects had to put their matrices-paper in a shredder

and mention the number of combinations they found on a different paper. Since they thought their matrices-paper was shredded, this gave them the opportunity to overstate the number. However, the shredding machine was manipulated, so the papers could still be checked by the experimenters. Gino et al. (2009) found that in this group subjects reported a higher number of matrices solved than in the control group. Most of the subjects cheated, although they only overstated their performance by two matrices on average.

Similar results were found by Fischbacher and Föllmi-Heuse (2013). In their experiment, subjects had to privately roll a die and afterwards report the outcome. Pay-off was related to the outcome on the die, however the outcome could not be checked by the experimenter. Most subjects gave a false outcome, but not everyone lied by stating the maximum possible pay-off. The authors called this phenomenon 'partial lying' or 'incomplete dishonesty.'

Based on these studies we can conclude that dishonesty is often not the result of a few individuals that cheat maximally ("bad apples"), but of many people that cheat a little ("a rotten barrel") (Ayal & Gino, 2011).

Increasing the Benefits

As discussed, the economical trade-off theory does not always hold with respect to people not cheating maximally when they cannot get caught. According to this theory, cheating should go up when benefits go up and other factors remain the same. Several authors studied whether this is the case.

Ariely (2012) investigated this by using the same matrix task. He altered the pay-off that a subject received per matrix solved, varying from 25 cents to $10. It turned out that cheating remained the same when benefits increased. It even showed that when people were rewarded with $10 per matrix, dishonest behavior went down. An explanation for this is that at a higher pay-off people feel guilty and cannot feel good about themselves when they cheat. Another explanation is that they do not want to draw attention and therefore cheat less when benefits go up. In line with this, Fischbacher and Föllmi-Heuse (2013) also did not find any differences when the stakes in their experiment increased. Even when the stakes were tripled, dishonest behavior remained the same.

Therefore, we can conclude that dishonest behavior is not changed by increasing the benefits that can be earned. At most, it could even cause people to cheat less when benefits become very high.

Self-concept Maintenance

A lot of research has been done to explain why people do no cheat in a way that maximizes their pay-off. The theory of Mazar et al. (2008) has been supported by many other studies and will therefore be discussed here.

Mazar et al. (2008) pose that people cheat when this leads to a benefit, however they only do this to a certain extent to maintain a positive self-concept as honest. Their self-concept maintenance theory incorporates both external (benefits) and internal rewards (self-concept maintenance) into the decision to cheat. According to Mazar et al. (2008) there are two mechanisms that influence self-concept maintenance: 'inattention to moral standards' and 'categorization malleability'.

The first implies that the more attention people pay to their moral standards and guidelines, the more honest they will act. They showed this in two experiments by manipulating subjects to be more mindful of their moral standards. In the first experiment, people had to sign an honesty statement before doing the matrix task. In the second experiment, they made participants recall the 10 commandments before doing said task. In both experiments dishonesty decreased compared to a control group without a moral reminder. This was confirmed by Shu, Mazar, Gino, Ariely, & Bazerman (2012); when people signed an honesty statement at the beginning of a self-report, instead of at the end, they filled in the form more honestly.

Where inattention to moral standards focuses on the 'inside world', categorization malleability focuses on the 'outside world'. It means that we can categorize our actions into positive (moral) terms, which in turn helps to protect our positive self-concept. When categorization malleability is higher, people will act more dishonest. For example, when you take a pen of a friend, we do not categorize this as stealing. This is because we can categorize it in in a positive way ("*We are friends, he will not mind and he probably took a pen of me before*"). However, if we steal the value of the pen from our friend to buy a pen, we can only categorize this as an immoral act (Dana, Weber, & Kuang, 2007). This effect was also shown by using the matrix task. This time subjects could earn 'tokens' instead of money. The tokens could later be exchanged for money. The fact that subjects earned tokens, made the categorization malleability higher, therefore cheating went up. Ariely (2012) showed the same effect by placing six cans of Coca Cola in a shared refrigerator at a campus. Within 72 hours all the cans disappeared. However, when he put six one dollar-bills in the same refrigerator they remained untouched.

Next to providing evidence for the two mechanisms that influence self-concept maintenance, Mazar et al. (2008) demonstrated that subjects do not alter their self-concept regarding their honesty and morality after displaying dishonest behavior. This proves that the self-concept is indeed maintained. Altogether, this provides evidence for the self-concept maintenance theory.

The findings of Shalvi et al. (2011) add credibility to this theory. They conducted a similar experiment as Fischbacher and Föllmi-Heuse (2013), where subjects had to privately roll a die. Some

subjects were instructed that they could roll the die three times, yet only the first outcome had to be reported for their payment. For this group lying increased compared to people who could only roll the die once. It appeared that subjects reported the highest outcome of the three die rolls. Shalvi et al. (2011) therefore state that cheating depends on the availability of self-justification that people have (*"I could have rolled 6 the first time I rolled the die"*). This is in line with the categorization malleability mechanism of Mazar et al. (2008).

To summarize, incomplete dishonesty results from people trying to find a balance between external rewards (money) and internal rewards (maintaining a positive self-concept). People want to feel positive about themselves, but sometimes this requires some self-deception.

Factors of Influence

We know that most people display dishonest behavior up to a certain point. But where do people draw the line and what influences where this line is? A lot of research has been done to show which factors can influence the degree and likelihood of dishonest behavior. The most important findings are discussed in this section. First, we discuss the effect of contextual and situational factors. Then, the effect of individual factors, like gender and personality, are discussed. Finally, studies about the effect of social factors on dishonesty are presented.

Contextual and situational factors. Ariely (2012) showed that increasing the benefits does not increase the extent to which people show dishonest behavior. However, the fact that the people or organization you dishonestly take the money from is wealthy does. Gino and Pierce (2009) showed the existence of the abundance effect: people cheat more when in the visible proximity of wealth (cash), compared to being in a setting of scarcity. An environment of abundant wealth encourages dishonest behavior, which is partly explained by feelings of envy according to this study. Somewhat in line with this, is the finding that people behave more self-focused and self-serving after being primed with visuals of money (Vohs et al., 2006, 2008).

The state that people are in also affects the likelihood of displaying dishonest behavior. People who are in an unpleasant visceral state, like being hungry or thirsty, will act more dishonest to improve that visceral state. An experiment showed that the hungrier people are, the more likely they are to lie about winning a snack pack. Interestingly, subjects were only more likely to be dishonest for a prize that could improve their current state (Williams, Pizarro, Ariely, & Weinberg, 2016).

Depletion also influences dishonesty. Mead, Baumeister, Gino, Schweitzer, & Ariely (2009) looked at the effect of being depleted by doing a task that required self-control. People had to do this task were more likely to be dishonest than people who did not have to do this task beforehand. Next to that, these people were also more tempted to expose themselves to opportunities in which they could cheat and subsequently cheated more when in that situation. Kouchaki and Smith (2014) found evidence

for the *morning morality effect*. They showed that people engage less in dishonest behavior in the morning, than in the afternoon. This effect can be explained by depletion; self-regulatory resources and moral awareness gradually decrease throughout the day (Mead et al., 2009).

To conclude, the context and state that people are in can both influence dishonesty. When people are depleted, in an unpleasant visceral state or in the proximity of wealth it is more difficult to behave socially desirable.

Individual factors. In general, most research finds that men are more likely to be dishonest than women. Dreber and Johannesson (2008) used a sender-receiver game to examine gender differences in deception. In this game senders had a monetary incentive to send a deceptive message to the receiver. They found that men are more likely to be dishonest to gain a monetary benefit than women. Houser, Vetter and Winter (2012) found that men were more likely to incorrectly report the outcome of a private coin toss. This was also confirmed by a field experiment; males were more likely to travel without a bus ticket than females (Bucciol, Landini, & Piovesan, 2013).

Regarding the effect of personality on dishonest behavior there is a lot of inconsistency in research outcomes. Giluk & Postlethwaite (2015) conducted a meta-analysis of 17 studies to come to a better understanding. All studies included observed the effect of Big Five personality traits on academic dishonesty. The analysis elucidated that conscientiousness and agreeableness are most strongly related to dishonesty. Students that score high on these traits are less likely to cheat, than students with a lower score on these traits. Next to these traits, creativity has been linked negatively with dishonesty (Beaussart, Andrews, & Kaufman, 2013; Chan, Tan, & Tan, 2016; Gino & Ariely, 2012). Gino and Ariely (2012) confirmed that people who are more creative are more likely to act dishonest. Additionally, creativity seems to be a better predictor for dishonesty than intelligence. Even when people are primed to be more creative, they behave more dishonest afterwards. Gino and Ariely explain this 'dark side of creativity' by the fact that a creative personality and mindset will help people to justify their dishonest actions, which will subsequently cause dishonest behavior. Beaussart, Andrews, & Kaufman (2013) correspondingly found a negative link between creativity and observed and self-reported integrity.

These studies suggest that individual factors play a role in dishonest behavior. Amongst others, personality, creativity and gender can influence the extent to which people act unethically.

Social factors. In real life, behavior almost always takes place in a social setting, hence it is important to be aware of the effect this could have on dishonest behavior. Gino et al. (2009) examined if dishonest behavior is 'contagious' by using the matrix test. An actor pretended to be doing the matrix test in a room with other subjects. Shortly after the task started, the actor claimed to have solved everything and - without any trouble - he receives the maximum amount of money and leaves. To the other subjects, it was clear that this participant must have cheated. The authors created two settings, one

where the actor was part of the in-group (a student of the same university) and one where he was part of the out-group (wearing a sweater of a different university). In the in-group setting cheating went up, however in the out-group setting it went down. This is in line with the social identity theory; the behavior of others has a bigger impact on people when they can identify with them (Tajfel & Turner, 1986). The fact that somebody who belonged to their in-group cheated, made this behavior socially acceptable. In another experiment conducted by the same authors they again hired an actor. This time, before the study started, the actor asked if he could cheat. To which the experimenter replied that "*you could do whatever you want*". This manipulation increased the saliency of cheating. When the possibility of cheating was made salient, cheating was lower compared to the regular setting. This could be explained by the self-concept maintenance theory of Mazar et al. (2008): people paid more attention to their moral standards and 'cheating' cannot be categorized in a positive way. This research shows that in some conditions unethical behavior can be contagious. Seeing someone from your in-group show bad behavior increases unethical behavior, however making unethical behavior salient makes it go down.

Several studies showed that when people are being watched their behavior changes (Ekström, 2012; Yu, Tseng, Muggleton, & Juan, 2015). This effect is also present when looking at dishonest behavior. Even the idea of being watched leads to a decrease in dishonest behavior (Bateson, Nettle, & Roberts, 2006). In the study of Bateson et al. (2006) people could take drinks from a table. On the table was a note which asked people to pay for their drinks by putting money into a box. During the study, eyes that appeared to be looking at the people grabbing a drink were printed on this note. They found that when people were being 'watched' by these eyes, the money in the box almost tripled. Kroher and Wolbring (2015) looked at the effects of physically being watched by a partner by using the die experiment. When subjects were in the company of a partner the extent of cheating decreased, compared to rolling the die in private. So, when people are being monitored by someone else – or just feel like they are – unethical behavior decreases. This is probably the consequence of a higher self-awareness, which causes people to behave more according to their moral standards (Baltazar et al., 2014).

Gino, Ayal and Ariely (2013) did several experiments to examine if people also act dishonest to benefit others (altruistic cheating). When outcomes of the matrix task were summed with that of other participants and afterwards divided, cheating went up. The bigger the group that could benefit, the higher the extent of cheating was. Moreover, the authors did an experiment in which the participants would not get paid themselves, but a random partner would get paid according to their performance. Although, the extent of cheating was lower than when participants also benefited themselves, people still cheated.

Another social factor that could influence unethical behavior is the fact if you know the person you 'steal' from. In a field experiment, people dining at a restaurant were given too much change after paying with cash. They found that regular customers of the restaurants were much more likely to return the excessive change, than one-time visitors (Azar et al., 2013). This can be explained by the fact that regular customers are familiar with the employees of the restaurant and feel worse when they keep the

change. These studies could indicate that people feel worse to steal from people that they know. DePaulo and Kashy (1998) found that people tell less lies to people that they feel closer to and when they lie to these people they feel more uncomfortable. In the study of van Swol, Malhotra, & Braun (2012) subjects had to play the ultimatum game twice; with a friend and with a stranger. For each pair, the role of allocator and receiver was randomly divided. The allocator received an amount of money (0-30$), which he had to divide between him and the receiver. The receiver was not informed about the initial amount of money the allocator received. The allocator had to communicate the amount of money the receiver would receive, but he was not required to tell the initial amount of money he received. Not very surprisingly, people were more likely to deceive strangers than to deceive friends.

We can conclude that dishonest behavior can be influenced by a lot of social factors; seeing others being dishonest, being monitored by or knowing others personally can influence the extent to which people behave unethically.

Field Experiments

Most research on dishonesty is conducted in a laboratory. However, for further implications it is important to know if behavior that is present in the lab will also hold in a field environment. A selection of conducted field experiments will be discussed in this section.

In Austria companies sell newspapers on the street through an 'honor system'. People can grab a newspaper and should pay by putting cash into a locked box. This system gives people the chance to get a paper without paying (enough). Next to this, it is a good setting for a field study on dishonesty. Pruckner & Sausgruber (2013) recreated this situation and found that two thirds of people did not pay. Most of the people that did pay, did not pay enough, which is in line with incomplete dishonesty found in lab experiments. A study on an honor system selling donuts and bagels, found similar results (Levitt, 2006).

Potters and Stoop (2016) conducted a lab and field experiment to look at the external validity of dishonesty in lab experiments. Participants were invited to the lab, where they had to do a version of the mind game. Participants received a deck of 20 cards of which the bottom side was divided into a black and a white part, with on each side a number. These numbers together add up to seven (e.g. 2 and 5). Subjects were asked to pick a color in their mind (black/white), after which they could turn a card and report the color they had in mind. The number corresponding to the chosen color would be paid out in cash. Subjects therefore had an incentive to be dishonest about the color they had in mind. This task had to be repeated twenty times of which three rounds were paid out. This amount would be paid on their bank account the next day. When leaving they received a card with a reminder of the amount of money they earned. After the lab experiment, subjects unknowingly became part of a field experiment. They were assigned to three different groups; one that was overpaid (actual earnings + €5), one that was

underpaid (actual earnings - €5) and one that received the right payment. The experimenters noted if subjects responded to an e-mail that was send three days after the experiment, asking to verify if payment was received. Potters and Stoop found that the (dis)honest behavior seen in the lab correlates to the behavior seen in the field. The individuals who replied to the e-mail when being overpaid, were the same individuals who were honest in the lab and vice versa. Additionally, Potters and Stoop (2016) found that the amount of people that cheat in the field is greater than the amount of people that cheat in the lab setting. Dai, Galeotti and Villeval (2017) conducted a comparable experiment with students and found similar results.

Dai, Galeotti and Villeval (2017) also conducted an artefactual field experiment, however they recruited people who just came out of public transport. These people were asked to join in an experiment nearby the station. Dishonesty measured with a task in the lab was compared to self-reported measures of honesty and the fact if people had bought a public transport ticket. They found that some people were fully honest, some partially dishonest and some completely dishonest, which is in line with previous findings (Fischbacher & Föllmi-Heusi, 2013). People that did not pay for a ticket in real life were the same people who acted dishonest in the lab. People that did pay for their ticket in real life displayed more honest behavior in the experiment.

These findings strengthen the impression of generalizability of research on unethical behavior conducted in the laboratory to the field. This is important to know when findings of laboratory research are used to decrease unethical behavior in real life.

Hypothesis Development

In this chapter, the hypotheses that will be tested by this research are specified. By testing these hypotheses, the following research question will be answered: *'Does being familiar with the experimenter influence the extent to which people display dishonest behavior in different types of experiments? Is this influenced by being primed with possible benefits?*

The hypotheses will be tested by collecting data through an online and field experiment with the same subjects.

Hypothesis 1

The current research will investigate the effect of being familiar with the experimenter on the extent to which people show dishonest behavior. As discussed in the literature review, people are less inclined to lie or deceive their friends compared to strangers (DePaulo et al., 1996; van Swol et al., 2012). Additionally, in a field experiment, Azar et al. (2013) showed that regular customers of a restaurant are more likely to return excessive change than one-time visitors. This can be explained by the fact that regular customers are familiar with the employees of the restaurant and feel worse when they keep the change. Some research, especially that of students writing their thesis, uses a convenience sample. This is an easy, fast and cheap method to find respondents. However, a convenience sample often consists of people that the experimenter knows personally, such as family and friends. Using this kind of sample when studying dishonesty is a potential confounding factor. Subjects that know the experimenter could act as if they are honest, because they do not want to deceive the experimenter. Therefore, it is important to examine this effect. Based on the literature, I expect that people that know the experimenter personally will behave more honestly in both the online and field experiment. The following hypotheses will be tested:

H1a: In an online experiment, individuals that are familiar with the experimenter are less likely to cheat than individuals that are not familiar with the experimenter.

H1b: In a field experiment, individuals that are familiar with the experimenter are less likely to cheat than individuals that are not familiar with the experimenter.

Hypothesis 2

Conducting field research is important to see if behavior found by laboratory research also holds in the field. Studies by Potters and Stoop (2016) and Dai et al. (2017) showed that people that behave dishonestly in in a field setting, are the same people that behave dishonestly in a lab setting and vice

versa. It has not been studied before if this is also the case for dishonest behavior found in an online experiment. Therefore, both an online experiment and a field experiment will be conducted. Based on the research discussed we expect that people that cheat in an online experiment, will also be dishonest in a field setting where they are unaware of being monitored. The other way around, we expect that people who are honest in the online experiment, are also honest in the field experiment. The following hypotheses will be tested:

H2a: The individuals that display dishonest behavior in an online experiment, are the same people that display dishonest behavior in a field experiment.

H2b: The individuals that display honest behavior in an online experiment, are the same people that display honest behavior in a field experiment.

Hypothesis 3

As presented in the literature review, Gino and Pierce (2009) showed the existence of the abundance effect. They found that people that are in the visible proximity of cash cheat more. Being in an environment of abundant wealth encourages dishonest behavior. Possibly, seeing the benefits that can be earned by being dishonest encourages people to be dishonest. Vohs et al. (2006, 2008) showed that when people are primed with visuals of money, they behave more self-focused and self-serving. Priming is a technique whereby exposure to a stimuli may affect subsequent responses without conscious guidance or intention (Weingarten et al., 2015). Based on the literature we expect that individuals that have been primed by images of the prize they can win will behave more dishonest, than individuals that have not been primed with these images. Seeing the prize – a Bol.com gift card worth €50 – could make people more willing to be dishonest to win the prize. It is expected that this effect is bigger for people that are not familiar with the experimenter than for people that are familiar with experimenter, since people are less willing to deceive the people that they personally know they could therefore be influenced less by priming (Azar et al., 2013; DePaulo et al., 1996; van Swol et al., 2012). These combined effects are summarized in Table 1. The following hypotheses will be tested in an online experiment:

H3a: Individuals that have been primed by images of the prize they can win will behave more dishonestly than individuals that have not been primed with these images.

H3b: This effect is bigger for individuals that are not familiar with the experimenter than for individuals that are familiar with the experimenter.

Table 1

Hypotheses Regarding 2x2 Effects of Familiarity and Priming on Dishonesty

	Primed with prize	Not primed with prize
Familiar with experimenter	-/+	-/-
Unfamiliar with experimenter	+/+	+/-

Hypothesis 4

In their research, Potters and Stoop (2016) found that, absolutely seen, people were more dishonest in a field setting than in a laboratory setting. This could be accounted for by a number of factors. In their experiment, people cheated by writing a false outcome down in the lab setting (lying by commission), but in the field, all they had to do was not respond to an e-mail (lying by omission). Moreover, it also possible that some participants simply did not see the e-mail or did not check their bank account (Potters and Stoop, 2016). Another possibility is that in the lab people behave more honestly because of observer effects. In the current research, we expect to find the same outcome. The expectation is that the effect is both visible for subjects that are familiar with the experimenter and for people that are not familiar with the experimenter. However, we expect that this effect is bigger for people that are not familiar with the experimenter, than for people that are not familiar with experimenter, since people are less willing to deceive the people that they are acquainted with (Azar et al., 2013; DePaulo et al., 1996; van Swol et al., 2012). The following hypothesis will be tested.

H4a: Both individuals that are familiar with the experimenter and individuals that are not familiar with the experimenter, will behave more dishonest in a field experiment than in an online experiment.

H4b: This effect is bigger for individuals that are not familiar with the experimenter than for individuals that are familiar with the experimenter.

Data and Methodology

This chapter will start with a section that specifies the design of the experiment. Secondly, the variables that have been used are described. Then, an overview of the descriptive statistics is given. Lastly, the statistical methods that were used to answer the research question are discussed in the methodology section.

Experimental Design

To answer the research question two types of experiments were conducted, an online experiment and a field experiment. Both will be described in this section. Also, the pre-test that was conducted is explained. First, the subjects that were invited to the experiments will be described.

Sample. To recruit subjects, (former) members of a student association in Rotterdam, the Netherlands, were invited to participate in the online experiment by e-mail. E-mail addresses were derived from yearbooks of the student association. In total 1.669 members received an invitation. This sample was chosen, since the experimenter was a member of the student association. Therefore, some of the subjects were familiar with the experimenter, whereas others were not. In total, 1.333 members unfamiliar with the experimenter and 336 members familiar with the experimenter were invited.

Online experiment. For the online experiment, the online survey software Qualtrics was used. The survey was duplicated to create two different links to the survey. Subjects familiar with the experimenter and subjects unfamiliar with the experimenter received different links to automatically create two conditions, without participants having to state if they are familiar with the experimenter themselves. This question could have otherwise influenced their answers. The division was made by the experimenter beforehand. On May 14th, 2018 all potential subjects were invited to participate in the experiment by an e-mail. The invitation that was sent can be found in appendix A3. One week later, on May 21st, a reminder was sent to all members that did not participate or did not finish the survey yet. The reminder can be found in appendix A4.

After starting the survey all participants were randomly assigned to one of two conditions, the priming condition or the control condition. In the priming condition, participants were primed with a picture of the prize that could be won by participating in the experiment, namely a Bol.com gift card worth €50. An image of this gift card, together with an image of €50 (see appendix A2), was shown on every page of the questionnaire, except for the pages after stating performance on the task. Since stated performance was the variable expected to be influenced by priming, showing the image afterwards was not necessary. In the control condition, the image was not shown. To summarize, in total there were four conditions in the online experiment:

1. Condition: subject familiar with experimenter in control condition
2. Condition: subject familiar with experimenter in priming condition
3. Condition: subject unfamiliar with experimenter in control condition
4. Condition: subject unfamiliar with experimenter in priming condition

The survey began with a message thanking people for participating. Subsequently, participants had to do a version of the matrix task, which was described earlier in the literature review (Ariely, 2012; Gino et al., 2009; Mazar et al., 2008). Firstly, an explanation of the task was given. Subjects needed to solve as many matrices as possible within two minutes. Solving a matrix, means finding two numbers within the matrix that add exactly up to ten. In total, there were 12 matrices that could be solved, containing 12 numbers each (3x4). This task is often used to measure dishonesty, since participants do not see this as a task that measures their intelligence. Additionally, subjects can evaluate themselves when a matrix is solved correctly, given that they can count to ten (Mazar et al., 2008). Subjects had two minutes to solve the matrices. It is impossible to solve all matrices within this time, which gives the opportunity to cheat. The matrix test can be found in Appendix A1.

Before starting the matrix task, subjects were instructed that by performing the task they could gather lottery tickets. With these tickets, they had a chance at winning a prize (a Bol.com gift card worth €50). The more matrices solved, the more tickets they earned, the more chance they had at wining the prize. The lottery system was chosen, since financial constraints made it impossible to pay every participant according to their performance, which is often done in similar research (Ariely, 2012; Fischbacher & Föllmi-Heusi, 2013; Gino & Ariely, 2012; Mazar et al., 2008). Connecting performance to the number of lottery tickets incentivized overstating performance. Beforehand, subjects were explicitly told to keep track of the number of matrices solved, because the survey could not keep track of this. Since subjects had to keep track themselves and it was not possible to click on the matrices to mark the ones solved, subjects could infer that it was not possible for the experimenter to know their real performance. This gave people the chance to cheat without getting caught. A small clock indicated the time subjects had left to solve the matrices. After two minutes were over, the survey automatically continued to the next page. On this page students had to state their performance on the task.

Following this task, participants had to answer questions regarding their age and gender. Next to that, they had to rate their current financial status on a 10-point Likert scale. Finally, subjects were thanked for participating and asked to state their e-mail address. It was explained that in the following days they would receive an e-mail to verify the amount of lottery tickets gathered and that the e-mail address would also be used to contact them if they had won the lottery. The complete text of the survey can be found in appendix A1.

Field experiment. After completing the online experiment, subjects became part of a field experiment. Since subjects were not aware of their participation in the experiment, we can speak of a natural field experiment (List, 2008). One day after participating in the online experiment, every subject received an e-mail to verify the amount of lottery tickets they gathered during the experiment. Subjects were asked to reply to the e-mail if the amount of tickets was incorrect. However, every subject deliberately received an incorrect amount of lottery tickets. See appendix A4 for the complete text of this e-mail. Half of the subjects received an e-mail that stated that the subject gathered three more lottery tickets than they did. The other half of the subjects received an e-mail that stated that the subject had gathered three lottery tickets less than they did. Which amount of lottery tickets subjects received was based on their performance in the online experiment. For both subjects familiar and unfamiliar with the experimenter, the top ~25% and bottom ~25% performers in the online experiment received an e-mail stating a lottery ticket amount that was too high (actual amount +3 tickets). For clarity, these conditions are called 'Higher Top' and 'Higher Bottom'. The subjects that had an average performance - the middle performers (~50%) - received an e-mail stating a lottery ticket amount that was too low (actual amount -3 tickets). This group is part of condition 'Lower'. The percentages were calculated for the familiar and unfamiliar group separately. This way of dividing subjects into conditions was essential, to test if subjects that are (dis)honest during the online experiment are also (dis)honest during the field experiment. The top performers were most likely dishonest in the online experiment and the bottom performers were most likely honest in the online experiment. For an overview of the conditions see Table 2.

Not replying to the e-mail if the amount of lottery tickets is too high (conditions 'Higher Top' or 'Higher Bottom'), was recorded as cheating. If cheating in the online experiment correlates with cheating in the field experiment, we expect that the bottom 25% performers are more likely to respond to the e-mail than the top 25% performers of the online experiment. Condition 'Lower' was added to control for the fact that people who are familiar with the experimenter in general will respond more often. In total, the field experiment consists of six conditions:

1. Condition: subjects familiar with the experimenter and part of condition 'Higher Top'
2. Condition: subjects familiar with the experimenter and part of condition 'Higher Bottom'
3. Condition: subjects familiar with the experimenter and part of condition 'Lower'
4. Condition: subjects unfamiliar with the experimenter and part of condition 'Higher Top'
5. Condition: subjects unfamiliar with the experimenter and part of condition 'Higher Bottom'
6. Condition: subjects unfamiliar with the experimenter and part of condition 'Lower'

Table 2

Conditions Field Experiment, Calculated Separately for Familiar and Unfamiliar Condition

'Higher' (+3 tickets)	'Lower' (-3 tickets)
Higher Top: ~Top 25% performers online experiment	Middle ~50% performers online experiment
Higher Bottom: ~Bottom 25% performers online experiment	

Pre-test. Before conducting the experiments, a pre-test of the matrix task was conducted with a total sample of 18 people to measure honest performance on this task. These people did not participate in the experiment later. The subjects had to do the same task printed on paper within the same time and mark the matrices solved. Afterwards, the experimenter checked the amount of matrices solved correctly. In this way, the honest distribution of matrix scores was obtained.

Variable Description

The current study tried to answer if certain variables influence dishonest behavior measured in an online- and field experiment. In this section, all variables that were included in this study are described. First the independent variables are described. Finally, the dependent variables will be described.

Independent variables. There are four independent variables that were expected to influence dishonesty: familiarity, the manipulation during the online experiment, the manipulation during the field experiment and the type of experiment. These will be described here.

Familiarity. Familiarity is a binary variable that indicates if the subjects knows the experimenter or not. It takes value '1' if the subject is familiar with the experimenter and value '0' if the subject is not familiar with the experimenter. As discussed, (former) members of a Dutch student association were invited to take part in the experiment. Beforehand, the experimenter made a division between members that – in her opinion - were familiar with the experimenter and members that were not. This is a subjective measure, since subjects could think otherwise. However, subjects were not asked if they were familiar with the experimenter, since this could have possibly influenced the results. Previous research of Huls (2017) showed that there were no differences in results when familiarity reported by the experimenter was used in comparison with familiarity reported by subjects.

Condition online experiment. This is a binary variable that indicates the condition subjects were randomly placed in during the online experiment. The variable takes value '1' if subjects were exposed to priming during the experiment (priming condition) and value '0' if subjects were not exposed to

priming (control condition). As discussed, subjects in the priming condition were exposed to an image of the prize that could be won by winning the lottery (see appendix A2).

Condition field experiment. This is a categorical variable that indicates the condition subjects were part of during the field experiment. As discussed, based on performance during the online experiment subjects were placed in treatment 'Higher Top', 'Higher Bottom' or 'Lower'. The variable takes value '1' if subjects were part of treatment 'Higher Bottom' and value '2' if subjects were part of treatment 'Higher Top'. Both groups received an e-mail to verify an amount of lottery tickets that was too high (+3). The variable takes value '0' if subjects were part of treatment 'Lower', this group received an e-mail to verify an amount of lottery tickets that was too low (-3).

Dependent variables. There are two types of dependent variables, one measured during the online experiment and one measured during the field experiment. They both measure dishonest behavior.

Dishonest behavior online experiment. Dishonesty in the online experiment was measured by performance on the matrix task, this is a continuous variable. Subjects stated their performance on this task themselves, which gave them the opportunity to cheat. The matrix task consists of 12 matrices, which makes 12 the highest possible score and 0 the lowest possible score. A higher score gives the suspicion of dishonest behavior and makes it more likely the subject has cheated. Next to that, for testing certain hypotheses subjects were marked as honest or dishonest or dishonest depending on their matrix score compared to the pre-test. This is binary variable, which takes value '1' if subjects were dishonest and value '0' is subjects were honest during the online experiment.

Dishonest behavior field experiment. Dishonesty in the field experiment was measured by responding to the e-mail which was send after participation in the online experiment. Subjects in the Higher-conditions received an e-mail with an amount of lottery tickets that is higher than the amount actually earned and were asked to reply if the amount is incorrect. Not responding to this e-mail was marked as dishonest behavior. Therefore, this is a binary variable, which takes value '1' if subjects did not respond to the e-mail and are therefore marked as dishonest and value '0' if they did respond to the e-mail and are therefore marked as honest. Treatment 'Lower' was used to control for the fact that people that are familiar with the experimenter will a priori be more likely to respond to the e-mail.

Methodology

The statistical methods that were used to test the hypotheses are specified in this section. For each hypothesis separately the methods are discussed.

Hypothesis 1

H1a: In an online experiment, individuals that are familiar with the experimenter are less likely to cheat than individuals that are not familiar with the experimenter.

In the online experiment, dishonesty was measured by looking at the height of the score on the matrix test. To test H1a the differences in matrix scores between familiar and unfamiliar subjects were examined. To make use of parametric tests certain assumptions should hold. The assumption of equal variances on the matrix scores of the unfamiliar and familiar group does hold (see appendix B2). However, the matrix scores in the sample are not normally distributed (see appendix B1), which is a required assumption for parametric tests. Therefore, if possible non-parametric test should be used. To test H1a the non-parametric Mann Whitney U Test was used initially. This test is used to look at differences of distributions in two unrelated samples. Matrix scores were used as dependent variable and familiarity as grouping variable.

However, since groups could not be randomly divided in a familiar and unfamiliar group, we needed to control for possible differences between the groups. Therefore, we also conducted the following One-Way ANCOVA to control for these variables:

$$Matrix_{it} = \beta_0 + \beta_1 Familiarity + \beta_2 Gender + \beta_3 FinancialStatus + \beta_4 Age + \varepsilon_{it}$$

H1b: In a field experiment, individuals that are familiar with the experimenter are less likely to cheat than individuals that are not familiar with the experimenter.

In the field experiment, dishonesty was measured by observing if subjects reply to the e-mail stating an amount of lottery tickets that is too high. To control for the fact that subjects that are familiar with the experimenter could have a higher tendency to respond to the e-mail in general, an e-mail was send with an amount of lottery tickets that is too low. The response to this e-mail only measures the reply rate and not dishonest behavior. When selection bias is likely the Difference in Difference method is preferred. By using this method, we took the general difference in response rate between familiar and unfamiliar groups into account. In Figure 1 the Difference-in-Differences method is demonstrated with the effects that were expected beforehand. It was expected that familiar subjects have a higher response rate in general than the unfamiliar subjects, because they know the experimenter. After sending both groups an e-mail with an amount of lottery tickets that is lower than their actual performance, we expected that the response rate of the familiar group is higher (“A”) than that of the unfamiliar group (“C”). When an e-mail is send that contains an amount of lottery tickets higher than actual performance, we expected that people unfamiliar with the experimenter have a higher tendency to be dishonest and therefore a lower tendency to reply to the e-mail (“D”), than subjects in the familiar group (“B”). We

expect that the higher tendency to respond because of knowing the experimenter is constant across conditions. Therefore, the real difference between the familiar and unfamiliar group can be estimated by calculating the following:

(B – A) – (D – C) = effect of familiarity

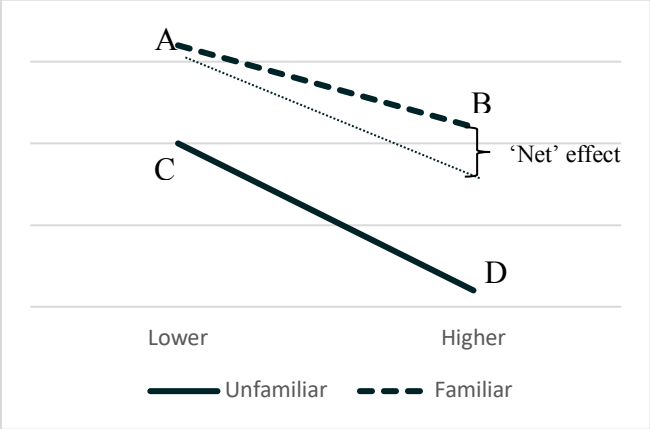

Figure 1. Difference-in-Differences Analysis Response Rate.

This effect was examined by conducting a logistic regression with three dummy variables, familiarity (familiar: 1; unfamiliar: 0), treatment (Higher: 1; Lower: 0) and the interaction term familiarity * treatment. The interaction term is called the Difference-in-Differences estimator (γ). Since groups could not be randomly divided in a familiar and unfamiliar group, we also needed to control for some factors (age, gender, financial status). The following logistic regression model was estimated to find the effect of the Difference-in-Differences estimator on response to the e-mail:

$$Ln\ \frac{P(Response)}{1-\ P(Response)} = \beta_0 + \beta_1 Familiarity_i + \beta_2 Treatment_t + \gamma Familiarity_i * Treatment_t + \beta_3 Gender + \beta_4 Age + \beta_5\ FinancialStatus + \varepsilon_{it}$$

Hypothesis 2

H2a: The individuals that display dishonest behavior in an online experiment, are the same people that display dishonest behavior in a field experiment.

H2b: The individuals that display honest behavior in an online experiment, are the same people that display honest behavior in a field experiment.

To test these two hypotheses, we only incorporated subjects that received an amount of lottery tickets that was too high, since only this group had the possibility to be dishonest. In the online experiment, it is unknown what the real performance of the subject is, therefore it was needed to set a cut-off point for matrix scores that were given dishonestly. Based on the pre-test of the matrix task without the possibility to cheat a cut-off point was chosen. With this cut-off point subjects in the online experiment could be divided into a dishonest and honest group. We then compared dishonest behavior in the online experiment and field experiment. Since we are looking at the values of two binary variables a 2x2 Fisher Exact test was used. We expected the distribution of response to the e-mail in the field experiment to differ between subjects that were honest or dishonest in the online experiment.

Hypothesis 3

H3a: Individuals that have been primed by images of the prize they can win will behave more dishonestly than individuals that have not been primed with these images.

To test this hypothesis, matrix scores of subjects in the priming and control condition were compared to each other. This was done by conducting a Mann Whitney U test with matrix scores as dependent variable and condition (control or priming condition) as grouping variable.

H3b: This effect is bigger for individuals that are not familiar with the experimenter than for individuals that are familiar with the experimenter.

We expected that priming has a bigger effect on individuals that are not familiar with the experimenter than on individuals that are familiar with the experimenter, therefore we had to look at the interaction effect of condition (priming versus control) and familiarity. Since the matrix data is not normally distributed (appendix B1), we should use non-parametric tests. However, interaction effects cannot be measured by these tests. Therefore, we used a Two-Way ANCOVA to look at the interaction effect of condition and familiarity with matrix scores as dependent variable. Since randomization of familiarity was not possible, some covariates (age, gender, financial status) were added to the model. The model on the next page was tested.

$$Matrix_{it} = \beta_0 + \beta_1 Familiarity_i + \beta_2 Condition_t + \beta_3 Familiarity_i * Condition_t + \beta_4 Gender + \beta_5 Age + \beta_6 FinancialStatus + \varepsilon_{it}$$

Hypothesis 4

H4a: Both individuals that are familiar with the experimenter and individuals that are not familiar with the experimenter, will behave more dishonest in a field experiment than in an online experiment.

To test this hypothesis, we compared dishonesty displayed in the online experiment and dishonesty displayed in the field experiment. Only subjects that received an e-mail with an amount of lottery tickets that was too high during the field experiment were considered when testing this hypothesis, since only these subjects could be dishonest by not replying to the e-mail. For hypothesis 2a and 2b a variable was created that divided subjects in a dishonest and honest group based on their matrix scores in the online experiment. This variable was used again and compared to dishonesty in the field experiment. A McNemar test was conducted to test if the frequencies of dishonesty are equal between the two types of experiments.

H4b: This effect is bigger for individuals that are not familiar with the experimenter than for individuals that are familiar with the experimenter

Again, only subjects that received an e-mail with an amount of lottery tickets that was too high during the field experiment were considered when testing this hypothesis. The McNemar tests that was conducted for H4a was conducted again, but now the familiar and unfamiliar group separately. Subsequently a 2x2 Fisher Exact test was conducted with the values of the discordant pairs of these tests, to examine if change in dishonesty is significantly different between the familiar and unfamiliar group. This is based on the two-sample McNemar test described by Feuer and Kessler (1989).

Descriptive Statistics

In this section, the descriptive statistics of the sample and all variables are given. These are presented for the total sample and for familiar and unfamiliar subjects separately.

In total 1.669 e-mails with an invitation to the online experiment were send to potential subjects. 1.333 e-mails were send to people unfamiliar with the experimenter, 23 of the e-mails bounced. In total, 438 unfamiliar people started the survey. However, more than half opted out before completing it. 135 unfamiliar subjects finished the online experiment after the first invitation. After a reminder was send, 51 other subjects finished the survey. Therefore 186 unfamiliar subjects finished the survey completely.

Two of them had to be deleted from the analysis, because they entered an invalid e-mail address. This leads to a total of 184 unfamiliar subjects in the experiment (response rate: 13.8%). 336 e-mails were send to people familiar with the experimenter, 3 of the e-mails bounced. In total the survey was started by 163 familiar people, 67 of them opted out before finishing the survey. Following the first invitation, 76 surveys were completed, after sending a reminder another 20 were completed. In total, 96 familiar subjects finished the survey completely. One of the responses had to be deleted, because an invalid e-mail address was entered. This leads to a total of 95 familiar subjects in the experiment (response rate: 28.3%). Combining the familiar and unfamiliar subjects, this study involves 279 subjects. Only the responses of these subjects will be used for further analysis. There are no variables with missing values, since Qualtrics forced subjects to answer all questions.

In Table 3 the descriptive statistics of all variables and conditions are summarized. As discussed, 95 participants (34.05%) were familiar with the experimenter, whereas 184 participants (65.95%) where unfamiliar with the experimenter. In the online experiment, 141 participants (50.54%) were part of the control condition and 138 participants (49.46%) were part of the priming condition. On average, all subjects solved 4.58 (*SD*=2.62) matrices, familiar subjects solved 4.05 (*SD*=2.45) matrices and unfamiliar subjects solved 4.86 (*SD*=2.67) matrices. Regarding gender, 36.20% of all respondents were male and 63.80% of all respondents were female. In the familiar group, 10.53% of was male and 89.47% was female. In the unfamiliar group, 49.46% was male and 50.54% was female. The average age was 22.78 years (*SD*=2.54) for the familiar group, 21.22 years (*SD*=1.88) for the unfamiliar group and 21.75 years (*SD*=2.25) for the total group. Average financial status, on a scale from 1 (worst) to 10 (best), was 6.20 (SD=1.77) for the familiar group, 6.04 (*SD*=1.91) for the unfamiliar group and 6.10 (*SD*=1.86) for the total group. During the field experiment every participant was allocated into one of three conditions (Higher Bottom, Higher Top or Lower) based on their performance. In total, 83 subjects (29.70%) were part of treatment Higher Bottom, 71 subjects (25.40%) were part of treatment Higher Top and 125 (44.8%) subjects were part of treatment Lower. Of all subjects, 44 (15.77%) replied to the e-mail that was send stating an incorrect amount of lottery tickets, whereas 235 subjects did not reply (84.23%). Within the familiar group, 22.11% of the subjects did reply, whereas 77.89% did not reply. Within the unfamiliar group, 12.50% of the subjects did reply and 87.50% did not reply.

Table 3

Descriptive Statistics

Variable		Familiar	Unfamiliar	Total
Familiarity				
	Familiar	95 (100%)	0 (0%)	95 (34.05%)
	Unfamiliar	0 (0%)	184 (100%)	184 (65.95%)
	No. of Observations	95	184	279
Condition Online Experiment				
	Control	49 (51.58%)	92 (50.00%)	141 (50.54%)
	Treatment (Priming)	46 (48.42%)	92 (50.00%)	138 (49.46%)
	No. of Observations	95	184	279
Matrices Solved				
	Mean *(SD)*	4.05 (2.45)	4.86 (2.67)	4.58 (2.62)
	No. of Observations	95	184	279
Gender				
	Male	10 (10.53%)	91 (49.46%)	101 (36.20%)
	Female	85 (89.47%)	93 (50.54%)	178 (63.80%)
	No. of Observations	95	184	279
Age				
	Mean *(SD)*	22.78 (2.54)	21.22 (1.88)	21.75 (2.25)
	No. of Observations	95	184	279
Financial Status				
	Mean *(SD)*	6.20 (1.77)	6.04 (1.91)	6.10 (1.86)
	No. of Observations	95	184	279
Condition Field Experiment				
	Treatment Lower	43 (45.26%)	82 (44.57%)	125 (44.80%)
	Treatment Higher Bottom	28 (29.47%)	55 (29.89%)	83 (29.75%)
	Treatment Higher Top	24 (25.26%)	47 (25.54%)	71 (25.45%)
	No. of Observations	95	184	279
Response e-mail				
	Responded	21 (22.11%)	23 (12.50%)	44 (15.77%)
	Not responded	74 (77.89%)	161 (87.50%)	235 (84.23%)
	No. of Observations	95	184	279

Results

In this chapter, the outcomes of the statistical analyses will be presented. Hypotheses that were discussed in the 'Hypothesis Development' chapter will be rejected or failed to be rejected. Each hypothesis will be discussed separately.

Hypothesis 1a: *In an online experiment, individuals that are familiar with the experimenter are less likely to cheat than individuals that are not familiar with the experimenter.*

A Mann Whitney U test showed that matrix scores of subjects familiar with the experimenter (*Mdn*=4.00, N_1=95) differ significantly from matrix scores of subjects unfamiliar with the experimenter (*Mdn*=5.00, N_2=184) at a confidence level of 95%, *U*=7,161.00, *p*=.013. The distributions of the matrix scores of both groups can be found in Figure 2. Since it was not possible to randomly divide subjects across groups, it is necessary to control for the effect of several variables (age, financial status, gender). Therefore, a One-Way ANCOVA was conducted, which showed that - after controlling for these variables - familiarity was no longer significantly related to matrix scores, *F*(1, 274)=1.306, *p*=.25. Gender does have a significant effect on matrix scores, *F*(1, 274)=4,83, *p*=.029. Additionally, financial status has a marginally significant effect on matrix scores, *F*(1,274)=22.39, *p*=.067. This means that we cannot conclude that individuals that are familiar with the experimenter are more likely to be honest than subjects that are not familiar with the experimenter. The effect found in the Mann Whitney U test was affected by the disproportionate number of females in the familiar group relative to the unfamiliar group. Therefore, we reject hypothesis 1a, in an online experiment, individuals that are familiar with the experimenter are not less likely to cheat than individuals that are not familiar with the experimenter.

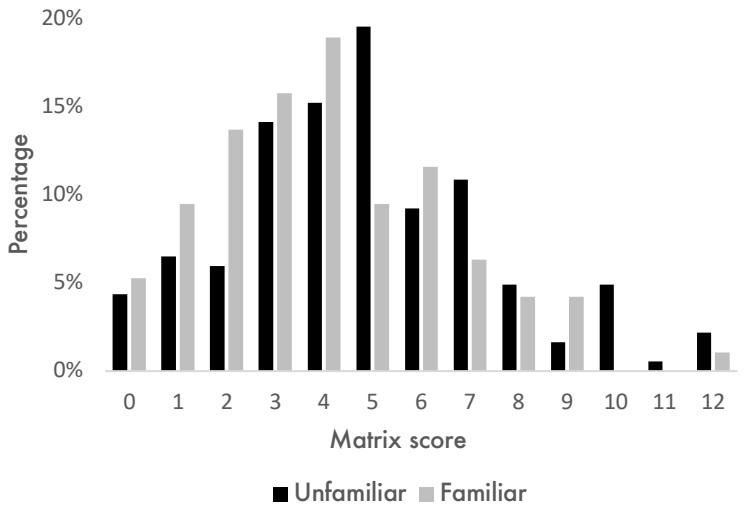

Figure 2. Distribution of Stated Matrix Scores of Familiar and Unfamiliar Subjects

Hypothesis 1b: *In a field experiment, individuals that are familiar with the experimenter are less likely to cheat than individuals that are not familiar with the experimenter.*

To test this hypothesis a Difference-in-Differences analysis was conducted. As explained in the methodology section, logistic regression was conducted with three dummy variables, familiarity, treatment and familiarity * treatment and dishonesty in the field experiment as dependent variable. Next to that, three covariates were added (age, gender, financial status). Before estimating the total model, a model with only familiarity as a predictor was estimated (model 1). The results of both models can be found in Table 4. In model 1 familiarity has a significant influence on dishonesty in the field experiment. However, after adding the other variables to the model, familiarity is no longer a significant predictor of dishonesty in the field experiment. The total model is not significant, $X^2(6) = 7.35.16$, $p = .29$. It explains 4.5% (Nagelkerke R^2) of the variance in dishonesty in the field experiment. The difference-in-differences estimator does not significantly predict dishonesty in the field experiment, $B = -.089$, $SE = .688$, $p = .896$. This means that familiarity has an impact on the likelihood of subjects to respond to the e-mail, however since the interaction term is insignificant the higher response rate is not caused by a higher tendency to be honest. No covariates have a significant effect on dishonesty in the field. We reject the hypothesis that individuals that are familiar with the experimenter are less likely to be dishonest than individuals that are not familiar with the experimenter in a field experiment.

Table 4

Logistic Regression Analysis Predicting Dishonesty in the Field Experiment

	Model 1			Model 2		
	B	*SE*	e^B	*B*	*SE*	e^B
Constant	1.26	0.25	3.52	1.20	1.80	3.31
Familiarity	0.69**	0.33	1.99	0.88	0.59	0.71
Treatment				0.46	0.47	1.58
Familiarity*Treatment				-0.10	0.69	0.90
Gender				-0.34	0.39	0.71
Age				-0.02	0.08	0.98
Financial Status				0.08	0.71	1.08

**p<.10 ** p<.05 ***p<.01*

Hypothesis 2a and 2b:

H2a: The individuals that display dishonest behavior in an online experiment, are the same people that display dishonest behavior in a field experiment.

H2b: The individuals that display honest behavior in an online experiment, are the same people that display honest behavior in a field experiment.

To analyze whether subjects that were (dis)honest in the online experiment are the same subjects that were (dis)honest in the field experiment, subjects in condition Lower were filtered out. This is because they received an e-mail with 3 lottery tickets too little and therefore could not be dishonest during the field experiment. To mark subjects as dishonest and honest in the online experiment, a cut-off matrix score had to be chosen. A pre-test without a possibility to cheat of the matrix test was conducted (N=18, M=4.06, SD=2.36). It was assumed that the underlying distribution of matrix scores on this test is normal. Based on z-scores and corresponding probabilities of the pre-test we can calculate a performance that is unlikely. See Table 5 for the z-values and probabilities of each score above 4. Based these values, we can state that scores above 6 are very unlikely at a confidence level of 95%. Every subject that has a matrix score of 7 or higher was therefore marked as dishonest. This measurement of dishonesty in the online experiment was compared to dishonesty in the field experiment (response versus no response). Statistical support for the claim that the difference in e-mail response between subjects that were honest and subjects that were dishonest in the online experiment is insignificant comes from a Fisher Exact Test (N_1= 28, N_2=126, p=1.00). In Table 6 the number of subjects in each category can be found. We reject both hypothesis 2a and 2b, we cannot state that the individuals that display (dis)honest behavior in an online experiment, are the same people that display (dis)honest behavior in a field experiment.

Table 5

Z-scores and Probability Values Corresponding to Matrix Scores from Pre-test

Matrix score	z	Confidence level	p
5	0.75	77.34%	.227
6	1.54	93.82%	.062
7	2.33	99.01%	0.01
8	3.13	99.91%	0.001
9	3.92	>99.99%	<0.001
10	4.71	>99.99%	<0.0001
11	5.51	>99.99%	<0.0001
12	6.30	>99.99%	<0.0001

Table 6

Number of Subjects being (Dis)Honest in Online and Field Experiment

	Field experiment		
Online experiment	Honest	Dishonest	Total
Honest	17	76	93
Dishonest	11	50	61
Total	28	126	154

Hypothesis 3a: *Individuals that have been primed by images of the prize they can win will behave more dishonestly than individuals that have not been primed with these images.*

To look at the effect of priming with the prize that could be won on dishonest behavior, a Mann Whitney U test was conducted with matrix score as dependent variable and condition (control versus priming) as grouping variable. Matrix scores did not differ significantly between subjects who were exposed to the images (*Mdn*=4.00, *n*=138) and subjects who were not exposed to the images (*Mdn*=4.00, *n*=141), *U*=9,821.00, *p*=.891. Therefore, we reject hypothesis 3a; individuals that have been primed by images of the prize they can win do not behave more dishonestly than individuals that have not been primed with these images.

Hypothesis 3b: *The effect of priming is bigger for individuals that are not familiar with the experimenter than for individuals that are familiar with the experimenter.*

A Two-Way ANCOVA was conducted to look at the interaction effect of familiarity and condition. Some covariates were added (age, gender, familiarity) to control for these variables. In Figure 3 we see that the effect of priming is in the opposite way than expected for subjects in the familiar group, average matrix scores of familiar subjects that have been primed are lower than average matrix scores of familiar subjects that have not been primed. The average matrix scores of subjects in the unfamiliar group move in the expected direction, priming seems to increase matrix scores of familiar subjects. However, the results of the Two-Way ANCOVA show that the interaction between condition and familiarity is not significant, $F(1, 272)=1.26$, $p=.264$. We therefore reject the hypothesis that subjects who are not familiar with the experimenter react more strongly to priming with the prize that could be won, than subjects that are familiar with the experimenter.

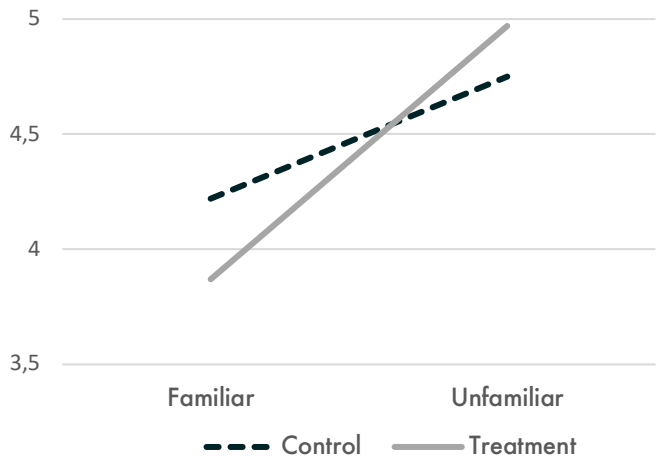

Figure 3. Average Matrix Scores of Subjects in Familiar and Unfamiliar Group by Condition.

Hypothesis 4a: *Both individuals that are familiar with the experimenter and individuals that are not familiar with the experimenter, will behave more dishonest in a field experiment than in an online experiment*

To find out if subjects are more likely to be dishonest in the field than in the online experiment a McNemar test was performed with dishonesty in the online experiment and dishonesty in the field experiment as test pairs. Again, subjects in condition 'Lower' were excluded from the analysis. For dishonesty in the online experiment, the binary variable that was created for hypothesis 2a/2b was used. The McNemar Exact Test showed that the proportion of subjects being dishonest in the field experiment differs significantly from the number of subjects being dishonest in the online experiment, p=<.001. We therefore fail to reject the hypothesis that both individuals that are familiar with the experimenter and individuals that are not familiar with the experimenter, will behave more dishonest in a field experiment than in an online experiment

Hypothesis 4b: *This effect is bigger for individuals that are not familiar with the experimenter than for individuals that are familiar with the experimenter*

To test whether the effect just discussed is bigger for people who are not familiar with experimenter than people who are familiar with the experimenter the method described by Feuer and Kessler (1989) was used. First two McNemar tests were conducted for both groups separately. In Table 7 the number of subjects in each category can be found for people unfamiliar with the experimenter. The McNemar Exact test shows that within the unfamiliar group the proportion of subjects being dishonest in the field experiment differs significantly from the number of subjects being dishonest in the online experiment, p=<.001. In Table 8 the number of subjects in each category can be found for people

familiar with the experimenter. The McNemar Exact Test shows that, within the Familiar group, the proportion of subjects being dishonest differs significantly across types of experiments, p=<.001.

To test if there is a difference in change between these two groups a "Two Sample McNemar Test" was performed on the discordant pairs of each table (for these pairs see Table 9). A 2x2 Fisher Exact test showed that the change in dishonesty did not significantly differ across groups, p=.745. Therefore, the hypothesis that the change in dishonesty across the different types of experiments is bigger for individuals that are not familiar with the experimenter than for individuals that are familiar with the experimenter is rejected.

Table 7

Number of Subjects being (Dis)honest in Online and Field Experiment – Unfamiliar Group

	Field experiment		
Online experiment	Honest	Dishonest	Total
Honest	9	47	56
Dishonest	6	40	46
Total	15	87	102

Table 8

Number of Subjects being (Dis)honest in Online and Field Experiment – Familiar Group

	Field experiment		
Online experiment	Honest	Dishonest	Total
Honest	8	29	37
Dishonest	5	10	15
Total	13	39	52

Table 9

Discordant Pairs for Two Sample McNemar Test

	Group		
Discordant Pairs	Unfamiliar	Familiar	Total
Honest in Online Experiment, Dishonest in Field Experiment	47	29	76
Dishonest in Online Experiment, Honest in Field Experiment	6	5	11
Total	53	34	87

Other Findings

At the end of the online experiment every subject had to answer several general questions. We tested if these variables are related to dishonesty in the online and field experiment.

Confirming the findings of hypothesis 1a, A Mann Whitney U test indicated that matrix scores were higher for male subjects (M=5.18, Mdn=5.00) than for female subjects (M=4,25, Mdn=4.00), U=7.088, z=-2.96, p=.003, r=-.16. This could indicate that men are more likely than women to be dishonest. However, a Fisher Exact Test showed that in the field experiment dishonesty was not significantly related to gender, p=1.00.

Subjects were asked to rate their financial status from 0 (worst) to 10 (best). The Pearson Correlation between matrix scores and financial status shows a positive relationship, so a higher financial status is related to higher matrix scores, ergo being more dishonest. However, the relationship is very weak and only marginally significant, r=.098, p=.10. The relationship between financial status and dishonesty in the field experiment is also positive, but weak and not significant, r_{pb}=.13, p=.11.

No significant effects of age on dishonesty in both the online and field experiment were found. Next to that, the moment that subjects took part in the online experiment (morning, afternoon or evening) did also not significantly influence matrix scores.

Conclusion & Discussion

In this chapter, results of this study and their implications will be discussed. An overview of the limitations and suggestions for further research are given. The finale conclusions of the study are reported.

Discussion

This study aimed to answer if being familiar with the experimenter influences the extent to which people display dishonest behavior in different types of experiments. Additionally, it intended to answer if priming with the benefits that can be earned by being dishonest influences the likelihood of dishonest behavior. The research initiated with an elaborate literature review, which led to the formulation of eight different hypotheses. To test these hypotheses an online and field experiment were conducted, both with members from a Dutch student association. Some of these members were familiar with the experimenter and some of them were not. Firstly, subjects participated in an online experiment where they had to complete a matrix task. During this experiment, half of the subjects were primed with an image of the prize that could be won (Bol.com gift card worth €50, -) and half of them were not primed. The performance on the matrix task was linked to a lottery, the better a subject's performance, the more lottery tickets were earned. These tickets participated in a lottery to win the prize. Since real performance could not be monitored, subjects could lie about their performance on the task to earn more tickets. After the online experiment, all subjects unknowingly became part of the field experiment. They received an e-mail from the experimenter, allegedly to confirm the amount of lottery tickets earned. However, the amount of tickets stated was either too high or too low. Not replying to an e-mail that stated an amount of lottery tickets that was too high, was interpreted as being dishonest. Data gathered in both experiments were analyzed with multiple statistical methods to test the hypotheses and finally answer the research question.

Against expectations, the study did not confirm that subjects who are familiar with the experimenter behaved more honestly in the online experiment than subjects who are not familiar with the experimenter. Also during the field experiment, the effect of familiarity on dishonesty was not observed. The fact that familiarity with the experimenter did not influence dishonesty is not in line with the expectations based on findings of DePaulo et al. (1998) and van Swol et al. (2012). They found that people are less inclined to lie or deceive their friends. It also failed to reproduce the findings of Azar et al. (2013), who showed that regular customers of a restaurant are more likely to return excessive change than one-time visitors. A possible explanation for the fact that we did not confirm the expectations, could be the design of the experiment. A lottery design was used, where people could only increase their chances of winning the prize by being dishonest, instead of directly earning more money. If the benefits of being dishonest would have been higher, the behavior would probably have reflected real behavior

more closely. The differences in matrix scores that were found between familiar and unfamiliar groups in the online experiment were caused by the relatively large group of females in the familiar group. The research revealed that gender had a big influence on dishonesty in the online experiment. Males are more likely to state a higher matrix score than females. This finding is in agreement with earlier research, which also revealed that men are more likely to be dishonest than women (Bucciol et al., 2013; Dreber & Johannesson, 2008; Houser et al., 2012). However, during the field experiment an effect of gender on dishonesty was not present. Possibly this is because subjects had to put more effort into being honest during the field experiment (sending an e-mail), therefore a lot of subjects did not reply at all.

Secondly, it was not confirmed that the individuals that display (dis)honest behavior in an online experiment, are the same people that display (dis)honest behavior in a field experiment. Although the design of the experiment was based on that used by Potters and Stoop (2016) and Dai et al. (2017), it did not replicate their findings. However, both these studies looked at the generalizability of behavior found in a laboratory experiment to the field instead of behavior found in an online experiment. Additionally, in these studies being dishonest directly influenced the amount of money subjects earned. As mentioned above, the fact that in this study subjects could only increase their chances on winning something by being dishonest, instead of directly earning something could explain that we could not replicate these findings.

There was no obvious effect of priming with images of the prize that could be won on dishonest behavior. Subjects who were primed with images of the Bol.com giftcard and a €50, - note tended not to behave more dishonestly than subjects who were not primed. This effect was also not present when looking at familiar and unfamiliar subjects seperately. The expectation that people would behave more dishonestly after the priming manipulation was based on findings of Gino and Pierce (2009), indicating that people cheat more when in the proximity of abundant wealth. However, this could also be explained by the fact that subjects in their experiment cheated more because they thought the experimenters were rich and felt envious. Nevertheless, our findings are also not in agreement with outcomes of Vohs et al. (2006, 2008), who showed that when people are primed with visuals of money, they behave more self-focused and self-serving. A possible explanation could again be the design of the current study. A priming manipulation in a setting were money could be earned directly by being dishonest might have led to other results.

In line with research of Potters and Stoop (2016), subjects behaved more dishonestly in the field experiment than in the online experiment. The change in dishonesty across the different types of experiments was equal for both individuals that are not familiar with the experimenter and individuals that are familiar with the experimenter. The difference in dishonesty across types of experiments could be due to several factors, since the tasks in the online and field experiment are very different from each other. In the online experiment, subjects that are dishonest had to write down a false outcome and therefore lie by commission. When subjects are dishonest in the field experiment, all they had to do is

not reply to an e-mail and therefore they lie by omission. Being dishonest in the field experiment costs less effort and courage than in the online experiment. Additionally, subjects could behave more honestly in the online experiment, because of observer effects, e.g. because they have the feeling that they are being watched Alternatively rather than wanting to cheat, the subject may simply have not noticed the emails. Because of these reasons, we did expect to find a difference dishonesty. Since the two settings are very different, we cannot assign the difference in dishonesty to only the change from an online setting to a more 'real life' field setting.

Finally, some additional relationships were tested. As discussed, an effect of gender on dishonesty was found in the online experiment, but not in the field experiment. In addition, a very weak positive correlation was found between financial status and dishonesty in both the online and field experiment. The fact that it is a positive relationship is quite contra-intuitive, since it means that a higher financial status is related to being more dishonest. No relationship between age and dishonesty was found. We were not able to observe an influence of the time that subjects participated in the online experiment on dishonesty, which is in conflict with the morning morality effect found by Kouchaki and Smith (2014). They discovered that subjects behaved more honestly in the morning than in the afternoon. The fact that we could not replicate this finding, cannot completely be explained by the fact that subjects were not randomly divided in different time slots in the current study, since this was also not controlled for in the study of Kouchaki and Smith.

Limitations and Further Research

The current study has several limitations due to small sample size, limited resources, and time constraints. The research design was not ideal to measure dishonest behavior. In most experiments on dishonesty, subjects are paid according to their performance on a certain task. Since monetary resources were limited, it was impossible to pay everyone according to their performance on the matrix task. Therefore, a lottery design was chosen. However, the incentive to cheat in a lottery design is much lower, since it only increases the chance of winning certain benefits, compared to when cheating is directly linked to earning more benefits. This does probably account for the failure to reproduce certain findings of previous research and possibly why we could not prove that subjects familiar with the experimenter are less likely to be dishonest.

The fact that subjects did not receive any payment to participate in the experiment, could also have influenced the behavior of subjects. When subjects participate in an experiment, they should ideally be paid in proportion to the effort they have to put into the experiment. It could for example explain why the reply rate to the e-mail was very low compared to similar studies. Replying to the e-mail costs extra effort and since subjects were not paid they were not incentivized to show their real behavior.

The sample also caused some limitations. Only (former) members from a Dutch student association were asked to join in the experiment. This group is not representative for the total population, amongst others all subjects are highly educated and of relatively the same age. Utikal and Fischbacher found that dishonest behavior of students was different from that of non-students (2013). The results of this study are therefore not generalizable to a different sample. Another limitation is the fact that subjects could not be randomly divided across familiarity groups. Therefore, the groups were not comparable to each other. The fact that groups are based on who is familiar with the experimenter and who is not, will lead to bias between the two groups. The experimenter will possibly be familiar to a group of people who share certain characteristics that could influence outcomes. In this case, the experimenter knew more females than males for example. However, this fact is hard to overcome, since familiarity cannot be a treatment in an experiment.

Another limitation when studying dishonesty are observer effects leading to socially desirable behavior. During the matrix task, it was not possible to monitor the real performance of subjects. However, because subjects know they are participating in an experiment, subjects might still have the feeling that somehow they are being monitored. As discussed in the literature review, people behave more honestly when they are being watched or have the feeling they are being watched (Bateson et al., 2006; Kroher & Wolbring, 2015). This might explain why certain expectations were not confirmed.

Further research should be conducted to overcome these limitations and to expand the literature on the effect of familiarity with the experimenter on dishonesty. First, the study should be replicated with a different payment method. It is interesting to see if directly linking dishonesty to payment will generate different results than using the current lottery design. Also, further research should be conducted on a different sample which is more generalizable to the total population. However, since subjects cannot be randomly divided across familiarity groups, this is a difficult task. One is naturally limited to the group of people that an experimenter knows personally. However, this makes it extra important for future research to take more control variables into account when looking at the effect of familiarity. This to make sure differences in dishonesty are not caused by other differences in characteristics between familiar and unfamiliar groups. Moreover, it would be interesting to use a different task to measure dishonesty in the online experiment to overcome observer effects. Preferably a task where subjects are completely certain that the experimenter cannot observe the real outcome on the task, for example the mind game used by Potters and Stoop (2016).

Conclusion

This study failed to confirm that being familiar with the experimenter influences dishonesty. Several limitations in the study design and execution could have influenced these observations. Future research in this field that overcomes these limitations is therefore needed. We did find additional

evidence for the fact that men are more likely to be dishonest than women. Therefore, it is extra important to make sure groups are equally distributed gender wise when studying dishonesty or to control for this factor. Priming with possible benefits did not influence dishonesty our online experiment. Unfortunately, the study does not add to the literature about the generalizability of dishonest behavior found in online experiments to the field. This could indicate that we must be cautious when generalizing findings about dishonesty found in an online experiment.

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Appendix A – Experiments

A1. Survey Text

Thank you very much for participating in this online survey. My name is Annelot Wismans, I am conducting this study as part of the master program Behavioral Economics at the Erasmus School of Economics. Most people finish this survey within 5 minutes. All answers will be kept strictly confidential.

Thank you in advance for your responses and time!

Annelot Wismans

You will start with a short exercise which will give you the opportunity to win lottery tickets! With these lottery tickets, you will have the chance to win a Bol.com gift card worth €50,00. After all participants have finished the survey the lottery will be held.

The better you perform in the exercise, the more lottery tickets you earn, the more chance you have of winning the prize! Each ticket will participate in the lottery once.

If this is clear, press 'Next' for an explanation of the exercise.

In the exercise, you will see 12 matrices (tables) containing 12 numbers. In each matrix, you have to find two numbers that add up to 10. **The goal is to find as many combinations as possible in 2 minutes.**

For example:

4.73	2.12	8.99
0.63	8.89	9.33
1.02	2.34	4.98
1.11	0.65	2.91

The numbers 8.89 and 1.11 add up to 10

- Every matrix contains 1 correct combination.
- **Keep track of the number of matrices you have solved correctly**, afterwards you have to insert this number yourself. The survey cannot keep track of this number
- After 2 minutes the survey will automatically continue.

Remember: the better you perform the more chance you have at winning a Bol.com gift card worth €50,-.

Note: are you on your phone? You can zoom in to enlarge the matrix you are solving!

Ready to start? Click 'Next'

1.69	1.82	2.91
4.67	4.81	3.05
5.82	5.06	4.28
6.36	5.19	4.57

3.91	0.82	3.75
1.11	1.69	7.94
3.28	2.52	6.25
9.81	6.09	2.46

0.49	0.74	1.13
3.72	2.66	1.22
3.75	5.22	5.67
8.87	8.23	7.71

2.92	4.98	4.34
1.39	0.72	5.53
8.61	3.57	3.36
6.8	0.53	7.58

0.81	1.31	2.09
4.55	3.75	3.12
5.62	9.41	6.88
7.02	8.48	8.51

0.17	3.46	2.44
6.02	2.46	2.63
6.05	6.21	6.61
8.22	8.19	7.54

6.21	2.47	9.57
2.68	9.52	4.52
8.72	7.69	1.47
6.41	4.44	7.32

3.08	9.42	5.87
3.94	5.41	3.42
4.02	5.06	4.12
4.13	4.65	2.86

3.15	0.95	1.31
4.98	2.9	2.88
6.66	6.73	7.67
9.75	6.85	8.17

2.22	4.51	7.13
9.33	9.77	5.86
7.04	4.14	5.22
2.28	1.72	8.16

0.74	4.55	3.19
8.51	7.91	8.68
5.62	0.81	2.11
3.75	3.72	2.09

5.97	9.62	9.41
3.61	7.39	7.01
5.49	0.59	2.62
7.51	5.71	0.49

Your time is up! How many matrices did you solve?

What is your gender?

- Male
- Female

What is your age?

On a scale of 1-10 how would you score your current financial status?

1 2 3 4 5 6 7 8 9 10

Thanks a lot for participating in this survey! You have gathered X lottery tickets

The upcoming days I will contact you to verify the amount of lottery tickets you have gathered. Next to that, I will contact you if you have won the lottery. Therefore, I need to have your e-mail. You will not be spammed in any other way!

Please state your e-mail below:

A2. Image Priming Condition

A3. Invitation E-mail

Beste (oud) lid van het R.S.C./R.V.S.V.,

Als onderdeel van mijn masterscriptie voer ik een onderzoek uit naar het gedrag van (oud) leden van studentenverenigingen. Ik zou je graag uitnodigen om mee te doen aan dit online onderzoek.

Take the survey

Of kopieer en plak onderstaande URL in je internetbrowser:
Survey URL

Het onderzoek duurt maximaal 5 minuten. Door mee te doen maak je kans op een Bol.com bon ter waarde van **50 euro**! Hoe beter je presteert, hoe meer kans je maakt.

Alvast bedankt voor je hulp!

Groeten,
Annelot Wismans
(ese.onderzoek@gmail.com)

N.B. Je e-mailadres is verkregen uit de almanak van het R.S.C./R.V.S.V.

Follow the link to opt out of future e-mails:
${l://OptOutLink?d=Click here to unsubscribe}

A4. Reminder E-mail

Beste (oud) lid van het R.S.C./R.V.S.V.,

Onlangs stuurde ik je de link van een online onderzoek naar het gedrag van (oud) leden van studentenverenigingen. Ik heb helaas tot nu toe nog niet genoeg respondenten. Ik zou je daarom graag opnieuw uitnodigen om mee te doen aan dit online onderzoek. Je deelname zou mij enorm helpen!

Take the survey

Of kopieer en plak onderstaande URL in je internetbrowser:
Survey URL

Het onderzoek duurt maximaal 5 minuten. Door mee te doen maak je kans op een Bol.com bon ter waarde van **50 euro**! Hoe beter je presteert, hoe meer kans je maakt.

Alvast heel erg bedankt voor je hulp!

Groeten,
Annelot Wismans
(ese.onderzoek@gmail.com)

N.B. Je e-mailadres is verkregen uit de almanak van het R.S.C./R.V.S.V.

Follow the link to opt out of future e-mails:
${l://OptOutLink?d=Click here to unsubscribe}

A5. E-mail Field Experiment

Beste,

Bedankt voor het deelnemen aan mijn masterscriptie onderzoek naar het gedrag van (oud)leden van studentenverenigingen. Bij deze bevestig ik dat je hierbij het volgende aantal loten hebt verzameld:

X lot(en)

Indien dit aantal niet correct is, laat dit alsjeblieft weten door het juiste aantal terug te mailen naar dit mailadres.

Binnenkort zal de loting plaatsvinden, hopelijk ben jij de winnaar van de Bol.com bon ter waarde van €50!

Groeten,

Annelot Wismans

Appendix B – Test Results

B1. Normality Check Matrix Scores

Table B1.1

Normality Check Matrix Scores Using the Kolmogorov-Smirnov Test

	D	*df*	*p*
Familiar	0.140	95	0.005***
Unfamiliar	0.136	184	0.000***

*** Significant at 1%

B2. Test of Homogeneity of Variance of Matrix Scores Familiar and Unfamiliar Group

Table B2.1

Test of Homogeneity of Variance using Levene's Test

	F	*df1*	*df2*	*p*
Based on Mean	0.429	1	277	0.513
Based on Median	0.439	1	277	0.508