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Mindfulness and ethical decision making: A short mindfulness exercise affects the cheating behavior among students.

Name student: Myrthe Ekelmans
Student ID number: 482242

Supervisor: Chen Li
Second assessor: Merel van Hulsen

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Abstract

This paper investigates the effect of a short mindfulness exercise on the cheating behavior among students between the age of 16 and 26. I conducted an online randomized experiment. Participants in the treatment watched a short mindfulness video focusing on the body, mind and environment, whereas participants in the control group watched a funny video of similar length. As measured by the MAAS-scale, the mindfulness exercise increased people's mindfulness level. However, the higher mindfulness level did not affect people's cheating behavior.

The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

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1. Introduction

When we ask each other how we feel, we often say that we are fine while we are not. But why do we lie about that? According to a study from DePaulo et al. (1996), people tell at least two lies a day. A Brock University study shows that lying did not decrease during the recent COVID-19 pandemic, even though we are in a dangerous situation (Taylor, 2020). Around thirty-four percent of Covid-19-positive participants have lied about having symptoms, which may have caused a lot more infections. Due to COVID-19 it has also become easier to cheat on examinations at home, especially when these exams are not proctored. Cheating behavior is common, but why do people behave this way, while it may be better to be honest in these situations? Lying and cheating behavior are examples of unethical behavior. Epley and Caruso (2004) showed that ethical decisions can be caused by unaware and automatic psychological mechanisms. According to Brown and Ryan (2003) an important component of ethical decision making is mindfulness and self-awareness. This paper focuses on the effect of mindfulness on cheating behavior. The research question of this paper is:

Does a short mindfulness exercise decrease cheating behavior among students?

Mindfulness has been around for a long time and has roots in Buddhism and other meditative traditions, where awareness and attention are important points of focus (Brown & Ryan, 2003). The definition of mindfulness is an individual's internal and external awareness. Mindfulness focusses on what happens in your mind, body and environment, without judging these active thoughts (Ruedy & Schweitzer, 2010). A low mindfulness level can be one of the reasons for unethical cheating behavior. As already told Epley and Caruso (2004) state that unaware and automatic psychological mechanisms can influence ethical decisions. Tenbrunsel and Messick (2004) show that self-deception can also cause unethical decisions, because people falsely believe that this is morally justified. These cases are examples of a lack of attention and awareness that can cause unethical behavior.

Moral reasoning and ethical behavior are complex subjects, because ethical perspectives can differ among different individuals. Social norms influence whether decisions can be seen ethical or unethical (Drake, Hall & Lang, 2011). Shapiro, Jazaieri & Goldin (2012) found that, among others, mindfulness can affect people's moral reasoning. They investigated the effects of Mindfulness-Based Stress Reduction (MBSR) among 25 adults on four disciplines: moral reasoning, mindfulness, emotion and wellbeing. With a Defining Issue Test version 2 (DIT-2),

they found that mindfulness was associated with improvements on negative emotions, wellbeing and moral reasoning.

This thesis focusses on selfish cheating behavior, where cheating that is not easily detectable can increase participants' payment in an experiment. This will simulate a situation that is more common in real life than what was studied in Shapiro et al. (2012), for example when making exams. When students cheat on their exams and nobody notices this, they may get a higher grade. However, to get a higher grade they must cheat, which is unethical behavior. The knowledge that will be generated by this research, fills in the gap to know more about the connection between mindfulness and cheating in these common situations.

Ruedy and Schweitzer (2010) also investigated the effect of mindfulness on ethical decision making. They used different methods to investigate the relation between mindfulness and ethical decision making. They found that more mindful participants made more ethical decisions compared to less mindful participants. This paper uses the same method to measure mindfulness, because this is a valid and reliable method. To measure cheating behavior, a different method is used from Fischbacher and Föllmi-Heusi (2013).

It is clear that everyone lies sometimes. In particular students lie more, compared with other aging groups (EUR, 2018). This research will only look at students, to limit the bias that may occur through the effect of different ages on lying. As already stated, it is easier to cheat on exams in the current Covid-19 situation. When someone is not proctored at home during his exam, it is easy to look at your book or phone when you do not know the answer. If the results of this research state that there is less cheating when someone does mindfulness, it is possible for universities to implement a short, mandatory mindfulness exercise before starting the exam. This may decrease the cheating behavior on exams, which will help to decrease the fraud on educational institutions during this at-home-schooling-time. This is the social relevance of this study.

This paper starts with the theoretical framework for mindfulness, cheating behavior and the knowledge of these two combined. After this look at the existing literature, the data and methodology are clarified. The data is collected by a survey and the method is a randomized experiment, to test whether mindfulness affects cheating behavior. The Mindfulness Attention Awareness Scale (MAAS) questionnaire is used, to check how mindful people are. The next part of the data and methodology will explain the regressions that are conducted in this research to investigate the effect of mindfulness on cheating behavior. After the data and methodology, the results are shown. According to the existing literature, my expectations are that the treatment

group will cheat less compared to the control group (Shapiro, Jazaieri & Goldin, 2012; Ruedy & Schweitzer, 2010). The last part consists of the conclusion and discussion.

2. Theoretical Framework

This part clarifies what the existing literature says about the effect of mindfulness about cheating behavior. It summarizes the current scientific knowledge about mindfulness, cheating behavior and these two combined. This literature review starts with the existing knowledge about mindfulness. After mindfulness, it contains the knowledge about cheating behavior. The last part explains the literature about mindfulness and cheating behavior together.

2.1 Mindfulness

To understand why mindfulness may influence cheating behavior, it is important to know what mindfulness is and what the origin of mindfulness is. Mindfulness has roots in Buddhism and is a translation of the Indian word 'Sati' (Alidina, 2014). Sati means awareness, attention and remembering. However, the idea to improve the state of awareness is also a common theme in other spiritual traditions, for example Christianity, Taoism and Sufism (Alidina, 2014). In 1979 John Kabat-Zinn started with mindfulness in a therapeutic setting (Alidina, 2014), which is called Mindfulness-Based Stress Reduction (MBSR). He explains that "mindfulness can be cultivated by paying attention in a specific way, that is, in the present moment, and as non-reactively, non-judgmentally and openheartedly as possible". So, mindfulness is not thinking about nothing, it means paying attention to your body, mind and environment, without judging it, or judging the feelings. When people are more mindful, they become more familiar with habitual patterns, which can help them to reduce negative emotions or feelings (Alidina, 2014). Being mindful, can help people to live more enjoyable at the present moment and less worrying about the past or concerning about the future (Kabat-Zinn, 1990).

Kabat-Zinn (1992) describes mindfulness as moment-to-moment awareness and as a human skill that can be trained and developed by practicing meditation. The MBSR program from Jon Kabat-Zinn is a program to reduce symptoms of stress, anxiety and depression. The MBSR training program is an eight- to ten-week course, with mindfulness exercises, that include formal and informal meditation (Kabat-Zinn, 1990). The formal exercises focus on breath attention, body-scanning, shifting attention to different sensory functions, moment-to moment experiences, walking meditation, and meditating while eating. The informal mindfulness is based on short pauses, that move the attention to the present moment. This paper focusses on formal meditation.

Many empirical studies looked at the relationship between mindfulness and wellbeing, stress, and reducing chronical pain. Brown and Ryan (2003) proved that mindfulness can

prognosticate positive emotional states and that mindfulness is a good method to manage stress situations. It also improves the regulation of negative emotions (Arch & Craske, 2006). The effect of mindfulness on some clinical conditions has also been investigated by different researchers (Bear, 2003). Kabat-Zinn et al. (1985) investigated the clinical use of MBSR-training for the self-regulation of chronic pain. They found statistically significant decreases in present-moment pain, negative body image, inhibition of activity by pain, symptoms, mood disturbance, anxiety and depression, by using a 10-week stress reduction program. Kabat-Zinn et al. (1992) found that MBSR is also useful in decreasing anxiety disorders. Thus, the prior mindfulness research is largely focused on clinical and psychological applications.

Besides the clinical and psychological benefits, mindfulness is also applied to health and behavioral aspects. Saxe et al. (2001) investigated a combined MBSR training with a low-fat vegetarian diet for males with prostate cancer. The mindfulness was applied to several factors, such as shopping of food, cooking, and eating. They found that the participants that had the combined training, had a slower increase of the prostate specific antigen and a slower progression of the tumor. Szeto et al. (2019) investigated the associations between mindfulness and craving or alcohol use. Hazardous alcohol use is an important public health problem and they wanted to investigate whether mindfulness could reduce this. They had 43 Dutch alcohol dependent patients, which were assisted for four weeks. They completed mindfulness exercises three times a day, where the exercises were focused on stress, negative affect, craving, recent drinking, and attentional or approach biases. They measured the mindfulness level with the MAAS-scale and found evidence that being more mindful was associated with lower drinking and craving rates. Another research of Amel et al. (2009) about sustainable behavior found that less mindful people are more likely to choose the default option. In America, where the research took place, most of the default options are unsustainable. This research found that people that are on autopilot, are more likely to choose less sustainable options. Besides the clinical and psychological applications, is mindfulness also helpful for behavioral and health aspects.

This paper investigates the effect of mindfulness on cheating behavior, using a mindfulness meditation exercise. The meditation exercise is part of the MBSR program from Jon Kabat Zinn (1990). The meditation exercise is a short three-minute exercise, which focusses on the body, mind and environment in the present moment. As shown above, several researchers investigated the effect of mindfulness on different perspectives. Mindfulness is useful for clinical, psychological, health and behavioral applications. Because researches proved that the MBSR program works for these different aspects, the expectation is that the mindfulness exercise make people more mindful. That is why the first hypothesis is:

H1: The treatment group has a higher mindfulness level due to the mindfulness exercise.

2.2 Cheating Behavior

Cheating behavior is a form of dishonest behavior (Klein et al, 2017). The current COVID-19 pandemic makes it easy for students to cheat, when they make exams at home. Cheating behavior of students in school is something that is already investigated by several researchers. When we talk about cheating in school, the intrinsic and extrinsic motivation are interesting factors for cheating. Intrinsic motivated students learn with the aim to gain more knowledge. Extrinsic motivated students learn to get a good grade, prove that they are good enough or to get through the year. It is easy to imagine, that people that have intrinsic motivation for school are less likely to cheat, because when these students will not get more knowledge if they cheat. Newstead, Franklyn-Stokes and Armstead (1996) investigated the differences in individual motivations of students. They found more reported cheating in men, compared to women. Younger students were more likely to cheat than older students. Their results suggested that when students are motivated to learn they cheat less, compared to when they want to obtain simply higher grades. In this research there is no difference in intrinsic or extrinsic motivation, but different ages and gender may affect the outcome. It is necessary to control for these variables, when the randomization does not work properly.

Anderman, Griesinger and Westerfield (1998) investigated as well cheating behavior and motivations among students. Their results state that students who cheat, are more likely to cheat due to the atmosphere in the classrooms. These students experienced their classrooms as extrinsically motivated, focused on the results and performance and not on the learning processes. Besides this finding, they found that cheating students reported extrinsic personal goals and worried about school. Rettinger and Kramer (2009) looked at situational and personal causes of cheating among students. They concluded that neutralizing attitudes increases the examination cheating the most among students. Also being a witness of others cheating increases the likelihood that the witness his- or herself was also cheating. These variables will not affect this specific research, because people do not take part of the survey in a common space.

Bushway and Nash (1977) wrote an older, but not less interesting paper, where they looked at factors that may influence cheating behavior. They examined the existing literature about dishonest behavior and divided it into three different categories: personal characteristics,

situational factors and reasons for people to behave unfair. Intelligence, being a member of a student- or study association and being extrovert combined with being neurotic are personal characteristics that are positively correlated with dishonest behavior. Also gender is correlated with dishonest behavior, but these findings vary a bit. Some researchers report no significant differences in the sex of cheaters, while other investigators state that females cheat less frequently. Bushway and Nash (1977) also reported different situational factors that influence the frequency of dishonest behavior. The situations that may influence cheating behavior are the moral climate of the school, the chance to be caught and the teaching style of the professor. The chance to be caught might influence the cheating rate a lot at this moment, because students make their exams at home and are sometimes not proctored. The chance to be caught is low, which will increase the cheating rate. Bushway and Nash (1977) described also the reasons for cheating according to the existing literature. The most common reason is concerning about the grades. Another important reason is that students do not understand that cheating is wrong. They do not see the relationship between cheating and morality. Bushway and Nash wrote about factors that may influence the cheating behavior in our sample. That is why it is important to ask the participants for their education level, being a member of an association, gender and how they feel about lying.

According to Klein et al. (2017), dishonest behavior is driven by individual profits and the availability of justifications. They investigated which factor is more important, in contrast to the existing literature that tells that these two are equally important. By use of a coin-tossing task, they studied the trade-off between self-profit versus social justifications. They concluded that self-profit was stronger correlated, but there was also an effect of social justifications.

This paper looks at the cheating behavior among students by use of a randomized experiment. However, it can occur that the randomization does not work properly. In that case, it is necessary to have control variables in the regression of mindfulness on cheating behavior. The survey will ask questions about these control variables. The existing literature, described above, shows that there are multiple factors that may have an influence on cheating behavior. The factors that the survey contains and are described by the literature are age, gender, education level, being member of a study or student-association and whether they feel wrong about dishonest behavior and lying. The other factors that are described in the literature are not relevant in this case or are the same for all students. This is due to the experimental design.

2.3 Mindfulness & Cheating Behavior

This research examines whether mindfulness affects cheating behavior. Even though there exists already research about mindfulness and cheating behavior, findings about these two combined are relatively scarce. Mindfulness is related to concepts that have a link with ethical decision making, namely cognitive load (Greene et al, 2008), self-regulation (Muraven & Baumeister, 2000) and moral attention (Reynolds, 2008). For this reason, it is interesting to investigate the relationship between mindfulness and cheating behavior.

Shapiro, Jazaieri & Goldin (2012) investigated the effects of Mindfulness-Based Stress Reduction (MBSR) among 25 adults on four disciplines: moral reasoning, mindfulness, emotion and wellbeing. They used two kinds of MBSR training with different durations. They found that the shorter training was associated with improvements on mindfulness, emotion and well-being. After the two-month MBSR training there were also improvements in the moral reasoning. They investigated moral reasoning and ethical decision making with the Defining Issue Test version 2 (DIT-2), which presents five moral dilemmas. The respondents have to decide what the person in the dilemma should do. The fact is that the DIT-2 situations are not very common situations. They focus on very complex moral dilemmas, which do not often occur in the reality.

Another interesting research is the research from Ruedy and Schweitzer (2010). They investigated the effect of mindfulness on ethical decision making. They investigated it with two studies in the same paper. The first study was focused on questionnaires about mindfulness and their self-reported ethical behavior. They used two different methods to measure mindfulness, the MAAS and the Mindfulness/Mindlessness Scale (MMS). The ethical decision making was measured by the Self-reported Inappropriate Negotiation Strategies Scale (SINS) and the self-importance of moral identity (SMI) scale. This part showed that there is a significant link between mindfulness and ethical decision making. They state that there is a positive relationship between mindfulness and self-reported ethical decision making. The second study of this paper was focused on cheating behavior itself, by use of a Carbonless Anagram Method (CAM). A CAM measures intentional, unethical behavior. The MAAS was used to measure mindfulness level. These results also suggest that a higher mindfulness level curtails cheating behavior.

Götmann, Bechtoldt and Fetchenhauer (2021) also investigated the effect of mindfulness level on cheating behavior, but in a group setting. Besides mindfulness they also looked at the role of individual differences in dispositional sensitivity to injustice. In a laboratory experiment, they gave participants a 10-minute mindfulness meditation training.

After the mindfulness training, they received a shortened 15-item questionnaire to measure mindfulness. They used the state mindfulness scale of Tanay and Bernstein (2013). Thereafter, they looked at the cheating behavior of the participants in a group performance task. The participants knew that cheating would lead in the experiment to higher group payments. The findings showed that more mindful participants cheated less compared to less mindful participants.

My research looks whether there is a decrease in cheating behavior, when people are more mindful. The experiment uses a meditation exercise, which may improve the mindfulness scale, according to Hypothesis 1. The cheating frequency is measured by the method of Fischbacher and Föllmi-Heusi (2013). In data and methodology is this further explained. According to the existing literature, the expectations are that a mindfulness exercise will decrease the cheating frequency. For that reason, the second hypothesis is:

H2: Students with a higher mindfulness level lie less.

3. Data & Methodology

This part contains the data and methodology. The data starts with explaining what kind of data is used and how the data is collected. It also gives a short description of the data. The next part, the experimental design, will conduct an explanation of the experiment that is conducted. The last part clarifies the analysis, regressions and variables that are used in this research.

3.1 Data

This research has a quantitative research design. It collects data through a survey. The detailed survey can be found in appendix 1. The survey is executed in Dutch and is focused on Dutch students between the age of 16-26. This indicates that the data will be from students from intermediate vocational education (in Dutch MBO), higher professional education (in Dutch HBO) and higher education (in Dutch WO). Looking at distinct levels of education will contribute to the diversity in this research. This improves the external validity of the research. The reason to choose for students, is that they lie relatively more (EUR, 2018), which may otherwise bias the outcome variables. The research uses a randomized experiment to investigate the effect of mindfulness on cheating behavior. It conducts a between-subjects design, which indicates that half of the participants are assigned to the treatment group and the other half is assigned to the control group. This randomization is executed by a function in the survey program, Qualtrics. The experiment consists of a manipulation, manipulation check, one question to check cheating behavior and a general questionnaire. This will be further explained below. The aim is to have a minimum sample of 100 participants, with roughly equal groups. The data contains every participant's mindfulness score, whether he or she lied in the survey, and their demographic information as controls. Table 1 includes all variables used in this paper and their explanation.

240 respondents filled in the survey but only 107 finished. It may be caused by the fact that they had not enough time to finish the survey or listen to the film at that moment. From the 107 responses, five responses were left out of the data. Three participants filled in the number 1 or 6 by the dice question. This indicates that they did not read the question well, because these numbers will give them less money than three Euros. Besides that, there were also two respondents without diploma or study. These are also left out of the data, because this research is about students. After filtering the data, there were 102 respondents left, where 57 were in the treatment group and 45 were in the control group. Table 2 below shows the descriptive statistics of the data. The table starts with the MAAS-score, which indicates the mindfulness level. The

higher the MAAS-score, the higher is the mindfulness level of the respondent. Below the MAAS-score, four variables are showed, to check whether the respondent thinks that he or the respondent would cheat here. Lying self and lying other are dummy variables, which have two possible outcomes. Thereafter, the control variables are showed.

Table 1: Summary of variables

Variables	Variable Description
Treatment	Dummy variable taking value 1 if in treatment group and 0 if in control group
MAAS-score	The mean score of the 15 question MAAS-questionnaire on a six-point Likert scale
Reported Nr Self	The number the participant filled in for him or herself, in the dice exercise between 3 and 5.
Reported Nr Other	The number the participant filled in for the fictitious respondent, in the dice exercise between 3 and 5.
Lying self	Dummy variable taking value 1 if payment is implied by their report and taking 0 if payment is implied by the actual number.
Lying other	Dummy variable taking value 1 if payment is implied by their report and taking 0 if payment is implied by the actual number.
Age	Age of the participant, between 17 and 26.
Female	Gender of the participant, takes 1 if participant is female, 0 if participant is male and 3 if participant does not want to say their gender.
Job	Dummy variable taking value 1 if participant has job, and 0 otherwise
Education	Education level of the participant, takes value 1 if intermediate vocational educational level, takes value 3 if higher professional education bachelor, takes value 4 if higher education bachelor and takes value 5 if higher education master
Living alone	Living situation of the participant, takes value 1 if the participant is living alone, and 0 if the participant is living with roommates or parents.
Association member	Dummy variable taking value 1 if participant is member of a study- or student association, and 0 otherwise
Feel about lying	The participants feeling about lying, takes value 0 if it is no opinion, takes value 1 if it is everyone lies sometimes, so it does not matter, takes value 2 if it is against lying and do it rarely, and takes value 3 if it is against lying and never do it

Note: The variables used in the analysis with an explanation and their possible values.

Table 2: Descriptive Statistics of all variables

Variables	Observations	Mean	Standard Deviation	Min	Max
MAAS-score	102	3.593	0.635	1.6	5.4
Reported Nr Self	102	3.186	0.558	3	5
Reported Nr Other	102	3.725	0.834	3	5
Lying self	102	0.108	0.312	0	1
Lying other	102	0.480	0.502	0	1
Age	102	22.049	2.154	17	26
Female	102	0.676	0.523	0	3
Job	102	0.824	0.383	0	1
Education	102	3.667	0.926	2	5
Living alone	102	1.775	0.900	1	3
Association member	102	0.235	0.426	0	1
Feel about lying	102	1.902	0.572	0	3

Note: All variables used in the analysis and their mean; standard deviation; minimum value; maximum value.

3.2 Experimental Design

The experiment starts with a manipulation for the treatment group. The control group will not receive this manipulation, because this makes it possible to look at the difference for an effect. The manipulation is a short mindfulness exercise, to become more mindful in three minutes. The three-minute exercise is part of the MBSR, which is developed by John Kabat-Zinn in 1979 (Kabat-Zinn, 1990). The official MBSR program contains two-hour sessions during eight weeks and a half-day retreat. It consists of didactic and experiential parts, that are meant to develop mindfulness skills. MBSR contains several mindfulness practices in four different settings: Sitting Meditation, Body Scan, Hatha Yoga and the Three-Minute Breathing Space. This research only uses the last setting, the Three-Minute Breathing Space. The exercise focuses on the breath, body and what is happening at this moment (Segal, Williams & Teasdale, 2002). The short exercise is used, because in this thesis setting it is not possible to plan a training for two weeks in a large sample size. The manipulation uses a short Dutch video, which is called '3 minuten Ademruimte' (Tiny Tweaks, 2020). The participants will be guided through the video by a voice, that let the participants focus on their breath, body and environment, without judging it. The control group will not receive the mindfulness exercise. Nevertheless, to make the control group as equal as possible to the treatment group and to only measure the effect of mindfulness, they receive another video of three minutes to focus at. By doing this, focusing by itself will not bias our results.

The video for the control group is a funny video about the Marshmallow experiment (Igniter Media, 2009). This video has nothing to do with mindfulness, but holds the attention from the participants. Because the research focuses on students, it is important that it takes no

longer than three minutes. When it takes longer, there may be some participants that skip this exercise. The participants that still completed this mindfulness exercise in less than three minutes, are excluded from the survey data. It can occur that there is a selection bias, when too much participants skip the exercise. This is because the patient people that watch the video, may be more mindful already compared to people that do not finish the video. To decrease this bias, the button to go further on the next question appears after three minutes.

After the mindfulness exercise for the treatment group, both groups get the manipulation check. This part is necessary, to check whether the manipulation did work. The manipulation check tests whether the treatment group is more mindful compared to the control group. Both groups get questions following the Mindful Attention Awareness Scale (MAAS) (Brown and Ryan, 2003). The MAAS has a single factor structure and includes 15 questions about self-reported internal and external mindfulness. Participants give answers in the form of a six-point Likert scale from 1 (almost always) to 6 (almost never). By computing a mean of these answers, you get the mindfulness score of each participant. A higher score indicates that the participant is more mindful. To check whether the manipulation worked, the means of both groups will be compared.

A Dutch study from Schroevers, Nyklícek and Topman (2008) investigated the validity of this MAAS and translated it into a Dutch version. Their results acted the same as previous American researches (Baer et al., 2006; Carlson & Brown, 2005; MacKillop & Anderson, 2007), that they all stated that the validity and reliability was adequate. The Cronbach's Alpha, which indicates the internal consistency as a measure for reliability, varies between 0.81 and 0.87 (Schroevers, Nyklícek & Topman, 2008). A Cronbach's alpha indicates an adequate reliability, when the alpha is higher than 0.65. This means that the different questions, that are used to measure mindfulness, are sufficiently correlated. According to a study from Bear et al. (2006) is the Cronbach's alpha for MAAS 0.86, one of the higher alpha's compared to other mindfulness scales. Schroevers, Nyklícek and Topman (2008) also recommend the MAAS for clinical and research proposal, because it is a short questionnaire with simple formulated questions. All these reasons make that this research uses the MAAS.

Even though Schroever, Nyklícek and Topman (2008) recommend the MAAS, there are some critical notes for this scale. It only measures one dimension of mindfulness, which is being aware at the present moment (Bear et al. 2006). This is not a limitation for this research, because this is the awareness where this paper looks at. It is also a self-reported scale, which may be less reliable when people are noticing that it is about mindfulness. However, the scale and survey make it almost impossible to mention that mindfulness is measured.

When the manipulation check is done, the next part of the experiment is checking whether the cheating behavior differs among the control and the treatment group. This part uses the method from Fischbacher and Föllmi-Heusi (2013). The survey contains an explanation part, where they tell the participants to imagine that they completed another experiment. Since money cannot be used in this setting as incentives, the best alternative is to let participants imagine that they could earn money when they would participate in real life. In this case, people do not have the incentive to lie. This may be a limitation of this research, because participants do not actually earn the money, which is the hypothetical bias. This may cause that people behave more honest, compared to what they would do in real life. This may induce that the results show less effect, compared to what the results would be when people had to choose in real life. To investigate this effect with more accuracy, the participants get also the question what they think the person in this situation would do. Some research has proved that people fill in what they would do themselves in the situations, which is called *the false consensus effect* (Ross, Green & House, 1977). This is an egocentric bias.

In the hypothetical decision situation, participants are asked to imagine that they would get an amount between 0 and 5 euros and to determine which amount they will receive for that participation, they have to roll a die. There is one person in the same room, who has to pay out the participant. The person that pays the participant out, does not know how many points the participant rolled. Then the participant has to write down his score and hand it in to get his money. The payout according to the score is done in this way: throwing 1 gives the participant 1 Euro, throwing 2 gives 2 Euros etc. The maximum output if 5 Euros when throwing 5, and throwing 6 give 0 Euros. After the explanation, the survey asks what the participant would do when he or she throws 3. The idea was to let the participants throw a die online, but this was not possible in the survey program Qualtrics. For that reason, the participants now see the die they would have thrown. The participants are then asked, what they would fill in on the note to get their money. The fact that participants can not actually throw a die is also a limitation, because it would better simulate a game situation.

The last part of the survey contains general demographic questions to check whether the randomization worked properly. These questions will collect information about age, gender, education level, being member of a study- or student association, (side)job, how the participants' living situation is and how you the participant feels about lying. When the randomization or treatment does not work, it is possible to implement this information in the regression as control variables.

3.3 Regression and Variables

The research aims to investigate whether more mindful people are lying less. This will be investigated with different regression methods. If the randomization worked properly, there is no need for control variables. Then we can assume that the treatment- and control group are the same before the experiment. A proper randomization solves selection bias. In this case, it is possible to use a simple linear regression to check whether the mindfulness exercise worked. The first hypothesis states that the treatment group has a higher mindfulness level compared to the control group. This can be tested by using a regression of treatment on mindfulness level, with *Treatment* as independent variable and *the MAAS score* as dependent variable. This regression is shown below, as equation 1. The *MAAS score* gives the mean of the mindfulness level for both the treatment and control group. The variable Treatment is 1 when the respondent is in the treatment and 0 when the respondent is in the control group. The effect on the mindfulness scale is given by $\beta 1$. When $\beta 1$ is significantly larger than 0, then the mindfulness exercise worked and the treatment group is more mindful.

If the randomization worked properly and the three-minute exercise has a significant effect, it is possible to look at the effect of being in the treatment group on cheating behavior by using a logistic regression. Lying self and Lying other are dichotomous variables, which indicates that the variables have only two possible outcomes (lying or not). When the dependent variable is a dichotomous variable, it is necessary to use a logistic regression (McCrum-Gardner, 2007). Hypothesis 2 will then be tested by the equation 2 and equation 3, shown below. *Treatment* is the independent variable and $Log\left(\frac{p(lyingself=1)}{p(lyingself=0)}\right)$ is the dependent variable. $\beta 2$ and $\beta 3$ are the effects of the mindfulness exercise on the logistic cheating odds among the participants. The result of this regression indicates whether mindfulness affects cheating behavior. According to Hypothesis 2, these coefficients should be significantly negative, which means that more mindful people lie less.

$$(1)\quad MAAS\ score = \alpha + \beta 1 * Treatment + \varepsilon$$

$$(2)\quad Log\left(\frac{p(lyingself=1)}{p(lyingself=0)}\right) = \alpha + \beta 2 * Treatment + \varepsilon$$

$$(3)\quad Log\left(\frac{p(lyingother=1)}{p(lyingother=0)}\right) = \alpha + \beta 3 * Treatment + \varepsilon$$

However, it can occur that the treatment does not work. This means that equation 1 gives no significant difference between the mindfulness level in the treatment group and the

mindfulness level in the control group. Hypothesis 1 can then not be accepted. If this is the case, the randomization worked, but the treatment did not. Because the treatment did not work, it is not possible to look at two groups anymore, because there is no significant difference. That is why it is also not possible to use the randomization. In this situation, the sample consists of participants with different MAAS-score outcomes, where some participants are lying and some participants are not. This is the same situation as when both the randomization and the treatment do not have a significant effect. In this situation, it is not possible to speak from an effect anymore.

However, it is possible to look at the correlation between two variables. It is still possible to test hypothesis 2, whether more mindful people lie less. To investigate this, it is necessary to run a logistic regression of MAAS score on lying, with mindfulness level as the independent and logistic lying odds as dependent variable. These regressions are shown below, as equation 4 and equation 5. It is necessary to add control variables, to get the most reliable and valid results. The survey contained different demographic questions, to collect data for the control variables. $\beta 4$ and $\beta 5$ show the correlations between mindfulness level and the logistic lying odds. If Hypothesis 2 holds, these coefficients should be significantly negative. This would mean that more mindful people lie less.

$$(4)\quad Log\left(\frac{p(lyingself=1)}{p(lyingself=0)}\right) = \alpha + \beta 4 * MAASscore + \Sigma\, \beta i * Control\, Variables + \varepsilon$$

$$(5)\quad Log\left(\frac{p(lyingother=1)}{p(lyingother=0)}\right) = \alpha + \beta 5 * MAASscore + \Sigma\, \beta i * Control\, Variables + \varepsilon$$

It can also occur that the randomization does not work. If the randomization does not work, it is necessary to add control variables to look for the treatment effect. The mindfulness exercise may have a significant positive effect on the MAAS-score. This has to be checked again by equation 1, but in this case with control variables. When $\beta 1$ is significantly positive, the mindfulness exercise has a significant effect on the MAAS-score. This indicates that Hypothesis 1 is true. To check the effect of the mindfulness exercise on lying behavior, also control variables have to be added to conduct a valid analysis. It is possible to check this, by conducting logistic regressions of the treatment on the lying variables with control variables. These regressions are shown below, as equation 6 and equation 7. $\beta 6$ and $\beta 7$ show the effect of the mindfulness exercise on the lying rate. When $\beta 6$ and $\beta 7$ have a significant negative effect on the lying rate, it is possible to say that Hypothesis 2 is true.

$$(1)\ \ MAAS\ score = \alpha + \beta 1 * Treatment + \Sigma\, \beta i\ *\ Control\, Variables + \varepsilon$$

$$(6)\ \ Log\left(\frac{p(lyingself=1)}{p(lyingself=0)}\right) = \alpha + \beta 6 * Treatment + \Sigma\, \beta i\ *\ Control\, Variables + \varepsilon$$

$$(7)\ \ Log\left(\frac{p(lyingother=1)}{p(lyingother=0)}\right) = \alpha + \beta 7 * Treatment + \Sigma\, \beta i\ *\ Control\, Variables + \varepsilon$$

Besides only looking at whether people are lying or not, it is also interesting to look at the degree of lying. In the survey people filled in 3,4 of 5. When they filled in 3, they were not lying. When filling in 4 or 5, the respondents were lying. However, filling in 5 is gaining two more Euros by lying and filling in 4 is only gaining 1 more Euro by lying. There is a difference between these two. People that filled in 5 are relatively lying more, compared to the people that filled in 4. This is due to the difference with the number 3.

To investigate this, a linear regression will be used of Treatment on the numbers the people filled in by lying self and lying for the other. The numbers they filled in, are between 3 and 5, which indicates that this variable has more than two possible outcomes. That is why a simple linear regression is a suitable method to investigate this effect on the height of the numbers. Because the randomization and treatment worked, there is no need for control variables. Equation 8 and equation 9 show these regressions with the numbers they filled in, as dependent variables and being in the treatment group as independent variables. The expectation is, according to Hypothesis 2, that both coefficients are negatively significant. This means that the people in the treatment group are cheating less compared to the control group, because the treatment group is more mindful.

$$(8)\ Reported\ Nr\ Self = \alpha + \beta * Treatment + \varepsilon$$

$$(9)\ Reported\ Nr\ Other = \alpha + \beta * Treatment + \varepsilon$$

It is also interesting to look at differences between the mean outcomes of the numbers they wrote for themselves and what they thought what others would fill in. According to the existing literature from Ross, Green and House (1977) it may occur that people fill in higher numbers for others and lower numbers for themselves. This is because the *false consensus bias*, which is an egocentric bias. This bias causes that people do not admit that they would lie, but they think that another person would lie in that situation. This reflects what they would do in the same situation. The expectation is, according to this literature, that the mean of the reported Nr Other is higher than the mean of Reported Nr Self. To investigate whether this difference is

significant, a paired t-test has to be executed. A paired t-test is used, because the numbers are from the same person and are not from two independent samples.

4. Results

This part contains the results of this paper. It starts with checking whether the randomization worked. Then, the effect of the mindfulness exercise is investigated on the MAAS-score. This will reject or accept Hypothesis 1. Thereafter, the effect of mindfulness on lying behavior is investigated, to reject or accept Hypothesis 2. The last part will show the degree of lying behavior and the difference between lying behavior for themselves and how they think about lying behavior of others.

4.1 Randomization check

First, it is checked whether the treatment and control group are approximately the same, in order to control the randomization. To show that both groups are roughly the same, table 3 shows the means for both groups. The treatment group consist of 57 respondents and the control group consists of 45 respondents. As table 3 shows, there are no large differences between the treatment and control group.

Table 3: Means for the Treatment and Control group

Variables	Mean Treatment group	Mean Control group
MAAS-score	3.690	3.471
Reported Nr Self	3.158	3.222
Reported Nr Other	3.736	3.711
Lying Self	0.105	0.111
Lying Other	0.491	0.467
Age	22.263	21.778
Female	0.667	0.733
Job	0.807	0.844
Education	3.684	3.644
Living alone	1.614	1.978
Association member	0.157	0.333
Feel about lying	1.878	1.933

Note: All variables used in the analysis with their mean for Treatment = 1 (Treatment group) and Treatment = 0 (Control group).

However, to ensure that the randomization worked well, the variables are put in a regression on Treatment. Only the control variables are included in this regression on treatment. This regression is shown in Table 4. Only association member gives a small significant difference between the treatment and control group. There are significantly less association members in the treatment group, compared to the control group. The randomization worked properly on the most variables, except being an association member. Even though, the difference is not large, it is significant on a 5% level. This causes that it is necessary to implement this variable as control variable in the regression.

Table 4: Randomization check

Variables	Treatment	Constant	N
Age	0.485	21.778***	102
	(0.428)	(0.316)	
Association member	-0.175**	0.333***	102
	(0.086)	(0.071)	
Education	0.040	3.644***	102
	(0.183)	(0.128)	
Female	-0.067	0.733 ***	102
	(0.101)	(0.067)	
Job	-0.037	0.844***	102
	(0.076)	(0.055)	
Feel about lying	-0.056	1.933***	102
	(0.115)	(0.086)	
Living alone	0.104	0.089**	102
	(0.068)	(0.043)	

*Note: Regression Treatment on all the control variables. The first column shows dependent variables: Age; Female; Job; Education; Living alone; Association member; Feel about lying. The second column shows coefficients to check randomization. Robust standard errors are given in parentheses. The third column gives the constant. The last column shows the sample size. Significance levels: * p < .10, ** p < .05, *** p < .01.*

4.2 Manipulation check

Since it is clear that randomization worked except for being an association member, it is now possible to do a manipulation check. According to Hypothesis 1, the effect of being in the treatment group should be positive. This indicates that the mindfulness exercise for the treatment group, should cause a higher mindfulness level. It is important to take association member as the only control variable in this regression of Treatment on MAAS-score, because this one was not well randomized. Equation 1 has been converted to the new regression with control variables.

The results of this manipulation check are shown in Table 5. This table shows that Treatment coefficient has a small significant positive effect on the MAAS-score. This means that the MAAS-score for the treated respondents is marginally higher (at 10% level), compared to the non-treated respondents. Whether being a member of a student association has no significant effect on the MAAS-score. This variable can be left out of the regression. According to these results, Hypothesis 1 is accepted.

$$(1)\quad MAAS\ score = \alpha + \beta 1 * Treatment + \beta_A * Association\ Member + \varepsilon$$

Table 5: Manipulation check

	MAAS-score
Treatment	0.214*
	(0.128)
Association member	-0.031
	(0.145)
Constant	3.481***
	(0.100)
N	102
R^2	0.0300

*Note: Manipulation check, to check whether the mindfulness exercise has effect on the mindfulness level. The first column shows the independent variables: Treatment; Association member (to control). In the second column the coefficients are shown from equation 1. The robust standard errors are given in parentheses. The R^2 and sample size are shown. Significance levels: * p < .10, ** p < .05, *** p < .01*

4.3 Effect of mindfulness on lying behavior

Table 5 shows a significant effect of the treatment on the mindfulness level. This part will look for an effect by two ways. First, the scenario will be tested where both the randomization and the treatment worked (on a 10% significance level). The manipulation effect is significant, which means that it is possible to logistically regress treatment on the lying odds. To test this, equation 2 and equation 3 are used. Because there is already showed that Association member does not affect the MAAS-score, it is not necessary to implement this variable in the regression. Thus, no control variables are used in this regression. Table 6 shows the results of this logistic regression.

Table 6 shows no significant results for both lying variables. It is interesting that the treatment coefficient on the log odds of lying self is negative, which indicates that being more mindful would decrease the lying behavior. However, this coefficient is not significant. Contrary to the expectation, these results provide no support for Hypothesis 2. This may be caused by the small and weak significance of the manipulation, showed before.

$$(2)\quad Log\left(\frac{p(lyingself=1)}{p(lyingself=0)}\right) = \alpha + \beta 2 * Treatment + \varepsilon$$

$$(3)\quad Log\left(\frac{p(lyingother=1)}{p(lyingother=0)}\right) = \alpha + \beta 3 * Treatment + \varepsilon$$

Table 6: Logistic Regression of treatment on lying

	$Log\left(\frac{p(lyingself=1)}{p(lyingself=0)}\right)$	$Log\left(\frac{p(lyingother=1)}{p(lyingother=0)}\right)$
Treatment	-0.061	0.098
	(0.644)	(0.401)
Constant	-2.079***	-1.134
	(0.477)	(0.300)
Pseudo R^2	0.0001	0.0004
N	102	102

*Note: Logistic regression of Treatment on lying odds to investigate the effect of the treatment on lying odds. The first column shows the independent variable Treatment. In the second column the coefficients are shown for equation 2. The third column shows the coefficients for equation 3. The robust standard errors are given in parentheses. The Pseudo R^2 and sample size are shown. Significance levels: * $p < .10$, ** $p < .05$, *** $p < .01$*

As table 6 shows, there is no significant effect of the mindfulness exercise on the lying behavior. However, it is still possible to look at the correlation between the MAAS-score and logistic lying odds. By this way, it is possible to check whether being more mindful correlates with lying odds. In this situation, the correlation is investigated and not the treatment effect. There are not two different groups anymore, thus there is no randomization any more. Control variables then have to be added. Looking for a correlation can be done by equation 4 and equation 5. Table 7 shows these results.

$$(4) \qquad Log\left(\frac{p(lyingself=1)}{p(lyingself=0)}\right) = \alpha + \beta 4 * MAASscore + \Sigma\, \beta i * Control\, Variables + \varepsilon$$

$$(5) \qquad Log\left(\frac{p(lyingother=1)}{p(lyingother=0)}\right) = \alpha + \beta 5 * MAASscore + \Sigma\, \beta i * Control\, Variables + \varepsilon$$

Table 7: Logistic Regression of mindfulness level on lying

	$Log\left(\frac{p(lyingself=1)}{p(lyingself=0)}\right)$	$Log\left(\frac{p(lyingother=1)}{p(lyingother=0)}\right)$
MAAS-score	0.338	-0.278
	(0.788)	(0.337)
Age	-0.215	-0.049
	(0.138)	(0.107)
Association member	-0.292	-0.135
	(0.991)	(0.513)
Education	0.763*	0.143
	(0.458)	(0.249)
Feel about lying	-2.354***	-0.611
	(0.725)	(0.400)
Female	-0.629	0.315
	(0.719)	(0.406)
Job	2.029	0.288
	(1.829)	(0.594)
Living alone	0.759	-0.702
	(1.167)	(0.652)
Constant	0.934	2.301
	(3.882)	(2.730)
Pseudo R^2	0.2401	0.0498
N	102	102

*Note: Logistic regression of MAAS-score on lying odds to investigate the effect of the mindfulness level on lying odds. The first column shows the independent variable: MAAS-score; Age; Association member; Education; Feel about lying; Female; Job and Living alone. In the second column the coefficients are shown for equation 4. The third column shows the coefficients for equation 5. The robust standard errors are given in parentheses. The Pseudo R^2 and sample size are shown. Significance levels: * p < .10, ** p < .05, *** p < .01*

Contrary to the expectations, these results do also not accept Hypothesis 2. Both coefficients of the MAAS-score on the logistic lying odds are not significantly negative. These results indicate that the mindfulness exercise has no negative correlation with logistic lying odds. The coefficient from MAAS-score on the logistic lying other odds is negative, which normally says that the higher the mindfulness level, the lower the odds of lying. However, this coefficient is not significant, which makes it impossible to accept Hypothesis 2.

It is also interesting to look at some control variables. The existing literature stated that these control variables may have an effect on cheating behavior. Education level and how participants feel about lying give some significant correlations with the logistic lying odds. Bushway and Nash (1977) described that the moral climate of schools may influence cheating behavior. In our sample the education level correlates with cheating behavior. The results give a negative significant, on the 10% level, correlation between the education level and lying self. This indicates that the higher the education level, the lower the odds for lying by themselves. The most significant correlation in the Table 7 is the correlation between feelings about lying

and the odds for lying by themselves. This correlation is significantly negative on the 1% level. This means that the more people think that lying is bad (this means that the value of the 'Feel about Lying' is higher), that these respondents really lie less. The fact that education level and feelings about lying have both a significant effect on lying odds, may be caused by the moral climate at school, where Bushway and Nash wrote about (1977).

According to these results, Hypothesis 1 can be accepted. The mindfulness exercise has a small positive significant effect on the mindfulness level of the respondents. There is insufficient evidence to accept Hypothesis 2. It is not possible to say that students with a higher mindfulness level have a lower lying frequency.

4.4 The scope of lying and different forms of lying

Until now, only the effect of mindfulness was investigated on lying or not. To gain more detailed knowledge mindfulness and lying, it will now be investigated more in detail. As told in the Data & Methodology, a simple linear regression is suitable to test this. Equation 8 and equation 9 are used to look for an effect. The expectation was that both coefficients were significantly negative. The results are shown in Table 8. These results show no significant effect of treatment in the scope of lying. This indicates that there is no significant difference in how high the numbers are, between the treatment and control group. This confirms the results from the sections above, in which it is not possible to accept Hypothesis 2.

$$(8)\ Reported\ Nr\ Self = \alpha + \beta * Treatment + \varepsilon$$

$$(9)\ Reported\ Nr\ Other = \alpha + \beta * Treatment + \varepsilon$$

Table 8: Linear Regression of treatment on the numbers

	Reported Nr Self	Reported Nr Other
Treatment	-0.064	0.026
	(0.115)	(0.167)
Constant	3.222	3.711
	(0.095) ***	(0.125) ***
R^2	0.0033	0.0002
N	102	102

*Note: Linear regression of being in the treatment group on numbers they filled in for themselves and others. The first column shows the independent variable: Treatment. In the second column the coefficient is shown for equation 8. The third column shows the coefficient for equation 9. The robust standard errors are given in parentheses. The R^2 and sample size are shown. Significance levels: * p < .10, ** p < .05, *** p < .01*

This last part takes a look at the results about the difference between the numbers that were reported for themselves, and how the participants thought what others would fill in. This is investigated with a paired t-test, because the two mean numbers that are compared are not independent from each other. The results are shown in table 9. The means already show a difference from 0.539, where the numbers for others are higher. The results from the paired t-test for the number self (*M=3.19, SD=0.56*) and the number other (*M=3.73, SD=0.83*) indicate that there is a significant difference between the numbers (t (101) = -6.67, p=0.0000).

Table 9: T-test numbers self and other

Variable	N	Mean	Standard Deviation
Reported Nr Self	102	3.186	0.558
Reported Nr Other	102	3.725	0.834
Difference	102	-0.539 ***	0.817
Degrees of freedom = 101			
t = -6.669	p-value = 0.0000		

*Note: T-test to test the difference between the mean numbers reported for themselves and others. In the first column the variables Reported Nr Self and Reported Nr Other are shown, with the difference between the two. In the second column the sample size is shown. The third column shows the means and the last column shows the standard deviations. Also, the degrees of freedom, the t-statistic and p-value are shown. Significance levels: * p < .10, ** p < .05, *** p < .01*

The results from this section show that there is no significant difference in how high the numbers are between the treatment and control group. This confirms the results from the previous section, that do not accept Hypothesis 2. This part also shows that there is a significant difference between the numbers, the respondents reported, for themselves and for others. This supports the literature from Ross, Green and House (1977). This may confirm that there is an egocentric bias, called the false consensus bias.

5. Conclusion and discussion

This part will examine the results of the paper and give the conclusion. After that, some limitations of this paper and improvements for further research are discussed.

5.1 Conclusion

The aim of this paper is to investigate whether more mindful students lie less. Participants were randomly assigned to two groups, the control and the treatment group. To ensure internal validity, the two groups were randomized. The paper started to investigate whether this worked well. Besides, the variable, association member, the variables had no significant difference. This means that the randomization worked properly.

After the randomization check, the manipulation check was executed to test whether the treatment had an effect on mindfulness level. To test this, a regression from Treatment on MAAS-scale was used. Because association member had a significant difference in the randomization check, it was necessary to add this one as control variable. The results accept Hypothesis 1, which means that the mindfulness exercise increased the mindfulness scale for the treatment group. Besides this finding, being an association member had no significant effect on the mindfulness level. This means that the randomization worked properly in total, because it has no effect on the outcome variable.

The next step was to investigate the aim of the paper, whether mindfulness decreases the lying frequency, Hypothesis 2. This was investigated with two different logistic regressions. The first regression was executed without control variables, because the manipulation worked. This logistic regression, regressed Treatment on the logistic lying odds. The results showed no significant difference. With this regression it is not possible to confirm that more mindful people lie less. The second logistic regression that was used, was a logistic regression with control variables. This equation regressed the mindfulness level on the logistic lying odds with added control variables. This was necessary, because in this case it was only able to investigate a correlation. These results showed also no significant difference, which means that there is insufficient evidence to accept Hypothesis 2. It is not possible to conclude that more mindful students lie less.

In the last part more knowledge was generated by doing investigations about how high the numbers were, which the respondents filled in. The first part was looking at whether the people in the treatment group filled in higher numbers. This would indicate that there may be a higher lying frequency in the treatment group. These results showed also no significant effect,

which confirms the results from the previous section. Furthermore, there was investigated whether there was a false consensus bias. This means that the numbers they reported for others were higher, compared to the numbers for themselves. The results showed that there was a significant difference between the self-reported numbers and the reported numbers for others. This supports the literature from Ross, Green and House (1977).

The treatment had a significant effect. The mindfulness exercise was useful to increase the mindfulness level of the students. Hypothesis 1 is accepted. However, the results of this paper show insufficient evidence to accept Hypothesis 2 is true. There is no significant decrease in the lying frequency when people are more mindful. The research question of this paper was whether a short mindfulness exercise would decrease cheating behavior among students. With the results of this paper, it is not possible to say that the answer on this question is yes.

5.2 Discussion

In this paper no significant effect was found from mindfulness on cheating behavior. There are some limitations that may have caused this. To start, there were no real incentives in this research design. The participants had to fill in what they would do in a situation. They did not get money in real life, which causes that the incentives are not real. In this research, it was not possible to pay out money to the students. To improve this, it is also asked what they think other students will do, which is a good option when real incentives are not possible due to the false consensus bias. However, for further research it would improve the research to give real pay outs. In that situation, the respondents would have the incentives to get more money and lie more.

Another limitation is that the pay-outs were between 1 and 5 Euros. These are relatively small amounts, with small differences of 1 Euro. It is possible that the respondents do not consider the amount to be outweighed by the fact that they have to lie. They may not want to lie for only 1 Euro. For further research, it would be interesting to work out this limitation. An example may be, a payout rate between 10 and 50 Euros or maybe even up to 100 Euros. By working this limitation out, it is possible to gain more knowledge about lying behavior. When this is in high payouts, we can learn more about fraud situations where it is about large amounts of money.

Furthermore, a lot of students quit after or during the video. 240 students started the survey, but only 107 finished it. It could be that they did not have the time at that moment, and still opened it on a later time to finish it. It could also be that they actually quit the survey and

never came back to fill it in. A video may irritate people, because they do not want to spend too much time on an online survey. In that case, there may occur a self-selection bias. This problem indicates that participants can decide by themselves, whether or not they want to participate in a survey (Heckman, 1990). This causes that the sample of respondents is not representative for the target population. The respondents that quit the survey may be less mindful, because they are very busy. The students that stay, may be less busy and more mindful. This may influence the results. It would maybe be better to take the survey in an artificial environment, the lab. It is then called a lab experiment. In a lab experiment it is also able to notice whether people are really doing the mindfulness exercises or that they just watch the video. To become more mindful, it is necessary to actually do the body, mind and environment exercises. This may help to solve the self-selection bias.

Another interesting direction for further research may be to use different kinds of mindfulness exercises. This could be in different ways of mindfulness. In this experiment a short 3-minute video was used, but there are more types that could be applied to this research. The longer MBSR-mindfulness training from Jon Kabat-Zinn (1990) would be an example. In that case, it has to be able to follow the same respondents over a longer time, because this training is an eight- to ten-week course with formal and informal meditation. It is also interesting to test the difference between formal and informal meditation, because this paper only investigates that formal meditation.

Although it is already a larger sample compared to other mindfulness researches, it would be still better to increase the sample size. However, it is necessary to take a selection, for example students. Otherwise, the randomization method will be very difficult use, because the respondents change to much from each other. It is also interesting to take another selection than students. In that case, we gain more knowledge about different kinds of people, their lying behavior and mindfulness level.

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Appendix

Appendix 1: Survey questions

The survey was distributed with Qualtrics and conducted in Dutch.

Introduction:

Ik nodig u uit om deel te nemen aan een onderzoek. Deelname is vrijwillig. Als u wilt deelnemen, moet u uw toestemming geven. Neem de tijd om de volgende informatie aandachtig door te lezen.

Voor mijn studie economie en bedrijfseconomie aan de Erasmus Universiteit Rotterdam doe ik onderzoek voor mijn afstudeerscriptie. Uw deelname is vrijwillig en anoniem. Dit betekent dat u uw deelname en toestemming op elk moment tijdens deze enquête kunt intrekken, zonder een reden hiervoor op te geven. Alle gegevens worden geanonimiseerd verzameld, waardoor de gegevens niet naar u te herleiden zijn. De enquête duurt ongeveer 5-7 minuten.

Mocht er iets niet duidelijk zijn, dan kunt u contact met mij opnemen via mijn e-mail 482242@student.eur.nl

Consent:

Geeft u toestemming voor deelname aan het onderzoek?

- Ja, ik geef toestemming voor deelname aan het onderzoek
- Nee, ik geef geen toestemming en zal niet meedoen aan dit onderzoek.

Manipulation Treatment

"The mindfulness exercise video is played" (Tiny Tweaks, 2020)

Manipulation Control

"The control video is played." (Igniter Media, 2009)

Mindfulness scale (MAAS)

	Bijna altijd (1)	Vaak (2)	Regelmatig (3)	Niet vaak (4)	Zelden (5)	Bijna nooit (6)
1. Ik kan een emotie ervaren en mij daar pas later bewust van zijn						

2. Ik breek of mors dingen door onzorgvuldigheid, onoplettendheid of doordat ik er met mijn gedachten niet bij ben.	
3. Ik vind het moeilijk om mijn aandacht te houden bij wat er op dat moment gaande is.	
4. Ik heb de neiging snel naar mijn bestemming te lopen, zonder aandacht te schenken aan wat ik onderweg meemaak.	
5. Ik merk lichamelijke spanning of ongemak pas op als deze echt mijn aandacht trekken.	
6. Ik vergeet iemand naam bijna meteen als ik die voor de eerste keer hoor.	
7. Het lijkt er op dat ik dingen automatisch doe zonder mij erg bewust te zijn van wat ik aan het doen ben.	
8. Ik voer activiteiten haastig uit, zonder er echt aandacht aan te schenken.	
9. Ik ben zo gericht op een doel, dat ik het zicht verlies op wat ik op dit moment aan het doen ben om dat te bereiken.	

10. Ik doe klussen en taken automatisch zonder mij bewust te zijn van wat ik aan het doen ben.
11. Ik merk dat ik met een half oor naar iemand luister en ondertussen met iets anders bezig ben.
12. Ik ga op automatische piloot ergens heen en vraag mij dan af waarom ik daar ook alweer heen ging.
13. Ik merk dat ik erg bezig ben met de toekomst of het verleden.
14. Ik merk dat ik dingen doe zonder er aandacht aan te besteden.
15. Ik eet haastig zonder er bewust van te zijn dat ik aan het eten ben.

Cheating Behavior Introduction

Stelt u zich de volgende situatie voor:

Een deelnemer heeft al meegedaan met een experiment, die is afgenomen door een man. Deze man zit nog samen met de deelnemer in dezelfde kamer. Van tevoren is gezegd tegen de deelnemer dat hij/zij na het experiment een bedrag uitbetaald krijgt tussen de 0 en 5 euro. Dit bedrag wordt bepaald door te rollen met een dobbelsteen en wordt betaald door de man in de kamer. De uitbetaling gaat als volgt:

- Bij 1 oog, krijg je 1 euro;
- Bij 2 ogen, krijg je 2 euro;
- Bij 3 ogen, krijg je 3 euro;

- Bij 4 euro, krijg je 4 euro;
- Bij 5 ogen, krijg je 5 euro;
- MAAR LET OP, bij 6 ogen krijg je 0 euro.

Na het rollen van de dobbelsteen, moet de deelnemer het aantal ogen noteren op een briefje en moet hij dit briefje inleveren bij de man. De man is niet in staat om in de gaten te houden wat de persoon gooit, maar gaat ervan uit dat deze persoon eerlijk is.

Na deze introductie, krijgt u zo meteen een dobbelsteen te zien. Het is de bedoeling dat u daarna noteert wat u denkt dat deze persoon op het briefje zal schrijven voor zijn uitbetaling.
Dit zijn de ogen van de dobbelsteen die de persoon gooit:

Nr Cheating Behavior (reported nr self)
Welk getal zou u zelf op het briefje schrijven?

Nr Cheating Behavior (reported nr other)
Welk getal denkt u dat deze deelnemer op het briefje zal schrijven?

Demographic Questions:

Wat is uw leeftijd?

- Jonger dan 16
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26

Wat is uw geslacht?

- Vrouw
- Man
- Anders/dat wil ik niet zeggen

Wat is het hoogste opleidingsniveau waar u mee bezig bent of dat u hebt voltooid?

- Geen diploma
- Mbo-opleiding of vergelijkbaar
- Hbo-bachelor
- Universitaire bachelor
- Master degree
- Kandidaats/PhD

Heb je op dit moment een baan? Dit kan ook een bijbaan zijn.

- Ja
- Nee

Wat is uw huidige woonsituatie?

- Ik woon op mezelf
- Ik woon thuis bij mijn ouders
- Ik woon in een huis met huisgenoten? (maar niet met mijn ouders)

Bent u lid van een student- en/of studievereniging?

- Ja
- Nee

Wat is uw houding tegenover liegen? Klik aan welk antwoord het beste bij u past.

- Geen mening
- Iedereen liegt wel eens, dus dat maakt niet uit.
- Ik ben tegen liegen en doe het zelden.
- Ik ben tegen liegen en doe het zelf ook niet.