Can an oath reduce dishonesty and overconfidence for bankers?

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Abstract: I tested the effectiveness of an oath for bankers by conducting an experiment with business students, I measured the effect of an oath on dishonesty and overconfidence. The results showed that dishonesty of females was reduced by an oath, however dishonesty of males was increased by just an oath. The financial identity prime did not work as expected. But when the oath was combined with the financial identity prime, it did reduce dishonesty of males. How the financial identity prime works in this combination is unclear. The results show that overconfidence is not influenced by oaths, nor is this effect changed by the financial identity prime. I conclude that oaths are a measure with impact, an oath influences behaviour in a positive or a negative way. Not just the oath, but all circumstances need to be taken in to account to get the positive effect of such a measure.

Key words: Oaths, Group identity, Bankers, Dishonesty, Overconfidence, Banker's oath

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Introduction

A survey conducted by Labaton Schuarow in 2014 revealed worried messages about the financial services culture: *"Nearly one in five respondents feel financial services professionals must at least sometimes engage in illegal or unethical activity to be successful"* and *"33% of financial services professionals feel the industry has not changed for the better since the financial crisis"*. The decreased trust and the increasing social importance of banks called for action. The Dutch government introduced a banker's oath in April 2015. It was introduced as a measure to increase the trust in the financial sector and like the Hippocratic oath help bankers behave in a social responsible way by providing guidelines. By signing the oath, employees in the financial sector declare that they will comply to the content of the banker's oath, swearing/promising[1] that they will act ethically, honourably and weigh interests of stakeholders properly. Researchers have speculated about the effect of the banker's oath and are sceptical. Both civilians and financial advisors doubt that the banker's oath can change behaviour (Loonen & Rutgers, 2014). Loonen & Rutgers (2016) found that the general trust in the banker's oath is low. Concerning is that this is especially low for bank employees.

Why is the banker's oath distrusted, while the Hippocratic oath is publicly accepted? It might be the different identities of the bankers and doctors, which make the difference in trust. Doctors provide healthcare to society. The main purpose of their job is to help (sick) people and they get paid to do so. Dutch hospitals are non-profit organisations; they do not have profit targets. They are allowed to make profit, but this is not the focus. The Hippocratic oath swear that the oath taker should focus on the patient's interest. Bankers on the other hand provide financial services to society. There is not one main goal for bankers, as there are many different financial products and services. The banker's oath swears that the oath taker shall focus on the customers interest. Bankers work for a bank, which are commercial organizations. The owners of the bank (shareholders) want return on their investment, which comes from the profit the banks make. To accomplish this, banks set targets and goals for their employees. These targets and goals are incentivized with monetary rewards. Besides the different settings in which they operate, also the individuals identity seems to be different. Research found that bankers are more dishonest than non-bankers (Cohn, Fehr, & Maréchal, 2014). This effect is increased when the bankers are primed with their financial identity. On the other hand, doctors primed with their professional identity restrain their self-interest and introduce altruism towards their patients (Kesternich, Schumacher, & Winter, 2015). This indicates that group identity is a pillar in the functioning

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[1] The oath taker can choose whether he swears to god, or promises.

of an oath (Chen, 1996). In this research I define group identity as: *"the identity of the group of oath-takers, and whom it represents"*. Investigating the combination of group identity within an oath helps in understanding if the banker's oath can potentially work (Boatright, 2013). I investigate the short-run effect of an oath and the combined effect with group identity on reducing dishonesty and overconfidence on an individual level. The question that I answer in this research is: *"Can an oath reduce dishonesty and overconfidence of bankers*?"* Answering this question provides empirical arguments for the discussion about the banker's oath. The results will help the Dutch financial sector understand how an oath for bankers works. Also, reducing dishonesty and overconfidence of employees is beneficial for the employers.

To answer the research question, I conducted a Posttest-only randomized experiment[2] with 61 business student. I worked with students from the Dutch business school: Rotterdam School of Management (RSM). I test the effect of A) taking the RSM oath and B) taking the RSM oath combined with a financial identity prime, on dishonesty and overconfidence. One group takes the RSM oath, one group takes the RSM oath and the financial identity prime and the last group functions as a control condition to set a baseline. I designed an oath for individuals of the RSM, based on the students honour code of Shu, Gino & Bazerman (2011). The RSM oath made the individual a representative of the RSM. This should strengthen the social responsibility of the RSM group. The financial identity prime consist of questions about the financial sector, making the students more aware of their financial identity. I worked with business students, to be able to extrapolate this research to bankers. Business students are, just like bankers, less honest than their non-business counterparts and are even more dishonest when they are primed with their financial identity (Cohn, Fehr, & Maréchal, 2014). The financial identity prime is expected to make the individuals even more comparable to bankers. With a manipulation check I measure if the prime works. The manipulation check consist of word fragments that can be completed with words that are frequently used in the banking sector. I find that the financial identity prime did not work according to the manipulation check.

The research question consists of two parts: dishonesty and overconfidence. Dishonesty and overconfidence have been problematic in the banking sector and have caused reputational and monetary damage. The banker's oath is supposed prevent this from happening in the future. I test if an

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[2] A Posttest-only experiment is an experiment designed with control and treatment group(s). Subjects are randomly assigned to each group and the only measurement point is after the treatment/control. Comparing the outcomes of the treatment group with the control group gives insight on the effect of the treatment.

oath for business students reduces dishonesty and overconfidence. Dishonesty is measured by the outcome of ten coin tosses. For each successful coin toss the individuals get an monetary reward. They can cheat by reporting a successful outcome, while the coin toss was unsuccessful. Oaths work by strengthening the intrinsic motivation to act ethical (Jacquemet, Joule, Luchini, & Shogren, 2013). The oath functions, through the intrinsic motivation, as a guideline for the desired behaviour. Partly cheaters have some intrinsic motivation to be honest. Full cheaters have no intrinsic motivation to be honest. I expect the RSM oath will prevent the partly cheaters from cheating, but not the full cheaters.[3] On the group level I test the effect of the oath by comparing the means, distributions, fraction of misreported coin tosses and the fraction of cheaters of the groups. The latter two measures are statistical calculations from the research of Cohn, Fehr & Maréchal (2014). I find that the means of the groups do not differ, nor do the distributions. This implicates that oaths do not reduce dishonesty. The results of the statistical measures show that the fraction of cheaters decreases when an oath is taken, but the fraction of misreported coin tosses does not decrease. This indicates that oaths results in less people cheating, but the people who cheat, cheat more. Therefore I conclude that oaths do not reduce dishonesty on the group level. I also examine the effect on the individual level. Most employees in the financial industry are males, in 2015 in the Netherlands only 20.8% of the higher functions in the financial sector were occupied by females (commissie Monitoring Talent naar de Top, 2016). Previous studies found that males are more dishonest than females. The effect of the oath could potentially differ for each gender, but I do not expect this because Carlsson et al. (2013) found that the effect of an oath does not depend on demographic variables. I use an OLS regression to test the effect on dishonesty on the individual level. I find that males cheat more than females, which is in line with previous studies. Contradictory to the findings of Carlsson et al. (2013), I find that the oath works different for each gender. Oaths increase dishonesty of male individuals, but decrease dishonesty of female individuals. However, when the oath is combined with the financial identity prime, it offsets the negative effect of the oath of the males and reduces their dishonesty. For female individuals the oath reduces dishonesty and this effect is not influenced by the financial identity prime. A possible explanation for the negative effect of the oath for males, is that males have a negative association with oaths. They do not see the usefullness of an oath and it provokes them to cheat more. The manipulation check indicated that the prime did not work, but the prime does affect the effectiveness of an oath. I assume that the financial

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[3] Partly cheaters are subjects who cheat to some degree, full cheaters are subjects who go for (almost) maximum payoff which is statically unlikely. If individuals report honestly, only 0.098% of the cases report an outcome of 10 successful coin tosses.

identity prime makes the subjects think of the wrong-doing in the financial sector, which was the reason for the introduction of the banker's oath. This made the male students understand the necessity of the oath, and behave according to it. I conclude that an oath combined with the financial identity prime reduces dishonesty, but it is unknown how the financial identity prime works.

Overconfidence is a frequently phenomenon in the financial industry. Various studies show the negative consequences of overconfident CEO's and employees. I measure overconfidence with a self-perceived performance of an intelligence test. I deduct the actual test score of the individual from the expected test score to calculate the degree of overconfidence. Revill & Dando (2006) found that oaths can create some degree of group identity. If the individuals identify with the group (identity), they will feel the social responsibility of the group (Adams & Marshall, 1996). This social responsibility will increase the weight on the estimation decision, and result in a change of the decision process from the subconscious decision-making, system one, to the conscious decision-making, system two (Kahneman, 2011). This would result in better estimations of their own performance, and therefore less overconfidence. I find that the means of the groups do not differ, nor do the distributions. This shows that oaths do not reduce overconfidence on the group level. With an OLS regression I test the effect of the oath on the individual level. I find no signficant results, therefore I conclude that oath does not reduce overconfidence. Also the financial identity prime does not impact the effect of the RSM oath on overconfidence. The increased weight on the decision process, did not change the thinking process from system one to system two. A possible cause is the lack of incentives to perform well in the intelligence test or accurately estimate their own performance. I can however conclude that the RSM oath, alone or in combination with the financial identity prime, does not improve the estimation of the subjects estimation of their score on the intelligence test.

Group identity within oaths related to dishonesty and overconfidence

The literature is ambiguous whether oaths work or not. Most literature indicate that oaths, honour codes or code of ethics reduce unethical behaviour. Rutgers (2013) argues that an oath is an commitment to a particular action and draws attention to the corresponding attitude. Therefore an oath changes behaviour, even if it is not made in good faith. But it needs to be clear for the oath taker, what this attitude or action is. An oath for complicated attitudes or actions is less likely to change behaviour. Sulmasy (1999) argues that an oath needs to commit oath takers to the service they provide. Within this commitment they should place the needs of their customers/patients above their own personal self-

interest. In essence this should already be the main focus of the service provider, but an oath can strengthens this. Boatright (2013) explains that in order for an oath to work, it needs to have a singular focus in the behaviour it guides. He argues that the banking sector lacks this singular focus, therefore an oath for bankers will not work. The oath works as an internalization of commitment and it substantially different from an externally imposed rule, like code of conducts or code of ethics (Blok, 2013). The difference is that the internal system includes intrinsic motivation. Van der Linden (2013) agrees that an oath can support ethical decision making, because it reminds the oath-taker of important practical considerations. However, he argues that in order for this to work, the ethical reasoning needs to be unrealistic simple. As the ethical reasoning in the banking sector is complex, an oath is doubted to work (van der Linden, 2013). The previous mentioned research are from a theoretical point of view. Empirical research test these theories. Jacquemet, Joule, Luchini & Shogren (2012) showed that oaths work through an increase in the willingness to tell the truth, by strengthening the intrinsic motivation. It requires some degree of intrinsic motivation for an oath to have an effect. An individual with no intrinsic motivation to tell the truth, will not be influenced by an oath. Shu, Gino & Bazerman (2011) conducted an experiment with business students, whom were required to sign a honour code. In the experiment they found that signing the honour code made the subjects less likely to cheat. Both an honour code and an oath work on the intrinsic motivation. Contrary to the previous findings, Thaler & Helmid (2015) conducted an between-subjects experiment among public administration employees and found that codes of conduct do not improve ethical behaviour, or even ethical intentions. Oaths seem to have other effects for different type of people. Carlsson et al. (2013) conducted a survey in China and Sweden with an oath script. They found that the oath reduced the variance in a willingness-to-pay game for both countries. For the Chinese sample it also decreased the average willingness-to-pay, but is not the case in Sweden. They conclude that the effect of oath depends on the country.

The difference in the oath's group identity might explain these contradictory findings. Revill & Dando (2006) find that an oath strengthen, amongst other things, the norms related to the underlying group. Research on the combination of pledges and commitment of Chen & Komorita (1994), found that a pledge only increases cooperation when it contains some degree of commitment. The individual pledge was an individual preliminary contribution decision. When this pledge contained full commitment (the pledge was their minimum contribution amount) or when it contained no commitment (the pledge was non-counting), it did not increase cooperation. Chen (1996) found that individual pledges do not increase cooperation, but group pledges do. Group pledges are like individual

pledges, but the minimum contribution amount for each individual depends on the pledges of the whole group. Group pledges increase cooperation more when there is a higher level of commitment, but this depends on the individual's feeling of group identity. According to Sulmasy (1999) an oath works only if the oath takers agree to be held accountable for what they have sworn. The articles of Chen (1996) and Chen & Komorita (1994) indicate that group identity functions as pillar for an oath.

Revill & Dando (2006) found that the Hippocratic oath is recognized as an established (working) oath that creates some degree of group identity. Their results showed that doctors see their oath as an entrance barrier to become part of the body of doctors. In order to feel the social responsibility of a group, an individual needs to identify with the group (Adams & Marshall, 1996). As soon as the doctors take the Hippocratic oath, they identify with the group and feel the social responsibility of the group. When we compare the banker's oath and the Hippocratic oath, we must note that bankers and physicians differ in the work they do and the kind of people that are employed in each sector. Cohn, Fehr & Maréchal (2014) found that bankers are more dishonest when monetary rewards are at stake than non-bankers and students. Doctors who are primed with professional norms restrain their self-interest and introduce altruism towards patients (Kesternich, Schumacher, & Winter, 2015). When bankers are primed with their job identity, bankers are less honest (Cohn, Fehr, & Maréchal, 2014). Cohn, Fehr & Maréchal (2014) did not find a significant effect for the years the individual worked in the banking sector. They suggest that the finding that people behave more selfish when they are primed with money may play a role in the dishonesty of the banking sector (Vohs, Mead, & Goode, 2006). Every banker is confronted with money on a daily basis. Also, most employees in the banking sector are males. Dreber & Johannesson (2008) found that males are more likely than women to lie to secure a monetary benefit. The study used a sender and receiver game, in which the sender could send a deceptive message to the receiver to earn a higher monetary reward. Houser, Vetter & Winter (2012) used a private coin toss to show that males are more likely than females to incorrectly report the result of a private coin toss. Bucciol, Landini & Piovesan (2013) conducted a field experiment by checking tickets of passengers on a bus. They find that males are likelier to not buy a ticket. Friesen & Gangadharan (2012) used matrices to measure dishonesty on the individual level. They find that males cheat more often, and also cheat more. Muehlheusser, Roider & Wallmeier (2015) study the gender effect on dishonesty of groups and individuals. They find that male individuals cheat more in a dice rolling experiment. A two-person group, with either one or two males in it, is more likely to cheat than a group with two females.

To indicate the relevance in the banking sector of perceived dishonesty and overconfidence, I will give some examples.

Dishonesty in the banking sector

"If YOU can only be good at one thing, be good at lying… because if you're good at lying, you're good at everything." Thus a wag imagined one investment banker advising another in a lift. He may not have been far wrong (The Economist, 2014). Lee Stewart (51), trader from Rabobank, admitted that he influenced, in cooperation with other banks, the LIBOR rate[4] in the period Mai 2006 until the beginning of 2011. By manipulating this rate, banks were able to make the rate favourable for their own profits, and the employee(s) would achieve their targets and receive bonuses. This is an example of bankers lying to achieve personal (or corporate) benefits. I define dishonesty as *"a consciously and deliberatively act of lying to achieve personal gains"* (Greene & Paxton, 2009; Mazar, Amir, & Ariely, 2008) in this research.

Overconfidence in the banking sector

"Too much testosterone, too much confidence: the psychology of banking" (Leslie, 2012). The overconfidence of bankers has already led to big losses, for example Jérôme Kerviel lost approximately €4.9 billion for his employer Société Générale in 2008. Not just employees, but also CEO's are assumed to be overconfident frequently. These overconfident CEO's overeagerly make acquisitions (Malmendier & Tate, 2005), overestimate the success of new innovations (Galasso & Simcoe, 2011), have a higher forced turnover (Campbell, Gallmeyer, Johnson, Rutherford, & Stanley, 2011) and take on more risk for their bank (Niu, 2010). The oath, and its group identity, will put more weight on the decision process. The higher stakes can potentially move the decision from the subconscious decision-making, system one, to the conscious decision-making, system two. This should result in a better estimation of their capabilities (Kahneman, 2011). I use the definition of Moore & Healy (2008) for overconfidence: "*Overestimation of one's actual ability, performance, level of control, or chance of success*".

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[4] The LIBOR rate, which is determined by the banks, is used worldwide as a fundament for a lot of financial contracts, from mortgages and company loans till derivate contracts (Het Financieel Dagblad, 2015).

Conceptual framework

In this part I use the findings and implications of previous studies to set up hypotheses, and explain how I test them. I split this research in two parts: The effect of oaths on dishonesty and the effect of oaths on overconfidence. The outcomes of the hypotheses combined, are used formulate an answer to the research question: *"Can an oath reduce dishonesty and overconfidence of bankers?"*

An oath can be compared to a group pledge, because it is a commitment with a group to behave according to the set of rules. Therefore I expect that the effect of the oath also depends on the group identity (Chen, 1996; Chen & Komorita, 1994). But this does depends on the degree of commitment of the oath. The banker's oath has legal consequences for breaking the oath, but the oath taker is still free to act as he wants. The legal consequences of the banker's oath would ensure the effectiveness of the banker's oath (Sulmasy, 1999). The legal part of the banker's oath is another topic, which I will not discuss further in this research. I focus on oaths, their group identity and the potential effect on behaviour. We can expect that if there is a group identity combined with the oath, it will impact behaviour. By reinforcing the group identity with an oath, it makes the individual aware of the groups norm (Revill & Dando, 2006). The more complex the group is, the harder it will be for the individual to become aware of the groups norms. The group norms also indicate, either implicitly or explicitly, the desired behaviour (Jacques, 2004). The RSM oath has as group identity the students (and employees) of the Rotterdam School of Management. Currently the RSM has 24.000 students and 3.500 staff members.[5] This includes both Dutch and international students. I assume that all members of the RSM have become aware of the groups norms during their period at the university. Besides, even if the given oath does not match the individual's private beliefs, or is not made in good faith, it positively changes behaviour (Rutgers, 2013).

Financial identity prime hypothesis

Working longer in the banking sector does not increase dishonesty (Cohn, Fehr, & Maréchal, 2014). This implicates that either the people who work in the banking sector are less honest or individuals become less honest when they start working in the banking sector. To control for the banking sector attracting less honest students, I check for the career path the subjects wants to pursue. Most individuals who work in the banking sector studied at business schools, therefore current business

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[5] http://www.rsm.nl/about-rsm/facts-figures/erasmus-university-rotterdam/

school students should be comparable. If an oath works for business school students, it should also work for bankers. Cohn, Fehr & Maréchal (2014) find that the financial identity prime increases dishonesty for bankers. Business students are comparable to bankers, therefore I assume the financial identity prime should increase the dishonesty of business students. The financial identity prime will make the business students (even more) comparable to bankers. With the manipulation check from Cohn, Fehr & Maréchal (2014), I test if the financial identity prime works. The manipulation check consist of word fragments that can be completed with banking related words. I expect that the financial identity prime increases the use of banking related words in the manipulation check.

H_1: *"The financial identity prime increases the banking related word use in the manipulation check."*

The manipulation check consists of four word fragments that must be completed. It can be done with either banking related words, or other words. With a t-test I compare the means of the number of banking related words used. I expect the mean to be higher for the RSM oath & financial identity prime group compared to the control group and the RSM group, as they are primed about their financial identity and therefore more comparable to bankers.

Dishonesty hypotheses

Shu, Gino & Bazmerman (2011) found that oaths reduce dishonesty. Oaths work by increasing the intrinsic motivation to be honest (Jacquemet, Joule, Luchini, & Shogren, 2013), therefore if an individual has intrinsic motivation to behave honest, it reduces dishonesty. There are two different types of cheaters: full cheaters, those without any intrinsic motivation to tell the truth and are expected to take the maximum payoff and partly cheaters, whom cheat a little. The latter, partly cheaters, have some degree of intrinsic motivation and are expected to be influenced by an oath. Van der Linden (2013) argues that the ethical reasoning in the banking sector is too complex for an oath to work. Dishonesty is measured by the reported outcome of ten coin tosses. In this experiment the decision is between being honest and complying to the oath, or cheating and acquiring a higher payoff. I expect the experiment to be simplistic enough for the RSM oath to reduce dishonesty. When the individual is considering to cheat for a higher payoff, he should take into account the consequences of breaking the oath. When he cheats, he does not comply to his self-image of being honest and breaks the oath. Therefore I expect the RSM oath to reduce dishonesty.

H_2: *"Oaths reduce dishonesty on the group level."*

I will test this in two ways. Firstly, comparing the means and distributions of the three groups. I use a t-test to compare the means of total successful coin tosses. I expect that the means of the groups with the RSM oath are lower than the mean of the control group. Next I use the Wilcoxon rank-sum (Mann-Whitney) test for comparing distributions of the total successful reported coin tosses. I expect that the distribution of the RSM oath groups are skewed more towards the low outcomes, compared to the control group. This implicates less cheating, as the chance someone cheated is higher in the case of a high outcome. Secondly, I test the effect by statically calculating the fraction of misreported coin tosses and fraction of cheaters with the calculations of Cohn, Fehr & Maréchal (2014) and comparing the fractions of the groups. The subjects in the experiment were not observed, therefore it is impossible to determine with certainty whether a subjects cheated or not. Subjects could hide behind chance and should have not feared the potential consequence from cheating. Houser, Vetter & Winter (2012) designed a statistical way to calculate the fraction of misreported coins. Cohn, Fehr and Maréchal (2014) adopted this calculation and added a calculation for the fraction of cheaters. We can statically detect dishonesty at a group level by comparing the empirical results with the theoretical 50% benchmark of honest reporting. If we assume that no subject reported an unsuccessful outcome while the outcome was successful, we are able to calculate the fraction of misreported coin tosses in a group (Houser, Vetter, & Winter, 2012).[6] s is the fraction of successful outcomes reported and m is the fraction of misreported outcomes such that $(1 - m)$ is the fraction of coin tosses that are honestly reported. This results in the following equation for the fraction of successful outcomes reported (s):

(1) $\qquad s = m * 1 + (1 - m) * 0.5 = 0.5\,(1 + m)$

When a subject cheats, he or she reports a successful outcome with a probability of 1. However, an honest subject would report a successful outcome with a probability of 0.5 (Cohn, Fehr, & Maréchal, 2014). With this we can calculate the fraction of misreported coin tosses (m):

(2) $\qquad m = 2 * s - 1$

We make one more assumption: when a subject cheats, he or she reports an outcome greater than five successful coin tosses (Cohn, Fehr, & Maréchal, 2014). If an individual is willing to cheat and not comply to their self-image of being honest (and breaking the oath), we assume that the individual reports an above average, of 5, outcome. In other words, we assume anyone that reports 5 or less

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[6] It could be possible that subjects report a bad outcome when they actually tossed a successful outcome. However, I believe it is reasonable to assume that this did not happen.

successful outcomes does not cheat. With this assumption we can compute the fraction of cheaters. x is the theoretical fraction of subjects with more than five successful coin tosses in case of honest reporting ($x = 0.376$). c is the fraction of subjects who cheat. We can compute the following equation for the empirical fraction of subjects who report an outcome of greater than five (p):

(3) $$p = c * 1 + (1 - c) * x = c\,(1 - x) + x$$

Then, we can compute the equation for the fraction of cheaters (c):

(4) $$c = \frac{p-x}{1-x}$$

I expect to find a lower fraction of misreported coin tosses and a lower fraction of cheaters for the RSM oath groups, compared to the control group. Next I test the individual level with an OLS regression. On this level I control for demographic characteristics. This way the effect of the oath can be better estimated. Similar to H_2, I expect that the RSM oath will reduce dishonesty.

H_3: *"Oaths reduce dishonesty on the individual level."*

The banking sector has a lot of male employees. Most previous studies found that males are more likely to cheat. Friesen & Gangadharan (2012) found that male are more likely to cheat, and cheat more when they cheat. Therefore the potential effect of an oath on males is bigger. However, Carlsson et al. (2013) found that the effect of an oath on willingness-to-pay does not depend on demographic variables. Therefore the effect of the RSM oath should also not depend on the gender. I test if the effect of the RSM oath is different for each gender, but I expect that this will not be the case.

H_3a: *"The effect of oaths on dishonesty does not depend on the gender of the oath taker."*

The financial identity prime makes bankers less honest (Cohn, Fehr, & Maréchal, 2014). We can expect that this effect is likewise for business students. We also know that oaths reduce dishonesty for students (Shu, Gino, & Bazerman, 2011). The questions is which effect is expected to be stronger? Does the oath even reduce dishonesty for the financial primed business students, whom are expected to be more dishonesty? I expect that the combination of the financial identity prime and the RSM oath will increase the dishonesty compared to the RSM oath group. But I expect that the dishonesty is lower than the control group.

H_3b: *"Oaths reduce the dishonesty of financially primed individuals, but the effect is smaller than for neutral primed individuals."*

To test this hypothesis, I use interaction effect between the RSM oath and the financial identity prime. Because all subjects in the financial identity prime group, also took the RSM oath.

Overconfidence hypotheses

Overconfidence is measured with the self-perceived score on the intelligence test. The social responsibility of the group within an oath has an effect on the decision process of individuals, but individuals needs to identify with the group (Adams & Marshall, 1996). I expect that all the subjects have associated with the RSM during their study enough, in order to feel the social responsibility. This social responsibility should increase weight on the decision, and change the thinking process from the subconscious, system one, to the conscious, system two (Kahneman, 2011). System one is the fast and instinctive system, while system two is the slower, more deliberate and logical decision making system. The estimation of their own performance should be better in system two. I therefore expect that the RSM oath groups perform better in estimating their own performance, which results in a lower degree of overconfidence.

H_4: *"Oaths reduce the degree of overconfidence."*

I test this with two analytic tools. Firstly, a t-test to compare means between the groups. I expect to find a lower average degree of overconfidence for the RSM oath groups compared to the control group. Secondly, an OLS regression with the degree of overconfidence as dependent variable. I expect to find the coefficient for the RSM oath to be negative, which implicates that it reduces the degree of overconfidence. We do not know the effect of the financial identity prime on overconfidence. I suggest that it makes the individuals less ethical, because Cohn, Fehr & Maréchal (2014) found that the prime reduces honesty. I think that when the business students are primed about their financial identity, they think about a possible future career in the banking sector. This can make them more overconfident, as the banking industry is well respected industry with high salaries. The question is, which effect will be stronger? Does the oath even reduce overconfidence for the financial primed business students, whom I expect to be even more overconfident? I expect that the financial identity prime & RSM oath group increase overconfidence compared to the RSM oath group, but the degree of overconfidence than the control group.

H_4a: *"Oaths reduce the overconfidence of financially primed individuals, but the effect is smaller than for neutral primed individuals."*

To test this hypothesis, I use interaction effect between the RSM oath and the financial identity prime. Because all subjects in the financial identity prime group, also took the RSM oath. Next chapter will explain in detail how the experiment was conducted and how each variable was measured.

Experimental design

I conducted a Posttest-only randomized experiment with students from Rotterdam School of Management (RSM). To be able to extrapolate this research to bankers, I worked with RSM students whom all have a background in business administration. The experiment was done in private cubicles, preventing interaction and sense of being monitored. The subjects assigned themselves to timeslots, without knowing which group they would be in. This randomized the allocation of individuals to the groups, and should result in comparable groups. The experiment consisted of three groups: two treatment groups and a control group, all executing the same experiment. Both treatment groups took a RSM oath. Treatment group 2 was primed on their finance identity, while treatment group 1 had a neutral prime. The control group set the baseline, by using a neutral prime and no oath. All subjects were recruited from the EURO-pool. The expected payoff of the experiment falls within the EURO-pool guidelines, an hourly wage of five to ten euro. The payoff was determined by the reported outcomes of ten coin tosses and a fixed show-up fee of 1 euro. During the experiment students were rewarded with points instead of monetary rewards, to increase effect of the payoff (Kagel, Roth, & Hey, 1995).[7] The exchange rate was: 1 point = 0.05 euro. Their points were converted to the corresponding monetary payoff at the end of the experiment. In Table 1 the timetable for all groups is presented. All participants finished the experiment within 30 minutes.

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[7] According to the flat maximum critique: that is, if the reward structure is too insensitive at the optimum, the earnings will be a flat function. Making the difference of outcomes look bigger by increasing the number, makes the function less flat. This does not actually change the payoff, but can increase the effect of the incentive.

Table 1 | Experiment timetable

Group	Control group	Treatment group 1	Treatment group 2
Introduction	**Control introduction**	**Treatment introduction**	**Treatment introduction**
Physical reminder	**Control polo**	**RSM polo**	**RSM polo**
Prime	**Neutral**	**Neutral**	**Financial Identity**
Oath	**-**	**RSM oath**	**RSM oath**
* Overconfidence & Dishonesty *	*Intelligence test & Coin tosses *	*Intelligence test & Coin tosses *	*Intelligence test & Coin tosses *
Manipulation check	*Word completion game*	*Word completion game*	*Word completion game*
Demographics	*Demographic questions*	*Demographic questions*	*Demographic questions*

Table 1 notes. *Overview of the timeline of the experiment. *The intelligence test and coin tosses were presented randomly to prevent order effects. The introduction differed a bit for the control and treatment groups, see Appendix A and Appendix B for the details. As a physical reminder the RSM oath groups had to put on a RSM polo after the introduction. The control group wore a comparable polo without the RSM logo. The financial prime consisted of questions about the financial sector, while the neutral prime was about leisure activities and holidays. The length of the neutral prime and financial prime were comparable. The Control group had a slightly shorter experiment, because they did not have to take the RSM oath.*

All groups started with an introduction of the experiment, which can be found in Appendix A and Appendix B. Thereafter the groups were primed by the financial identity prime or the neutral prime, which are also used in Cohn, Fehr & Maréchal (2014). The neutral prime for control group and treatment group 1 consisted of nine questions about leisure activities and holidays. The questions of the neutral prime can be found in Appendix C. The financial identity prime for treatment group 2 consisted of nine questions about the financial sector from the research of Cohn, Fehr & Maréchal (2014), and two questions about their business study. These two questions should increase the effect of the prime. The questions of the financial identity prime can be found in Appendix D. The instruction for the RSM oath is partly based on the introduction of the student honour code, designed and used by Shu, Gino & Bazerman (2011). The RSM oath is based on the student honour code (Shu, Gino, & Bazerman, 2011) and the banker's oath, but adjusted to RSM students. Each subject in the treatment groups individually signed the RSM oath, because this improves the impact of the RSM oath (Cassel, Johnson, & Smith, 1997). The RSM oath made them a representative of the RSM. This makes them more likely to feel the social responsibility of the group's identity (Adams & Marshall, 1996). For the detailed RSM oath, see Appendix E. The subjects who took the RSM oath, were also confronted with physical reminder of the group identity of the RSM oath: a RSM polo shirt. The subjects in the treatment groups had to wear this physical reminder during the experiment. The control group wore a comparable polo shirt, without the RSM logo. Moral symbols increase moral decision making (Desai & Kouchaki, 2016) and physical reminders increase the effect of an pledge (Raju, Rajagopal, & Gilbride, 2010). Therefore I expect the RSM polo improved the group identity and therefore, the effect of the RSM oath.

After the treatments, the coin toss game and the intelligence test were presented to the subject. The order in which parts of the experiment are presented can influence the outcomes. To prevent these order effects, the order of the coin toss game and the intelligence test was randomized. The coin toss game determined the payoff for the subject, like in the research of Cohn, Fehr & Maréchal (2014). Each subject tossed the coin ten times and reported the result of each toss separately. Each time they reported 'Heads', they were rewarded with 15 points (0.75 euro). Reporting 'Tails' was rewarded with 0 points. There is a trade-off between morality and payoff when it landed on tails: lying to receive a higher payoff but not complying to their self-image of being honest and breaking the RSM oath, or being honest and complying to their self-image of being honest and the RSM oath, but receiving nothing. The advantage of coin tosses is that the chance on a maximum outcome is small, so cheating behaviour will stand out. The disadvantage is that we do not know for sure if an individual cheated. However, as the outcome is higher, the higher the chance is that the individual cheated. The instruction for the coin toss can be found in Appendix F.

For measuring overconfidence, I use the self-perceived score of an intelligence test: Raven Progressive Matrices. This test has often been used in literature to measure overconfidence (Duttle, 2015; Crawford & Stankov, 1997). The subjects tried to solve twelve matrixes from the Advanced Progressive Matrices[8] (Domino & Domino, 2006), with a time limit of 60 second for each matrix. Afterwards, they were asked how many questions they thought they answered correctly. The difference between their actual score and their self-perceived score is the level of under-/confidence. The actual score is also a measure for intelligence, because these matrices are used in IQ-tests. In Appendix G the matrices can be found.

After the coin tosses and intelligence test, I measured the effect of the financial identity prime. This was done with a word completion game. The subjects had to complete six word fragments, two served as fillers and the other four could be completed with words that are frequently used in the life of bank employees. The words picked by the subject indicate the effect of the prime. See Appendix H for the manipulation check. Finally, I asked for demographic characteristics. I measured the following characteristics: Gender, Age, Grade Point Average (GPA), University Degree, Faculty, (expected) Job

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[8] Advanced Progressive Matrices is an intelligence test with a difficulty level appropriate for adults and adolescents of above-average intelligence. It must be noted that solving these matrices can be trained, but I assume that if there are any trained individuals, they are randomly distributed amongst the groups.

Sector, (expected) Salary, Nationality and Materialism[9]. All demographic measures can be found in Appendix I. I did not measure religiosity because multiple studies found it not impacting the effect of an oath (Randolph-Seng & Nielsen, 2007; Shariff & Norenzayan, 2007). Also the effect of an oath is not dependent on respondents characteristics (Carlsson, et al., 2013), but the respondents characteristics are necessary to test if we have a representative sample an comparable groups.

Demographic variables

I recruited 63 students from Rotterdam School of Management. Two of these students were not related to RSM and therefore removed from the sample. This results in a total sample of 61 students. The experiment was conducted on 23rd, 24th and 25th May 2016. The subjects were between 18 and 28 years old, with an average age of 21. 44% of the sample was male. All subjects were schooled at university level and 30% already holds a university degree. Their average GPA was 7.4, ranging from 5.7 up to 9.1. 53% of was Dutch and 89% lived in Rotterdam. Only 23% is expecting to pursue a career in the financial sector after their graduation. On average they expect an annual salary of € 39,166 for their first job after their graduation, but the answers varied from € 10,000 up to € 160,000. On average our sample rated their agreement with the following statement: "*Social status is primarily determined by financial success*" 4.6 out of the possible 7. On average they answered 3.1 of the 12 matrices correctly. See Table 2 for more details on the demographic variables.

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[9] For materialism I use the measure of Cohn, Fehr & Maréchal (2014).

**Table 2 | Descriptive statistics - Demographic variables**

Variable	Total Sample (n = 61) Mean	Control Condition (n = 20) Mean	Oath Condition (n = 20) Mean	Oath & Financial Identity Prime Condition (n = 21) Mean	Test for differences between groups p-value
Age	21.213 (1.984)	21.150 (2.084)	21.600 (2.210)	20.905 (1.670)	0.533
Gender	0.443 (0.501)	0.400 (0.503)	0.400 (0.503)	0.524 (0.512)	0.686
Grade Point Average	7.407 (0.615)	7.470 (0.594)	7.260 (0.671)	7.486 (1.364)	0.436
Dutch (Nationality)	0.525 (0.504)	0.650 (0.489)	0.350 (0.489)	0.571 (0.507)	0.164
Rotterdam (Resident)	0.885 (0.321)	0.850 (0.366)	0.950 (0.224)	0.857 (0.359)	0.681
University Degree	0.295 (0.460)	0.300 (0.470)	0.350 (0.489)	0.238 (0.436)	0.732
Expected Sector (Financial)	0.230 (0.424)	0.200 (0.410)	0.250 (0.444)	0.238 (0.436)	1.000
Expected Salary	€ 39,166 (€ 35,633)	€ 33,284 (€ 13,245)	€ 54,300 (€ 56,650)	€ 29,620 (€ 11,359)	0.060*
Materialism	4.607 (1.333)	4.250 (1.410)	4.750 (1.209)	4.810 (1.365)	0.347
Intelligence	3.066 (0.727)	3.050 (0.605)	2.800 (0.696)	3.333 (0.796)	0.061*

Table 2 notes. *, ** *and *** *represent significance levels on respectively 10%, 5% and 1%. Standard deviations are in parentheses. The differences between the groups is tested with a Fisher's Exact test for the binominal variables. For the continuous variables it is tested with a one-way ANOVA test. The means of the expected salary and intelligence are significantly different from each group. "Age" is their current age at the date of the experiment. "GPA" is measured on a scale from 1 – 10 for their overall university career. "Dutch (Nationality)" is a dummy variable which takes on a 1 if the person is Dutch. "Rotterdam (Resident)" is a dummy variable which takes on a 1 if the person currently lives in Rotterdam. "University degree" is a dummy variable which takes on 1 if the person has a Bachelor or higher degree. "Expected Sector (Financial)" is a dummy variable that takes on 1 if the person expects to get a job in the financial sector after their graduation. "Expected Salary" is a continuous variable that shows their expected salary of their first job after their graduation. "Materialism" is measured on a seven-point Likert scale, 1 is low materialism and 7 is high materialism. "Intelligence" is the number of correct answered matrices, a score of 0 up to 12 is possible.*

Empirical results of the RSM oath on dishonesty and overconfidence

The manipulation check measured if the financial identity prime worked. By completing the words with banking related words, I test whether the prime increased their financial identity. If the prime works, we expect an increased use of banking related words for RSM oath & Financial identity prime group compared to the control group and the RSM oath group. Figure 1 shows a decreased use of bank-related words for RSM oath & financial identity prime group compared to the other groups. The

control group used in 41.3% (SD = 0.296) of the cases a banking related word, 35.0% (SD = 0.262) for the RSM oath group, and down to 32.2% (SD = 0.239) for the RSM oath & financial identity prime group. H_1 should be rejected, the financial identity prime does not increase the banking related words used. This indicates that the prime did not work and I therefore combine both treatment groups to test the effect of the RSM oath. As a robustness check I control for the financial identity prime in the regressions.
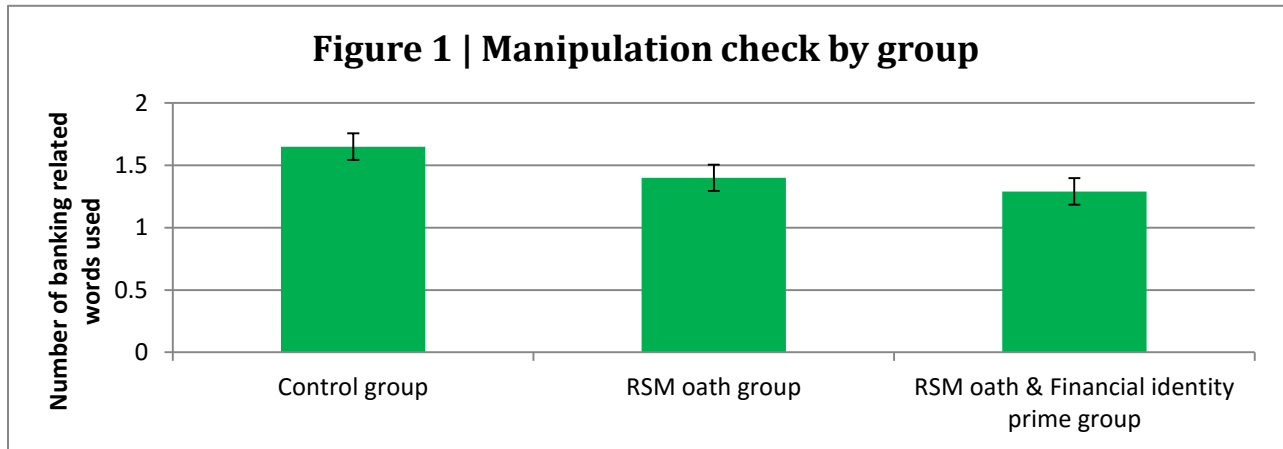
Figure 1 | Manipulation check by group. *The manipulation check measured how many of the four word fragments the subjects solved with a banking related word. We find that on average the control group answered 1.65 (SD = 1.18) of the 4 words with a banking related word. RSM oath group answered on average 1.40 (SD = 1.05) of the four words with a banking related word. RSM oath & Financial identity prime group answered on average 1.29 (SD = 0.96) of the four words with a banking related word. The mean of the manipulation check of RSM oath & Financial identity prime group is not significantly higher than the control group, nor RSM oath group (p = 0.858 and p = 0.642; one-sided t-test; n = 40 and n = 41). From these results we can conclude that the financial identity prime did not work as expected.*

Empirical results of dishonesty

The black bars in Figure 2 show the binomial distribution of the ten coin tosses implied by honest reporting and the red bars show the empirical distribution of the control group. The control group reported a successful coin toss in 56.5% of the cases (SD = 0.114), which is significantly different from the theoretical 50% (p = 0.019), indicating that the control group cheated. The green bars show the empirical distribution of the RSM oath group. The RSM oath group reported a successful coin toss in 54.9% of the cases (SD = 0.180), which is significantly different from the theoretical 50% (p = 0.091), but is not different from the control group (p = 0.7148). This indicates that the RSM oath group also cheated, but not significantly more or less than the control group. The results from the two-sample Wilcoxon rank-sum (Mann-Whitney) test show that the distributions of the groups also do not differ significantly from each other (p = 0.503). These results give a first impression: oaths do not reduce dishonesty on a group level and suggest we should reject H_2.

Figure 2 | Distributions of successful coin tosses reported
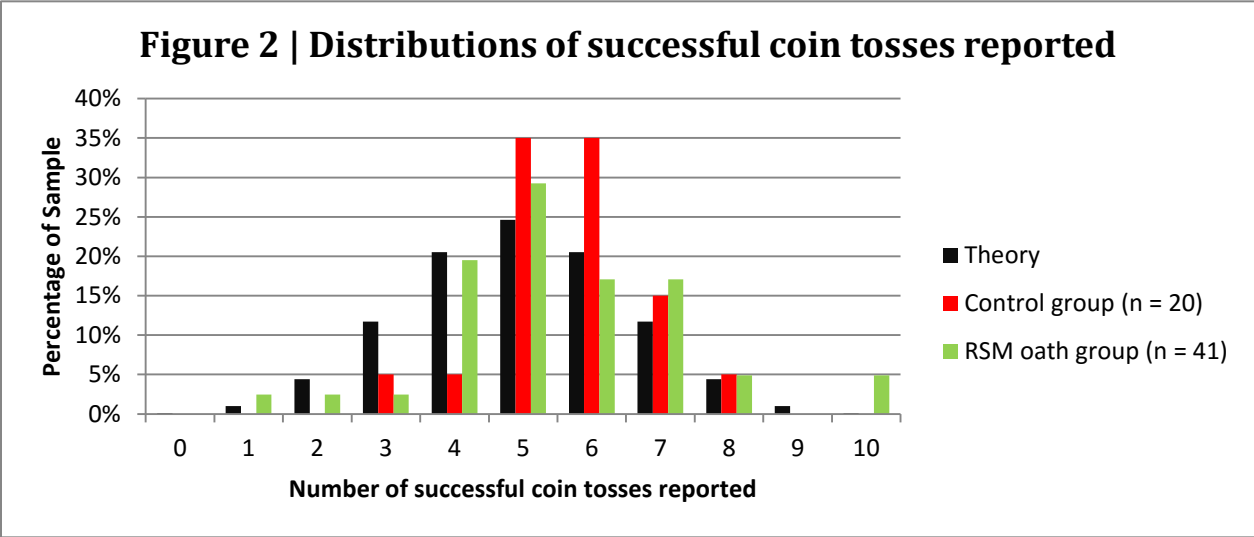
Figure 2 | Distribution of successful coin tosses reported, by group. *Distribution of the control condition and RSM oath group in comparison to the binomial distribution implied by honest reporting. On average, subjects in the control group reported 56.5% (SD = 0.114) successful coin tosses, which is significantly different from the theoretical 50% (p = 0.0193; two-sided t-test; n = 20). Subjects in the RSM oath group reported 54.9% (SD = 0.180), which is significantly different from the theoretical 50% (p = 0.0912; two-sided t-test; n = 41). The RSM oath group does not significantly differ from the control group (p = 0.7148; two-sided t-test; n = 61). The control group and the RSM oath group both cheated. They reported significantly more successful coin tosses than the theoretical benchmark of honest reporting. But the RSM oath group did not cheat more or less than the control group.*

I calculate the fraction of misreported coin tosses and the fraction of cheaters for the RSM oath groups and the control group with the statistical calculation of Cohn, Fehr & Maréchal (2014). The blue bars in Figure 3 show the results of the fraction of misreported coin tosses. The RSM oath group misreported 9.8% of the coin tosses, which is lower than the control group who misreported 13.0% of the coin tosses. But the difference between the RSM Oath group and the control group is not significant (p = 0.2260; two-sided chi-squared test). The yellow bars in Figure 3 show the results of the statistical fraction of cheaters. In the RSM oath group 10.1% of the subjects cheated, while in the control group 27.9% of the subjects cheated. This difference between the RSM oath group and the control group is significant (p = 0.0605; Barnard's Exact Test). The results show that the RSM oath does not reduce the overall times cheated, but it does reduce the number of cheating individuals. In other words, oaths reduce the number of cheaters, but not the degree to which the remaining cheaters cheat. As the fraction of misreported coin tosses does not decrease, it implicates that the remaining cheaters after the oath cheat more. We must therefore reject H_2, oaths do not reduce dishonesty on the group level. These findings are partly in line with Jacquemet, Joule, Luchini & Shogren (2012), who argued that an individual with no intrinsic motivation to tell the truth, will not be influenced by an oath. While an individual with some intrinsic motivation to tell the truth, will cheat less after an oath. The indication that some individuals cheat more due to an oath is unexpected finding, which I investigate on the

individual level later in this chapter. These calculations are based on the research of Cohn, Fehr & Maréchal (2014), but they do not provide a way of measuring the significance. I used non-parametric tests for comparing the means of the different groups. But we should be cautious when interpreting the results.
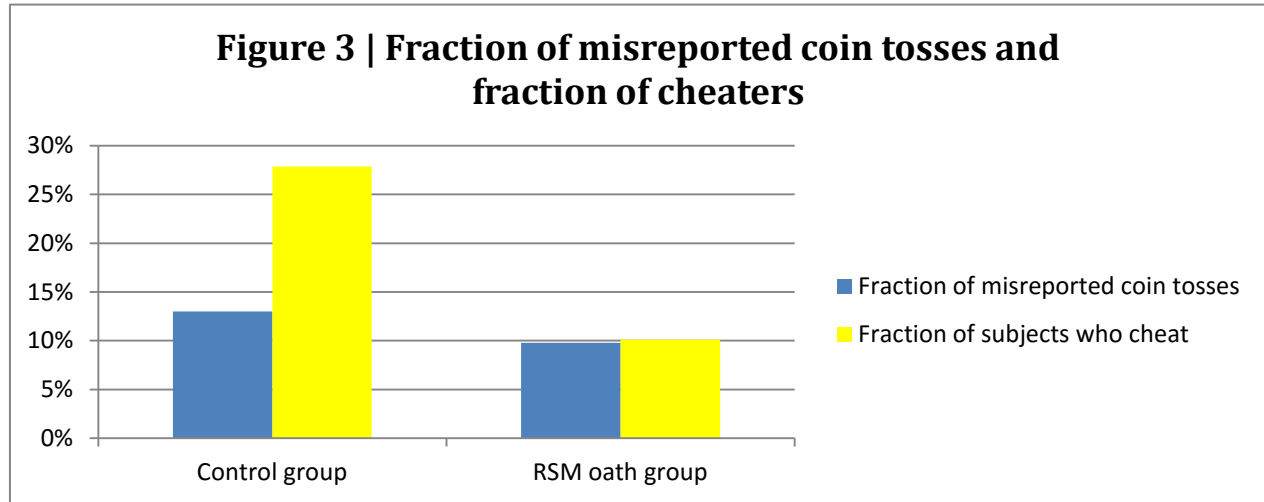
Figure 3 | Fraction of misreported coin tosses and fraction of cheaters. *With the assumptions that no subject reports unsuccessful outcomes when they toss a successful outcome and that none of the subjects cheat when they report 5 or less successful outcomes, we can calculate the statistical fraction of misreported coin tosses, shown by the blue bars: 13.0% in the control group (SD = 0.0129) and 9.8% in the RSM oath group (SD = 0.0078). There is no significant difference between the groups for the fraction of misreported coin tosses (p = 0.2260; two-sided chi-squared test; n = 610). Due to the high number of observation, I use a chi-squared test to compare the probabilities of the two groups. The statistical fraction of cheaters is shown by the yellow bars: 27.9% in the control group (SD = 0.0395) and 10.1% in the RSM oath group (SD = 0.0081). The mean of the RSM oath group is significantly lower than the mean of the control group (p = 0.0605; Barnard's Exact Test; n = 61). Due to the smaller number of observations (n < 100), I use the Barnard's Exact test to compare the probabilities of the two groups. The main findings from these results is that oaths reduce the number of cheaters, but the people who still cheat, cheat more.*

To analyse the treatment effects on an individual level, I estimate an OLS regression for dishonesty. The number of successful coin tosses reported is the dependent variable, which is a proxy for dishonesty. The higher the number of successful coin tosses reported, the higher the chance of dishonest behaviour. Model (1) has just the treatment effects taken into account. Model (2) I add the control variables and in Model (3) I add the interaction variables. Table 3 presents the models with estimates of the effect of the RSM oath and the financial identity prime. I found that the financial identity prime did not work according to the manipulation check, but I use it as a robustness check. In Model (1) RSM Oath (p = 0.771) and Financial Identity Prime (p = 0.286) are not significant. Also in Model (2) RSM Oath (p = 0.972) and Financial Identity Prime (p = 0.476) are not significant. This implicates that we need to reject H$_3$, oaths do not reduce dishonesty on an individual level.

We find that males cheat more. In Model (2) the coefficient of Male is 0.741 (p = 0.066; SE = 0.395; CI(95%) = -0.050 | 1.532), indicating that males are more likely to cheat. This is in line with the previous literature. I add interaction variables to see if the effect of the RSM oath and the financial identity prime might differ for gender. In Model (3), I add interaction variables to the regression: a dummy variable for RSM Oath & Male and a dummy variable for Financial Identity Prime & Male. The results in Model (3) show that when all other variables are fixed: RSM Oath decreases the number of successful coin tosses reported for females by 0.993 (p = 0.071; SE = 0.540; CI(95%) = -2.076 | 0.090). The coefficient for the interaction variable for RSM Oath & Male is 2.533 (p = 0.005; SE = 0.867; CI(95%) = 0.794 | 4.272). Financial Identity Prime decreases the number of successful coin tosses reported for Males by 2.679 (p = 0.018; SE = 1.102; CI(95%) = -4.890 | -0.469). The coefficients of Financial Identity Prime (p = 0.387) and Gender (p = 0.838) are not significant. To interpret the effect of the RSM oath for males, we need to combine the coefficient of RSM Oath and the interaction variable for RSM Oath & Male. This results in an increase in the number of successful coin tosses reported for males of 1.540. The RSM oath reduces dishonesty for females, while it increases dishonesty for males. Therefore I accept H_3a, the effect of oaths on dishonesty depends on the gender of the oath taker. Next to gender, also intelligence and day of the experiment had an significant coefficient in the most complete Model (3). A higher intelligence test score makes the individual less likely to be dishonest. I also find that the second and third day had significant higher outcomes. The treatments were randomized over the timeslots over the days, therefore I do not expect that this is a problem. The other control variables were insignificant and therefore not added to the model. I do not find a significant effect for an individual who wants to pursue a financial career. This implicates that banking sector does not attract less ethical students, but it makes the attracted people more dishonest.

To interpret the results of the financial identity prime in combination with the RSM oath for males, we need to combine the coefficient of RSM Oath, the interaction variable for RSM Oath & Male and the interaction variable for Financial Identity Prime & Male. This combined results in a decrease in the number of successful coin tosses reported for males by 1.139. The addition of the financial identity prime to the RSM oath, has no effect for the female population. Contrary, for males I find that the addition of the financial identity prime decreases the dishonesty. The financial identity prime offsets the initial negative effect of the RSM oath for the male subpopulation, so the combination of both reduces the dishonesty of males. I found that according to the manipulation check the financial identity prime did not work. However, the results show that the combination of the financial identity prime and the

oath does have an effect on dishonesty. How the financial identity prime works in this case, is an open question for further research. I do find that it offsets the negative effect of the RSM oath on the male subpopulation, therefore I must reject H₃b. Oaths reduce dishonesty of neutral primed females, financially primed females and financially primed males, but an oath increases dishonesty for neutral primed males.

Table 3 | OLS regressions dishonesty

Dependent variable: Number of successful coin tosses reported	Model (1)	Model (2)	Model (3)
RSM Oath	.150	-.017	-.993*
	(.510)	(.467)	(.431)
Financial Identity Prime	-.610	-.346	.586
	(.566)	(.481)	(.672)
Male		.741*	.089
		(.395)	(0.431)
RSM Oath 1 & Male			2.533***
			(.867)
Financial Identity Prime & Male			-2.679**
			(1.102)
Control variables included?	No	Yes	Yes
Constant	5.650***	7.387***	7.220***
Number Observations	*61*	*61*	*61*
R-squared	2.68%	18.40%	35.30%
Prob. > F	0.455	0.012**	0.019**

***Table 3 notes.** *, ** and *** represent significance levels on respectively 10%, 5% and 1%. Robust standard errors are in parentheses. All models satisfy the assumptions of linear relations, homoscedasticity, multicollinearity and normality. I control for the demographic variables and add a categorical variable for the day on which the experiment took place in Model (2) and Model (3). Only significant variables are added to the regression. The dependent variable is the "Number of successful coin tosses reported" out of the 10 coin tosses. "RSM Oath" is a dummy variable for subjects whom took the RSM oath. It takes on a value 1 for the subjects in treatment group 1 or treatment group 2, otherwise 0. "Financial Identity Prime" is a dummy variable for subjects whom received the financial identity prime. It takes a value of 1 for the subjects in treatment group 2, otherwise 0. "Male" is the gender dummy which is 1 when the subject is male. "Oath & Male" is the interaction variable for Gender and Oath, which is 1 when the subjects is male and in treatment group 1 or treatment group 2, otherwise 0. "Financial Identity Prime & Male" is the interaction variable for Gender and Financial Identity Prime, which is 1 when the subject is male and in treatment group 2, otherwise 0. The F-test shows that the variables of both Model (2) and Model (3) are jointly significant. The significant control variables are: Intelligence (actual score of intelligence test) for Model (2) and Model (3), and Day for Model (3). Intelligence has a negative significant coefficient in both models. Day has two significant positive coefficients for Model (3), indicating that on day 2 and day 3 of the experiment there were more successful coin tosses reported. Model (2) explains 18.40% and Model (3) explains 35.30% of the variance in the dependent variable.*

The previous finding that oaths decrease the number of cheaters, but not the total dishonesty can be explained by the findings on the individual level. I find that the RSM oath decreases dishonesty for females, but increases the dishonesty for males. This increase in male dishonesty offsets the decrease in female dishonesty, resulting in the fraction of misreported coin tosses to stay stable while

the fraction of cheaters decreases. This increase of dishonesty for males is offset when the individuals also take the financial identity prime. I think that the financial identity prime makes the male subjects think about the wrong-doing in the financial sector, which called for an oath and therefore the male students understand the necessity of an oath. The results are in partly line with the research of Shu, Gino & Bazerman (2011), whom found that an student oath reduces dishonesty. In line with previous research, I also find that males are less honest than females. I find that gender has an impact on the effect of an oath, contrary to what Carlsson, et al. (2013) found. The results show that an oath reduces dishonesty for females. The financial identity prime does not change this effect. Males on the other hand, become more dishonest when they need to take an oath. When it is combined with a financial identity prime this negative effect is offset. We can conclude that an oath combined with the financial identity prime reduces dishonesty for the whole sample.

Empirical results of overconfidence

Next to dishonesty, I measured the degree of overconfidence. The intelligence test consists of twelve matrices. On average the subjects answered 3.07 (SD = 0.727) of the 12 matrices correctly and the subjects' average self-perceived score was 8.25 (SD = 2.173) of the 12 answers correct. 98.4% of the sample was overconfident. I measure the degree of overconfidence by deducting the actual score of the intelligence test from the self-perceived score (Duttle, 2015). Figure 4 shows the means of the degree of overconfidence per group: average overconfidence in the control group is 5.00 (SD = 2.224) and in the RSM oath group 5.27 (SD = 2.460). There is no significance difference between the control group and the RSM oath group (p = 0.682). This suggest that I need to reject H_4, oaths do not reduce overconfidence.
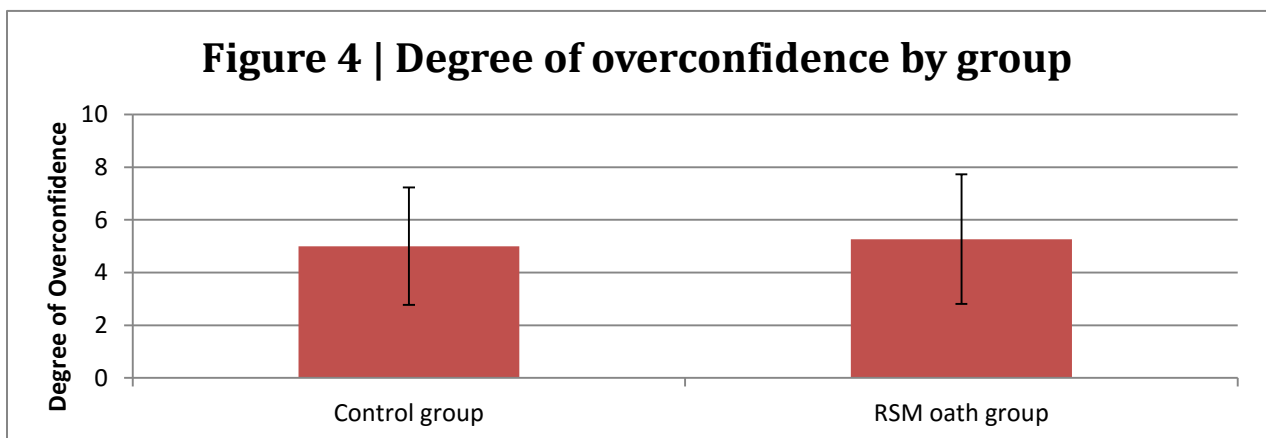
Figure 4 | Degree of overconfidence by group. *Means of the degree of overconfidence per group. The error bars indicate the standard deviation. On average, subjects in the control group had a degree of overconfidence of 5.000 (SD = 2.224). Subjects who took the RSM oath had on average a degree of overconfidence of 5.268 (SD = 2.460). The RSM oath group is not significantly different from the control group (p = 0.6817; two-sided t-test; n = 61). The RSM oath has no impact on the degree of overconfidence.*

To analyse the treatment effects on an individual level, I estimate an OLS regression for overconfidence. The degree of overconfidence is the dependent variable. Model (1) has just the treatment effects and in Model (2) the control variables are added. Table 4 presents the models with estimates of the treatment effects on overconfidence. In Model (1) the coefficients of the RSM Oath ($p = 0.783$) and the Financial Identity Prime ($p = 0.864$) are both not significant. In Model (2) the coefficients of the RSM Oath ($p = 0.689$) and Financial Identity Prime ($p = 0.925$) are both not significant. Also both models are not significant ($p = 0.904$ and $p = 0.290$; F-Test; n = 61), which indicates that the variables in both models are jointly not significant. Therefore I must reject H_4, oaths do not reduce overconfidence on the individual level. Also we must reject H_4a, as the financial identity prime did not influence the effect of the oath.

Table 4 | OLS regressions overconfidence

Dependent variable: Degree of Overconfidence	Model (1)	Model (2)
RSM Oath	0.200	0.280
	(0.724)	(0.697)
Financial Identity Prime	0.333	0.072
	(0.776)	(0.768)
Control variables included?	No	Yes
Constant	5.000***	12.461***
Number of Observations	*61*	*61*
R-squared	0.34%	7.57%
Prob. > F	0.904	0.290

Table 4 notes. *, ** and *** represent significance levels on respectively 10%, 5% and 1%. Robust standard errors are in parentheses. All models satisfy the assumptions of linear relations, homoscedasticity, multicollinearity and normality. I control for the demographic variables and add a categorical variable for the day on which the experiment took place in Model (2). Only significant variables are added in the regression. The dependent variable is the "Degree of Overconfidence" which is calculated by deducting the actual score from the self-perceived score on the intelligence test. "RSM Oath" is a dummy variable for subjects who took the RSM oath. It takes on a value 1 for the subjects in treatment group 1 or treatment group 2, otherwise 0. "Financial Identity Prime" is a dummy variable for subjects who received the financial identity prime. It takes a value of 1 for the subjects in treatment group 2, otherwise 0. The F-test shows that the both model (1) and (2) are each not jointly significant. The models are not better in explaining the variance in the dependent variable than an empty model.

The results show that the RSM Oath has no effect on the degree of overconfidence. I expected that the oath would reinforce the group identity, which would make the individual more aware of the groups norm. This extra weight on the decision process was expected to make the individuals decision process change from system one to system two. This seems to not be the case. It remains unknown if the oath changed the thinking process from system one to system two, but we do know it did not improve the estimation of their own performance and therefore their overconfidence.

Discussion

This research focuses on the short-run effect of oaths, as the coin tosses and the intelligence test were done within 30 minutes after taking the oath. Further research is needed to test the long-term effect of oaths. The results of the manipulation check show that the financial identity prime did not work as expected. I expected that the financial identity prime had the same effect for business students as it did for bankers (Cohn, Fehr, & Maréchal, 2014). Because we expect a similar effect for bankers as for business students, a financial identity group without the oath was not used in the experiment setup.

A possible cause for the results of the manipulation check, could be that the most participants were non-native English speakers. Native English speakers have a bigger English vocabulary, whereas the non-native English might had trouble to come up with a word to complete the fragment. The financial identity prime was used as a robustness check in the remainder of the research.

Dishonesty was measured with ten coin tosses. Only the reported outcomes are known, therefore we do not know if the participants cheated. We can assume that the higher the successful number of coin tosses reported, the more likely it is that an individual cheated. The mean and distribution comparison between the groups, show that oaths do not decrease dishonesty on the group level. The statistical calculation of misreported coin tosses and fraction of cheaters show that oaths reduce the fraction of cheaters, but not the fraction of misreported coin tosses on the group level. The oath withholds people from cheating, but the people who still cheat, cheat more. These results should be interpreted with caution, because an accurate way of measuring the significance is not known. Cohn, Fehr & Maréchal (2014) did not test the significance for their calculations. I used non-parametric test to measure the significance. The findings on the individual level explain the unexpected findings of the group level. I find that males cheat more than females, which is in line with previous research. The results show that just the oath increases dishonesty for males. In contrary, just the oath decreases dishonesty for females. A possible explanation for the negative effect of the oath for males, is that males have a negative association with oaths. They do not see the usefulness of an oath and it actually causes them to cheat more. Maybe they do not like to be told what to do, or how to behave. As a result, they behave opposite of what is desired from them. Females behave according to the guidelines set by the oath and cheat less. Lastly, I checked for the effect of the financial identity prime on dishonesty. I expected no effect, because according to the manipulation check the prime did not work. The results show that financial identity prime offsets the negative effect of oaths on males. The combination of the

financial identity prime and the oath reduce dishonesty of males. The prime in combination with the oath potentially made the male subjects think about the banking sector and its wrong-doing in the last decade. I think that through this way male subjects understood the necessity of oaths and why they should comply to its content. The financial identity prime has an effect in combination with the oath, but we do not know how the financial identity prime works. For further research the effect of the financial identity prime for business students should be tested. These findings suggest that not just the oath is important, but also the circumstances.

The banking sector works with monetary incentives to increase the performance of employees. This sector is dominated by male employees. Males cheat more when there is a monetary reward at stake than females. The banker's oath is supposed to guide the behaviour, and prevent employees from wrong-doing. My findings suggest that an oath for bankers will increase dishonesty in the banking sector for males, in the short run. This suggests that the banker's oath negatively impacts the behaviour of male bankers. For females the oath does work. The addition of a financial identity prime to an oath offsets the negative effect for males, but the prime does not work according to manipulation check. If the financial identity prime worked as a trigger to think about the banking sector, we can expect that the banker's oath should also work for the Dutch bankers. They are aware of the reason why the banker's oath is introduced, so they are already financially primed.

This research makes a first step in empirically testing the effect of oaths on bankers' behaviour. I find that oaths impact cheating behaviour. The same oath results in both an increase and a decrease of dishonesty, depending on the circumstances. The finding that most banking employees do not trust the banker's oath (Loonen & Rutgers, 2016), in combination with my findings, makes the introduction of banker's oath worrying. I cannot judge if the banker's oath has the right circumstances currently. We know that oaths work differently for each country (Carlsson, et al., 2013), and therefore my findings should be interpreted with caution when extrapolated to other countries.

It must be noted that this research and its experiment have limitations. I worked with Rotterdam School of Management students. It is questionable to what degree we can compare RSM business students to bankers, even when they are primed with their financial identity. Note, the financial identity prime did not work according to the manipulation check. Some of these students will pursue a career in the financial sector, but they have not yet worked in the financial sector. Future research could replicate this study with just finance students, whom I expect are even more comparable

to bankers. The neutral prime was about leisure activities and holidays, it is questionable if this is really neutral. Due to the financial restrictions the number of observations was limited and a group with the financial identity prime and no oath was left out. Doing this research with more observations will increase the statistical power. The intelligence test was not incentivized due to the financial budget. I find that overconfidence is not influenced by the oath, nor by the financial identity prime. Perhaps the effort to complete the task was to high, compared to the benefits of getting the right answer. It is also possible that the subjects did not pay enough attention to the question *"How many of the previous twelve (12) problems do you think you answered correctly?"*. In further research I would suggest to also incentivize this question, to make the subjects try harder to get close to the actual number of correctly answered matrices. Besides incentivizing all parts, the amount of money is also important. Was the 0.75 euro per coin toss enough for everyone to consider cheating? People can value money differently, but I expect that the participants who reacted to the advertisement of this study came to earn money. They did not expect to earn more than the maximum payoff of 7.50 euro, which was indicated in the advertisement. In the financial sectors the monetary incentives (bonuses) are proportionately higher than I paid here. My relatively small payoffs can be so small that people do not see it as cheating. When the stakes are higher, the decision to cheat could be different. I converted the monetary value into points. If subjects did not pay enough attention during the introduction of the experiment, they might have not realized that the points were their payoff. This could result in them not realizing they could cheat during the coin toss to earn a higher payoff. I used a general measure of overconfidence, it would be interesting for further work to measure financial overconfidence, which relates better to the bankers' overconfidence. The RSM oath I used during the experiment was an adjusted form of a previously used oath. We know the effect of the original oath, but we do know exactly if and how this RSM oath works. Besides, the association with the RSM of each individual also plays an role. For example, an individual who just had a bad experience with the RSM will react differently to the oath than someone who did not.

Finally, it is important to consider the presence of the experimenter demand effects. These effects refer to changes in behaviour by experimental subjects due to cues about what constitutes appropriate behaviour (Zizzo, 2010). In my experiment the RSM oath (and the financial identity prime) could be a trigger for the subjects to think about the banker's oath and what kind of behaviour I, as experimenter, would want to see. This could be acting towards the preferred behaviour, but also doing completely the opposite. We cannot know for sure what the effects are, and which direction they push

behaviour. I expect that the experimental design prevented this effect. The comparison between groups makes these kind of effects less likely, but we still need to consider them. A downside of using control and treatment groups design, is the potential assignment bias. I do not know for sure if the groups are comparable. I randomize the allocation of subjects to the group to prevent this, but we do find that for some demographic variables (expected salary and intelligence) there are significant differences between the groups.[10] Most demographic variables do not differ per group, therefore I assume the groups are comparable.

Conclusion

Oaths influence dishonesty, but do not influence overconfidence. Oaths can both increase dishonesty and decrease dishonesty. I find that on the group level oaths do not reduce dishonesty. Full cheaters, whom do not have intrinsic motivation to be honest, will still cheat despite the oath. Partly cheaters, with some intrinsic motivation are withheld from cheating by the oath. Oaths reduce the number of cheaters, but not the overall dishonesty. The stable level of misreported coin tosses is explained by the findings on the individual level. I find that oaths decrease dishonesty for females. The dishonesty of males increases when they are required to swear an oath. This effect is offset when the male participants were primed with their financial identity. According to the manipulation check the financial identity prime did not work. I expected that the financial identity prime made individuals less honest, but the results show that this is not the case. I conclude that the combination of the financial identity prime and oaths reduce dishonesty of the whole sample. How this financial identity prime works is unclear, because previous research found that the prime increased dishonesty for bankers. I do not find a significant relation between oaths and overconfidence. Nor is it effected by the financial identity prime. I expected that increased weight on the decision process would make their decision be made with system two (the slower, more deliberate and logical decision making system) instead of system one (fast and instinctive system). This should have made their estimation of their performance better, which means they would be less overconfident. But this is not what the results show.

The findings of this research contribute to the discussion about oaths. It is important to consider that besides the content of the oath, also the identity of the oath takers has to be taken in to account. The Hippocratic oath is recognized as an working oath, while the banker's oath is distrusted. I find the

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[10] See Table 2 for more details.

financial identity prime in combination with the oath works for both genders. This indicates the influence of other factors on oaths. Also previous literature found the differences in countries as an factor. These factors play an important role in the implementation and execution of oaths like the banker's oath. The banker's oath was introduced as a measure to prevent wrong-doing in the banking sector. I find that the oath can potentially increase the wrong-doing in the banking sector. It requires the right circumstances for an oath to positively influence behaviour, else it can also negatively impact behaviour. I cannot judge which is the case for the banker's oath, but it does indicate the importance of the circumstances of enforcing an oath. The banker's oath is not trusted by most employees in the financial industry. This is an implication that the banker's oath might not be introduced in the right way.

Further research is required to make concrete suggestions for politicians, but this research is a first step in the empirical research about oaths for bankers. Due to budget constraints the observations are limited. Also the effect of financial identity prime on an oath for business students is an interesting topic, this research could not provide an answer for how the prime works. Oaths are a strong measure to impact behaviour, but my results shows that this is not per se in a positive way. Not just the oath, but all circumstances need to be taken in to account to get the positive effect of such a measure.

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Appendix

A. Introduction (control)

Dear student,

Thank you for participating in this experiment. Please follow the instructions closely and if something is unclear, contact the supervisor. The experiment consists of multiple questions and a few games. During the experiment you will be rewarded with points, which determine your cash payoff at the end. <u>Each point is worth 5 eurocent.</u> Your show-up fee is 20 points and you can earn an additional 150 points during the Coin Toss Game. Please put on the polo, which is on your desk.

B. Introduction (treatment)

Dear student,

Thank you for participating in this experiment. Please follow the instructions closely and if something is unclear, contact the supervisor. The experiment consist of different parts: Taking an oath, multiple questions and a few games. During the experiment you will be rewarded with points, which determine your cash payoff at the end. <u>Each point is worth 5 eurocent.</u> Your show-up fee is 20 points and you can earn an additional 150 points during the Coin Toss Game. Please put on the RSM polo, which is on your desk.

C. Neutral prime

- What is your favourite leisure activity? Please describe your answer in two to three sentences.
- Which 3 opportunities for leisure activities would you most like in your area?
- How many hours per week on average do you watch TV?
- Where did you spend your last vacation?
- Which 3 things did you like most about your last vacation?
- Are you actively involved or have you ever been involved in a club?
- Which 3 leisure activities do you enjoy most with your friends or family

D. Financial identity prime

- Name a large, international bank.
- What is a typical function of an employee in a large bank?
- What do you think, how many years do bank employees work in the banking industry on average?
- What do you think, for what reasons do individuals generally decide to become bank employees? Please describe your answer in two to three sentences.
- What are, in your opinion, the three major advantages of working in the banking profession?
- Which three personality characteristics are, in your opinion, typical for individuals working in the banking profession?
- What do you think are the three most important things bank employees learn in their profession?
- Why did you choose your business study?
- What is your favourite course within your business study?

E. Introduction RSM oath and RSM oath

The Rotterdam School of Management believes that the fundamental objective of the institution is to provide the students with a high quality education while developing in them a sense of ethics and social responsibility. They believe that any instance of unethicality hurts Rotterdam School of Management and your colleagues. It is with this in mind that we have set forth this Oath. The Oath aims to cultivate a community based on trust, academic integrity and honour. It specifically aims to accomplish the following:

- Ensure that students understand that the responsibility for upholding ethics at Rotterdam School of Management lies with them;
- Prevent any students from gaining an unfair advantage over other students;
- Ensure that students understand that unethical behaviour is a violation of the profound trust of the entire community and damages the Rotterdam School of Management and your colleagues.

During this experiment you, and approximately twenty (20) other students, will be representing the students of Rotterdam School of Management. Next you will need to take an oath, making you a representative of Rotterdam School of Management. The oath is on the paper, which is on your desk (if this is not the case, please contact the supervisor!). Read the oath out loud, cross out what does not apply and sign the oath.

Rotterdam School of Management Student Representative Oath

I swear/promise that I hold during this experiment as student of RSM:

- I will execute this experiment ethically and with care;

- I will comply with the laws and regulations that apply to me;

- I will keep confidential that which has been entrusted to me;

- I will not abuse my knowledge;

- I will act openly and accountably and I know my responsibility to society;

- I will make every effort to retain my social responsibility for RSM.

So help me God/This I declare and promise.

The oath was taken/made in the above form on …. - …. - …….. [date], at Rotterdam.

Signature: _____

Name: _____

F. Coin toss measure

Next is a Coin Toss game. You have a Dutch one Euro coin in front of you. If this is not the case please call a supervisor. In the image below: the left coin is the "Heads" side, and the right coin is the "Tails" side.

You must flip the coin a total of ten (10) times. Each time after you flip the coin you must write down your result. Each time you report "Heads" you will be rewarded with 15 points, each time you report "Tails" you will not be rewarded. Please catch the coin in your hand to prevent noise.

The game starts on the next page.

Please write down your result after each coin flip:

	Heads (Win, 15 points)	Tails (Lose, 0 points)
First Coin Toss	◯	◯
Second Coin Toss	◯	◯
Third Coin Toss	◯	◯
Fourth Coin Toss	◯	◯
Fifth Coin Toss	◯	◯
Sixth Coin Toss	◯	◯
Seventh Coin Toss	◯	◯
Eight Coin Toss	◯	◯
Ninth Coin Toss	◯	◯
Tenth Coin Toss	◯	◯

G. Overconfidence measure

During this part you will be asked to solve twelve matrices. Each matrix has one empty spot and you need to choose which of the eight pieces completes the matrix. After the twelve matrices, you will be asked how many of the twelve you think you answered correctly. There is only one correct answer for each matrix and you will have 60 seconds to answer each matrix. There is a countdown clock at the top of each page, when it reaches 0 you will automatically advance to the next matrix.
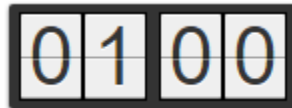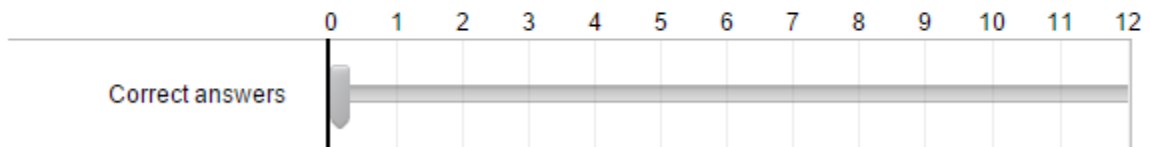

Which answer fits in the missing space to complete the pattern?

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8

How many of the previous twelve (12) problems do you think you answered correctly?

H. Manipulation check

Try to fill the gaps with letters to form existing words. Please enter in each case the full solution word into the input field.

Example: _ o u s e → H o u s e

_ _ o c k	→ Stock vs. Clock
_ a t	Filler
_ _ o k e r	→ Broker vs. Smoker
_ o n e y	→ Money vs. Honey
T h _ n _	Filler
B _ n d	→ Bond vs. Band

I. Demographic questions

- What is your gender? *<Male / Female>*
- How old are you? *<0 – 100>*
- With which nationality do you mostly associate yourself?
- What is the highest degree which you finished?
    - *Elementary School / Primary School, High School / Secondary School, Bachelor's Degree, Master's Degree, Doctoral Degree, Other:*
- For what study are you currently enrolled?
- Which faculty is your study associated with?
- What is your current GPA (Grade Point Average) for all your studies? (on a 1 – 10 scale)
- Please indicate on a seven-point Likert Scale, ranging from 'don't at all agree' (1) to 'fully agree' (7) your agreement with the following statement: "*Social status is primarily determined by financial success.*"
- In what field do you expect to get a job after graduating?
    - *Consulting, Engineering, Finance, IT, Law, Marketing and Media, Property, Healthcare, Other:*
- How much do you expect to earn yearly, in your first job after your graduation?

Ending

Thank you for your participation. Please call the supervisor and **leave this screen open!** Also leave the pencil, the coin(, the oath) and the (RSM) polo on your desk. You earned a total of **X** points, which results in a payoff of <**X** * 0.05> euro.

☐ I declare that I received my payoff.

When you have received your payoff, please leave the room quietly. Use the opposite door of which you entered the room with. When you go through this door, go to the right until you see the elevators on your right hand.

J. Descriptive statistics – Main variables

Variable	Total sample (n = 61) Mean	Control group (n = 20) Mean	Treatment group 1 (n = 20) Mean	Treatment group 2 (n = 21) Mean
Number of successful coin tosses reported	5.541	5.650	5.800	5.190
	(1.608)	(1.137)	(1.989)	(1.601)
Overconfident	0.984	1.000	1.000	0.952
	(0.128)	(0.000)	(0.000)	(0.218)
Actual score intelligence test	3.066	3.050	2.800	3.333
	(0.727)	(0.605)	(0.696)	(0.796)
Self-perceived score intelligence test	8.246	8.050	8.000	8.667
	(2.172)	(2.064)	(2.271)	(2.221)
Overconfidence, degree of	5.180	5.000	5.200	5.333
	(2.370)	(2.224)	(2.353)	(2.614)

Table 5 | Descriptive statistics of main variables for total sample and per group.
Standard deviations are in parentheses. "Number of coin tosses successful reported" is the number of successful coin tosses the subject reported out of the ten times they tossed the coin. "Overconfident" is a dummy variable which takes on the value 1 if the person was overconfident. "Actual score intelligence test" is the number of matrices the subject answered correctly, out of the 12 matrices. "Self-perceived score intelligence test" is the subject's own guess of how many of the twelve matrices he/she answered correctly. "Degree of Overconfidence" is the actual score minus the self-perceived score, resulting in a level of overconfidence for the subject.

K. Correlation matrix

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Oath	1															
Financial Prime	-.506***	1														
Overconfident			1													
Intelligence Score		.269**		1												
Overconfidence, Degree of			.339***	-.413***	1											
Number of Succesful Coin Tosses Reported				-.359***		1										
Manipulation							1									
Gender (Male)						.257**		1								
Age									1							
Dutch (Nationality)							.308**	.254**		1						
Rotterdam (Resident)											1					
University Degree									.679***	-.281*		1				
Grade Point Average										.216*			1			
Materialism								.215*	.234*					1		
Expected Sector (Financial)							.216*	.377***	.218*						1	
Expected Salary				-.267**						-.2209*		.233*				1

Table 6 | Correlation Matrix. *Only significant correlations are shown. *, ** and *** are significant on respectively 10%, 5% and 1% level.*