No. 76

UNIVERSITY OF COLOGNE

WORKING PAPER SERIES IN ECONOMICS

WHO DO YOU LIE TO? SOCIAL IDENTITY AND THE COSTS OF LYING

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WHO DO YOU LIE TO? SOCIAL IDENTITY AND THE COSTS OF LYING

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September 2014

Abstract

We investigate whether and how an individuals' propensity to lie is affected by the social relationship between a potential liar and her/his possible victim. We argue that a shared social identity of sender and receiver increases sender's aversion to lie by raising two types of costs: the *allocative* and the *social* costs of the lie. Allocative costs should be larger in ingroup interactions because social preferences are stronger and thus losses to the receiver are weighted more heavily while social costs should be higher in closer relationships due to stricter moral rules. In contrast to our hypothesis our experimental results from a modified three-person sender-receiver game do not provide evidence that social identity affects lying behavior. While across all treatments about half of the participants send a dishonest message, we do not observe differences in lying behavior towards ingroup and outgroup members: neither with respect to allocative nor in terms of social costs. Hence, in our experiment lying behavior is robust to social identity manipulations.

Keywords: Private information; deception; lying costs; social identity; experiment

JEL-Codes: C91; D82

Financial support of the German Research Foundation (DFG) through the Research Unit "Design & Behavior" (FOR 1371) is gratefully acknowledged. We thank Axel Ockenfels and Peter Werner for helpful comments and suggestions.

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I. INTRODUCTION

Communication is a central element in almost every economic interaction between individuals. However, when people communicate they may not always tell the truth. In fact, in situations where one party possesses better information than the other, standard economic theory would predict that fully rational people do not tell the truth whenever the monetary benefits exceed the expected fines from detection (e.g. Becker 1968). In contrast to this rational perspective, some recent experimental studies have shown that in situations with asymmetric information individuals are not always willing to capitalize on their informational advantage and do not tell lies despite monetary incentives to do so (Gneezy 2005; Hurkens and Kartik 2009; Sutter 2009; Fischbacher and Föllmi-Heusi 2013). Thus, not all people follow a solely consequentialist approach and assess the monetary outcome only but incur costs of lying and also take the means to the end into account.

In this paper we are the first to investigate whether and how an individual's propensity to lie is influenced by characteristics of the receiver. In particular, we study in a modified sender-receiver game whether a sender's costs of lying are larger when sender and receiver share a common social identity. We argue that social identity can affect lying behavior in two different ways. First, senders take receivers' payoffs more into consideration if they share an identity (*allocative* costs of lying). In addition to these monetary consequences senders might also be more reluctant to tell a lie to someone who is a member of the same social group because they feel more obliged to live up to social norms (*social* costs of lying). A better knowledge of whether and through which

channel(s) social identity affects deceptive behavior may help to understand what drives the heterogeneity in the costs of lying (Gibson et al. 2013).

The subsequent section discusses the related literature and introduces our hypotheses. Following we describe the experimental design including our treatment variations. We then present our results, which indicate that social identities do not affect lying behavior and that neither allocative nor social costs play an important role. Finally, the conclusion discusses potential explanations for these results.

II. RELATED LITERATURE AND HYPOTHESES

Recent experimental evidence clearly demonstrates that many decision makers have an aversion to lie and include more truthful information in their messages than predicted by economic theory (Dickhaut et al. 1995; Cai and Wang 2006; Sánchez-Pagés and Vorsatz 2007).[3] When deciding whether to tell the truth or not individuals consider their own monetary gains as well as the losses the lie may cause to others (Gneezy 2005; Sutter 2009; Erat and Gneezy 2012; Gneezy et al. 2013; Conrads et al. 2014). For a considerable fraction of people the aversion to lie is even so strong that they prefer to tell the truth even if lying may lead to a Pareto-improvement (Erat and Gneezy 2012; López-Pérez and Spiegelman 2012). Recent economic models therefore incorporate this intrinsic lying aversion and assume that individuals experience psychological disutility from misrepresenting private information (e.g. Kartik 2009; Kartik et al. 2014).

[3] The aversion to lie is driven by individuals' urge not to act or appear dishonest and not by the preference to tell the truth. For instance, Sánchez-Pagés and Vorsatz (2007) show that otherwise honest subjects are likely to remain silent and send neither false nor correct information when given the opportunity. Similarly, people often try not to appear dishonest and disguise their lies by telling just 'incomplete lies' which do not maximize their profits (Fischbacher and Föllmi-Heusi 2013; Conrads et al. 2013; Conrads et al. 2014).

In order to gain a better understanding of these heterogeneous costs of lying, various factors that affect an individual's decision to tell the truth have been investigated. Besides monetary consequences also situational factors, such as diffusion of responsibility and the number of people who benefit from the lie, have been found to play an important role (Gino et al. 2009; Wiltermuth 2011; Conrads et al. 2013; Erat 2013; Gino et al. 2013). Furthermore, honesty is also affected by contextual factors – characteristics of the lie itself – for example when the content is personal or the more personal information needs to be exaggerated (Lundquist et al. 2009; Cappelen et al. 2013). Additionally, individual characteristics of the potential liar, e.g., gender, level of self-control and ego depletion or certain personality traits, have an impact on lying behavior (Trevino 1986; Ross and Robertson 2000; Tyler and Feldman 2004; Tyler et al. 2006; Dreber and Johannesson 2008; Mead et al. 2009; Childs 2012; Cappelen et al. 2013). This aversion to lie is heterogeneous between and within individuals and not an either-or decision between always or never telling the truth (Gibson et al. 2013).

In recent years the psychological concept of social or group identity developed by Tajfel and Turner (1979) has been incorporated into the field of economics. Social identity is usually defined as a person's sense of self which is derived from actual or perceived membership in social groups (Akerlof and Kranton 2000; Chen and Li 2009). Affiliation and identification with a social group induce people to interact differently with members from this particular group (ingroup) as compared to members from another group (outgroup). Experimental studies from psychology and economics show that a shared social identity affects peoples' social preferences and thereby leads to ingroup favoritism, meaning that decisions are taken to the advantage of the ingroup and often at the expense of the outgroup. In this sense, an individual's social preferences and the resulting actions can be group contingent. For example, Chen and

Li (2009) find that in dictator and response games, subjects display more altruism and less envy in allocation decisions when paired with another ingroup subject than with someone from an outgroup. Besides altruistic behavior also reciprocal behavior is affected by group identity: Reciprocating good behavior is more pronounced among ingroup members while punishing bad behavior is stronger with an outgroup match (Bernhard et al. 2006; Goette et al. 2012; Mussweiler and Ockenfels 2013). Moreover, it has been shown that a shared social identity increases cooperation in dilemma games (Eckel and Grossman 2005; Goette et al. 2006; Charness et al. 2007; Goette et al. 2012), has a positive effect on trust and reciprocity (Heap and Zizzo 2009) and improves efficiency in coordination games (Bornstein et al. 2002; Chen and Chen 2011).

However, to the best of our knowledge it has not been investigated yet how the relationship between sender and receiver – and in particular the identity of the recipient – influences the sender's propensity to lie in an economic setting. In the context of misrepresenting private information we argue that social identity may affect lying behavior in two different ways. First, in economic settings lies usually result in different monetary allocations for the liar and the receiver of a lie. As outlined above people have stronger charity concerns for members of the same social group and therefore put a higher weight on their interaction partner's profit in ingroup relationships (Chen and Li 2009). Thus, senders should be more likely to refrain from telling a harmful lie if an ingroup receiver is affected. In addition to these allocation considerations, according to Jones (1991) lying itself, as an unethical and immoral act, is also affected by the proximity between the potential liar and the potential victim irrespective of the monetary consequences. He argues that the moral imperative becomes stricter with the feeling of closeness on a social, cultural, psychological or even physical level between two parties. Similarly, DePaulo and Kashy (1998) argue that telling a lie violates

important ideals of close relationships such as relatedness, openness and trustworthiness and that for this reason, people feel more uncomfortable and distressed when they lie to people to whom they are closer. Therefore, lying to someone from your ingroup might also incur higher costs because you feel closer to this interaction partner. Survey data on everyday lies find that people are less likely to tell a harmful lie the closer the relationship with the recipient of the lie is (DePaulo and Kashy 1998; Ennis et al. 2008). In a similar vain, using survey data, Ross and Robertson (2000) demonstrate that in an organizational context the probability to lie depends on the closeness of the relationship between liar and victim as salespeople are less likely to represent false information to their own firm than to a competitor.

In addition, Chakravarty et al. (2012) show that subjects are less likely to deceive a friend than an anonymous stranger in an experimental setup where lying may lead to an increase of their own profit but decreases the profit for the other. Following these arguments we assume that there are two distinct costs of lying: *allocative costs*, related to the monetary outcomes of the lie and *social costs* associated with the closeness of the relationship. We hypothesize that both types of costs are more important when the sender is matched with an individual from the same social group in comparison to an outgroup match and thus lies should be less likely between ingroup members.

III. EXPERIMENTAL DESIGN AND HYPOTHESES

Our experimental design is similar to the two-player sender-receiver game used by Erat and Gneezy (2012) except that we introduce a third inactive person (dummy). As in Erat and Gneezy (2012) a sender has private information about the true state of the world and sends a (dis)honest message about the state of the world to the receiver who then

takes an action, which determines, together with the state of the world, the payoffs for all group members. The new third player receives the same payoff as the receiver but neither gets the message of the sender nor takes a decision. Thereby, the sender lies only to the receiver but not to the dummy player and thus this third player should only affect the sender's *allocative* but not her *social* costs of lying. By varying the identities of the receiver and the dummy separately we are able to test how allocative and social costs are affected by the relationship between the liar and the potential victims.

THE DECEPTION GAME

For each group we independently rolled a six-sided die but communicated the outcome only to the sender in the instructions.[4] After being informed about the outcome of the die roll, we asked the sender to choose one of six possible messages – one for each possible outcome – to be sent to the matched receiver. This set of possible messages consisted of: "The outcome of the roll of die was *i*", where $i \in \{1, 2, 3, 4, 5, 6\}$. We made clear that the chosen message would be transmitted only to the receiver and that this message would be the only information given to the receiver regarding the roll of the die. The sender also knew that the dummy would not receive any information and would not take a decision in the experiment. The sender was told that after receiving her message we would ask the receiver to also choose a number from the set {1, 2, 3, 4, 5, 6} and that the receiver's choice would determine payoffs for all participants in the following way: If the receiver chooses the actual outcome of the die, all participants receive a payment of 7 € and otherwise – if the receiver chooses a different outcome the sender gets 11 € while receiver and dummy get 5 €. Furthermore, we told the sender that she is the only one who knows these two payment schemes and that receiver and

[4] In the instructions of the game we used a neutral framing: PARTICIPANT A, B and C.

dummy would only be informed about their own individual payoffs of the implemented option. Erat and Gneezy (2012) argue that this expanded message space with six instead of two options makes it less likely that senders engage in sophisticated deception – telling the truth just because one believes that the receiver will not follow (Sutter 2009). In order to make an honest message more profitable than a deceptive message a sender would need to believe that more than 83 % of the receivers will not follow the sent message. We assume that most senders interpret their message rather as an allocative and not as a strategic decision and send a truthful message only when they really want to be honest.[5]

	Sender	**Receiver**	**Dummy**
Option 1 Receiver chooses **actual** number	7 €	7 €	7 €
Option 2 Receiver chooses **different** number	11 €	5 €	5 €

TABLE 1: PAYOFF SCHEMES DEPENDING ON RECEIVER'S CHOICE

The receiver and the dummy were informed that we rolled a die for the sender, showed only to her the outcome and asked her to send a message only to the receiver.[6] After receiving this message the receiver would be asked to choose a number from the set of possible outcomes {1, 2, 3, 4, 5, 6}. They were told that this choice would determine the payoffs for all three participants but that they would only get to know their own payoff at the end of the experiment and neither the other players' payoffs nor the payoff scheme of the alternative option. They only knew that if the receiver chooses the number that corresponds to the actual outcome of the die one option would be implemented and for any other choice a second option would be implemented. It was

[5] Additionally, Gneezy (2005) shows that in his experimental design with only a binary message space, 82 % of the senders expect the receiver to follow their recommended option.

[6] We made very clear in the instructions that the dummy player would neither receive the sender's message nor take a decision in this experiment.

common knowledge that even after the experiment the actual outcome of the die would not be revealed to the receiver and the dummy. Hence, a lie by the Sender would never be detected by either of the two interaction partners.

TREATMENT MANIPULATIONS

We use a between-subjects design to investigate how social identity affects the allocative and social costs of lying. Senders are matched with receivers and dummies either from their in- or outgroup or a combination of identities. We employ natural groups to induce social identities, as our participants were students from two different universities: the University of Cologne (UoC) or the University of Duesseldorf (UoD). Subjects in the role of the sender were always from UoC while receiver and dummy participants were enrolled either at UoC (ingroup match) or at UoD (outgroup match).[7] Thereby we have a full factorial 2x2 design with the university affiliations of receiver and dummy players as treatment variations: a sender either shares the social identity with both receiver and dummy (T1 CC), with only one of the two – either with the receiver (T2 CD) or the dummy (T3 DC) – or with none (T4 DD). According to our hypothesis that there are allocative and social costs of lying and that a shared identity increases these costs, lying behavior should differ between treatments and result in the following order of treatments regarding the frequency of lies:

T4		**T3**		**T2**		**T1**
Outgroup/Outgroup	>	Outgroup/Ingroup	>	Ingroup/Outgroup	>	Ingroup/Ingroup

[7] These two natural groups have already been used successfully in earlier experiments on social identities and lead to significant differences in e.g. punishment behavior (Mussweiler and Ockenfels 2013) and dictator giving (Ockenfels and Werner 2013).

Costs of lying should be lowest when a sender is matched with two outgroup members (T4). In comparison, being matched with an ingroup dummy (T3) increases a seller's allocative costs while being matched with an ingroup receiver (T2) increases allocative and social costs. Finally, when both partners come from the same social group (T1) allocative costs rise again and overall costs should be highest.

Senders were informed whether the matched receiver and dummy are students from UoC or UoD. To increase salience, university affiliation of the receiver and the dummy were frequently mentioned throughout the instructions. Conversely, receiver and dummy participants did not get to know that senders were from the University of Cologne and senders were informed about this.[8]

PROCEDURE

We collected the data for all three different roles sequentially. Sender behavior was collected first in two classroom sessions while receiver and dummy subjects were recruited via Orsee (Greiner 2004) from the subject pool of either the laboratory at the University of Cologne or at the University Düsseldorf and sessions were run in the respective laboratory using pen and paper. This sequential procedure made it necessary that decisions of senders and payments to senders are made in separate sessions. Therefore, we revisited both classroom sessions in the following week handing out the payments to the senders. For this purpose all senders received a card with a unique

[8] As in Chen and Li (2009) social identities are not common knowledge. We do not reveal the identity of the sender (and the full payoff schemes, see below) to the receiver or the dummy because we are interested in how the difference in allocative and social costs towards ingroup and outgroup members influences lying behavior and therefore want to eliminate potential effects due to differences in beliefs and beliefs about expectations. Several studies have shown that ingroup favoritism is at least partially driven by beliefs as it is more pronounced when individuals' identities are known to everyone (Yamagishi and Mifune 2008; Güth et al. 2009; Guala et al. 2013; Ockenfels and Werner 2013).

identification number along with the instructions.[9] This identification number was also printed on the decision sheet where senders recorded their message to the receivers. Subjects had to hand over their ID card to us in order to receive their payment. We randomly selected 100 of all participating senders for payments. We draw these 100 senders after the first two classroom sessions and published these ID numbers via an online learning tool to all course members and also at the beginning of each payment classroom session.

To collect sender behavior we visited two consecutive sessions of the undergraduate course "Introduction into Microeconomics". These two sessions are offered to students as alternatives because there are only a limited number of seats available and sessions might overlap with other courses. The teaching content in both sessions is identical and students usually attend only one of these two.[10] Students come from different fields but mostly from business administration and economics and are typically within their first year at university. In both sessions we randomly distributed envelopes of all four treatments. Participation was voluntary but almost all students participated.[11] Overall 545 students participated as senders in the two classroom sessions, 284 in the first and 261 in the second. We have a similar number of sender participants in all four

[9] Instructions for sender's were handed out in large envelopes and consisted of 4 items: ID card, general instructions, game instructions with decision sheet and questionnaire. Instructions for receivers and dummies consisted only of game instructions with decision sheet and questionnaire. A full set of instructions for all three roles can be found in the Appendix.

[10] We cannot fully rule out that some students attended both classroom sessions. However, we made very clear that it is not allowed to participate more than once in this experiment. Based on answers given in the questionnaire we suspect in one case that a subject participated twice. We excluded both observations.

[11] Only five participants decided not to write down a message on the decision sheet. We excluded these observations.

treatments, ranging between 131 and 140. Additionally, 100 receivers (53 from UoC) and 100 dummies (53 from UoC) took part in the laboratory sessions.[12]

After subjects made their decisions they were asked to complete a short questionnaire including demographic information such as age, gender, course of study, year of study, zip code and mother tongue. To elicit senders' affiliation with the University of Cologne we also asked them to rank on a nine-point Likert scale (1-9) whether studying at the University of Cologne is an important part of their self-image.[13]

IV. RESULTS

Across all treatments, the average probability to lie is 49% (see TABLE 2).[14] We thus find clear evidence for an aversion to lie, as half of the participants are not willing to send a false number to increase their own payoffs. In our setup the share of lies is very similar to the results in comparable treatments in Gneezy (2005) where lying also has no welfare effects as the monetary gain of the sender equals the loss of the receiver.[15] However, between our four treatments there are no significant differences in the

[12] When recruiting receivers and dummy participants for the laboratory sessions we made sure that they are students at UoC or UoD and do not attend the course where we conducted the sender sessions.

[13] TABLE 4 in Appendix A lists the demographic characteristics from the post-experimental questionnaire of the participants in the role of senders. Nearly half of the subjects are female, the average age is 20 and most of them speak German as their mother tongue (83%). Nearly two thirds are business students, one third comes from economics while the rest has another background. More than 90% are in their first year at university but already show an average affiliation of 6 on Likert-scale from 1 to 9. Randomization into the four different treatments worked very well as there are no major treatment differences for all characteristics with the exception that in T1 there are less business and more economics students ($p < 0.05$, chi^2-test) and subjects in T2 are slightly older than in all other three treatments ($p < 0.1$, *t*-test).

[14] The variable lie is a dummy variable equal to 1 if the message sent by the sender is a different number than the actual outcome of the roll of the die.

[15] Receiver behavior is less trusting than in Gneezy (2005) as in our experiment only 65% of the receiver choose to follow the message by the sender. However, this figure is in line with trust rates from other lying experiments such as Hurkens and Kartik (2009).

probability to lie. In all treatments roughly half of the subjects send a deceptive message to the receiver (between 47% and 51%).[16]

	T1 CC	T2 CD	T3 DC	T4 DD	Overall	N
All subjects	51%	48%	47%	51%	49%	545
High affiliation	53%	47%	50%	48%	49%	371
From Cologne	53%	48%	47%	54%	50%	398
Mother tongue German	49%	50%	47%	50%	49%	453

TABLE 2: SHARE OF LIES ACROSS TREATMENTS FOR DIFFERENT GROUPS OF SUBJECTS.

As a robustness check, we look at lying behavior in different subpopulations for which the social identity of the interaction partner should be even more important or who might have been better able to understand the instructions. These subgroups are 1) participants who report a high (> 5) affiliation with the University of Cologne, 2) subjects who currently live in Cologne (based on zip code) and 3) those who speak German as a first language.[17] However, we do not find any differences in lying behavior between treatments in one of these subgroups (TABLE 2).

As a further test we ran probit regressions for the same groups with lie as dependent variable and controlling for demographic characteristics of our subjects (see TABLE 3).[18] In all four models, none of the treatment dummies has a significant effect on the probability to lie. Additionally, pairwise comparisons between all treatment dummies using wald tests do not yield any significant difference. Overall, we find no evidence

[16] A pairwise comparison of treatments using chi^2-tests yields a p value of 0.24 for T2 versus T4, all other comparisons result in larger p values. For more details see Tables 5-8 in Appendix A.

[17] We differentiate between native and non-native German-speaker because it could be that foreign students may misunderstand the instructions especially with regard to the difference between the role of the receiver and the dummy. In addition, we also hypothesize that our social identity manipulation is more effective with German participants.

[18] We exclude seven additional observations in the regressions because these subjects did not fill in all information in the post-experimental questionnaire. One participant did not fill in any information in the questionnaire; six participants answered all questions except for zip code.

that social identity affects individual lying behavior either through higher allocative or social costs.

	All subjects	Affiliation > 5	Cologne	German
T2 CD	-0.040	-0.113	-0.076	0.062
	(0.156)	(0.190)	(0.178)	(0.171)
T3 DC	-0.093	-0.105	-0.102	-0.072
	(0.152)	(0.186)	(0.178)	(0.168)
T4 DD	0.006	-0.147	0.047	-0.007
	(0.152)	(0.184)	(0.177)	(0.166)
Age	-0.089***	-0.075**	-0.082**	-0.101***
	(0.025)	(0.029)	(0.029)	(0.028)
Female	-0.197	-0.159	-0.306*	-0.164
	(0.111)	(0.134)	(0.130)	(0.123)
Economics	-0.003	-0.031	0.066	-0.026
	(0.119)	(0.144)	(0.142)	(0.132)
Other field of study	0.224	0.331	0.126	0.318
	(0.230)	(0.341)	(0.240)	(0.245)
Constant	1.904***	1.673**	1.839**	2.086***
	(0.528)	(0.617)	(0.611)	(0.596)
Log-likelihood	-368,76	-251,71	-268,17	-305,58
Observations	544	370	397	452

Standard errors in parentheses; $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

TABLE 3: PROBIT REGRESSIONS ON LYING FOR DIFFERENT GROUPS OF SUBJECTS.

Regarding our control variables we find that older subjects are less likely to send a deceptive message. Furthermore, looking at participants from Cologne, we also find evidence for a gender effect, indicating that women are less likely to lie. However, for the entire group of participants this effect is only significant on a 10 %-level. These results are in line with findings in other studies from e.g. Ross and Robertson (2000), Dreber and Johannesson (2008) and Conrads et al. (2013) who also find that age has a negative effect on lying and women are more honest than men.[19]

[19] There is an ongoing debate on which gender is more likely to lie. Besides the aforementioned studies which show that women are lying less often, there are also other studies finding no differences between the sexes (DePaulo et al. 1996; Childs 2012; Cappelen et al. 2013) or even more deceptive behavior by women (Tyler and Feldman 2004; Tyler et al. 2006).

V. DISCUSSION

In this paper we investigated whether the social relationship between the potential liar and the possible victim alters people's propensity to lie. More specifically, we argued that a shared social identity of sender and receiver might increase senders' aversion to lie by raising the allocative and social costs of lying. We varied social identities by matching participants from different universities. The same natural identities have already been used successfully in recent laboratory and classroom experiments to study effects of social identity (Mussweiler and Ockenfels 2013; Ockenfels and Werner 2013).[20] In contrast to our hypothesis, however, our experimental results from a modified three-person sender-receiver game do not provide evidence that social identities play a role for lying behavior. In all four treatments, despite the varying social identity of the two victims of the lie, roughly half of our participants decide to send a message containing false information in order to increase their own payoffs at the expense of the receiver and the dummy player. This overall share of lies is in line with earlier results from Gneezy (2005) and confirms that for a substantial fraction of participants the costs of lying are too high to exploit an informational asymmetry for their financial advantage. However, these lying costs – neither in terms of allocative nor of social costs – do not seem to vary between in- and outgroup relationships.

Regarding allocative costs this result suggests that a subject's propensity to lie is a robust individual characteristic that cannot be easily manipulated by a variation of social identities. Consequently, in a lying context subjects do not discriminate between in and outgroup members based on differences in social preferences as in e.g. Chen and

[20] In addition, Gino, Ayal, and Ariely (2009) successfully used different university affiliations even within the same city to induce different social identities.

Li (2009).[21] In this respect, our results indicate that discrimination based on social groups does not extend to richer moral contexts such as deception and lying. An alternative explanation for our results could be that those subjects who have different social preferences for in- and outgoup members are the same who have a higher aversion to lying. Cappelen et al. (2013) and Chakravarty et al. (2012), for example, find that subjects who have higher social preferences in general are also less likely to lie. Following this argument, it could be interesting to investigate the relationship between ingroup favoritism and lying aversion on an individual level by combining a simple allocation game with a deception game.

Similar to Chen and Li (2009) we manipulate social identities only for the sender and do not reveal her identity either to the receiver or the dummy because we want to exclude effects due to differences in first and second-order beliefs. In recent studies, however, it has been found that beliefs at least partially drive behavior in social identity experiments as ingroup favoritism is more pronounced when identities are common knowledge (Yamagishi and Mifune 2008; Güth et al. 2009; Guala et al. 2013; Ockenfels and Werner 2013). Hence, in future research, it might be interesting to investigate how beliefs and beliefs about expectations affect the allocative and social costs of lying.

Regarding the social costs of lying, we argued based on evidence from social psychology that lying is perceived as more unethical the closer individuals are to each other. A possible explanation why we do not find evidence for group-contingent social costs of lying might be that an important motivation to tell the truth in close relationships are not only moral reasons but also the fear of being caught as a liar. People suspect that close relationship partners are more likely to spot a lie immediately

[21] Here, point to social identities and tournaments (destructive effort comparable to lying).

due to verbal and non-verbal cues and also discover the truth more often in the future because they interact more frequently (DePaulo and Kashy 1998; Anderson et al. 1999). In addition, being caught as a liar might have more severe consequences for a close relationship as it violates important ideals of the relationship such as openness and trustworthiness. In our anonymous, one-shot interaction, however, senders do not have to worry about being caught lying and the corresponding consequences because neither the receiver nor the dummy ever get to know the actual outcome of the role of the die, the sender's payoff or the alternative payment option. Overall, the mere feeling of closeness due to a shared social identity does not seem to affect individual lying behavior in our experimental setup.

Taken together, in contrast to other experimental settings regarding altruism, trust, reciprocity, or cooperation, the social relationship between individuals does not affect behavior in our deception game. Hence, more research is needed to identify what exactly distinguishes lying behavior in our setting from other allocation decisions as in Chen and Li (2009) and makes deception robust to social identity manipulations.

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VII. APPENDIX A – SUPPLEMENTARY TABLES AND FIGURES

	T1 CC	T2 CD	T3 DC	T4 DD	Overall
Female	50%	44%	51%	49%	49%
Age	20,2	20,7	20,3	20,2	20,3
German	85%	83%	80%	84%	83%
Business	53%	67%	64%	62%	61%
Economics	42%	28%	29%	31%	33%
Other	5%	5%	7%	7%	6%
Term	1,3	1,3	1,2	1,2	1,2
Affiliation	6,0	6,1	6,0	6,2	6,1
N	140	131	140	134	545

TABLE 4: DEMOGRAPHICS OF PARTICIPANTS.

All subjects	T1 CC	T2 CD	T3 DC
T1 CC	-	-	-
T2 CD	0.67	-	-
T3 DC	0.55	0.88	-
T4 DD	0.90	0.58	0.47

TABLE 5: *P* VALUES OF PAIRWISE CHI^2 TESTS OF SHARES OF LIES FOR ALL SUBJECTS.

High affiliation	T1 CC	T2 CD	T3 DC
T1 CC	-	-	-
T2 CD	0.46	-	-
T3 DC	0.66	0.76	-
T4 DD	0.51	0.93	0.83

TABLE 6: *P* VALUES OF PAIRWISE CHI^2 TESTS OF SHARES OF LIES FOR SUBJECTS WITH A HIGH AFFILIATION TO THE UOC.

From Cologne	T1 CC	T2 CD	T3 DC
T1 CC	-	-	-
T2 CD	0.49	-	-
T3 DC	0.44	0.94	-
T4 DD	0.89	0.43	0.38

TABLE 7: *P* VALUES OF PAIRWISE CHI^2 TESTS OF SHARES OF LIES FOR SUBJECTS LIVING IN COLOGNE.

Mother tongue German	**T1 CC**	**T2 CD**	**T3 DC**
T1 CC	-	-	-
T2 CD	0.80	-	-
T3 DC	0.83	0.64	-
T4 DD	0.90	0.89	0.74

TABLE 8: *P* VALUES OF PAIRWISE CHI^2 TESTS OF SHARES OF LIES FOR SUBJECTS WITH GERMAN AS FIRST LANGUAGE.

VIII. APPENDIX B – INSTRUCTIONS

Instructions for senders

General instructions

Welcome and thank you for participating in this experiment. Please read the instructions carefully. You can earn money based on your decisions. We will randomly choose 100 participants and will pay them the payoff of this experiment. Which participants were chosen will be disclosed in the lecture on 20. November 2013. Following the lecture on 20 November 2013 these 100 participants will receive their payoff in cash.

In addition to the instructions for this experiment you find enclosed:

- **Payoff-ID:** Your personal identification number is printed on the ID. Based on this identification number we will randomly choose 100 participants. In case you are chosen, your **payoff can only be paid to you if you hold your identification number**. Thus, please, take your identification number with you immediately and do not forget to take it with you to the lecture next week. It is not sufficient to remember your identification number. Without your payoff-ID we cannot hand out your payoff.

- **Blue envelope:** Please do not open this envelope until asked to by the experimenter.

- **Red envelope:** Please do not open this envelope until asked to by the experimenter.

Please decide **on your own** and do **not** talk to your classmates. If you have any questions, please raise your hand, and an experimenter will come to you. If you do not follow these rules we will have to exclude you from this experiment and all payoffs.

Game instructions

If your identification number is chosen, you will be matched to two randomly chosen persons with whom you will interact. In the following parts of the instructions you will be referred to as Person A. The other two participants will be referred to as Person B and Person C. Neither you nor the other two persons will learn the identity of the others. Thus, your decisions in this experiment are completely anonymous. The only information you receive on participant B and C is the University they attend:

- **Participant B** is a student at the **University of Cologne**.
- **Participant C** is a student at the **University of Cologne**.

Participants B and C do **not** know that you are a student at the University of Cologne.

Prior to the experiment we threw a six-sided dice for every participant A.

Rolling the dice has resulted in "**1, 2, 3, 4, 5 or 6**" for you.

Participants B and C are **not** informed of the result of your dice roll. However, they will be told, that you as Participant A know the result. We would like to ask you to send a message to **participant B (Cologne)**. **Participant C (Cologne)** does **not** receive a message. You have the choice between six different messages:

- "The result of the dice roll was 1."
- "The result of the dice roll was 2."
- "The result of the dice roll was 3."
- "The result of the dice roll was 4."
- "The result of the dice roll was 5."
- "The result of the dice roll was 6."

Which message you send is your decision. The message will **only** be shown to **participant B (Cologne)**. We will then ask participant B to choose a number between 1 and 6. The number participant B chooses will determine your payoff as well as the payoff of participant B and C:

- If participant B chooses the number that has been thrown, you receive **7€**, participant B (Cologne) receives **7€** and participant C (Cologne) receives **7€**, as well.
- If participant B does not choose the number that has been thrown, you receive **11€**, participant B (Cologne) receives **5€** and participant C (Cologne) receives **5€**, as well.

The following table illustrates the payoffs for you, participant B and participant C depending on the number participant B chooses:

	Your payoff	**Payoff participant B** (University of Cologne)	**Payoff participant C** (University of Cologne)
Participant B chooses the **actual** number	7€	7€	7€
Participant B chooses a **different** number	11€	5€	5€

You are the only one who knows these possible payoffs. Participant B and participant C do not know these possible payoffs and, also do not know how the decision of participant B affects the payoffs. Both participants only know that you know all possible payoffs.

After participant B has chosen a number, participant B and participant C are informed about their payoffs. Participant B and participant C are informed neither about the actual dice roll nor about the payoff you receive. Also, they do not know the payoffs you would have received if participant B had chosen a different number.

Please now fill out the decision sheet, stating the message you want to send to participant B.

Instructions for receivers

Welcome and thank you for participating in this experiment. Please read the instructions thoroughly. You can earn money based on your decisions. Independent of this you will receive 2,50 € as a show-up-fee.

Two other participants have been randomly assigned to you. Through the following parts of the instructions you are referred to as participant B and the other two participants as participant A and C. Participant C does not make any decisions in this experiment. She/he receives a payoff depending on your decision. Neither you nor the other participants are informed about the identity of the other participants. Your decisions are completely anonymous in this experiment.

Prior to the experiment we rolled a six-sided dice for participant A. You will not be informed about the result; however, participant A knows the result. After informing participant A of the result, she/he has the possibility to send you a message. You are the only one who receives this message. Participant C does not receive any message. Participant A can send one of six different messages:

1. "The result of the dice roll was 1."
2. "The result of the dice roll was 2."
3. "The result of the dice roll was 3."
4. "The result of the dice roll was 4."
5. "The result of the dice roll was 5."
6. "The result of the dice roll was 6."

Participant A has sent the following message:

"The result of the tossing of the dice was "(1, 2, 3, 4, 5, or 6)"."

This message is the only information you receive regarding the role of the dice. Now, we would like to ask you to choose a number between 1 and 6. The number you choose determines your payoff as well as the payoffs of participant A and C:

- If you choose the actual number, you, participant A and participant C will be paid **according to option 1**.
- If you choose a different number, you, participant A and participant C will be paid **according to option 2**.

Only participant A knows the exact payoffs of option 1 and 2 for all participants.

Your choice:

Please enter your choice of number (1, 2, 3, 4, 5 or 6) here:

I choose number ____.

After deciding on a number, please hand the sheet to the experimenter. Next, you will receive a short questionnaire.

Instructions for dummy players

Welcome and thank you for participating in this experiment. Please read the instructions thoroughly. You can earn money in this experiment. How much depends on the decisions of the other players. Independent of this you receive 2,50 € as a show-up-fee.

For this experiment two other players are randomly assigned to you. Through the following parts of the instructions you will be referred to as participant C and the other two participants will be referred to as participant A and participant B. As participant C, you do not make any decisions in this experiment. Your payoff will be determined depending on the decision of participant B. Neither you nor the two other participants are informed about the identity of the other participants.

Prior to the experiment we rolled a six-sided dice for participant A. You will not be informed of the result; however, participant A knows the result. After informing participant A of the result, she/he has the possibility to send a message to participant B. Only participant B receives this message. You will not receive any message. Participant A had to choose between six different messages:

1. "The result of the dice roll was 1."
2. "The result of the dice roll was 2."
3. "The result of the dice roll was 3."
4. "The result of the dice roll was 4."
5. "The result of the dice roll was 5."
6. "The result of the dice roll was 6."

This message is the only information participant B has concerning the result of the dice roll. After participant B received the message, she/he chooses a number between 1 and 6. The number participant B chooses determines your payoff as well as the payoff of participants A and B.

If participant B chooses the actual number, you will be paid corresponding to option 1.

If participant B chooses a different number than the actual number, you will be paid corresponding to option 2.

Only participant A knows the exact payoffs of option 1 and 2 for all participants.

You will not make decision in this experiment. The decisions of participants A and B determine your payoff. We would lie to ask you to answer the following questionnaire.