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Similarity increases collaborative cheating

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We report two experimental studies testing how a cognitive feeling of similarity affects dishonesty in individual and collaborative tasks when cheating hurts others. By employing a novel die-in-the-box paradigm with a total of 1,080 subjects, we find that a sense of similarity (vs. dissimilarity) tends to increase dishonesty in settings highlighting the relationship with a collaborator, but tends to decrease dishonesty in settings highlighting the relationship with others who suffer from cheating. Corroborating these results, a code of conduct highlighting similarity towards the firm's employees leads to higher levels of cheating than a code of conduct highlighting similarity towards other members of the society. The results provide insights into how to craft effective organizational codes of ethical conduct.

Key words: similarity, cheating, lying, codes of ethical conduct, whistle-blowing, four-eyes principle, two-man rule, social responsibility

JEL codes: C92, D79, M14

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1. Introduction

When employees make decisions, they have a wide range of strategic choices available that may result in outcomes with differing degrees of social responsibility. Some choices of how to conduct a task may be socially responsible, in that employees behave according to values shared within

society. Other choices, however, may violate ethical and legal rules and include behavior that yields higher returns to the individual or a small set of collaborators, at the cost to other members of the organization or society. In 2015, for example, Volkswagen (VW) employees were found to have intentionally manipulated diesel engines to meet the strict US nitrogen oxide emission standards during testing (Economist 2015). They had manipulated engines' software to emit less harmful gas when the car was being tested. The software checked several indicators about whether the car was being driven or whether it was being tested; for example, it checked the extent of the movement on the steering wheel. Before being exposed, members of the team who manipulated the software were reaping the benefits of their cheating and lying (in the following, we use "cheating" and "lying" interchangeably), by receiving bonuses and being praised for allowing VW to excel in sales. Those individuals were corruptly collaborating to promote narrow interests at the cost to clients and the larger society. Since exposure, the financial and reputation costs of Volkswagen as a result of these manipulations have been enormous. Similar scandals emerge with striking regularity. As a result, organizations bear substantial costs – sometimes jeopardizing their very existence – caused by the ethical misconduct of some of its members. Gaining a substantiated understanding of the institutional structures and psychological underlying processes that lead people to behave (un-)ethically is a timely managerial issue that triggers more and more research endeavors (Grolleau et al. 2016, Moore and Gino 2015, Cohn et al. 2014, Villeval 2014, Conrads et al. 2013, Fischbacher and Föllmi-Heusi 2013, Gino et al. 2013, Bazerman and Gino 2012, Erat and Gneezy 2012, Srivastava and Banaji 2011, Ordóñez et al. 2009, Sutter 2009, Mazar et al. 2008, Gneezy 2005, Schweitzer et al. 2004).

To protect their organizations against having their employees engage in unethical behavior, management teams craft codes of ethical business conduct for their firms (Paine et al. 2005, Forster et al. 2009, Kish-Gephart et al. 2010). These codes provide an ethical compass to employees, highlighting both general and specific ethical principles employees should adhere to. Among other elements, codes of conduct typically vary in how much weight they put on two dimensions: (1) relationships within versus outside the organization and (2) whether the code emphasizes similarities versus differences in these relations. Focusing on relationships within the organization, Nestlé's code of conduct, for example, states in its introduction, "Employees should always be guided by the following basic principles: – avoid any conduct that could damage or risk Nestlé or its reputation; – act legally and honestly; – put the Company's interests ahead of personal or other interests"(Nestlé 2016, p. 1). UBS (2016), by contrast, begins by mentioning relationships outside the organization: "We act fairly, honestly and in good faith towards everyone we deal with: our clients, business partners, competitors, suppliers, the public and each other" (p. 4). Codes of conduct further emphasize either internal commonalities and solidarity between their employees

and sub-organizations, or diversity and differences of opinion. For example, the pharmaceutical company GlaxoSmithKline (2016) opens its code of conduct by stating, "We are a community of over 100,000 people in more than 115 countries. We aim to build a culture where all our people are empowered and united by our values and a common set of expectations" (p. I). By contrast, highlighting diversity and the importance of taking different perspectives into account, the code of BP (2016) states, "Our expectations: Diversity and inclusion build teamwork and success. We value the unique contribution that each person brings to BP. We accomplish more when people from diverse backgrounds and with different talents and ideas work together in an environment where everyone can contribute and make full use of their talents" (p. 11).

With regard to the two dimensions discussed above, little is known about how codes of conduct should be tuned to boost employees' ethical and socially responsible behavior. Is having employees focus on their relationships within the organization more useful than having them focus on relationships outside the organization? Alternatively, could a focus on relationships within the organization be corruptive, making employees more likely to focus on their close circles' interests at the expense of larger societal considerations? Furthermore, would emphasizing similarities with others in the organization boost ethical conduct or perhaps, amplify organization-serving corrupt behavior? We tackle these questions in this paper. In two laboratory studies, we employ a novel die-in-a-box design with a total of 1,080 subjects, allowing us to assess individual - versus close-circle-serving dishonesty (the proxy we adopt here for unethical behavior). We further evoke a sense of similarity among participants, using procedures common in social cognition research. Our results suggest a sense of similarity increases ethical behavior when evoked in relation to others outside one's own organization (e.g., society), but decreases it when evoked in relation to others within one's own organization (e.g., close collaborators). As such, our findings help organizations considering how to craft their codes of conduct to facilitate ethical conduct.

Our novel die-in-the-box paradigm is an extension of the die-rolling paradigm introduced by Fischbacher and Heusi (2008) and commonly employed in subsequent studies (see Fischbacher and Föllmi-Heusi (2013), Shalvi et al. (2011a,b); for a recent meta-study, see Abeler et al. (2019)) with more than one decision-maker. In the die-rolling paradigm, a subject is asked to privately roll a die and report the outcome of the roll. The subject is paid according to the reported outcome, thus allowing the subject to increase the own payoff by cheating and reporting an outcome associated with a higher payoff than is actually deserved. Rolling a die guarantees a high degree of privacy because the experimenter obviously cannot detect whether any particular person is cheating. Cheating is assessed by comparing the aggregate-level performance with the performance expected if subjects are honest. The task (or its variations of reporting private coin toss predictions) has been validated as a proxy to a variety of real world unethical behaviors including not paying for

public transport (Dai et al. 2016), not returning undeserved payment send in compensation for study participation (Potters and Stoop 2016), misbehaving in school (Cohn and Maréchal 2016), milk-sellers diluting milk with water (Kröll and Rustagi 2016), and nurses being late to work (Hanna and Wang 2016). A recent cross cultural study (Gächter and Schulz 2016) further revealed higher levels of misreporting in countries high on political fraud, corruption, and tax evasion.

The die-rolling task is useful to study individual dishonesty. Many important real-world decisions, however, are made in collaboration of more than one person. Our experimental design extends the die-rolling task to a dyadic setting in which two subjects are sequentially exposed to the exact same die-roll, report its outcome sequentially, and thereby determine their payoffs. As such, the design allows studying an environment closely mirroring many organizational settings, in which one person (e.g., an employee) conducts a task (e.g., designs a software to control an engine's emission) and another person (e.g., a colleague or a manager) observes the final product and signs it off for production. We are able to estimate the prevalence of two types of ethical misconduct: (1) cheating by boosting a reported outcome conducted by the first person, and (2) covering up another's lie by not reporting it to the authorities. That is, avoiding whistle blowing another's wrongdoing.

Our design most closely resembles the dyadic die-rolling task recently introduced by Weisel and Shalvi (2015). In their die-rolling task, one subject privately rolls a die and reports the outcome on a computer, and the reported outcome is sent to a second subject. The second subject learns the first reported rolling, rolls a die as well, and reports the own outcome. If both subjects report the same outcome, each gets the reported value in euros. If they report different numbers, both get nothing. The task thus allows for the first subject to lie to increase the target value, and for the second subject to lie by matching the first subject's outcome regardless of the actual outcome. Weisel and Shalvi report 82% doubles being reported (mostly 5-5s and 6-6s – the two numbers that yield the highest earnings), compared with 17% expected if subjects were honest. Our design is different from Weisel and Shalvi's in two important ways. First, in their design, subjects are exposed to different private pieces of evidence (i.e., two die rolls) that they are required to report. In our design, subjects observe the same piece of evidence (i.e., one die roll). The difference is important because in many organizational settings, multiple people deal with the same information and materials and need to handle it or report it. Indeed, many organizations adopt the four-eyes principle requiring one person to check and sign off on the work of a colleague. Our design follows such a procedure as well, making it resemble actual decision situations in organizations where people lie when reporting the observed evidence as well as when signing off on another person's report. We are able to have two subjects observe the same die roll by introducing custom-made boxes that prevent the first subject from tampering with the rolled outcome. The boxes thus

allow the second subject to verify whether the first subject's report was honest. To prevent the experimenter from knowing the actual outcome, the second subject receives the key to the box and is guided to remove the die, thus eliminating all evidence.

Second, Weisel and Shalvi compare behavior in the dyadic task with the behavior of individual subjects rolling the die twice. They find more cheating in the dyadic than in the individual setting. However, in their design, whether the differences between the dyadic and individual settings are driven by the collaborative aspect of working together or by the higher-efficiency cheating entailed in the dyadic setting (benefiting two rather than only one individual) is unclear. In our design, cheating is efficiency neutral in that it improves the payoffs of liars but causes negative externalities to others by the same amount. The setup maps, for example, a typical fraud situation in which two individuals extract profits at the cost of many others, for example, shareholders of a competitor or other members of the society outside the organization. Keeping cheating efficiency neutral across treatments allows us to compare lies that serve the interests of one person versus a dyad of collaborators at the expense of a larger collective (here, all other subjects in the experimental session). The comparison is important because it allows us to concentrate our investigation on understanding how codes of conduct focusing on similarities with members within versus outside one's organization shape ethical (mis)conduct.

We manipulate a sense of similarity in two distinct ways. In study 1, we manipulate subjects' general focus on similarities versus dissimilarities, following a procedure to subtly activate the respective foci that was developed by Mussweiler (2001). We compare unethical conduct in individual versus collaborative settings. In the collaborative setting, the induced focus on similarities (vs. dissimilarities) is likely to be applied to the social target in the experiment on which participants focus their attention, namely, the other member of their dyad. In the individual setting, the induced focus on similarities is likely to be applied to the only other targets available, namely, the other members of the session who will bear the negative externalities from one's lie. Study 2 transcends the abstract activation of similarity and is designed to address how firms might overcome the potential dishonesty of similar collaborators. Here, we assess the extent to which members of an organization may behave more socially responsibly if their code of conduct particularly focuses on the similarities between members of the organization and its external stakeholders (society focus) compared to a narrow focus on similarities among collaborators (firm focus). Indeed, we tend to find more cheating in the firm-focus treatment than in the society-focus treatment.

Our study is related to new contributions on the role of perceived similarity as a cognitive factor that shapes economic behavior. Subtly inducing subjects to adopt an information-processing style that focuses on similarities versus dissimilarities (Mussweiler 2001) has a considerable impact on

social judgment and their behavior toward others (e.g., Corcoran et al. (2009), Todd et al. (2011); for overviews, see Mussweiler (2014) and Mussweiler et al. (2017)). As an important example for the present work, research has shown that the manipulation of a focus on similarities versus dissimilarities influences the extent to which individuals altruistically reward and punish others in the context of a cooperation game (Mussweiler and Ockenfels 2013).

To date, however, little is known about how such cognitive mechanisms of focusing on similarities versus dissimilarities influence ethical behavior in general, and cheating in specific. Such knowledge is essential, for example, when considering ways to craft effective organizational codes of conduct. To fill this gap, we unobtrusively manipulate similarity perceptions by letting participants work on a task (Mussweiler and Damisch 2008) in which they compare two pictures (see Appendix). About one half of participants are asked to list all of the similarities they can find between the two pictures. The remaining participants are asked to list all of the dissimilarities they can find. Extensively concentrating on similarities versus dissimilarities during the picture comparisons induces a generalized focus on either similarities or dissimilarities that carries over to subsequent tasks. The task has been shown to induce perceived self-other similarity in subsequent interactions: Participants who focused on similarities (differences) in the picture comparison task subsequently judged themselves as more similar to (dissimilar from) a given other (Mussweiler 2001).[1] In the context of study 1, participants who focus on ways in which the pictures are similar would thus subsequently focus on ways in which they are similar to the most salient other person in the experimental set-up. In a collaborative condition in which participants engage in the die-rolling task in a dyad, the partner is the salient other. Hence, in this condition, participants will focus on similarities to their dyad partner. In an individual condition in which participants engage in the die-rolling task by themselves, the persons bearing the negative externalities from their potential lies are the salient others. Hence, in the individual condition, participants will focus on similarities to the potentially harmed others. By the same token, participants who focus on ways in which the pictures are dissimilar will focus on ways in which they and the most salient other(s) are dissimilar.

[1] The procedure enables a content-free variation of self-other similarity that manipulates perceived similarity independent of group identity (see, e.g., Chen and Li (2009)). We avoid creating any kind of group identity in order not to confound perceived similarity and group identity (for a discussion on these matters, see Mussweiler and Ockenfels (2013)). We aim to maniuplate pure similarity versus dissimilarity, because they are often evoked by codes of conducts, and not boundaries between qualitatively different social groups. Such manipulations of similarities versus dissimilarities most likely affect unethical conduct via cognitive processes of the projection of own interests and norms, empathy and trust, and hence cooperation. In fact, similarity appears to be the more fundamental factor; it is spontaneously extracted from both social and non-social stimuli, and is central to human information processing, already at a very young age (Markman and Gentner 2005, Mussweiler 2014). By contrast, a salient and realistic group membership might especially also entail other motives, such as a desire to compete with the outgroup over scarce resources, and thus to harm the outgroup (e.g., Brewer and Kramer (1985)). Because such motives are not the focus of our current study, we avoid emphasizing group memberships.

2. The die-in-the-box paradigm

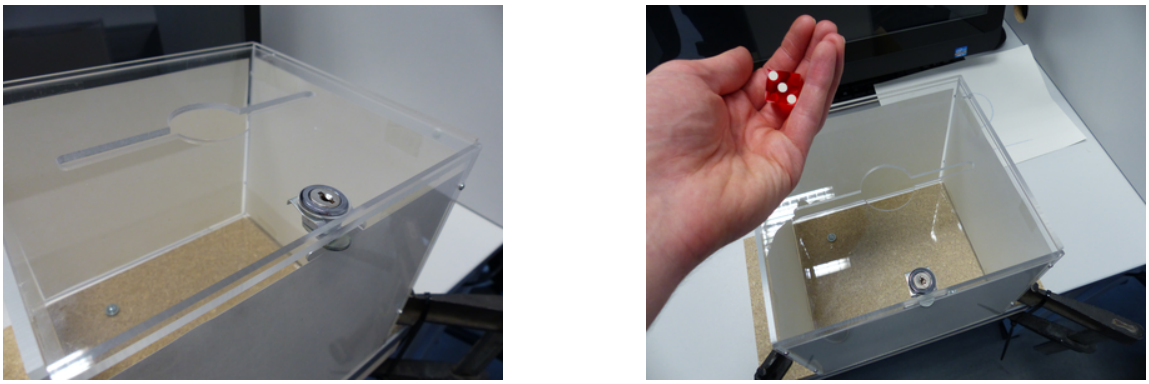

Figure 1 **Die-roll into custom-made acrylic glass box with six-sided high precision die**

In our experiments, we allow dyads of two subjects to observe the same actual outcome of rolling one physical die, while preventing communication between the subjects. We fabricated locked boxes made of acrylic glass that subjects look into sequentially. One subject privately rolls a die into this box, and another subject is able to observe the outcome later. Subjects are randomly assigned to one of two roles, either first mover (F) or second mover (S). One F is randomly matched with one S to form a dyad. Further, each subject is located in a separated, randomly assigned, cubicle in the laboratory. Each dyad owns one additional cubicle that is equipped with a custom-made acrylic glass box, and a high-precision die also used for professional games tournaments (see Figure 1). After clarifying potential questions on the instructions, the experimenter leaves the laboratory to reduce concerns about the detection of a potential lie. When the experimenter has left the laboratory, each F is asked to move to the dyad's cubicle with the acrylic glass box. All side walls of the box are covered with paper from inside so that looking into the box is not possible. As in other die-rolling studies, F is asked to roll the die three times.[2] F is asked to roll the die twice on the table. Afterwards, F removes the sheet covering the upper side of the box. Under the cover, F finds a transparent side through which he or she can privately look into the box. F then rolls the die into the box by throwing it through a small hole (see Figure 1). After the die lands in the box, F observes the rolled outcome and is asked to cover the box to ensure privacy. F reports the outcome by typing an integer from 1 to 6 into the computer. The number that F reports is sent to the assigned S via computer. To guarantee no communication takes place between the subjects, they do not meet each other in the laboratory, nor do they learn who the other dyad member was after the experiment is over.

[2] In many studies, subjects roll the die more than once even though only the first die-roll should be reported. Observing additional irrelevant outcomes is meant to increase the opportunity for justifications of a potential lie (Shalvi et al. 2011a, Gächter and Schulz 2016). To make our data comparable to the other studies, we also implement three die-rolls.

After all Fs are back at their original cubicle, each S learns the number reported by the matched F and is asked to move to the dyad's cubicle with the box. S finds the die in the locked box showing the actual outcome of F's die roll. S is asked to remove the cover from the box and to report the observed outcome. S types an integer from 1 to 6 into the computer. Thereby, S can confirm F's report by typing in the same number or can report a different number. For example, if F lied, S may disclose this lie by reporting the actual outcome. S may alternatively cover up F's lie and confirm the wrongly reported outcome. Using a key for the locked box, which only S possesses, S opens the box and removes the die (see Figure 2). Removing the die enhances privacy because no one except the matched F and S can therefore observe the actual outcome. Importantly, F cannot manipulate the outcome of the die.[3]

Figure 2 Open custom-made acrylic glass box to remove six-sided high precision die

Payoff structure

We provide both F and S with an incentive to cheat, in order to mirror the incentives of many collaborative tasks in the workplace. Behaving dishonestly, for example, manipulating emission

[3] We could think of three potential ways to manipulate the outcome of the die that are highly unlikely with our locked acrylic glass boxes: First, participants could manipulate the thrown number by reaching into the box to move the die. This action is very difficult in our experiment because the box has a height of 21 centimeters and the hole has a radius of less than 1.5 centimeters. In particular it is difficult because any tools or pens are strictly forbidden (and, in fact, almost all pens are too short to reach the die, even if the die luckily landed in the middle of the box). Second, we prevent the possibility of shaking the box until the die switches to a more favorable outcome. The box is fixed with bolts and ring washers on a piece of wood. This piece of wood is fixed on the table with two massive screw clamps, and subjects cannot move the box or even the table, because the tables are fixed in the laboratory. To move the box, one would need to open the screw clamps. Further, to manipulate the die, one would need to shake the box until the desired outcome realizes, and fix the box with the screw clamps in the same position again. To prevent this behavior, we fix the screw clamps with cable ties. Thus, opening the screw clamps is very difficult, and if the subject were to open it we could have easily detected this manipulation, because destroying the cable ties would be necessary. Third, subjects could try to open the lock, which would be very difficult and we would easily detect if the participant were to manage to open it. Otherwise, one would need special tools to open the lock. Those tools are obviously forbidden, and subjects are unlikely to have those tools with them. Thus, by rolling the die into our box, we reduce potential manipulations by F and S. Thus, if F lied, S is able to observe this lie, and F is also aware that S will detect a potential lie.

software in cars or accepting bribes, often increases own monetary payoffs or bonuses. At the same time, other people who observe the misconduct often benefit as well and/or are unlikely to have an incentive to disclose, because blowing the whistle or disclosing an observed bribe is often costly for colleagues or even auditors. Indeed, the literature on whistle-blowing – the act of reporting another's wrongdoing – suggests people are very reluctant to blow the whistle. In lab experiments (Bocchiaro et al. 2012, Reuben and Stephenson 2013), less than 20% report an explicit ethical violation to the relevant authorities, even when receiving an opportunity to do so in private. When S confirms F's report, both subjects receive the reported number paid in euros; for example, reporting 4 would lead to a payoff of 4 euros for F and 4 euros for S. When S does not confirm, the number of the two reports that yields the lower payoff determines the payoff for the two subjects. For example, if F reports 5 but S reports 3, S's report determines the payoff for F and S (3 euros each). However, if F reports 2 and S reports 4, F's report determines the payoff for F and S (2 euros each). We follow Fischbacher and Föllmi-Heusi (2013) in that (at least one of the two, F and/or S) reporting 6 leads to the lowest payoff of 0 euros, which is clearly communicated to the subjects.

Our experimental design also reflects the social costs of cheating through negative externalities (see Abbink et al. (2002) for a similar modeling of negative externalities triggered by unethical conduct). In many previous studies, cheating increases efficiency, because reporting a higher number yields a higher outcome without any direct costs for others (beyond the experimenter; see Fischbacher and Föllmi-Heusi (2013) for a notable exception in their EXTERNALITY treatment). In these cases, cheating might be less ethically objectionable, because it increases the welfare of the subjects. In our experiment, we model cheating as efficiency neutral to avoid efficiency considerations as an additional motivation to lie. Each die-roll payoff is subtracted in equal parts from the endowment of all 20 subjects in each session. Suppose, for example, subject F rolls the die and the actual outcome is 3. If F lies and reports 5, and S lies by confirming the outcome was indeed 5, both subjects benefit in monetary terms from dishonest behavior. They receive 5 euros each, even though each of them deserves only 3 euros. In our efficiency-neutral setting, reporting a higher number also creates the same amount of negative externalities. Thus, for each dyad reporting 5, we subtract 0.50 euros from every subject's payoff, whereas for reporting 3, we only subtract 0.30 euros. Then, reporting 5 after observing 3 increases the own payoff by 2 euros (= 5 euros – 3 euros), creating costs of 4 euros that are borne by all subjects in the laboratory. Thereby, all participants in an experimental session resemble members of a society who have to bear the social costs from cheating. Another interpretation would be that cheating enables a kind of stealing from a larger group or society. To guarantee every subject receives a positive payoff at

the end of the experiment, subjects receive an endowment of 4.50 euros from which the deductions can be paid.

3. Study 1

Study 1 is designed to understand how cheating and lying – as a proxy for unethical conduct – is affected by two dimensions, namely, perceived similarity compared to dissimilarity in individual and collaborative tasks.[4]

3.1. Experimental Design and Procedures

We employ a 2 x 2 design (see Table 1). Each treatment contains two independent stages. The first stage serves to induce pure (dis)similarity with the help of a commonly used procedure to subtly induce participants to adopt an information-processing style that focuses on similarities versus differences (Mussweiler 2001). The second stage employs the die-in-a-box task presented above.

Table 1 2 x 2 Design of Study 1

Treatment	Focus (stage 1)	Decision Type (stage 2)	Independent observations
SIM-IND	*similarity*	individual decision	110
DIS-IND	*dissimilarity*	individual decision	110
SIM-DYAD	*similarity*	dyad decision	110
DIS-DYAD	*dissimilarity*	dyad decision	110

[4] Our paper follows a long stream of research that studies ethical behavior operationalized as being honest (e.g., Fischbacher and Föllmi-Heusi (2013), Shalvi et al. (2011a,b), Conrads et al. (2014), Abeler et al. (2019)). Our design models a situation in which one is asked to follow a simple rule, report the outcome of a die-roll, and earn money accordingly. If the first mover violated the rule by lying about the outcome of the die-roll, and the second confirms this lie, the dyad earns more money than they are supposed to compared to reporting honestly. As such, we refer to the dyad's honesty in reporting as a proxy for ethical behavior. We acknowledge that ethical behavior is not only manifested in honest behavior. People, for example, may also care for "Fairness" or "Equity." If participants report honestly, with a high likelihood, outcome inequality is the result. Due to the implemented externalities, everyone reporting the highest number results in the same final individual payoff as everyone reporting the lowest outcome (or any specific number). If participants want to ensure they all leave the lab with the same amount of money, they all should report the same outcome irrespective which one. Such a desire raises a coordination problem, and one might argue that reporting the highest number is focal because it ensures higher own payoffs in case of miscoordination. Thus, to achieve equity, some participants may favor coordinating on reporting the highest number as the more ethical choice. We note, however, that as far as we know the latter is true in all die-rolling studies used to date. Some participants might not see unequal payoffs as being unfair, because, assuming honesty, they are the result of a procedurally fair allocation due to the random assignment of roles and die-roll outcomes.

3.1.1. Similarity induction (stage 1) Research in social cognition demonstrates that how people behave toward others critically depends on how they process information about those others. One important aspect is, for example, how similar people see another person to be to themselves. Humans behave in fundamentally different ways towards those they see as similar to rather than dissimilar from themselves. To unobtrusively vary perceived similarity, participants work on a task (Mussweiler and Damisch 2008) in which they compare two pictures (see Figures 6 and 7 in the Appendix). In doing so, a random half of the participants are asked to list all of the similarities they can find between the two pictures. The remaining participants are asked to list all of the dissimilarities they can find. Participants in the same dyad both perform the same task, i.e., either the similarity task or the dissimilarity task. Extensively focusing on similarities versus dissimilarities during the picture comparison induces a generalized focus on either similarities or dissimilarities that carries over to subsequent tasks. As explained above, the task has been shown to influence perceived self-other similarity in subsequent interactions; for example participants who focused on similarities (dissimilarities) in the picture-comparison task subsequently judged themselves as more similar to (dissimilar from) a given other (Mussweiler 2001). In our experiment, participants who focus on ways in which the pictures are similar would thus subsequently focus on ways in which they and a salient other person are similar. By the same token, participants who focus on ways in which the pictures are dissimilar would focus on ways in which they and a salient other person are dissimilar. The procedure affords a content-free manipulation of self-other similarity that manipulates perceived similarity independent of group identity. Thus, to understand how pure similarity affects cheating behavior, we manipulate perceived similarity by inducing subjects to adopt either a similarity (SIM) or a dissimilarity (DIS) focus in the first stage. To control for session effects, we randomly assign both SIM and DIS settings in each of the sessions.

3.1.2. Die-in-a-box (stage 2) The second stage employs the die-in-the-box paradigm described in section 2. In the dyad conditions (DYAD), a subject with role F and a subject with role S can report a variety of outcomes, as discussed above. Each experimental session employs 20 subjects (10 dyads): 10 subjects taking the role of F and 10 subjects taking the role of S. Payoffs Π for a dyad F_i and S_i are provided in equation (1), where x is the vector of all reports by all 10 Fs and 10 Ss, and $o(x_{F_k})$ and $o(x_{S_k})$ are the payoffs resulting from reports by F_k and S_k, respectively:

$$\begin{aligned} \Pi_{F_i}(x) = \Pi_{S_i}(x) = \textit{endowment} + \min\left[o(x_{F_i}), o(x_{S_i})\right] - \frac{1}{10}\sum_{j=1}^{10}\min\left[o(x_{F_j}), o(x_{S_j})\right]; \\ o(x_{P_k}) = x_{P_k}, \quad \text{if} \quad x_{P_k} \in \{1,...,5\},\ o(6) = 0 \ \textit{with}\ P \in \{F, S.\} \end{aligned} \tag{1}$$

The individual-decision conditions (IND) are designed to be as similar as possible to DYAD. The difference between IND and DYAD is essentially that IND is conducted without the role S that may verify the report of role F. As in DYAD, F goes to the cubicle with the box made of acrylic glass and rolls the die. Also, the box is locked as in DYAD. However, IND has no S, F also holds the key. Thus, F also removes the die so that the experimenter cannot observe the actual outcome. Ten subjects with role F take part in each experimental session in IND (as in DYAD). Cheating, for example, by reporting 5 after observing 3, increases the individual payoff in IND exactly as in DYAD (in the example: by 2 euros = (5 euros – 3 euros)). Cheating in IND is also efficiency neutral because it not only increases the payoff of one individual, but also decreases the payoff of all 10 subjects in this experimental session (see equation (2); in the example, the payoff of all subjects is additionally decreased by 0.20 euros each due to the lie). Subjects in IND receive the same endowment of 4.50 euros as in DYAD. Payoffs Π for an individual F_i are provided in equation (2), where x is the vector of all reports by all 10 Fs, and $o(x_{F_k})$ denotes the payoffs resulting from reports by F_k:

$$\begin{aligned} \Pi_{F_i}(x) &= endowment + o(x_{F_i}) - \frac{1}{10}\sum_{j=1}^{10} o(x_{F_j}); \\ o(x_{F_k}) &= x_{F_k}, \quad \text{if} \quad x_{F_k} \in \{1,...,5\},\ o(6) = 0. \end{aligned} \tag{2}$$

3.1.3. Hypotheses Suppose every subject would report truthfully. Then, a share of about 16.7 % of subjects would report each number, from 1 to 6. By contrast, a purely self-interested rational subject maximizes the monetary payoff and reports only truthfully if the actual outcome is 5. According to standard theory, all subjects selfishly report 5 in all treatments, independent of the actual outcome they rolled. The literature on lying, however, does not support this extreme view. Typically, not only does a substantial share of subjects report the number that yields the highest monetary payoff, but a substantial share of subjects also report lower outcomes. In Fischbacher and Föllmi-Heusi (2013), a significant proportion of participants reported the second-highest value, more than would be expected if participants were reporting honestly. Such incomplete lies are sometimes explained by assuming a psychological cost people suffer from cheating (Lundquist et al. 2009, Mazar et al. 2008). That is, when deciding about the extent of their lies, people seem to balance the profit generated by cheating with the psychological costs it entails (Shalvi et al. 2011b). Fischbacher and Föllmi-Heusi (2013) reveal that the tendency to

cheat in a non-profit-maximizing way is robust to, for example, tripling the financial incentive to lie, increasing anonymity by having participants pay themselves out of a sealed envelope, and having participants engage in the task for a second time.

Prior work seems to suggest cheating is psychologically costly. The underlying assumption so far seems to be that the costs of cheating only vary with how cheating affects the monetary payoffs of the different parties. That said, because monetary incentives per individual in our design are kept constant across treatments, allowing for costs of cheating should not lead us to expect differences between the treatments. Furthermore, because the monetary costs imposed on others (i.e., negative externalities) are kept constant across the IND and DIS treatments, respectively, they too should not lead to predicting different amounts of cheating between treatments.

Null hypothesis: *The distribution of reported outcomes is the same in all treatments*

From a social cognition perspective, similarity should, however, cause a difference in behavior. To better understand how similarity affects cheating, we vary perceived similarity by employing the procedural manipulation as described above. As shown in psychological research, extensively focusing on similarities versus dissimilarities during the picture-comparison task induces a generalized focus on either similarities or dissimilarities that carries over to subsequent tasks (see, e.g., Mussweiler (2014)). In our case, the extensive focus from the first stage of the experiment carries over to the die-in-a-box task in the second stage. In the IND conditions, participants are likely to focus their attention on all other participants, because they do not interact more closely with anybody else, that is, with anyone who would be more salient, and they are all in the same strategic situation. Participants who are asked to find similarities in the first task (SIM-IND) should therefore focus on similarities between themselves and those other participants. Thus, in the SIM-IND condition, participants can be assumed to perceive the other participants as similar to them. Following the above reasoning, these participants should be more inclined to feel empathy toward those other participants. They should feel closer to them, and thus harming them should be relatively costly. Therefore, to avoid harming the others by inflicting negative externalities on them, in the SIM-IND condition, participants should lie less than in DIS-IND.

In the DYAD conditions, however, effects should be reversed: Subjects with role F should primarily focus on the subject with role S in the same dyad, who observes the true outcome and the report of F, and vice versa. This single other person (role F or S) should be salient to participants: He or she assumes a complementary role in obtaining the payoff, and hence is a potential collaborator in cheating. Participants in the SIM-DYAD condition should focus on similarities between them and their respective other in their dyad. Similarity increases trust and increases projection of own

norms and potentially selfishly biased perceived entitlements. Thus, participants should project their monetary self-interest on their counterpart in the dyad, and also be more motivated to benefit their counterpart. In sum, similarity should foster cooperation in cheating in the SIM-DYAD condition. Therefore, similarity should increase the proportion of lies in the SIM-DYAD condition relative to DIS-DYAD. Note that F and S may lie in different ways, F can modify an observed outcome by making up a different one, and S can confirm an untruthful report by F. The design allows the assessment of whether the two types of lies are similarly affected by our experimental manipulations.

Alternative hypothesis: *The distribution of reported outcomes differs between the treatments. Similarity decreases cheating in the IND settings, that is, from DIS-IND to SIM-IND. However, similarity increases cheating in the DYAD settings, that is, from DIS-DYAD to SIM-DYAD. Decreases and increases apply to (1) the report of F, (2) the report of S, and (3) the report of the dyad.*

3.1.4. General Procedures We conducted the experiment in the Cologne Laboratory for Economic Research (CLER), a computer laboratory of the University of Cologne. We recruited 660 subjects, primarily students of the University of Cologne, via ORSEE (Greiner 2015) from the lab's subject pool. Each subject was randomly assigned to one of the four treatments and into one role. Subjects received written instructions, and the experimenter read aloud a summary to ensure common information.[5] After all subjects confirmed the instructions, the experimenter left the laboratory. Doing so should enhance a feeling of privacy and reduce the fear of detection in case of cheating. The experimenter was waiting in a room next to the laboratory so that participants could reach out in case they needed to. Because the walls are thin, the experimenter was still able to detect potential communication inside the laboratory even when physically absent from the laboratory. The experiment was programmed using z-Tree (Fischbacher 2007) and implemented a double-blind payment procedure. Subjects drew a card that determined the computer terminal they were assigned to. Each subject further received a voucher code. At the end of the experiment, subjects were guided to a room located on a different floor from the laboratory in which a person unfamiliar with the details of the experiment handed over a sealed envelope with their earnings, in exchange for the voucher code.

Experimental sessions took place in January 2015 and February 2015, and lasted between 25 and

[5] Complete sets of instructions (for studies 1 and 2) can be found in English in the appendix. Original instructions are in German and available from the authors upon request.

45 minutes. Subjects received a show-up fee of 2.50 euros (about a quarter of an hourly student wage, 1 euro = 1.08 USD at the time of the experiment) for attending and could earn from 0.00 euro up to 12.20 euros additionally, depending on behavior. Average earnings of the subjects were 8.23 euros, including the show-up fee.

3.2. Results

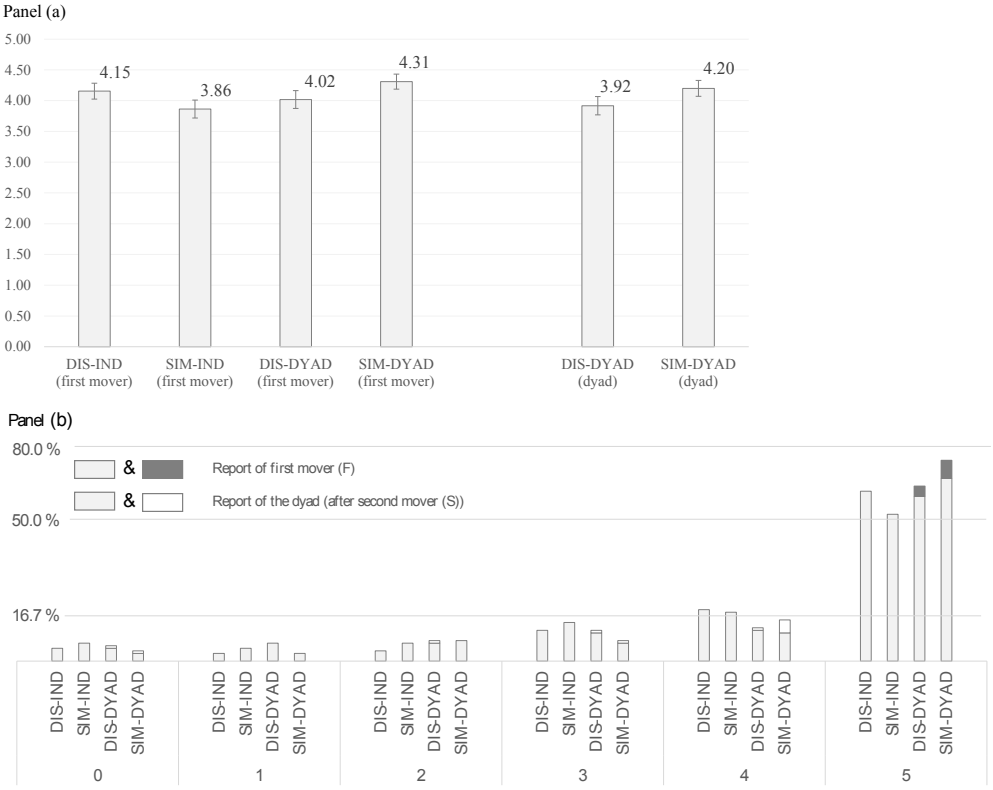

Figure 3

Panel (a): Average outcomes with standard errors reported by first mover and the dyad, Panel (b): Distribution of outcomes reported by the first mover (F) and the dyad. Black bars indicate reports of first movers who are not followed by the second mover (S). The choices of second movers in these disagreement cases are depicted as white bars. White bars together with the grey bars indicate the reports of the dyads.

3.2.1. First movers' reports The distribution of reported outcomes shows a large share of Fs reporting the most profitable outcome, a 5 (see Figure 3). Such a pattern indicates cheating because – from a statistical perspective – one should expect only about 16.7 % of participants to actually observe a 5.[6] Thus, we reject the hypothesis that Fs report honestly (Mann-Whitney U

[6] In principle, F might lie by reporting a number with a payoff smaller than the payoff of the observed number. But this scenario would yield lower payoffs for F and S than when telling the truth (the negative externalities, however,

test, one-sided, $p < 0.001$).[7] Note that due to our directional hypotheses and the higher efficiency of one-sided tests in terms of statistical power, we consistently employ one-sided tests, where applicable (for a discussion see, for example, Lakens (2016)).

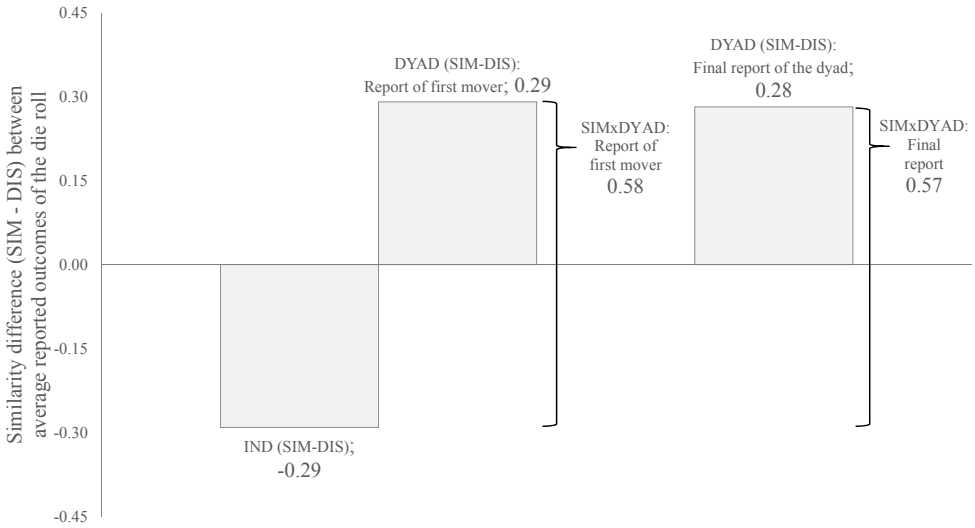

Figure 4 Average outcomes, similarity

Processing information with a focus on similarities (SIM) seems to change behavior (see Figures 3 and 4) compared to behavior with a focus on dissimilarity (DIS). The direction of how similarity affects cheating, that is, whether it increases or decreases cheating, seems to depend on whether a situation comprises a collaborative decision or an individual decision. The observed patterns are in the predicted directions. In the IND settings, similarity tends to decrease cheating: The average outcome reported by the Fs decreases from 4.15 in DIS-IND to 3.86 in SIM-IND, yet this difference is only marginally significant (Mann-Whitney U test, one-sided, $p = 0.072$). By contrast, similarity tends to lead more Fs to lie in DYAD: The average outcome reported by the Fs increases from 4.02 in DIS-DYAD to 4.31 in SIM-DYAD (see Figure 3), this effect being again only marginally significant (Mann-Whitney U test, one-sided, $p = 0.065$). Taken together, as shown in Figure 4, similarity compared to dissimilarity reduces average cheating by 0.29 in the IND settings, whereas it increases average cheating by 0.29 in the DYAD settings. Given this pattern, we compared the two conditions, which should differ the most according to our

would be reduced). Although we cannot exclude such a scenario, we do not assume it happens. Nobody mentioned such a behavior in the debriefing.

[7] In all our four settings, SIM-IND, DIS-IND, SIM-DYAD, and DIS-DYAD, Fs report outcomes that are significantly different from the uniform distribution of outcomes, which would result from truthfully reporting (Mann-Whitney U test, one-sided, $p < 0.001$ each).

Table 2 Study 1: Outcome reported by first mover

Regression model	OLS	Ordered probit	OLS	Ordered probit
Dep. Var.	Rep. outcome	Rep. outcome	Rep. outcome	Rep. outcome
SIM	-0.2909^{*}	-0.2196^{*}	-0.2695^{*}	-0.2170^{*}
	$(p = 0.066)$	$(p = 0.079)$	$(p = 0.077)$	$(p = 0.084)$
DYAD	-0.1364	-0.0471	-0.0994	-0.0192
	$(p = 0.239)$	$(p = 0.383)$	$(p = 0.299)$	$(p = 0.453)$
SIMxDYAD	0.5818^{**}	0.4800^{**}	0.5568^{**}	0.4925^{**}
	$(p = 0.017)$	$(p = 0.017)$	$(p = 0.019)$	$(p = 0.016)$
Age			-0.0289^{***}	-0.0244^{***}
			$(p = 0.005)$	$(p = 0.004)$
Male			0.1658	0.2323^{**}
			$(p = 0.113)$	$(p = 0.026)$
BusinessEcon			0.4326^{***}	0.4711^{***}
			$(p = 0.001)$	$(p = 0.001)$
Cons.	4.1545^{***}		4.5713^{***}	
	$(p = 0.001)$		$(p = 0.001)$	
Ind. obs.	440	440	440	440

All reported p-values in the table refer to one-tailed testing. $***$ $p < 0.01$ (one-sided); $**$ $p < 0.05$ (one-sided); $*$ $p < 0.10$ (one-sided).
Note our subject pool primarily employs students, implying the variation in the variable "Age" is limited. The variable "BusinessEcon" is binary and indicates a participant is enrolled in business administration, economics, or a related program.

hypotheses: SIM-IND and SIM-DYAD. The difference between these conditions is significant (Mann-Whitney U test, one-sided, $p = 0.003$), indicating similarity may tend to exert opposing effects in individual versus dyadic (i.e., collaborative) settings.

A regression analysis tends to support these findings (see Table 2 with DIS-IND as the base; two of the models control for age, gender, and business/econ as fields of study). The coefficients are consistently negative - albeit only marginally so, indicating similarity tends to reduce cheating in the individual-decision situation (comparing DIS-IND and SIM-IND). The coefficients of the variable DYAD turn out to be insignificant, suggesting cheating under the dissimilarity focus does not differ between the individual and the dyadic-decision situation (comparing DIS-IND and DIS-DYAD). All regression models show a significant interaction effect of SIMxDYAD, supporting that the average outcome reported by Fs under the similarity focus differs between the individual and the dyadic-decision situation (comparing SIM-IND and SIM-DYAD). A Wald test reveals the

coefficients SIM and SIMxDYAD are significantly different, indicating the similarity focus has an effect also in the dyad setting (comparing DIS-DYAD and SIM-DYAD, Wald test one-sided, $p = 0.022$).

Table 3 Study 1: Outcome reported by second mover

Regression model	OLS	Ordered probit	OLS	Ordered probit
Dep. Var.	Rep. outcome	Rep. outcome	Rep. outcome	Rep. outcome
Report first mover	0.7154^{***}	0.7616^{***}	0.7239^{***}	0.7921^{***}
	$(p = 0.001)$	$(p = 0.001)$	$(p = 0.001)$	$(p = 0.001)$
SIM	-0.5552^{*}	-0.5647	-0.5247^{*}	-0.5155
	$(p = 0.063)$	$(p = 0.119)$	$(p = 0.075)$	$(p = 0.143)$
SIMxReport first mover	0.1185^{*}	0.1264	0.1122^{*}	0.1170
	$(p = 0.075)$	$(p = 0.143)$	$(p = 0.087)$	$(p = 0.165)$
Age			-0.0129	-0.0257^{*}
			$(p = 0.157)$	$(p = 0.087)$
Male			0.0214	0.0356
			$(p = 0.429)$	$(p = 0.425)$
BusinessEcon			-0.1735^{*}	-0.3627^{**}
			$(p = 0.075)$	$(p = 0.028)$
Cons.	1.2164^{***}		1.5570^{***}	
	$(p = 0.001)$		$(p = 0.001)$	
Ind. obs.	220	220	220	220

All reported p-values in the table refer to one-tailed testing. $***$ $p < 0.01$ (one-sided); $**$ $p < 0.05$ (one-sided); $*$ $p < 0.10$ (one-sided).
Note our subject pool primarily employs students, implying that the variation in the variable "Age" is limited. The variable "BusinessEcon" is binary and indicates a participant is enrolled in business administration, economics, or a related program.

3.2.2. Second movers' reports An S would have the opportunity to correct a falsely reported outcome by F in the DYAD conditions.[8] Recall that whereas an F is cheating by inventing a different outcome than observed, an S simply can follow a lie by not correcting F's lie, which, of course, is a lie because Ss are also asked to truly report the observed outcomes. An S may thus

[8] In both settings SIM-DYAD, DIS-DYAD Ss report outcomes that are significantly different from the uniform distribution of outcomes, which would result from truthful reporting (Mann-Whitney U test, one-sided, $p < 0.001$ each).

simply follow the suggestion of F,[9] which happens quite often. In SIM-DYAD, 70.9 % of the Fs report a 5 (78/110), with more than 90 % Ss confirming their reports. In DIS-DYAD, 61.8 % of the Fs report a 5 (68/110), with more than 90 % of Ss confirming their reports (see Figure 3).[10] Thus, Ss very often confirm Fs' reports even if they are lies. Such confirmations occur with and without a similarity focus, and which is also supported in regression analyses shown in Table 3, with two regressions controlling for age, gender, and field of studies. The effect of the first mover's report is highly predictive for the outcome reported by the second mover.

3.2.3. Dyads' reports In the dyad settings, the Ss often confirm the reports of the Fs. Thus, the final reports of the dyads show similar results and implications, as shown in the discussion above. Similarity tends to weakly increase the final reports of the dyads, on average, from 3.92 in DIS-DYAD to 4.20 in SIM-DYAD, with an average difference of 0.28 between the two (see Figures 3 and 4, Mann-Whitney U test, one-sided, $p = 0.108$) albeit non-significantly so. The final reports by the dyads turn out to be significantly higher in SIM-DYAD (4.20) than the final reports (which are the Fs' reports) in SIM-IND (3.86) (Mann-Whitney U test, one-sided, $p = 0.028$). This difference is reflected by the pattern of reported outcomes. Whereas similarity compared to dissimilarity reduces average cheating by 0.29 in the IND settings, it increases average cheating of the dyads by 0.28 in the DYAD settings (see Figure 4). A regression analysis on the final reports yields results that are similar to the regression analyses on the first movers' reports (see Table 4 with analogous models to the ones in Table 2). The coefficients of the variable SIM tend towards being negative in all models, suggesting similarity might reduce final cheating in the individual-decision situation (comparing DIS-IND and SIM-IND). The coefficients of the variable DYAD turn out to be insignificant, suggesting final cheating under the dissimilarity focus does not differ between the individual- and the dyadic-decision situation (comparing DIS-IND and DIS-DYAD). All regression models show a significant interaction effect of SIMxDYAD, supporting that the final average outcome reported under the similarity focus differs between the individual-

[9] An S might also report a number that is neither the observed number nor the number reported by F. Recall that S cannot increase F's and his own payoffs (at the cost of higher negative externalities for all participants) if he reports a number higher than the one reported by F, because only the number with a lower payoff counts. Reporting a number between the observed number and the number reported by F would dampen the lie of F, because it reduces the payoffs of F and S (and also reduces the negative externalities for all participants). But it still would be lie. In principle, S might report a number with a payoff smaller than the payoff of the observed number. But such a scenario would yield lower payoffs for F and S than when telling the truth (the negative externalities, however, would be reduced compared to the truth). We do not assume this behavior occurs often. Nobody mentioned such a behavior in the debriefing.

[10] The cases in which S adjusts a number reported by F to a lower number are indicated by black bars (higher number reported by F) and white bars (lower number reported by S) in Figure 3. In very few cases, S reports a number that would have been more profitable than the number reported by F.

Table 4 Study 1: Outcome reported by dyad

Regression model	OLS	Ordered probit	OLS	Ordered probit
Dep. Var.	Rep. outcome	Rep. outcome	Rep. outcome	Rep. outcome
SIM	-0.2909^{*}	-0.2219^{*}	-0.2748^{*}	-0.2236^{*}
	$(p = 0.069)$	$(p = 0.076)$	$(p = 0.077)$	$(p = 0.077)$
DYAD	-0.2364	-0.1354	-0.2047	-0.1222
	$(p = 0.114)$	$(p = 0.194)$	$(p = 0.145)$	$(p = 0.220)$
SIMxDYAD	0.5727^{**}	0.4325^{**}	0.5533^{**}	0.4448^{**}
	$(p = 0.020)$	$(p = 0.026)$	$(p = 0.022)$	$(p = 0.024)$
Age			-0.0310^{***}	-0.0253^{***}
			$(p = 0.004)$	$(p = 0.003)$
Male			0.1198	0.1832^{*}
			$(p = 0.196)$	$(p = 0.058)$
BusinessEcon			0.3470^{***}	0.3654^{***}
			$(p = 0.008)$	$(p = 0.001)$
Cons.	4.1545^{***}		4.6801^{***}	
	$(p = 0.001)$		$(p = 0.001)$	
Ind. obs.	440	440	440	440

All reported p-values in the table refer to one-tailed testing. $***$ $p < 0.01$ (one-sided); $**$ $p < 0.05$ (one-sided); $*$ $p < 0.10$ (one-sided).
Note our subject pool primarily employs students, implying the variation in the variable "Age" is limited. The variable "BusinessEcon" is binary and indicates a participant is enrolled in business administration, economics, or a related program.

and the dyadic-decision situation (comparing SIM-IND and SIM-DYAD). A Wald test reveals the coefficients SIM and SIMxDYAD are also significantly different, indicating the similarity focus has a significant effect on the final reports in the dyad setting (comparing DIS-DYAD and SIM-DYAD, Wald test one-sided $p = 0.025$).

Result SIMILARITY: *Similarity seems to decrease cheating from DIS-IND to SIM-IND, whereas it seems to increase cheating from DIS-DYAD to SIM-DYAD. Results with regards to the dyad settings apply to both, the behavior of the first mover and the behavior of the entire dyad.*

4. Study 2

Results of study 1 are in line with our initial hypotheses, namely, that similarity should decrease cheating in the individual setting, in which the focal people suffer negative externalities from the

individual person's lie, and that, by contrast, similarity should increases cheating in a collaborative setting, in which the collaborator is focal. Organizations, however, like to emphasize collaboration within their organization, but wish to do so without provoking unethical behavior among their employees. Study 2 builds on the results of study 1. It is designed to test an intervention aimed at reducing the adverse unethical effects of similarity in collaborative settings. Whereas study 1 is framed in abstract terms with no reference to organizations or principles laid down in codes of conduct, study 2 explicitly mentions organizations and uses codes that prime similarity either by making colleagues or people outside the organization focal.

4.1. Experimental Design and Procedures

Whereas in study 1, we vary similarity versus dissimilarity, in study 2, we focus on the effects of similarity by targeting different people as focal. Study 2 focuses on the dyad setting only, because it resembles within-firm collaboration. Two random participants – each randomly assigned one of two roles, F and S – are instructed to form an organization. The study includes two treatments, each consisting of two stages (see Table 5). In the first stage, the similarity task is conducted. The second stage employs the same die-in-the-box task as in the dyad setting of study 1 (see section 2).

Table 5 Design of Study 2

Treatment	Focus (stage 1)	Decision Type (stage 2)	Independent observations
FIRM	firm focus	dyad decision	105
SOCIETY	society focus	dyad decision	105

4.1.1. Similarity induction (stage 1) In the first stage, participants are induced to focus on similarity to different targets. In the firm-focus treatment (FIRM), they are focused on the similarity between oneself and the other member of their dyad. In the society-focus treatment (SOCIETY), they are focused on the similarity between themselves and one other person not belonging to their dyad. A dyad is framed as an organization – an organization is constituted by one player with role F and one with role S. Participants are asked to consider some principles that are in place for their organization like they are in place for real organizations. The principles applied in different treatments essentially differ in one paragraph. The following sentences are used in the FIRM condition:

For your organization, consisting of you and participant ..., a number of principles shall be applied, as is frequently the case in larger companies. The following principles apply to today's entire session and are particularly central:

- *It is our explicit concern to bring to our minds and to consciously direct our attention to the similarities and the unity of all people.*
- *In particular, we want to try to bring to our minds the similarities to that particular person whom we directly work and interact with and whom we are in close contact with ...*

we would like to ask you, based on these principles, to think about which ***similarities there may be between you and the other person whom you will be completing the task in Part 2 with ... Think about in what respect you may be similar to that person****. Please briefly write down your thoughts on the computer screen in front of you.*

In the SOCIETY condition, these sentences are replaced by the following sentences:

For your organization, consisting of you and participant ..., a number of principles shall be applied, as is frequently the case in larger companies. The following principles apply to today's entire session and are particularly central:

- *It is our explicit concern to bring to our minds and to consciously direct our attention to the similarities and the unity of all people.*
- *In particular, we want to try to bring to our minds the similarities to those persons, whom we do not directly work and interact with and whom we are not in close contact with ...*

we would like to ask you, based on these principles, to think about which ***similarities there may be between you and one of the other persons whom you will not be completing the task in Part 2 with ... Think about in what respect you may be similar to that person****. Please briefly write down your thoughts on the computer screen in front of you.*

In the first stage of both treatments, participants are asked to think of similarities between them and a respective target and to type corresponding keywords into the computer.

4.1.2. Die-in-a-box (stage 2) The second stage employs the same die-in-the-box task used in the dyad settings of study 1. Payoffs are also determined according to equation (1).

4.1.3. Hypotheses The null hypothesis is derived in an analogous way as in study 1. We might expect no difference between the treatments, because we keep the monetary incentives constant. The only difference is the target of the similarity focus prior to the die-rolling task. Participants are exposed to a code of conduct framed differently between the treatments, as described above.

Null hypothesis: *The distribution of reported outcomes is the same in both treatments.*

Participants in the FIRM condition should focus on similarities between them and their respective other in their dyad. As argued above, similarity increases trust and increases projection of own norms and potentially selfishly biased perceived entitlements. Thus, participants should project their monetary self-interest on their counterpart in the dyad, and also be more motivated to benefit their counterpart. In sum, similarity should foster cooperation in cheating in the FIRM condition, and therefore should increase the proportion of lies in the FIRM condition. In the SOCIETY condition, however, participants focus on similarities between themselves and a participant not part of the own organization who would suffer from own lies. Thus, participants in SOCIETY should be more inclined to feel empathy with those other participants. They should feel closer to them, and thus harming them should be relatively costly. Therefore, in the SOCIETY condition, participants should lie less than in the FIRM condition.

Alternative hypothesis: *The distribution of reported outcomes differs between the treatments. Compared to a firm focus (FIRM), a society focus (SOCIETY) decreases cheating. Decreases apply to (1) the report of F, (2) the report of S, and (3) the report of the dyad.*

4.1.4. General Procedures Study 2 was conducted in the CLER. We randomly recruited 420 subjects who did not participate in study 1 from the lab's subject pool according to the same procedure as in study 1. Each subject was randomly assigned to one of the two treatments and into one role. Subjects received written instructions, and the experimenter read aloud a summary to ensure common information. After all subjects confirmed the instructions, the experimenter left the laboratory and waited in a room next to the laboratory. Study 2 was computerized using basically the same software as in study 1, and we implemented the same double-blind payment procedure. Experimental sessions took place in June 2015 and lasted between 25 and 45 minutes. Subjects received a payment of 2.50 euros for attending and could earn an amount from 0.00 euros up to 12.20 euros additionally, depending on behavior, with average earnings of 8.40 euros (1 euro = 1.08 USD at the time of experiment).

4.2. Results

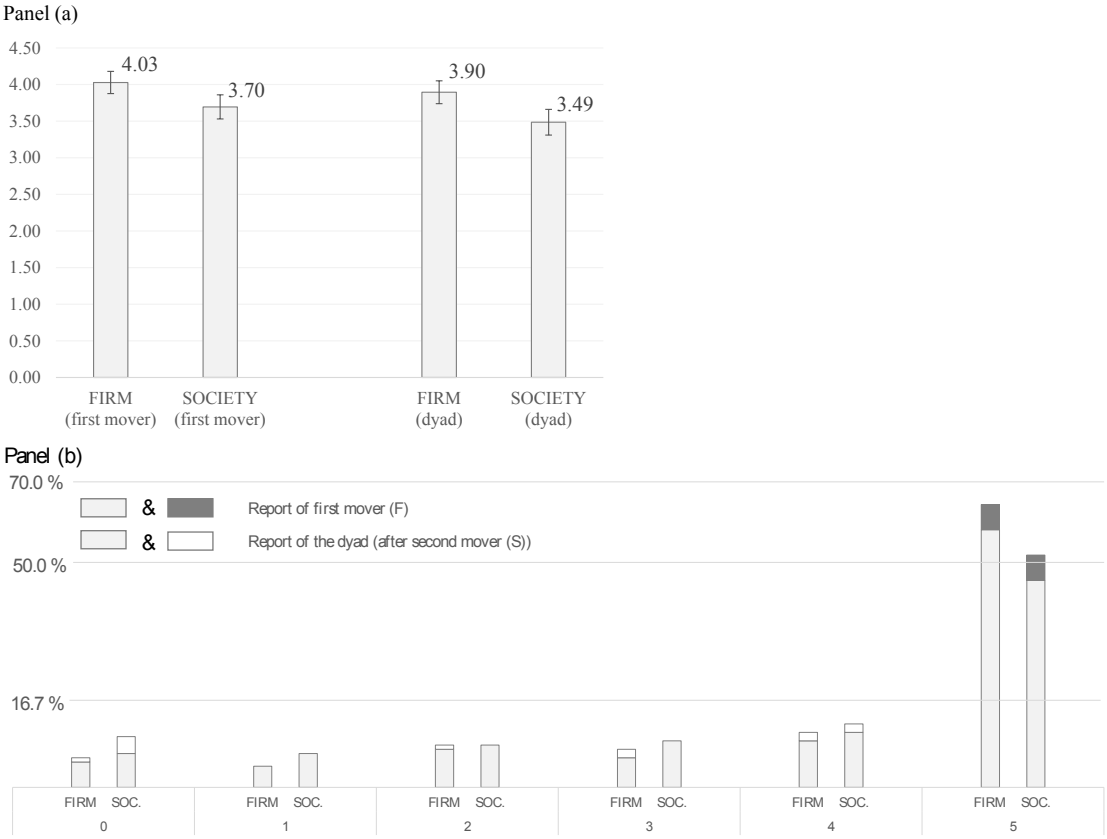

Figure 5

Panel (a): Average outcomes with standard errors reported by first mover and the dyad, Panel (b): Distribution of outcomes reported by the first mover (F) and the dyad. Black bars indicate reports of first movers who are not followed by the second mover (S). The choices of second movers in these disagreement cases are depicted as white bars. White bars together with the grey bars indicate the reports of the dyads.

4.2.1. First movers' reports In the FIRM condition, the code of conduct emphasizes similarity toward other people within the same organization, that is, the dyad's other member. The framing leads to a high degree of cheating (see Figure 5).[11] In the SOCIETY condition, the code of conduct emphasizes similarity toward one (more distant) member of society, that is, all participants in the session who bear the negative externalities from cheating. A high degree of cheating is also observed in SOCIETY (see Figure 5). However, changing the focus from the firm to society seems to reduce Fs' cheating. The average reported outcome tends to decrease from 4.03 in FIRM to 3.70 in SOCIETY (Mann-Whitney U test, one-sided, $p = 0.049$).

[11] Outcomes reported by Fs, Ss, and the dyads are significantly different from the uniform distribution of outcomes that would result from truthfully reporting (Mann-Whitney U test, one-sided, $p < 0.001$ each).

Table 6 Study 2: Outcome reported by first mover

Regression model	OLS	Ordered probit	OLS	Ordered probit
Dep. Var.	Rep. outcome	Rep. outcome	Rep. outcome	Rep. outcome
SOCIETY	-0.3333^{*}	-0.2567^{*}	-0.3825^{**}	-0.3096^{**}
	$(p = 0.069)$	$(p = 0.055)$	$(p = 0.041)$	$(p = 0.029)$
Age			-0.0435^{**}	-0.0374^{**}
			$(p = 0.041)$	$(p = 0.025)$
Male			0.4293^{**}	0.3476^{**}
			$(p = 0.029)$	$(p = 0.021)$
BusinessEcon			0.5474^{***}	0.3996^{***}
			$(p = 0.008)$	$(p = 0.008)$
Cons.	4.0286^{***}		4.6620^{***}	
	$(p = 0.001)$		$(p = 0.001)$	
Ind. obs.	210	210	210	210

All reported p-values in the table refer to one-tailed testing. $***$ $p < 0.01$ (one-sided); $**$ $p < 0.05$ (one-sided); $*$ $p < 0.10$ (one-sided).
Note our subject pool primarily employs students, implying the variation in the variable "Age" is limited. The variable "BusinessEcon" is binary and indicates a participant is enrolled in business administration, economics, or a related program.

Table 6 provides regression analyses that control for age, gender, and field of studies. The consistently negative, albeit not always significant coefficients of the variable SOCIETY indicate cheating tends to be lower under the society focus than under the firm focus. [12]

4.2.2. Second movers' reports Ss have the opportunity to correct a misreported outcome by Fs. Similar to the pattern observed in study 1, the Ss often follow the suggestion of the Fs. In FIRM, 63.8 % of the Fs reports 5 (67/105) and about 90 % of the associated Ss confirm the 5 reported by the Fs (see Figure 5). In SOCIETY, 52.4 % of the Fs report 5 (55/105) and about 90 % of the associated Ss confirm the 5 reported by the Fs. Ss tend to confirm the report of Fs in both FIRM and SOCIETY (see Figure 5).

[12] Note, p-values for SOCIETY range between 0.029 and 0.069, one-sided.

Table 7 Study 2: Outcome reported by second mover

Regression model	OLS	Ordered probit	OLS	Ordered probit
Dep. Var.	Rep. outcome	Rep. outcome	Rep. outcome	Rep. outcome
Report first mover	0.7690^{***}	0.7418^{***}	0.7730^{***}	0.7534^{***}
	$(p = 0.001)$	$(p = 0.001)$	$(p = 0.001)$	$(p = 0.001)$
SOCIETY	-0.3683	-0.2875	-0.3588	-0.2867
	$(p = 0.153)$	$(p = 0.242)$	$(p = 0.163)$	$(p = 0.246)$
SOCIETYxReport first mover	0.0608	0.0276	0.0605	0.0311
	$(p = 0.239)$	$(p = 0.398)$	$(p = 0.244)$	$(p = 0.387)$
Age			0.0235^{*}	0.0305
			$(p = 0.098)$	$(p = 0.109)$
Male			0.0915	0.1315
			$(p = 0.264)$	$(p = 0.234)$
BusinessEcon			0.0368	0.0579
			$(p = 0.398)$	$(p = 0.374)$
Cons.	0.9212^{***}		0.2900	
	$(p = 0.001)$		$(p = 0.290)$	
Ind. obs.	210	210	210	210

All reported p-values in the table refer to one-tailed testing. $***$ $p < 0.01$ (one-sided); $**$ $p < 0.05$ (one-sided); $*$ $p < 0.10$ (one-sided).
Note our subject pool primarily employs students, implying the variation in the variable "Age" is limited. The variable "BusinessEcon" is binary and indicates a participant is enrolled in business administration, economics, or a related program.

This finding is also supported by the regression analyses reported in Table 7 as the coefficients for the variable "Report first mover" turns out to be significant. We do not, however, observe a significantly different pattern of Ss' behavior with regard to firm focus and society focus, because the coefficients for the interaction variable "SOCIETYxReport first mover" turn out to be insignificant.[13] Apparently, the influence of the first movers' reports on the second movers seems to be too strong to be influenced by the treatment variation.

4.2.3. Dyads' reports The behavior of the Fs and the Ss determine the behavior of the dyads. Thus, SOCIETY also tends to decrease cheating of the dyads. The average outcome reported by the dyads decreases, from 3.90 in FIRM to 3.49 in SOCIETY (Mann-Whitney U test,

[13] The distribution of Ss' reports after observing a 5 reported by F seems not differ between FIRM and SOCIETY (Mann-Whitney U test, one-sided, $p = 0.357$).

Table 8 Study 2: Outcome reported by dyad

Regression model	OLS	Ordered probit	OLS	Ordered probit
Dep. Var.	Rep. outcome	Rep. outcome	Rep. outcome	Rep. outcome
SOCIETY	-0.4095^{**}	-0.2831^{**}	-0.4669^{**}	-0.3360^{**}
	$(p = 0.042)$	$(p = 0.035)$	$(p = 0.023)$	$(p = 0.017)$
Age			-0.0282	-0.0146
			$(p = 0.141)$	$(p = 0.199)$
Male			0.1797	0.0944
			$(p = 0.225)$	$(p = 0.281)$
BusinessEcon			0.7073^{***}	0.4990^{***}
			$(p = 0.002)$	$(p = 0.001)$
Cons.	3.8952^{***}		4.1872^{***}	
	$(p = 0.001)$		$(p = 0.001)$	
Ind. obs.	210	210	210	210

All reported p-values in the table refer to one-tailed testing. $***$ $p < 0.01$ (one-sided); $**$ $p < 0.05$ (one-sided); $*$ $p < 0.10$ (one-sided).
Note our subject pool primarily employs students, implying the variation in the variable "Age" is limited. The variable "BusinessEcon" is binary and indicates a participant is enrolled in business administration, economics, or a related program.

one-sided, $p = 0.039$). This difference is also supported by the regression analysis shown in Table 8, because the variable SOCIETY turns out to be significant in all four models.

Result SOCIETY versus FIRM FOCUS: *Less cheating tends to occur in SOCIETY than in FIRM. Results apply to both, the behavior of the first mover and the behavior of the entire dyad. The cheating behavior of the second mover does not appear to differ between SOCIETY and FIRM.*

5. Conclusion

Two experiments provide (partial) support of the hypothesis that when a sense of similarity is invoked, people's likelihood to cheat tends to vary as a function of the focal relationship in a given situation. People placed in a situation in which their relationship with another person (i.e., a collaborator within their organization) is salient, thus evoking a similarity (vs. dissimilarity) mindset, consistently tended to cheat more, even though this effect was not always statistically significant. By contrast, people placed in a situation in which their relationship with people who would suffer negative externalities from their dishonesty (i.e., people outside their organization;

society at large) is salient, thus evoking a similarity (vs. dissimilarity) mindset, tended to cheat less. Accordingly, directly evoking a society focus rather than a firm focus increases honesty in our sample. Whereas not all predicted effects were significant in the present studies, importantly, both studies provide significant support for the main hypotheses (i.e., the interaction effect in study 1 and the society effect in study 2). Thus, we conclude that similarity mindsets may indeed increase cheating in collaborative settings.

We conducted and reported one-sided statistical tests given that we had clear a priori directional hypotheses. Since the one-shot nature of our methodology necessarily limited statistical power, one-sided tests served to efficiently detect the effect of the experimental variables on our variables of interest. Nevertheless, some of the predicted effects did not turn out to be significant. While the key results from both studies turned out to be significant, providing critical support for our hypotheses, future research should extend these effects to more sensitive measures (e.g., repeated measures of dishonesty) and more conservative (e.g., two-sided) statistical analyses.

Importantly, in our experiments, we systematically vary subjects' sense of (dis)similarity toward others, not their sense of group identity (Chen and Li 2009). From a cognitive research perspective, similarity is likely to be a more primitive concept than the more complex group identity concept. Given that people may be motivated to help in-group members (Halevy et al. 2008), and in some extreme cases even hurt out-group members (Weisel and Böhm 2015), we intentionally avoid evoking such affiliation. Instead, evoking a mindset of similarity allows us to single out the mechanism nudging people to engage in ethical behavior, when they consider the impact of their behavior on society at large. The results are thus relevant and applicable to a diverse set of contexts, namely, all cases in which organizations make salient how similar employees are or should be to one another.

One clear application of the obtained results is to the creation (and adaptation) of organizational codes of ethical conduct. As we mention in the introduction, firms often highlight within-firm similarities which, in light of our findings, appears to be an ineffective (and an even potentially ethically detrimental) approach. By contrast, organizations seeking to boost ethical behavior should adopt one or both of the following strategies: (i) *an outward-looking approach*, highlighting how similar own employees are to members of fellow organizations, stake holders, clients, and members of society at large; and/or (ii) *an inward-looking approach*, highlighting within-organization diversity and richness of views.

The lying environment we study reveals people do not seem to attempt to disguise their lies (i.e., in our studies, only the highest pay outcome turns out to be reported greater than chance). The pattern is rather unique (see Abeler et al. (2019) for a meta-study; see also Aimone

et al. (2020) for a rare study in which few subjects try to disguise their lies). Our predictions focus on the between-treatment differences, and we had no ex-ante predictions about whether participants would disguise their lies. That said, we consider three possible, mutually non-exclusive explanations for the lack of lies in disguise (Fischbacher and Föllmi-Heusi 2013).

First, people may feel observed by the other member of the dyad when lying, and thus if they choose to lie, they lie all the way. We render this possibility rather unlikely, given that the pattern emerges also in our individual setting in which people are not observed.

Second, participants may lie to the maximal extent possible due to a diffusion of responsibility between themselves and the other participant. This pattern would be in line with findings by Dana et al. (2007), who compared a baseline dictator-game treatment to a setting in which two dictators had to choose the outcome distribution. The two dictators were much more likely to choose the unfair option, due to a diffusion of responsibility. Where possible, we again determine this mechanism is not very likely to be driving participants' tendency to lie to the maximum extent, because they also did so when diffusion of responsibility was not possible, namely, in the individual setting.

Third, people's lies pose a negative externality on other participants, which is not always the case in existing research. To assess how likely this explanation is, we re-analyzed the data in the Abeler et al. (2019) meta-study. Results suggest that when externalities are imposed, people are more, not less, likely to use partial lies. In our treatments, however, the externality is implemented in a novel way compared with past research; namely, we use (i) *more than one sufferer*: own additional gains from lying are borne by more than one other party in our experiments, and (ii) *reciprocal suffering*: those who suffer from externalities created by them or their dyad in turn can lie, such that they (and others) suffer from their externalities. In our case, the payoff of 10 individuals (dyads) is reduced by only 1/10 of the additional gain that the lying individual (each member of the dyad) receives from lying. Given that past research implemented the externality in a dictator-game style (i.e., one's lie affects one other person), the settings are not perfectly comparable. Arguably, internalizing the monetary costs of lying adds additional costs compared to standard lying experiments, or at least makes the monetary consequences of lying imposed on third parties more salient than in studies in which only the experimenter's budget is harmed. If the monetary costs from lying are more salient in the externality studies, costs that subjects impose on each other through lying may be evaluated more carefully. Thus, the decision between no, disguised, or complete lying might be evaluated differently. One might conjecture the additional costs of lying or the more pronounced saliency of monetary consequences lead to a tendency to disguise lies more often in one-on-one settings due to the dictator-like characteristics where claiming the maximum amount is, for example, not the norm. In our one-on-many setting,

however, the additional costs of lying or the more pronounced saliency of monetary consequences might lead to the decision to not even disguise lies. In addition, the reciprocal nature of the externality imposition in our setting might shift expectations about the norm of lying; that is, "I lie to the full extent because I expect to suffer from lies by others." These externality explanations are the first ones that came to mind. Ex post, we believe our results are somehow related to the fact that we have 10 individuals (dyads) and each participant is reciprocally hurt only a little bit from lying, whereas in other studies, only one participant is non-reciprocally hurt (by a greater amount than in our studies, both in absolute terms and percentages). We conclude that future work should assess the robustness of the tendency to lie to the maximum rather than to a partial extent in the die-in-the-box paradigm, and if robust, explore the mechanisms underlying it.

The results obtained here open up multiple important questions that still need to be tackled. One clear avenue for future work is to use archival data documenting organizational ethical codes of conduct and categorize them according to the similarity/dissimilarity and inward-/outward-looking dimensions we proposed. By looking at various success indicators as well as indicators for (un)ethical conduct, validating whether the results reported here hold also in companies implementing a variety of codes of conduct would be useful. A second avenue to investigate is whether employees in organizations with codes of conduct that could be mapped based on the dimensions highlighted here indeed report noticing ethical (mis)conduct in the direction we report. Corresponding estimates would be valuable because they would enable further refinement of the recommendations made here as to how an effective code of conduct should look.

Seeking to increase ethical conduct is a timely challenge to organizations, large and small. Gaining a better understanding of the effectiveness of commonly adopted approaches aimed at boosting ethical conduct is essential, especially when some approaches may backfire and lead to more, rather than less, ethical misconduct, as our results suggest. Our results highlight that carefully structuring and subtly focusing employees on their relationships with others, and the extent to which they are similar to (dissimilar from) those others, seems to go a long way in shaping their ethical conduct. Using codes of conduct to nudge employees to behave ethically appears to be possible. But such an approach requires understanding the cognitive processes underlying employees' behavior. Our results highlight a relationship focus and similarity as key processes to consider. As a result, crafting effective codes of ethical conduct promises to be more possible now than before.

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6. Appendix: Experimental Instructions (translated)

6.1. Study 1, General (all subjects)

Welcome to the experiment, thank you for your participation!

The experiment consists of two different parts. Please work on both tasks carefully. You will receive 2.50 euros for your participation. You will find the instructions of part 1 on the computer screen in front of you. After you have finished part 1, you will receive further instructions for part 2 on paper and on the screen. Please also read these instructions carefully. You can earn additional money in part 2. Neither other participants nor the experimenters will learn how much money you have earned. Hence, you will receive the amount of money that you have earned in a sealed envelope at the end of the experiment. You will be informed about the end of the experiment. Then, please go immediately to WISO-Modulbau, seminar room 1. There you will receive, in exchange for your payment code, an envelope with your payment. The person that will hand over the envelope does not know the experiment.
Your decisions are anonymous. You and the other participants will not know with whom they have played.

Please ask any question before you confirm the instructions of part 2 on the computer. The experimenters will leave the laboratory after all participants have confirmed the instructions of part 2 on the computer with the "Next" button. The experimenters will enter the laboratory only after the end of the experiment, and will then ask you to collect your payment.

Please note:
To guarantee the independence of the decisions, communication between the participants is not allowed during the entire experiment. If you have questions, please raise your hand. Your question will then be immediately answered at your station. Please ask any question early on because after the experimenters have left the laboratory, you will not be able to ask any more questions.

You will receive further instructions soon on the computer screen.

6.2. Study 1, Part 1: SIM

Please have a close look at the two pictures below. Try to determine in what ways the two pictures resemble each other and write down as many similarities as possible in the text boxes provided. In doing so, it is important that you compare the pictures as accurately as possible and that you name as many similarities as possible. Please take a few minutes for this comparison.

You will find the remaining processing time in seconds in the upper-right corner. After five minutes, you will be transferred to the next screen automatically.
Please type in every *similarity* in a separate text box and confirm your input by clicking on the "send" button before the processing time expires. Otherwise, your data cannot be used properly.

What similarities between the two pictures were you able to find?

Figure 6 Pictures shown on the computer screen.

6.3. Study 1, Part 1: DIS

Please have a close look at the two pictures below. Try to determine in what ways the two pictures differ from each other and write down as many differences as possible in the text boxes provided. In doing so, it is important that you compare the pictures as accurately as possible and that you name as many differences as possible. Please take a few minutes for this comparison.

You will find the remaining processing time in seconds in the upper-right corner. After five minutes, you will be transferred to the next screen automatically.
Please type in every difference in a separate text box and confirm your input by clicking on the "send" button before the processing time expires. Otherwise, your data cannot be used properly.

What differences between the two pictures were you able to find?

Figure 7 **Pictures shown on the computer screen.**

6.4. Study 1, Part 2: IND (role F)

10 persons take part in this experiment in total.

You will receive a **flat payment** of **4.50 euros** for part 2. You can earn additional money, dependent on your decisions and dependent on the decisions of the other participants. The potential choices are described in the following.

You will be asked to go **to another seat** that is randomly assigned to you. The number of this cubicle is shown on your screen for that purpose. Please **take** the card of the cubicle where you are currently sitting and the **key with you**. Communication is still not allowed on your way to and in the assigned cubicle.

You will find a box made of acrylic glass and a six-sided die next to the box in the cubicle to which you will go soon (see figures with an example).

Please sit down on the assigned seat and **roll the die twice on the table** in front of you to test the die. Afterwards, please remove the cover from the box.

Then, **roll the die** so that the die touches down **in the box**, please. Throw the die through the hole in the box and **remember** the **outcome of this cast**, i.e., the number on the upper side of the die.

After you have remembered the outcome of the die, open the box with the key. Please **remove the die**, lock the box, and take the die and and the key. Then, please cover the box with the sheet again. At the end of the experiment, you will return the die and key. Nobody - except for you - will learn the outcome of your die.

Afterwards, please **go back to your seat** where you are currently sitting according to your card of cubicle and take the die and the key with you. **Type in** the number **rolled in the box** at this computer **here**.

You will receive a **direct payment**, according to the table listed at the bottom of this page. In addition to that, an amount of money is subtracted from every participant of the experiment (this includes you), according to the table listed at the bottom.

Besides you, there are **nine other participants**. **Payment** for each of these participants is calculated **analogous** to your payment, i.e., on the basis of the reported number. Potential deductions for all participants are also computed as in your case.

Your payment (for part 2) = 4.50 euros + Direct payment - Deductions

Please ask any question before you confirm the instructions by clicking on the "next" button on the screen. The experimenters will leave the laboratory after all participants have confirmed. The experimenters will return to the laboratory only at the end of the experiment, and they will ask you to collect your payment. Please **take** your **payment code**, the **die**, and the **key** with you. Otherwise, you cannot receive your envelope with your payment. However, please leave the card of your cubicle in your cubicle at the end of the experiment.

Overview of the payments

	1	**2**	**3**	**4**	**5**	**6**
Your direct payment	**1.00 Euro**	**2.00 Euro**	**3.00 Euro**	**4.00 Euro**	**5.00 Euro**	**0.00 Euro**
Deduction for every participant	0.10 Euro	0.20 Euro	0.30 Euro	0.40 Euro	0.50 Euro	0.00 Euro

6.5. Study 1, Part 2: DYAD (role F)

All participants of the experiment are randomly assigned to one of two roles: Role A and role B. **Role A** is assigned to you, and you will be matched with another participant with role B ("participant B" in the following). Participant B and you form a **group**.
20 persons take part in this experiment in total. Hence, besides your group, there are nine other groups, each with one participant A and one participant B.

Part 2 of the experiment consists of two steps. You will receive a **flat payment** of **4.50 euros** for part 2. You can earn additional money, dependent on your decisions and dependent on the decisions of the other participants. The potential choices are described in the following.

Step 1

You will be asked to go **to another seat** that is randomly assigned to you. The number of this cubicle is shown on your screen for that purpose. Please take with you the card of the cubicle where you are currently sitting. Communication is still not allowed on your way to and in the assigned cubicle.

You will find a box made of acrylic glass and a six-sided die next to the box in the cubicle to which you will go soon (see figures with an example).

Please sit down on the assigned seat and **roll the die twice on the table** in front of you to test the die. Afterwards, please remove the cover from the box.

Then, **roll the die** so that the die touches down **in the box**, please. Throw the die through the hole in the box and **remember** the **outcome of this cast**, i.e., the number on the upper side of the die. Then, please cover the box with the sheet again.

Afterwards, please **go back to your seat** where you are currently sitting according to your card of cubicle. **Type in** the number **rolled in the box** at this computer **here** to transfer this number anonymously to participant B.

Step 2

Participant B's computer shows your input to participant B. This participant will then go to the cubicle where you rolled the die and will be asked to verify the outcome of the die in the box.

Participant B has the key for the locked box. After participant B has checked the outcome of your die, participant B opens the box and removes the die. This participant B returns the die and the key at the end of the experiment. Nobody - except for participant B and you - will learn the outcome of your die.

Participant B will be asked to also **type in** the **outcome** of the die on the computer, after checking your die.
If **participant B confirms** your input, you and this participant B will receive a **direct payment** each, according to the table listed at the bottom of this page. In addition to that, an amount of money is subtracted from every participant of the experiment (this includes you and the participant B that is assigned to you), according to the table listed at the bottom.

However, **participant B** is also able to **contradict** the number you have reported, by reporting a number different from yours. In this case, the **number** that yields the **lower payment** is **utilized**. For example, when you type in number 2 and participant B types in number 4, number 2 applies. In this case, participant B and you receive 2.00 euros each. In addition, 0.20 euros are subtracted from each participant's payment, so from all 20 participants.

Overview of the payments

	1	**2**	**3**	**4**	**5**	**6**
Your direct payment	**1.00 Euro**	**2.00 Euro**	**3.00 Euro**	**4.00 Euro**	**5.00 Euro**	**0.00 Euro**
Direct payment to participant B	1.00 Euro	2.00 Euro	3.00 Euro	4.00 Euro	5.00 Euro	0.00 Euro
Deduction for every participant	0.10 Euro	0.20 Euro	0.30 Euro	0.40 Euro	0.50 Euro	0.00 Euro

Besides your group, there are **nine other groups** with one participant A and one participant B. **Payment** in each of these groups is calculated **analogous** to your group , i.e., on the basis of the reported number of participant As and participant Bs. Potential deductions for all participants are also computed as in your group.

Your payment (for part 2) = 4.50 euros + Direct payment - Deductions

Please ask any question before you confirm the instructions by clicking on the "next" button on the screen. The experimenters will leave the laboratory after all participants have confirmed. The experimenters will return to the laboratory only at the end of the experiment, and they will ask you to collect your payment. Please **take** your **payment code** with you. Otherwise, you cannot receive your envelope with your payment. However, please leave the card of your cubicle in your cubicle at the end of the experiment.

6.6. Study 1, Part 2: DYAD (role S)

All participants of the experiment are randomly assigned to one of two roles: Role A and role B. **Role B** is assigned to you, and you will be matched with another participant with role A ("participant A" in the following). Participant A and you form a **group**.
20 persons take part in this experiment in total. Hence, besides your group, there are nine other groups, each with one participant A and one participant B.

Part 2 of the experiment consists of two steps. You will receive a **flat payment** of **4.50 euros** for part 2. You can earn additional money, dependent on your decisions and dependent on the decisions of the other participants. The potential choices are described in the following.

Step 1

Participant A will be asked via computer to go **to another seat** that is randomly assigned to participant A.

Participant A will find a box made of acrylic glass and a six-sided die next to the box in the cubicle to which participant A will go soon (see figures with an example).

Participant A rolls the die three times in total, first twice on the table in front of participant A. Afterwards, **participant A rolls the die** once so that it touches down **in the box**. Participant A throws the die through the hole in the box. It not possible to manipulate the outcome, because the box is locked.

Then, participant A covers the box and goes **back to participant A's original seat**. Participant A will be asked to **type in** the number **rolled in the box** at this computer **here** to transfer this number anonymously to you.

Step 2

The number reported by participant A appears on your screen. Please **remember this number**. Then, please go to the cubicle where participant a rolled the die. The number of this cubicle is shown on your screen for that purpose. Please take with you the card of the cubicle where you are currently sitting and the key. Communication is still not allowed on your way to and in the assigned cubicle.

Please sit down on the assigned seat and remove the cover from the box. **Check the outcome** of the die **in the box**. **Remember** the **outcome of this cast**, i.e., the number on the upper

side of the die.

After you have remembered the outcome of the die, open the box with the key. Please **remove the die**, lock the box, and take the die and the key. Then, please cover the box with the sheet again. At the end of the experiment, you will return the die and key. Nobody - except for participant A and you - will learn the outcome of your die.

Afterwards, please **go back to your seat** where you are currently sitting according to your card of cubicle and take the die and the key with you. **Type in** the number **rolled in the box** at this computer **here**.

If **you confirm** participant A's input, you and this participant A will receive a **direct payment** each, according to the table listed at the bottom of this page. In addition to that, an amount of money is subtracted from every participant of the experiment (this also includes you and the participant A that is assigned to you), according to the table listed at the bottom.

However, **you** are also able to **contradict** the number participant A has reported, by reporting a number different from that. In this case, the **number** that yields the **lower payment** is **utilized**. For example, when you type in number 2 and participant A types in number 4, number 2 applies. In this case, participant A and you receive 2.00 euros each. In addition, 0.20 euros are subtracted from each participant's payment, so from all of the 20 participants.

Overview of the payments

	1	**2**	**3**	**4**	**5**	**6**
Your direct payment	**1.00 Euro**	**2.00 Euro**	**3.00 Euro**	**4.00 Euro**	**5.00 Euro**	**0.00 Euro**
Direct payment to participant A	1.00 Euro	2.00 Euro	3.00 Euro	4.00 Euro	5.00 Euro	0.00 Euro
Deduction for every participant	0.10 Euro	0.20 Euro	0.30 Euro	0.40 Euro	0.50 Euro	0.00 Euro

Besides your group, there are **nine other groups** with one participant A and one participant B. **Payment** in each of these groups is calculated **analogous** to your group , i.e., on the basis of the reported number of participant As and participant Bs. Potential deductions for all participants are also computed as in your group.

Your payment (for part 2) = 4.50 euros + Direct payment - Deductions

Please ask any question before you confirm the instructions by clicking on the "next" button on the screen. The experimenters will leave the laboratory after all participants have confirmed. The experimenters will return to the laboratory only at the end of the experiment, and they will ask you to collect your payment. Please **take** your **payment code**, the **die**, and the **key** with you. Otherwise, you cannot receive your envelope with your payment. However, please leave the card of your cubicle in your cubicle at the end of the experiment.

6.7. Study 2, General (all subjects)

Welcome to the experiment. Thank you very much for participating!

The experiment consists of two different parts. Please work on both tasks carefully. You will receive 2.50 euros for your participation. On the next page, you will find the instructions for Part 1. After you have finished part 1, you will receive further instructions for part 2 on paper and on the screen. Please also read these instructions carefully. You can earn additional money in part 2. Hence, you will receive the amount of money that you have earned in a sealed envelope at the end of experiment. You will be informed about the end of the experiment. Then, please go immediately to WISO-Modulbau, seminar room 1. There you will receive, in exchange for your payment code, an envelope with your payment. The person that will hand over the envelope does not know the experiment.

Your decisions are anonymous. You and the other participants will not know with whom they have played.

Please ask any question before you confirm the instructions of part 2 on the computer. The experimenters will leave the laboratory after all participants have confirmed the instructions of part 2 on the computer with the "Next" button. The experimenters will enter the laboratory only after the end of the experiment, and will then ask you to collect your payment.

Please note:

To guarantee the independence of the decisions, communication between the participants is not allowed during the entire experiment. If you have questions, please raise your hand. Your question will then be immediately answered at your station. Please ask any question early on, because after the experimenters have left the laboratory, you will not be able to ask any more questions.

You will receive further instructions soon on the computer screen.

6.8. Study 2, Part 1: FIRM (role F)

All participants of the experiment are randomly assigned to one of two roles: Role A and role B. **Role A** is assigned to you, and you will be matched with another participant with role B ("participant B" in the following). Participant B and you form an **organization**.
20 persons take part in this experiment in total. Hence, besides your group, there are nine other groups, each with one participant A and one participant B.

Please picture all participants in this experiment to be persons who can be affected by the activities of your organizations, for example, as clients or as inhabitants of the city where your organization is active. However, apart from the single participant who forms an organization with you, all other participants belong to other organizations. For your organization, consisting of you and participant B, a number of principles will be applied, as is frequently the case in larger companies.

The following **principles** apply to today's entire session and are particularly central:

- It is our explicit concern to bring to our minds and to consciously direct our attention to the **similarities and the unity** of all people.
- In particular, we want to try to bring to our minds the **similarities** to that particular person **with whom we directly work and interact and with whom we are in close contact**. (This person may be a direct colleague or another employee within an organization).

In Part 1 of the experiment, we would like to ask you, based on these principles, to think about which **similarities** there may be between you **and the other person with whom you will be completing the task in Part 2** (participant B from your organization). Think about in what respect you may be **similar** to that person. Please briefly write down your thoughts on the computer screen in front of you.

6.9. Study 2, Part 1: FIRM (role S)

All participants of the experiment are randomly assigned to one of two roles: Role A and role B. **Role B** is assigned to you, and you will be matched with another participant with role A ("participant A" in the following). Participant A and you form an **organization**.
20 persons take part in this experiment in total. Hence, besides your group, there are nine other groups, each with one participant A and one participant B.

Please picture all participants in this experiments to be persons who can be affected by the activities of your organizations, for example, as clients or as inhabitants of the city where your organization is active. However, apart from the single participant who forms an organization with you, all other participants belong to other organizations. For your organization, consisting of you and participant A, a number of principles will be applied, as is frequently the case in larger companies.

The following **principles** apply to today's entire session and are particularly central:

- It is our explicit concern to bring to our minds and to consciously direct our attention to the **similarities and the unity** of all people.
- In particular, we want to try to bring to our minds the **similarities** to that particular person **with whom we directly work and interact and with whom we are in close contact**. (This person may be a direct colleague or another employee within an organization).

In Part 1 of the experiment, we would like to ask you, based on these principles, to think about which **similarities** there may be between you **and the other person with whom you will be completing the task in Part 2** (Participant A from your organization). Think about in what respect you may be **similar** to that person. Please briefly write down your thoughts on the computer screen in front of you.

6.10. Study 2, Part 1: SF (role F)

All participants of the experiment are randomly assigned to one of two roles: Role A and role B. **Role A** is assigned to you, and you will be matched with another participant with role B ("participant B" in the following). Participant B and you form an **organization**.
20 persons take part in this experiment in total. Hence, besides your group, there are nine other groups, each with one participant A and one participant B.

Please picture all participants in this experiment to be persons who can be affected by the activities of your organizations, for example, as clients or as inhabitants of the city where your organization is active. However, apart from the single participant who forms an organization with you, all other participants belong to other organizations. For your organization, consisting of you and participant B, a number of principles will be applied, as is frequently the case in larger companies.

The following **principles** apply to today's entire session and are particularly central:

- It is our explicit concern to bring to our minds and to consciously direct our attention to the **similarities and the unity** of all people.
- In particular, we want to try to bring to our minds the **similarities** to those persons **with whom we do not directly work and interact and with whom we are not in close contact**. (These may be persons who do not belong to our organization, but who may be affected by our decisions, e.g., clients or inhabitants of the city where our organization is active.)

In Part 1 of the experiment, we would like to ask you, based on these principles, to think about which **similarities** there may be between you **and one of the other persons with whom you will not be completing the task in Part 2** (a participant from another organization). Think about in what respect you may be **similar** to that person. Please briefly write down your thoughts on the computer screen in front of you.

6.11. Study 2, Part 1: SF (role S)

All participants of the experiment are randomly assigned to one of two roles: Role A and role B. **Role B** is assigned to you, and you will be matched with another participant with role A ("participant A" in the following). Participant A and you form an **organization**.
20 persons take part in this experiment in total. Hence, besides your group, there are nine other groups, each with one participant A and one participant B.

Please picture all participants in this experiment to be persons who can be affected by the activities of your organizations, for example, as clients or as inhabitants of the city where your organization is active. However, apart from the single participant who forms an organization with you, all other participants belong to other organizations. For your organization, consisting of you and participant A, a number of principles will be applied, as is frequently the case in larger companies.

The following **principles** apply to today's entire session and are particularly central:

- It is our explicit concern to bring to our minds and to consciously direct our attention to the **similarities and the unity** of all people.
- In particular, we want to try to bring to our minds the **similarities** to those persons **with whom we do not directly work and interact and with whom we are not in close contact**. (These may be persons who do not belong to our organization, but who may be affected by our decisions, e.g., clients or inhabitants of the city where our organization is active.)

In Part 1 of the experiment, we would like to ask you, based on these principles, to think about which **similarities** there may be between you **and one of the other persons with whom you will not be completing the task in Part 2** (a participant from another organization). Think about in what respect you may be **similar** to that person. Please briefly write down your thoughts on the computer screen in front of you.

6.12. Study 2, Part 2 (role F)

20 persons take part in this experiment in total. Hence, besides your group, there are nine other groups, each with one participant A and one participant B.

Part 2 of the experiment consists of two steps. You will receive a **flat payment** of **4.50 euros** for part 2. You can earn additional money, dependent on your decisions and dependent on the decisions of the other participants. The potential choices are described in the following.

Step 1

You will be asked to go **to another seat** that is randomly assigned to you. The number of this cubicle is shown on your screen for that purpose. Please take with you the card of the cubicle where you are currently sitting. Communication is still not allowed on your way to and in the assigned cubicle.

You will find a box made of acrylic glass and a six-sided die next to the box in the cubicle to which you will go soon (see figures with an example).

Please sit down on the assigned seat and **roll the die twice on the table** in front of you to test the die. Afterwards, please remove the cover from the box.

Then, **roll the die** so that the die touches down **in the box**, please. Throw the die through the hole in the box and **remember** the **outcome of this cast**, i.e., the number on the upper side of the die. Then, please cover the box with the sheet again.

Afterwards, please **go back to your seat** where you are currently sitting according to your card of cubicle. **Type in** the number **rolled in the box** at this computer **here** to transfer this number anonymously to participant B.

Step 2

Participant B's computer shows your input to participant B. This participant will then go to the cubicle where you rolled the die and will be asked to verify the outcome of the die in the box.

Participant B has the key for the locked box. After participant B checked the outcome of your die, participant B opens the box and removes the die. This participant B returns the die and the key at the end of the experiment. Nobody - except for participant B and you - will get to know

the outcome of your die.

Participant B will be asked to also **type in** the **outcome** of the die on the computer, after checking your die.
If **participant B confirms** your input, you and this participant B will receive a **direct payment** each, according to the table listed at the bottom of this page. In addition to that, an amount of money is subtracted from every participant of the experiment (this includes you and the participant B that is assigned to you), according to the table listed at the bottom.

However, **participant B** is also able to **contradict** the number you have reported by reporting a number different from yours. In this case, the **number** that yields the **lower payment** is **utilized**. For example, when you type in number 2 and participant B types in number 4, number 2 applies. In this case, participant B and you receive 2.00 euros each. In addition 0.20 euros are subtracted from each participant's payment, so from all of the 20 participants.

Overview of the payments

	1	**2**	**3**	**4**	**5**	**6**
Your direct payment	**1.00 Euro**	**2.00 Euro**	**3.00 Euro**	**4.00 Euro**	**5.00 Euro**	**0.00 Euro**
Direct payment to participant B	1.00 Euro	2.00 Euro	3.00 Euro	4.00 Euro	5.00 Euro	0.00 Euro
Deduction for every participant	0.10 Euro	0.20 Euro	0.30 Euro	0.40 Euro	0.50 Euro	0.00 Euro

Besides your group, there are **nine other groups** with one participant A and one participant B. **Payment** in each of these groups is calculated **analogous** to your group , that is, on the basis of the reported number of participant As and participant Bs. Potential deductions for all participants are also computed as in your group.

Your payment (for part 2) = 4.50 euros + Direct payment - Deductions

Please ask any question before you confirm the instructions by clicking on the "next" button on the screen. The experimenters will leave the laboratory after all participants have confirmed. The experimenters will return to the laboratory only at the end of the experiment, and they will ask you to collect your payment. Please **take** your **payment code** with you. Otherwise, you cannot receive your envelope with your payment. However, please leave the card of your cubicle in your cubicle at the end of the experiment.

6.13. Study 2, Part 2 (role S)

20 persons take part in this experiment in total. Hence, besides your group, there are nine other groups, each with one participant A and one participant B.

Part 2 of the experiment consists of two steps. You will receive a **flat payment** of **4.50 euros** for part 2. You can earn additional money, dependent on your decisions and dependent on the decisions of the other participants. The potential choices are described in the following.

Step 1

Participant A will be asked via computer to go **to another seat** that is randomly assigned to participant A.

Participant A will find a box made of acrylic glass and a six-sided die next to the box in the cubicle to which participant A will go soon (see figures with an example).

Participant A rolls the die three times in total, first twice on the table in front of participant A. Afterwards, **participant A rolls the die** once so that the die touches down **in the box**. Participant A throws the die through the hole in the box. It not possible to manipulate the outcome, because the box is locked.

Then, participant A covers the box and goes **back to participant A's original seat**. Participant A will be asked to **type in** the number **rolled in the box** at this computer **here** to transfer this number anonymously to you.

Step 2

The number reported by participant A appears on your screen. Please **remember this number**. Then, please go to the cubicle where participant a rolled the die. The number of this cubicle is shown on your screen for that purpose. Please take with you the card of the cubicle where you are currently sitting and the key. Communication is still not allowed on your way to and in the assigned cubicle.

Please sit down on the assigned seat and remove the cover from the box. **Check the outcome** of the die **in the box**. **Remember** the **outcome of this cast**, i.e., the number on the upper side of the die.

After you have remembered the outcome of the die, open the box with the key. Please **remove the die**, lock the box, and take the die and the key. Then, please cover the box with the sheet, again. At the end of the experiment, you will return the die and key. Nobody - except for participant A and you - will learn the outcome of your die.

Afterwards, please **go back to your seat** where you are currently sitting according to your card of cubicle and take the die and the key with you. **Type in** the number **rolled in the box** at this computer **here**.

If **you confirm** participant A's input, you and this participant A will receive a **direct payment** each, according to the table listed at the bottom of this page. In addition to that, an amount of money is subtracted from every participant of the experiment (this also includes you and the participant A that is assigned to you), according to the table listed at the bottom.

However, **you** are also able to **contradict** the number participant A has reported by reporting a number different from that. In this case, the **number** that yields the **lower payment** is **utilized**. For example, when you type in number 2 and participant A types in number 4, number 2 applies. In this case, participant A and you receive 2.00 euros each. In addition, 0.20 euros are subtracted from each participant's payment, so from all of the 20 participants.

Overview of the payments

	1	**2**	**3**	**4**	**5**	**6**
Your direct payment	**1.00 Euro**	**2.00 Euro**	**3.00 Euro**	**4.00 Euro**	**5.00 Euro**	**0.00 Euro**
Direct payment to participant A	1.00 Euro	2.00 Euro	3.00 Euro	4.00 Euro	5.00 Euro	0.00 Euro
Deduction for every participant	0.10 Euro	0.20 Euro	0.30 Euro	0.40 Euro	0.50 Euro	0.00 Euro

Besides your group, there are **nine other groups** with one participant A and one participant B. **Payment** in each of these groups is calculated **analogous** to your group , i.e., on the basis of the reported number of participant A and participant B. Potential deductions for all participants are also computed as in your group.

Your payment (for part 2) = 4.50 euros + Direct payment - Deductions

Please ask any question before you confirm the instructions by clicking on the "next" button on the screen. The experimenters will leave the laboratory after all participants have confirmed. The experimenters will return to the laboratory only at the end of the experiment, and they will ask you to collect your payment. Please **take** your **payment code**, the **die**, and the **key** with you. Otherwise, you cannot receive your envelope with your payment. However, please leave the card of your cubicle in your cubicle at the end of the experiment.