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EXPERIMENTAL EVIDENCE ON DECEITFUL COMMUNICATION: DOES EVERYONE HAVE A PRICE?

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Experimental Evidence on Deceitful Communication: Does Everyone Have a Price?

Radu Vranceanu* and Delphine Dubart†

Abstract

This paper introduces a new task to elicit individual aversion to deceiving, defined as the lowest payoff for which an individual agrees to switch from faithful to deceitful communication. The core task is a modified version of the Deception Game as presented in Gneezy (Am. Econ. Rev. 95 (1): 384–395: 2005). Deceitful communication brings about a constant loss for the receiver, and a range of benefits for the sender. A multiple-price-list mechanism is used to determine the sender's communication strategy contingent on the various benefits from deception. The results show that 71% of the subjects in the sender role will implement pure or threshold communication strategies. Among them, 40% appear to be process driven, being either "ethical" or "spiteful". The other 60% respond to incentives in line with the fixed cost of lying theory; they will forego faithful communication if the benefit from deceiving the other is large enough. Regression analysis shows that this reservation payoff is independent of the risk aversion and social preferences of the subject; it would thus capture an inner preference for "behaving well".

Keywords: Deception, Communication strategy, Cost of lying, Inequality aversion, Multiple price list.

JEL Classification: C91, D83.

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1 Introduction

In the last few years, both scholars and laymen became aware of the importance of earnings manipulation, fake news, and other forms of false messages in shaping economic and political outcomes. It is therefore not a surprise that experimental research on lies and deception has been expanding rapidly, backed by a solid set of theoretical studies in strategic communication. As a key insight from these empirical studies, some persons would resist the temptation to lie regardless of the benefit, and other persons would lie, but only a minority of people would push lies to the extreme (Ariely, 2012; Rosembaum et al., 2014; Aberler et al., 2016).

Leaving to philosophers the question of whether borderline communication strategies can be considered to be lies or not, economists choose to focus on "obvious lies" of the kind one may often face in economic life.¹ A first set of studies focuses on cheating: when individual benefits are related to performance on a task, and the task is private information, people can mis-report their performance to extract an undue benefit. In a classical study that aimed to replicate this context in the lab, Fischbacher and Föllmi-Heusi (2013) asked participants to roll a six-sided dice in private, and then report the resulting outcome.² Gains are proportional to the number reported, unless the number is six; reporting a six brings zero gain. While "statistical" dishonesty was observed (more than 1/6th of the participants reported a 4 or 5), many persons reported six, revealing a type of unconditional honesty.³ These cheating experiments help understanding many real life situations involving dishonest behavior; however, they are neglecting the strategic component specific to a wide category of lies, through which the sender uses dishonest communication to alter the beliefs of the receiver and prompts him into taking an action that he would not have taken otherwise.

To address the important strategic dimension of lying, Gneezy (2005) developed a "pure"

¹ Scholars in social sciences acknowledge that it can be very difficult to provide a neat definition of what a lie is (Mahon, 2015). A consensual definition was provided by Isenberg (1973, 248) who argued that "A lie is a statement made by one who does not believe it with the intention that someone else shall be led to believe it".

² The first version of their paper was published in 2008 as a working paper.

³ Several other studies use closely related reporting schemes (inter alia, Mazar et al. 2008; Pascual-Ezama, 2013; Jiang, 2013; Fischbacher, Kajackaite and Gneezy, 2017) and found similar results. Out of the experimental lab, Aberler et al. (2014) run the dice experiment on-line on a representative sample of the German population, and found little departure from the truth-telling distribution.

communication game in which an informed sender simply tells an uninformed receiver which of two options will bring him a higher payoff.⁴ The payoffs of the two players depend on the choice of option made by the receiver, who has no information about the payoff structure of the game. A tension is introduced in the exchange of information by making the lie profitable to the sender and harmful to the receiver. Three different treatments varied the benefit to the sender and the loss to the receiver. To confirm that people refrain from lying because of lying aversion and not of social preferences, the author also studied a modified dictator game with the same allocations and probability of implementation as the lies in the deception game. Table 1 summarizes the treatments (with 75 pairs each) and key results.

	Payoff option A		Payoff option B		Results	
	Sender	Receiver	Sender	Receiver	Frequency of senders lying	Dictators choosing B
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment 1	5	6	6	5	0.36	0.66
Treatment 2	5	15	6	5	0.17	0.42
Treatment 3	5	15	15	5	0.52	0.90

Table 1: Percentage of senders/dictators who recommend/chose Option B. (Payoffs in dollars.)

The results reveal that many subjects would not send false messages even though it was profitable to them; furthermore, the extent of honest communication increases with the loss imposed on the other, and decreases in the benefit of the sender (column 5). As shown in column (6), dictators chose the favorable allocation more often than senders in the Deception Game, which has been interpreted by Gneezy (2005) as proof that participants display an intrinsic aversion for lying. This aversion for lying of such "consequentialist agents" can be grounded in how individuals view and perceive themselves with respect to their own norms (Gneezy, 2005; Mazar et al., 2008; Vanberg, 2008; Aberler et al., 2014), or express guilt when not living up to their partner's expectations (Charness and Dufwemberg, 2006; Battiagli and Dufwemberg, 2007; Aberler et al.,

⁴ Ultimatum games with imperfect information also provided a relevant setting for the study of strategic lies. See for instance: Croson et al., 2003; Kriss et al., 2013; Besancenot et al., 2013; Anbarci et al., 2015; Chavanne and Ferreira, 2017.

2016).⁵

On the other hand, Hurkens and Kartick (2009) remark that similar figures could have been generated in a sample in which 50% of the subjects would never lie regardless of the benefit, and 50% who lie if they prefer the outcome of lying over the outcome of truth telling. We can check that if dictators choosing B (column 6) are randomly allocated to the "ethical" and "economic" type, we obtain a figure quite close the frequency of senders lying in the deception game (column 5).

Whether the observed distribution of liars is the outcome of a fixed lying cost distributed across individuals performing a cost-benefit analysis, or whether individuals can be separated between an "ethical" type that never lies regardless of the benefit and an "economic" type that lies whenever he/she obtains a marginal benefit from lying, is of utmost importance for developing policies to support truth telling.

To address this important question, Gibson et al. (2013) developed a framed experiment in which subjects must play the role of the CEO of a listed company and can manipulate earnings without any risk of being sanctioned. Similar to the cheating game by Fischbacher and Föllmi-Heusi (2013), the subject's payoff is related to his financial statement according to a predetermined rule. The benefit of reporting the true earnings varies from 0.30 CHF to 1.50 CHF by 0.30 cents increments. The benefit of lying is set invariant at 1.50 CHF. Therefore each subject must make five choices.⁶ If only 21% of the subjects stated the truth for a benefit of 0.30 CHF, this frequency raised to 82% for a benefit of 1.50 CHF equivalent to the benefit of truth telling. Authors interpret this outcome as a neat proof in support of the cost of lying theory by Gneezy (2005) and a rejection of the type based explanation by Hurkens and Kartik (2009). Unfortunately, we do not know "how much rationality" is involved in these averages, as the paper does not report on the individual switching strategies, nor can we say whether the results would hold in the original deception game with its important strategic dimension.

Finally, Sutter (2009) analyzed the data from Gneezy (2005) and argued that some "sophis-

⁵ Charness and Dufwemberg (2006).explain: "A guilt averse person who lies and thereby influences others' beliefs suffers from guilt when he does no live up to these beliefs."

⁶ The computer will pay him for all of them.

ticated" senders would tell the truth not because of lying aversion but because they believe that the receiver will follow the opposite recommendation. The extent of "deceitful communication" (through which the sender aims to make a benefit at the expense of the receiver) might thus be larger than the frequency of lying. Thus, his analysis makes an important distinction between unconditional lying and lying contingent upon the beliefs of the sender, as well as between intended and actual deception.

This paper aims to contribute to this debate by analyzing individual decisions in a modified Deception Game à la Gneezy (2005) (GDG hereafter), using a multiple payoff list design. This setting will allow us to elicit the reservation payoff for which an individual agrees to switch from faithful to deceitful communication; by deceitful communication we mean issuing a recommendation with negative consequences in terms of welfare for the receiver. The paper also analyzes to what extent this reservation payoff is characteristic of a fixed cost of deceiving, and whether social preferences or risk aversion, and other personal characteristics, have an influence on it.

In our experiment, senders must choose a message for each of 11 different binary allocations between an Option A_i and an Option B_i , with $i=(1..11)$. In all Options A, payoffs are invariant: 10€ for the sender and 10€ for the receiver; in Options B, the receiver's payoff is invariant at 5€; on the other hand, the sender's payoff can vary between 10€ and 20€. Like in the original GDG, senders know these allocations, while receivers have absolutely no information about the payoff structure of the game.

The key hypothesis being tested is that a person who initially uses faithful communication may change his mind and resort to deceitful communication if the benefit of doing so is large enough. If subjects switch only once, the amount that prompt a subjects to switch from faithfully to deceitful communication can be seen as a measure of his aversion to deceiving his partner. Once the senders make their 11 choices, the computer will select one of them at random and send the selected message to the receiver. This mechanism ensures that senders truthfully reveal their reservation payoff. Then, the receiver will choose between Option A and Option B, exactly as in GDG, and this option will determine the payment for both of them.

In GDG, a "successful lie" would not only bring to the sender a higher benefit, but will also

switch a disadvantageous inequality (in Option A) into an advantageous inequality for the sender (in Option B). Reverting payoff inequality could by itself provide a justification for lying. To rule out this additional incentive for lying, in our experiment Option A provides an equal payoff to both players. Thus, the only motivation for a selfish lie is obtaining a higher benefit, not reverting the payoff inequality. However, in our experiment, if the receiver follows the sender's recommendation, not only will the sender obtain a higher payoff, but he will also see the gap between his payoff and the payoff of the receiver increasing. If the sender features advantageous inequality aversion, this could contain his temptation to resort to deceitful communication. We will thus use a specific task to elicit the advantageous inequality aversion of the participants. Also the shape of the utility function (attitudes toward risk) can explain variations in the threshold where individuals shift from honest to dishonest communication. We use the self-reported risk aversion measure introduced by Dohmen et al. 2011 to elicit individual risk aversion. A regression model will be used to test to what extent the amount required by individual to forego honesty is sensible to risk aversion or inequality aversion.

In short, the results show that 71.4% of the senders will implement pure or threshold (single switch) strategies; the other participants implement multiple-switches, or switch in a way that cannot be easily rationalized. Among the first set of subjects, 9.2% are of the "spiteful" type (they strive to deceive even if they gain nothing), 30.8% are of the "ethical" type (they never deceive), and 60% will switch from faithful to deceitful communication only if they deem the benefit satisfactory. Regression analysis suggests that this aversion to deceiving is unrelated to the subjects' gender, age, risk aversion or inequality aversion, suggesting that our measure captures an inner taste for "doing good" in line with the fixed cost of lying theory (Gneezy, 2005).

As many other experiments, this one presents limitations. The inequality aversion task in Part B can be affected by an ordering effect, which we tried to contain by providing results from Part A only at the end of the experimental session. This methodological choice is motivated by our focus on the deception task. We did not measure "pure altruism", as we were afraid that adding a third task (a standard dictator choice) would make the experiment too tedious. However, the task used in Part B to elicit advantageous inequality aversion combines elements of altruism with

the preference for an equal distribution.

The paper is organized as follows. We first study the elementary decision problem of the individual in the main task of the experiment. The next section introduces the experimental design. Section 3 presents the results. The last section concludes.

2 The elementary decision problem

In this section, we study an elementary decision problem that will help us explaining the purpose of the main task in the experiment. As already mentioned, in the experiment subjects in the sender role will be exposed to a binary choice between an Option A and an Option B, with payoffs for each of the two players as indicated in Table 2.

Payoffs Option A		Payoffs Option B	
Sender	Receiver	Sender	Receiver
10	10	s	5

Table 2: A simple choice problem. (Payoffs are expressed in euros)

The payoff s can take integer values in the interval $(10, 20)$. We remark that unlike in GDG, in which the allocation with a lower payoff for the sender (Option A) also involved a higher gain for the receiver (the sender was subject to disadvantageous inequality), in this problem, Option A provides an equal payment to the two players (10€, 10€); like in GDG, Option B brings a higher gain for the sender, to the expense of the receiver whose payoff falls from 10 to 5 euros, and thus turns payoff equality into sender advantageous inequality.

For the time being let us just analyze the utility such a sender is attaching to each option. If Option A is implemented, the sender utility is simply $u(10)$. If Option B is implemented, besides the utility connected to the direct gain of the sender ($u(s)$, with $s > 10$), a sender subject to advantageous inequality aversion would bear an additional cost $C(s - 5)$, with $C' > 0$.

Now, we assume that the sender can implement the Option B, favorable to him, only through deceitful communication, i.e., stating a lie ("Option B will earn you more money") if he believes that the receiver will follow his recommendation (and vice-versa). The partner who follows the

recommendation will lose 5 euros, thus is subject to deception (although he will not know it). But, in the guilt aversion theory, the sender who is responsible for that loss of utility will bear a cost, either fixed, or proportional to the inflicted damage. In our experiment, the inflicted damage is invariant ($10-5=5$ euros), so we can consider the cost of deceiving the partner as constant; we denote it by k .

With this notations, the sender will choose deception if:

$$u(s) - C(s - 5) - k > u(10), \text{ with } s > 10 \quad (1)$$

To get additional intuition, for a risk neutral individual with $u(s) = s$ and with Fehr and Schmidt (1999) social preferences, this condition simplifies to:

$$s - \beta(s - 5) - k > 10 \quad (2)$$

expression in which $\beta < 1$ is the marginal sensibility to advantageous inequality aversion. The former condition is equivalent to $s > \hat{s}$, where the (single) critical threshold \hat{s} is defined by:

$$\hat{s}(k, \beta) = \frac{10 + k - 5\beta}{1 - \beta} \quad (3)$$

with $\hat{s} > 10$ and $\partial \hat{s}(k, \beta) / \partial k > 0$ and $\partial \hat{s}(k, \beta) / \partial \beta = (5 + k) / (1 - \beta)^2 > 0$. We can see that differences in \hat{s} from one individual to another can be related to differences in the cost of lying, or in the inequality aversion.

Furthermore, if individuals are not risk neutral (the utility function is convex for a risk loving individual and concave for the risk averse one), a trivial graphical analysis of condition (1) can show that differences in the shape of the utility function can also impact the critical threshold (with more risk averse individuals selecting a higher critical threshold s and vice-versa).

As an empirical strategy, if we observe that individuals switch at most once from Option A to Option B, and we want to make sure that differences in \hat{s} from one individual to another measure variation in the fixed cost of lying k , in a regression model with s as the dependent variable, we must control for risk aversion and sensibility to advantageous inequality aversion. The residual of this linear equation would be the cost of lying.

Finally, with risk averse individuals (a concave utility) function or with a convex inequality aversion cost, we cannot rule out that for a very large s , the individual will switch back from Option B to Option A.

3 Experimental design

3.1 Outlook of the experiment

The experiment was conducted at the ESSEC Business School (France) using students recruited from the subject pool of the ESSEC Experimental Lab.⁷ Nine sessions were organized in January and February 2018 with a total of 182 subjects. The experiment instructions and data collection were computerized; the program was developed using z-Tree (Fischbacher, 2007). Subjects were seated in boxes, and could not establish eye contact with one another. The experiment preserved the anonymity of the participants.

During a typical experimental session, all participants must execute two tasks referred to as Part A and Part B. Part A comprises the modified deception game. Part B elicits the advantageous inequality aversion through a modified dictator game. A last section includes some complementary questions on personal characteristics and attitudes. Instructions are presented in Appendix B.

The final cash payment, for all the parts, is delivered at the end of the experiment. Experimental sessions lasted 28 minutes on average; subjects received an average payment of 14.85€.

We now present the details of each task.

3.2 The aversion to deceiving task

Our key and original task is a modified version of the GDG. At the outset of the experiment, participants are matched at random in pairs and are assigned roles of sender and receiver (these role labels are used only in this presentation text; they are not explicitly stated in the instructions, which refer to "you" and "your counterpart" in a neutral way). Like in GDG, there are basically two possible payoffs for each player, and these payoffs are associated with an Option A and an Option B. Only the sender has the information about the possible payoffs; the receiver's only

⁷ Students are selected for the selective French Grande Ecole higher education track through a demanding national competitive examination. Thus this group is relatively homogenous in terms of computing and cognitive abilities, age and educational background. See Lamiraud and Vranceanu (2017).

information is a message sent by the sender, either Message 1: "Option A will earn you more money than Option B" or Message 2: "Option B will earn you more money than Option A".

Unlike in the Gneezy (2005) design, in this paper, the sender must indicate his preferred message for the 11 possible allocations displayed in Table 3, knowing that only one of the allocations will be selected at random by the computer as the "active" one. The receiver will receive the selected message for this allocation, and, depending on his choice of option, the payment of *this* allocation will be implemented at the end of the experiment.

To contain the would-be ordering effect, neither the sender nor the receiver will obtain any feedback after the task. The outcome of the decisions and the payoffs will be communicated at the end of the experimental session.

In the lab we alternate the names of the allocations (for instance, the (10€, 10€) allocation was called either A or B), and attributed them at random to the pairs of participants. However, to keep this presentation simple, we will refer to allocations that provide the low payoff to the receiver as the Option B. Regardless of the row, Option B provides 5€ to the receiver, which is less than his payoff in Option A; the payoff of the sender varies from 10€ to 20€ by one-euro increments, depending on the row. We notice that in row 1, the sender obtains the same payoff of 10€, whatever the option chosen by the counterpart; on all the other rows, the sender's payoff is higher if the receiver selects Option B.

Given that the receiver is losing money if he selects Option B, Message 1 is *true*, while Message 2 is *false*.

Following Sutter (2009), *deceitful communication* occurs when the sender sends a false message if he believes that the responder will follow his recommendation, *and* sends a true message if he believes that the responder will implement the opposite recommendation. As the receiver has no information about the structure of the payoffs (he only knows that there are two possible allocations, and probably can make a guess that payoffs are limited by the budget of the experiment), it is very difficult to make a theoretical prediction on whether he will follow the recommendation

	Option A		Option B		Message:	
#	Sender	Receiver	Sender	Receiver	1. Option A will earn you more money than Option B	2. Option B will earn you more money than Option A
1	10	10	10	5	<input type="checkbox"/>	<input type="checkbox"/>
2	10	10	11	5	<input type="checkbox"/>	<input type="checkbox"/>
3	10	10	12	5	<input type="checkbox"/>	<input type="checkbox"/>
4	10	10	13	5	<input type="checkbox"/>	<input type="checkbox"/>
5	10	10	14	5	<input type="checkbox"/>	<input type="checkbox"/>
6	10	10	15	5	<input type="checkbox"/>	<input type="checkbox"/>
7	10	10	16	5	<input type="checkbox"/>	<input type="checkbox"/>
8	10	10	17	5	<input type="checkbox"/>	<input type="checkbox"/>
9	10	10	18	5	<input type="checkbox"/>	<input type="checkbox"/>
10	10	10	19	5	<input type="checkbox"/>	<input type="checkbox"/>
11	10	10	20	5	<input type="checkbox"/>	<input type="checkbox"/>

Table 3: The aversion to deception task. Payoffs are expressed in euros.

of the sender or not.⁸ Former experiments with the GDG found that, on average, approximately 75% of the receivers will follow the sender's recommendation (Gneezy, 2005; Dreber and Johannesson, 2008; Sutter, 2009). In our experiment, 77% of the responders followed the recommendation of the sender.

As there is no theoretical prediction about the behavior of the receiver, we preferred to directly ask the sender what were his/her beliefs with respect to the receiver's decision on whether he/she will follow his/her recommendation. To the question "Do you think the counterpart will follow your recommendation", senders can answer: "will follow my recommendation", "I can't make a guess"; or "will follow the opposite". Similar to Sutter (2009) and Hurkens and Kartick (2009), the answer to this question was not cash incentivized. The question was asked (immediately) after the execution of the price-list task and not before the task, because we did not want to raise the awareness of the subjects about the importance of this question. This should also allow for the comparability of our results with those in the experiment by Gneezy (2005), which did not raised this question. However, it is possible that subjects made less effort in answering this question, and some of the answers might not reflect their expectations at the very moment of the decision.

If the sender believes that the receiver will follow his recommendation and switch from message 1 (A is better for you) to message 2 (B is better for you) at most once, the number of times the

⁸ Sanchez-Pages and Vorsatz (2007) show that if subjects assume that objectives of the two players are opposite, the Nash equilibrium strategy for both players is to randomize between telling the truth or lying, and respectively following the recommendation or not.

individual chooses the message 1 (starting with row 1) is a plausible measure of the aversion to deceiving the other. On the other hand, if the sender believes that the receiver will implement the opposite recommendation (sophisticated agents), then lying aims to protect the interest of the receiver (no intended deception). In this special case, the right measure of aversion to deceiving is the number of B choices.

In the following, we calculate an *index of aversion to deceiving the other* as the number of messages 1 (A is better for you) divided by 11, for subjects that stated that they believe receivers will follow their recommendation, or cannot guess what receivers will do. For subjects who declared that the receiver will follow the opposite recommendation, the index of aversion to deceiving is the number of B choices divided by 11. An index of 1 indicates a maximum aversion to deceiving.

It is important to note that the design of the experiment has imposed a maximum benefit of 10€ for a sender who succeeds in deceiving the receiver. However, if a benevolent individual foregoes a net gain of 10€ and resorts to faithful communication, we cannot be sure whether he would have maintained his choice for a larger gain. Thus, the reserve payoff for which the individual switches to faithful to deceitful communication might be (or not) a truncated variable (with an upper bound at 10€, or 1 for the index).

In our setting, the sender would resort to deceitful communication to get a payoff s equal or larger than 10€, i.e. his benefit from benevolent communication. If the deceitful strategy succeeds, the receiver obtains 5€ instead of 10€. Thus not only does the sender makes a profit, but the initial payoff equality between the sender and the receiver (10€, 10€) will turn into a sender advantageous inequality ($s; 5€$). If senders are averse to advantageous inequality, this effect might offset the direct benefit of deceiving the other and might create an incentive to avoid it. We thus cannot rule out that for a very large payoff, some individuals with strong inequality aversion will turn back to faithful communication (entailing multiple switches). It is therefore important to gauge the distributional preferences of the participants, which is what our second task does.

3.3 Distributional preferences

Several scholars used variants of the modified dictator game (Kahneman et al., 1986), to elicit subjects' aversion to favorable inequality (Kerchbamer, 2015; Blanco et al., 2011; Balafoutas et al., 2012; He and Villeval, 2017). In the standard dictator game, an active player (the dictator) is paired at random with a passive player and is given the choice of how to share a received endowment with him, knowing that the passive player receives nothing.⁹ In the modified dictator game, the dictator must make binary choices among various payoff distributions. In particular, he is offered the possibility to sacrifice some of his higher payoff in an inequalitarian distribution, to the benefit of an equal distribution with a lower payoff for himself.

In Part B of the experiment, we measured the inequality aversion of all participants. All subjects were (re)matched in pairs at random without being informed about their role. All participants were required to execute the task as a dictator. At the end of the experiment, the computer chose at random the attribution of roles (dictator, passive), and assigned the related payoffs.

Each subject was exposed to a series of twenty-one binary choices, between the (10€, 0€) inequalitarian distribution (LEFT), and a (z, z) equalitarian distribution (RIGHT), where z varies from 0€ (in row one) to 10€ (last row) by 0.50€ increments (see Table 4). He and Villeval (2017) constrained participants to switch only once, making the implicit assumption that a dictator who prefers the equal distribution (z, z) to the unequal distribution (10€; 0€) will also prefer all allocations (z', z') that provide $z' > z$ to the same unequal distribution (10€; 0€). We will make the same assumption; however, instead of using a multiple choice list with a compulsory single switch, which requires relatively complex instructions, we use a slider task with identical properties that is easier to implement and simpler to explain.

Initially, the slider is set in the middle of the table; such an individual prefers (10€, 0€) to all equalitarian distributions that provide to players in a pair less than a cumulated 10€, but would prefer the egalitarian distribution (5.5€; 5.5€) and all those above it to the inequalitarian one. By moving the slider UP, fewer LEFT choices and more RIGHT choices are selected, showing that

⁹ Korenok et al. (2012) analyze situations where the passive player also receives a (smaller) endowment.

the individual is more averse to advantageous inequality. The opposite happens when the slider is moved down; the individual reveals that he is less inequality averse, and his personal gain is more important to him than the implementation of the equal distributions.

At the bottom of the table, the slider allows a person to select the (10€, 0€) distribution against the (10€, 10€) distribution. This choice is hard to justify on moral grounds but might be observed in special cases. On the other hand, if the slider is set at the top of the table, this extremely egalitarian person signals that he would prefer (0€, 0€) rather than (10€, 0€).

	LEFT		Your choice:		RIGHT	
#	Your payoff	Counterpart's payoff	LEFT	RIGHT	Your payoff	Counterpart's payoff
1	10	0	■	<input type="checkbox"/>	0	0
2	10	0	■	<input type="checkbox"/>	0.50	0.50
3	10	0	■	<input type="checkbox"/>	1	1
4	10	0	■	<input type="checkbox"/>	1.50	1.50
5	10	0	■	<input type="checkbox"/>	2	2
6	10	0	■	<input type="checkbox"/>	2.50	2.50
7	10	0	■	<input type="checkbox"/>	3	3
8	10	0	■	<input type="checkbox"/>	3.50	3.50
9	10	0	■	<input type="checkbox"/>	4	4
10	10	0	■	<input type="checkbox"/>	4.50	4.50
11	10	0	■	<input type="checkbox"/>	5	5
12	10	0	<input type="checkbox"/>	■	5.50	5.50
13	10	0	<input type="checkbox"/>	■	6	6
14	10	0	<input type="checkbox"/>	■	6.50	6.50
15	10	0	<input type="checkbox"/>	■	7	7
16	10	0	<input type="checkbox"/>	■	7.50	7.50
17	10	0	<input type="checkbox"/>	■	8	8
18	10	0	<input type="checkbox"/>	■	8.50	8.50
19	10	0	<input type="checkbox"/>	■	9	9
20	10	0	<input type="checkbox"/>	■	9.50	9.50
21	10	0	<input type="checkbox"/>	■	10	10

Table 4: The advantageous inequality aversion slider task. Payoffs are expressed in euros.

As already mentioned, at the end of the experiment, the computer assigned the roles (dictator or passive player) at random. One row was randomly chosen for payment, and the payment reflected the decision of the dictator.

Depending on the choices, individuals can be assigned to one of the four categories:

- *Egalitarian inefficient* (or strongly egalitarian) individuals will switch to the equal outcome

on rows 1 to 10. In these rows, the dictator prefers an equal distribution (z, z) to $(10\text{€}, 0\text{€})$ although $2z < 10$.

- *Egalitarian efficient* subjects will switch to the equal outcome on rows 11 to 20. On row 11, the amount to be split between the two is equal to the payoff of the dictator in the unequal distribution ($2z = 10$); it is larger ($2z > 10$) on row 12 and beyond.
- *Selfish benevolent* subjects prefer $(10\text{€}, 0\text{€})$ to earning less than 10€ in any equalitarian distribution, but will switch to $(10\text{€}, 10\text{€})$ on row 21.
- *Selfish spiteful* people will select $(10\text{€}, 0\text{€})$ all of the time, including on row 21 where he has the choice of $(10\text{€}, 10\text{€})$.

The number of RIGHT choices is thus a good measure of inequality aversion. We can further obtain an index of inequality aversion by dividing the number of RIGHT choices by 21; in this case, the highest advantageous inequality aversion is 1. At the opposite bound, an index of 0 is characteristic of the selfish spiteful person.

3.4 Attitudes

In the last part of the experiment, participants were asked a series of unincentivized questions.

As we showed in Section 1, differences in the threshold s in the modified GDG can also originate in differences in risk aversion. To elicit this personal characteristic, we used the self-reported measure introduced by Dohmen et al. (2011):

Thinking of yourself, do you think you are fully prepared to take risks? 1 not at all, ..., 5 very much;

Answers were converted into a (0;1) tolerance for risk index (tr). We then transform it into a *risk aversion measure* by inverting the scale ($ra = 1 - tr$).

We also seek to find a set of attitudinal variables directly related to the unobservable lying cost. This is of course a difficult task. We assumed that individuals who assign an important role to the group and to its shared beliefs might be less prone to deceive their unknown, anonymous partner. If this assumption is true, trust and religiosity can be correlated to the hidden cost of

deceiving the other. Indeed, several studies have noted the positive correlation between aversion to deception/lying and trust (Bok, 1978; Butler et al., 2016; Gawn and Innes, 2018). Some other scholars argued that religiosity/spirituality and genuine prosocial behavior are positively related (inter alia., Conroy and Emerson, 2004; Ariely, 2012; Saroglu et al., 2005).¹⁰ Therefore, in this "attitude survey" part we also asked subjects:

Are you a religious person? 1 not at all, ..., 5 very much;

In general, do you trust other people? 1 not at all, ..., 5 very much;

In general, do you trust the government? 1 not at all, ..., 5 very much.

We convert all answers into (0;1) indexes.

Finally, subjects also had to report their gender, age and admission track (arts and letters, science, economics, other).

4 Results

Appendix A presents the descriptive statistics of the sample.

4.1 Deceitful communication

As already mentioned, whether a false message is intended to deceive the receiver depends on the sender's beliefs about the response of the receiver. In this context, if the sender believes that the responder will follow his advice, message 1 (truth) is faithful and message 2 (lie) is deceitful. The opposite holds if the sender is "sophisticated" and has opposite beliefs about the receiver's response.

Table 5 reports the different communication strategies, depending on the beliefs of the sender. The second column indicates the distribution of the senders depending on their answers to the question: *Do you believe the counterpart will follow your recommendation?* For each category of beliefs, columns 3 to 7 indicate the communication strategies.

*) Those 3 players want to avoid the receiver's deception by telling a lie. ** They would deceive all the time.

¹⁰ Other scholars present a more skeptical view (see for instance Spilka et al., 2003).

Answer:	Nb.	all times "message 1"	all times "message 2"	single switches	others
Yes	49	14	4	27 (switch to lying)	3 multiple switches 1 switch to truth
I don't know	18	3	0	9 (switch to lying)	6 multiple switches
Follow opposite	24	2**	3*	3 (switch to truth)	6 multiple switches <i>10 switch to lying***</i>

Table 5: A summary of communication strategies

Out of the 91 senders:

♦ 49 subjects (53,8%) stated that they believed their recommendation would be followed by the receiver. Only 3 of them switched several times (this could be justified for instance by significant inequality aversion), and one switched from lying to truth-telling (which is harder to justify).

♦ 18 subjects (19,8%) stated that they can make no inference about the response of the receiver. However, 12 of them implemented a strategy in line with beliefs consistent with the assumption that the other will follow the recommendation (switch from truth to lies for a positive gain). On the other hand, 6 of them "randomized" (multiple switches), which is consistent with the assumption that the other will also randomize (playing Nash mixed-strategies might be an equilibrium of this game), regardless on whether the sender is faithful or not.

♦ 24 subjects (26,4%) reported that they expected the receiver to implement the opposite recommendation. For this category, the lie (message 2) aims to avoid the receiver's deception, thus corresponds to faithful communication. Out of the 24, *10 subjects behaved as if they believe that the receivers will follow their recommendation*, since they switch to lying for a positive gain. As their behavior is inconsistent, we will exclude them from the main analysis. However, as a robustness check, we will also perform a regression analysis including these subjects, making the assumption that they made a mistake when reporting their beliefs.

If we exclude all those who switched several times, and those who switched in a "wrong" direction, for a total of 26 (3+1+6+6+10), we remain with 65 out of 91 proposers (71,4%) who behave in a consistent way (they either never deceive the receiver, or would deceive him provided that the benefit of deception is large enough, or always deceive). In Appendix 1, we present the personal characteristics of the multiple switchers; we cannot infer any specific pattern; in

particular, they do not present a different inequality aversion from the rest of the group.¹¹

Figure 1 summarizes the distribution of choices of these 65 subjects. The horizontal axis represents the sender's expected benefit from deceiving the partner, varying from 0€ (in row 1) to 10€ (in row 11) in Table 3. We recall that in all cases when the sender makes a zero or positive benefit, the receiver will lose 5€ (obtains 5€ instead of 10€). The vertical axis represents the cumulative distribution (numbers) of persons who seek to deceive and respectively seek to be faithful.

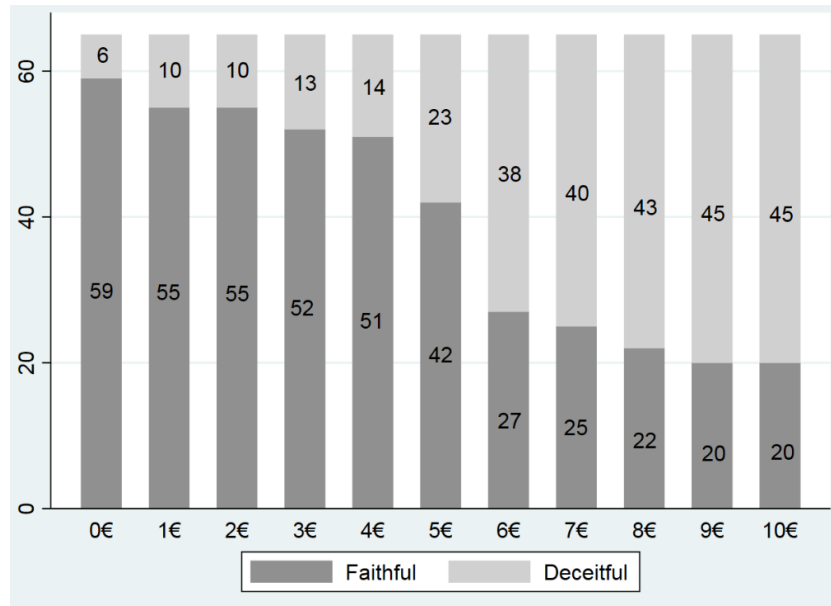


Figure 1: The distribution of senders using deceitful/fairful communication depending on the benefit of deceiving

Out of these 65 persons:

◆ Six persons (9.2%) aim to deceive their partner systematically, including if they gain nothing, as if they feature a "taste for deceiving the other". The presence of spiteful behavior has been observed in many other experimental settings (e.g., Falk et al., 2005). In the "cheating CEO" framed experiment by Gibson et al. (2013), spiteful behavior represented 18% of the reported choices.

◆ 39 subjects (60%) will switch from faithful to deceitful communication if they obtain a

¹¹ A probit model on the indicator variable Multiple switch = 1 and personal characteristics as covariates reveals no prominent determining factor.

satisfactory payoff. This reservation payoff differs from one person to another. As shown in Figure 1, four persons turned to deception for a 1-euro gain, 3 more would deceive for a 3-euro gain, and so on.

♦ 20 persons (30,8%) never resort to deceitful communication, even if the potential gain is as high as 10 euros. This frequency is not in contrast with Gneezy (2005) data, in which 48% of the senders were "honest"; they forego a gain of 10 euros while the receiver avoided a loss of 10 euros (instead of 5 euros in our experiment).

Hurkens and Kartick (2009) argued that the results in Gneezy (2005) might be the outcome of a configuration where 50% of the sender population never lie, and 50% randomize between lying or not regardless of the benefit. Our study confirms the existence of subjects who behave honestly even if their benefit from deception is as high as 10 euros (we do not know however how they would behave for a larger gain). However, 60% of the senders respond to incentives, i.e., will switch from faithful to deceitful communication if their benefit is large enough, at a constant loss (5 euros) for the receiver. The behavior of these subjects is much in line with the theory of consequence-dependent lying costs. However, we need to check whether this threshold communication strategy is not just the outcome of the sender's social preferences over the allocation of payoffs or differences in risk aversion.

4.2 What determines the aversion to deceiving?

Basic statistics

In the analysis of the decision problem we have shown that if the sender features aversion to advantageous inequality, than subjects with a higher aversion to advantageous inequality would ask a higher premium to forego deceitful communication. Table 6 represents the aversion to deceiving depending on the degree of advantageous inequality aversion (we use the categories defined in subsection 3.3). We note that at 0.69, the aversion to deceiving index for the Equalitarian Inefficient group is higher than 0.55, the average of the Equalitarian Efficient group, but the difference is not statistically significant (p-val: 0.143). The averages for the Selfish groups are not statistically relevant, as the numbers of observations is too low (3 and respectively 7 subjects).

	Equalitarian inefficient	Equalitarian efficient	Selfish benevolent	Selfish spiteful
	n=20	n=35	n=3	n=7
Av. aversion to deceiving	0.69	0.55	0.67	0.55
Standard deviation	0.23	0.36	0.58	0.37

Table 6: Distribution of the aversion to deception index with respect to inequality aversion

We also argued individuals featuring higher risk aversion could ask a larger premium to forego deceitful communication. Data in table 7 indicate little connection between risk aversion and the deception benefit (p-val: 0.63, between the average aversion to deception of the risk averse and the risk-neutral subjects; p-val: 0.13, between risk neutral and risk lovers).

	Risk averse (ctg. 1 and 2)	Risk neutral (ctg. 3)	Risk lovers (ctg. 4 and 5)
	n=23	n=22	n=20
Av. aversion to deceiving	0.58	0.53	0.69
Standard deviation	0.36	0.38	0.23

Table 7: Distribution of the aversion to deception index with respect to risk aversion

Conrads et al. (2013) point out that the existing literature on the gender effect in lying behavior has reached contrasting conclusions so far. In the specific context of the GDG, Dreber and Joahnneson (2008) and Erat and Gneezy (2012) found that women present a higher aversion to selfish lies than men. In our modified GDG, a comparison of the gender averages reveals no gender effect (male average aversion to deceiving=0.61; female average =0.59; p-val: 0.87).

Regression analysis

Regression analysis allows us to move beyond these descriptive statistics. We aim to study whether these significant differences in the aversion to deceiving the other depend on the personal characteristics of the subjects, and in particular if the aversion to deceiving index depends on Inequality aversion and risk aversion, two variables that the analysis of the decision problem (section 1) has identified as a possible source of variation in the index.

We use the *Aversion to Deceiving Index* (min=0, max=1) as the dependent variable. The main covariates are Age, Gender (Female=1), Inequality aversion, Risk aversion, Trust in people,

Trust in government and Stated religiosity. We also include two dummy variables. D_doubt takes the value of 1 if the sender reported that he cannot make a guess on whether the receiver will follow the recommendation, and 0 otherwise. D_soph takes the value of 1 if the "sophisticated" sender reports that he believes that the receiver will follow the opposite recommendation, and 0 otherwise. When these dummies are introduced in the analysis, the benchmark is the case where the sender believes that the receiver will follow his recommendation.

Table 8 presents the output of the OLS regressions (with errors clustered by sessions):

	Model 1	Model 2	Model 3	Model 4	Model 4'
	coef.	coef.	coef.	coef.	coef.
Age	0.018 (0.033)	0.020 (0.033)	0.023 (0.038)	0.030 (0.033)	0.032 (0.031)
Gender (Fe =1)	-0.017 (0.102)	-0.019 (0.104)	0.017 (0.093)	0.019 (0.085)	0.013 (0.070)
D_doubt	-0.074 (0.084)	-0.050 (0.068)	-0.044 (0.092)	-0.036 (0.090)	-0.064 (0.089)
D_soph	-0.069 (0.065)	-0.055 (0.083)	0.018 (0.054)	0.046 (0.042)	-0.103* (0.045)
Inequality aversion	0.173 (0.145)	0.125 (0.163)	0.201 (0.210)	0.198 (0.176)	0.233 (0.182)
Risk aversion	—	0.165 (0.231)	0.145 (0.222)	0.106 (0.214)	0.050 (0.203)
Trust in people	—	—	-0.226 (0.145)	-0.227 (0.151)	-0.190 (0.145)
Trust in government	—	—	0.484** (0.168)	0.416* (0.190)	0.326* (0.173)
Religiosity	—	—	—	0.310* (0.138)	0.220 (0.158)
Constant	0.151 (0.744)	0.034 (0.821)	-0.182 (0.905)	-0.403 (0.831)	-0.367 (0.811)
N	65	65	65	65	75
R2	0.01	0.04	0.15	0.21	0.18

Table 8: The determinants of the aversion to deceiving. Notes: * $p < .10$, ** $p < 0.05$

Models 1 and 2 show that although the (positive) signs of the coefficients of aversion to advantageous inequality and risk aversion are in line with that the elementary decision problem in Section 1 would suggest, they are not statistical significant.¹² These results confirm that our individual measure of aversion to deceiving is capturing an inner preference for behaving well,

¹² Age and gender are not significant either. A dummy variable for "major in economics" was not found to be significant.

tantamount to a fixed cost of deceiving specific to each individual.

In models 3 and 4, we add the trust and religiosity measures, which serve as a proxy for the fixed cost of deceiving. It can be seen that deception aversion is correlated with both trust in government and stated religiosity. In a less expected way, the trust in other people variable is not significant. Adding these three variables raises the R^2 from 0.04 to 0.21.

As a robustness check, we perform the same regression analyses including observations pertaining to the ten senders who declared that the receiver will follow the opposite advice, but switched once, in a direction as if they thought that the receiver will follow them. The results reported in Model 4' show no significant change in coefficients, except the vanishing significance of religiosity, and a significant dummy for these sophisticated subjects.

As we already mentioned, among the 65 senders who implement pure communication strategies, there are 20 individuals who forego deceitful communication even if the benefit was as high as 10 euros. If these persons were to switch to deceitful communication for a higher benefit, our aversion to deceiving index should be interpreted as a truncated variable. We thus estimate the same equations, using a Tobit model with an upper bound at 1. The results in Appendix Table 12 are similar to those in the OLS regressions.

Finally, we built a probit model, using as the dependent variable the indicator 1 if the subject never deceives, and 0 otherwise (20 observations). The purpose of this analysis is to obtain a better understanding of who these most ethical persons are. Only stated religiosity appears to be positively related to this indicator, no other personal characteristic can be related to the dummy variable.

As an upshot of all these, we can conclude that subjects in our sample of "single switchers" behave as if they have a true preference for behaving well, corroborating the assumption of a fixed cost of deceiving in Gneezy (2005).

5 Conclusion

Based on the now classical Deception Game by Gneezy (2005), this paper introduces a multiple-price-list mechanism to determine the reservation payoff that prompts a sender to forego honesty

and switch from faithful to deceitful communication. The focus on intended deception rather than on plain lies was motivated by the argument in Sutter (2009). In the experiment, succeeding in deceiving the other brings a benefit to the sender, and entails a (constant) loss for the receiver; it also turns payoff equality into sender advantageous inequality.

To the question raised in the title, "Does everyone have a price", the answer is "no". We found that only 65 out of 91 senders implement "pure" communication strategies. Among these 65 subjects, as many as 9.2% are "spiteful": they try to deceive their partner without expecting any monetary benefit. As many as 30.8% are "ethical": they would not deceive the other even if they forgo a net gain as high as 10 euros. Thus, our study corroborates the existence of process-driven subjects in the classical Deception Game by Gneezy (2005) as hypothesized by Hurkens and Kartick (2009).

However, 49 participants (60% of the 65), do have a price. They implement a threshold communication strategy, switching from faithful to deceitful communication if the net benefit from deceiving the other is large enough. This "reservation payoff" varies from one individual to another and is independent of risk aversion or aversion to payoff inequality. Furthermore, the aversion to deceiving is related to and stated religiosity and trust in the government, which can be seen as a proxy for this fixed cost. These results corroborate the assumption of a individual specific fixed cost of deception, as advocated by Gneezy (2005). This majority of senders respond to incentives; they communicate faithfully if the benefit from deceiving the other is low enough, and switch to deceitful communication if the benefit is large enough.

Despite its limitations, the experiment contributes to the research on lying and deception by introducing a new method to elicit individual deception aversion. Such a measure could be useful for future research, such as in understanding how deception aversion correlates to observed behavior in framed experiments involving strategic communication and negotiation.

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6 Appendix A. Additional descriptive statistics and Tobit regressions

	Total sample	Proposers		Receivers
		Overall	Multiple switchers	
Nb. observations	182	91	15	91
Female =1	0.55	0.55	0.60	0.55
Age	22.8 (1.85)	22.65 (1.71)	22.67 (1.18)	22.87 (2.00)
Religiosity	0.34 (0.34)	0.35 (0.31)	0.40 (0.34)	0.32 (0.30)
Trust in others	0.51 (0.28)	0.52 (0.28)	0.40 (0.30)	0.50 (0.27)
Trust in government	0.47 (0.24)	0.46 (0.23)	0.52 (0.26)	0.49 (0.25)
Risk aversion	0.50 (0.24)	0.48 (0.24)	0.53 (0.25)	0.51 (0.23)
Inequality aversion	0.49 (0.26)	0.46 (0.25)	0.45 (0.24)	0.53 (0.27)
Econ track	0.45	0.45	0.60	0.44

Table 9: Average values. (Standard errors within brackets)

Type	(definition)	Overall sample (n=182)	Proposers (n=91)
Egalitarian inefficient	prefer (z,z) to (10,0), where $2z < 10$	70	20
Egalitarian efficient	prefer (z,z) to (10,0), where $2z > 10$	91	35
Selfish benevolent	prefer (10,10) to (10,0)	9	3
Selfish spiteful	prefer (10,0) to (10,10)	12	7

Table 10: Categories of subjects with respect to inequality aversion

	Not religious (ctg. 1 and 2)	Moderately religious (ctg. 3)	Very religious (ctg. 4 and 5)
	n=39	n=14	n=12
Av. aversion to deceiving	0.54	0.62	0.75
Standard deviation	0.34	0.30	0.31

Table 11: Distribution of the aversion to deception index with respect to religiosity

	Model 1	Model 2	Model 3	Model 4	Model 4'
	coef.	coef.	coef.	coef.	coef.
Age	0.030 (0.046)	0.034 (0.047)	0.035 (0.052)	0.048 (0.046)	0.045 (0.042)
Gender (Fe=1)	-0.027 (0.134)	-0.030 (0.136)	0.015 (0.115)	0.014 (0.104)	0.003 (0.084)
D_doubt	-0.120 (0.109)	-0.092 (0.091)	-0.740 (0.110)	-0.050 (0.103)	-0.082 (0.106)
D_soph	-0.058 (0.095)	-0.043 (0.114)	0.050 (0.073)	0.099 (0.052)	-0.136** (0.060)
Inequality aversion	0.223 (0.209)	0.156 (0.233)	0.250 (0.269)	0.245 (0.213)	0.264 (0.222)
Risk aversion	—	0.228 (0.326)	0.193 (0.304)	0.133 (0.285)	0.079 (0.267)
Trust in people	—	—	-0.311* (0.183)	-0.301 (0.193)	-0.234 (0.169)
Trust in government	—	—	0.621*** (0.210)	0.514** (0.253)	0.891* (0.208)
Religiosity	—	—	—	0.464** (0.186)	0.295 (0.199)
Constant	-0.066 (1.068)	-0.242 (1.166)	-0.445 (1.228)	-0.829 (1.155)	-0.653 (0.199)
N	65	65	65	65	75
pseudo-R2	0.02	0.02	0.09	0.15	0.18

Table 12: The determinants of the aversion to deceiving. Tobit regressions, censored up to 1.
Notes: * $p < .10$, ** $p < 0.05$

7 Appendix B. Instructions

Screen 1

Good afternoon

Welcome to an experiment in decision making. We thank you for your participation.

During the experiment, you and the other participants will be asked to make a series of decisions. Your own decisions as well as the decisions of the other participants will determine your payment from the experiment, according to the rules that will be described in what follows.

The experiment will be conducted on the computer. You make your decisions on the screen. All decisions and answers will remain confidential and anonymous.

The experiment consists in two parts, Part A and Part B. The two parts are completely independent from each other. First we describe and conduct Part A, Part B will follow.

Your total earnings from the experiment will be the sum of your payments in parts A and B.

The money that you will earn will be paid to you privately and in cash.

Please do not talk to each other during the experiment. Switch off cellular phones. If you have any questions, please raise your hand and call the administrator.

Screen 2 - SENDER INSTRUCTIONS

Part A

In this part of the experiment, you will be matched at random and anonymously with another participant in the room. Neither of you will ever know the identity of the other.

Two possible monetary payments are available to you and your counterpart, each associated to an Option A or an Option B. The final choice between Option A and Option B belongs to your counterpart in the experiment.

The counterpart will choose between Option A and Option B without having any information about the payoffs associated to these options. The only thing he/she will receive as an information, is a message:

- Message 1: “Option A will earn you more money than Option B”

Or:

- Message 2: “Option B will earn you more money than Option A”

As an example (in the table below) there might be an Option A which delivers 10€ to you and 10€ to the other and an Option B that delivers 15€ to you and 5€ to the other. You will be asked to decide whether you prefer to send to the counterpart the Message 1 or Message 2. The decision problem would look like this on the computer screen:

Option A		Option B		Choose message	
Your amount	Counterpart's amount	Your amount	Counterpart's amount	1.Option A will earn you more money than Option B	2. Option B will earn you more money than Option A
10€	10€	15€	5€	<input type="checkbox"/>	<input type="checkbox"/>

Table 13:

You will have to indicate the preferred message for 11 distinct allocations of resources between an Option A and an Option B.

In all of the Options A, your gain is constant at 10 €, and the gain of the counterpart is also constant at 10€. Options B present a constant gain of the counterpart of 5€, but your gain can

vary between 10€ and 20 € in one euro increments.

The 11 allocations and choices of message will be presented as an 11-row Table in the next screen. Once that you make your choice of message for each row, the computer will select one of them as the active row. This will be the paid row. The computer will deliver to the counterpart the selected message for this row.

The counterpart will receive the message, then will be asked to choose between Option A and Option B. His/her choice will determine the cash payment for Part A at the end of the experimental session.

Please keep in mind that the counterpart will never know his/her payment in the option not chosen for payment (that is, he/she will never know whether the message was true or not). He/she will never know your payment.

IS THERE ANY QUESTION BEFORE YOU MOVE FORWARD? IF YES, PLEASE RAISE YOUR HAND AND CALL THE ADMINISTRATOR.

Screen 3. - SENDER INSTRUCTIONS

Active page

Please indicate your preferred choice of message for each row, taking into account the payoffs associated to each row and each option.

Once you make a choice for all of the 11 rows and validate your choices, the computer will draw at random one of the rows, and sent to your counterpart the message that you selected for that row.

After receiving the message, the counterpart will select one option, and this choice will determine the cash payment for the Part A. The result and payment will be delivered at the end of the experimental session.

Here follows Table 3 as displayed in the main text.

Validate.

Screen 4. - SENDER INSTRUCTIONS

Before moving to Part B, please make a guess on whether the counterpart will select or not the option that you indicated as bringing to him the highest payoff:

☐ He will follow my recommendation

☐ He will follow the opposite advice

☐ I can't make a guess

PART A IS OVER. YOU CAN MOVE NOW TO PART B

Screen 2'. - RECEIVER INSTRUCTIONS

Part A

In this part of the experiment, you will be matched at random and anonymously with another participant in the room. Neither of you will ever know the identity of the other.

Two possible monetary payments are available to you and your counterpart, each associated to an Option A or an Option B. The final choice between Option A and Option B belongs to your counterpart in the experiment.

The counterpart will choose between Option A and Option B without having any information about the payoffs associated to these options. The only thing he/she will receive as an information, is a message:

- Message 1: "Option A will earn you more money than Option B"

Or:

- Message 2: "Option B will earn you more money than Option A"

We will ask you to choose either Option A or Option B. Your choice will determine the payment in the experiment. You will never know what the actual payment was in the option not chose (that is, if the message sent by your counterpart was true or not). Moreover, you will never know how much money your counterpart was paid.

We will pay the two of you according to the choice you make at the end of the experiment.

IS THERE ANY QUESTION BEFORE YOU MOVE FORWARD? IF YES, PLEASE RAISE YOUR HAND AND CALL THE ADMINISTRATOR.

Screen 3'. - RECEIVER INSTRUCTIONS

Active page.

Your counterpart decided to send you the message "....".

We now ask you to chose either option A or option B. Your choice will determine the payment

in the experiment. You will never know what the actual payment was in the option not chose. Moreover, you will never know how much money your counterpart was paid.

We will pay the two of you according to the choice you make at the end of the experiment.

Your choice: Option A ☐. Option B ☐.

Validate.

PART A IS OVER NOW. YOU CAN MOVE TO PART B

Screen 5. - ALL PARTICIPANTS

PART B

In this part, participants are matched again in pairs, selected at random from the participant to this experiment. In each pair, there is a Player 1 and a Player 2. The roles are assigned at random as well.

Player 1 is asked to choose several times between two possible distributions of money, each of them involving his payoff and the payoff of Player 2.

Player 2 has only a passive role; he will accept the distribution chosen by Player 1.

You must indicate the choice you would make as the Player 1.

However, you will learn whether you were assigned the role of the Player 1 or the Player 2 only at the end of the session. If you were selected as Player 1, your payoff will be determined as the amount you have chosen. If you were selected as Player 2, your payoff will be the payoff chosen for you by the Player 1 with whom you were paired.

As an example, you might be asked whether you prefer to choose between Option LEFT and Option RIGHT. Option LEFT pays you 10€, and nothing to the Player 2 paired with you. Option RIGHT pays 2 € to you, and 2€ to the Player 2 paired with you.

The decision problem would look like this on the computer screen:

Option LEFT		your choice		Option RIGHT	
Player 1 payoff	Player 2 payoff			Player 1 payoff	Player 2 payoff
10€	0€	<input type="checkbox"/>	<input type="checkbox"/>	2€	2€

Table 14:

Overall, you must make 21 decisions of this type. To simplify the decision problem, the task involves a slider that selects (in green) the set of preferred option. Option LEFT always delivers

10 € to you, and nothing to the Player B. Option RIGHT provides an equal payoff to both Player A and Player B, increasing from (0€; 0€) to (10€; 10€) by increments of 50 cents.

To simplify the decision problem, the task involves a slider that selects in green the set of preferred options.

The slider constraints the decision, by making the assumption that if one prefers the allocation $(z; z)$ to $(10€; 0€)$, he/she will prefer to $(10,0)$ all equal allocations $(z'; z')$, that provide $z' > z$.

Furthermore, the slider also allows to select the $(10€; 0€)$ distribution all of the time, and also to rule it out completely.

On the last row, the slider allows to choose between $(10,0)$ and $(10,10)$.

At the end of the game, the computer will draw one row at random among the 21 rows, and pay the subjects the payoff selected by the Player 1 for that row.

IS THERE ANY QUESTION BEFORE YOU MOVE FORWARD? IF YES, PLEASE RAISE YOUR HAND AND CALL THE ADMINISTRATOR.

Screen 6. Decision page

Part B.

You can choose between option LEFT and Option RIGHT by shifting the slider UP or DOWN. The preferred option will be displayed in green (bold) text. Once you made your choice, please press VALIDATE. Then the computer will draw a row at random and deliver the payment for that row at the end of the experiment.

Here follows Table 4 as displayed in the main text.

Screen 7. Complementary questions.

- How do you see yourself ? Are you generally a person who is fully prepared to take risks, or do you try to avoid taking risks ? Unwilling to take risks 1 ... 5 Fully prepared to take risks
- Are you a religious person? Not at all 1 ... 5 Very much
- In general, do you trust other people? Not at all 1 ... 5 Very much.
- In general, do you trust the government? Not at all 1 ... 5 Very much.
- Your gender male /female
- Your age

- Admission track or background Arts and Science / Economics / Science / Other

Screen 8. Results

The experiment is over now.

- Part A brings you ... euros

- Part B brings you ... euros.

- Total earnings in the session ... euros

Thank you for your participation.

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