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Keywords: Communication, Trust, Language Precision, Delegation, Deception
JEL Codes: C7, C9, D9

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Watch your Words: An Experimental Study on Communication and the Opportunity Cost of Delegation

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Abstract

Communication has been shown to play a positive role in promoting trust, yet there is no evidence on how sensitive this result is to the size of the gains from cooperation. To investigate this issue, we adopt an experimental design in which a trustee can send a free form message to a trustor, before the latter makes a delegation choice, by selecting whether or not to allow the trustee to decide how to share a given sum between the two of them. We allow the opportunity cost of delegation to vary and find that the trustee makes use of non-precise promises prevalently when the opportunity cost of delegation is low. Moreover, communication increases the trustor's beliefs on the amount that the trustee will choose to transfer, only when this cost is high to start with. This attenuates the effect of the size of the opportunity cost of delegation on the trustor's choice. We also find evidence of deception, but in some circumstances the trustee is overoptimistic about her ability to deceive. Indeed, in the presence of lower opportunity costs of delegation, we document an illusion effect: a trustee using non-precise promises incorrectly expects these to exert a positive effect on the trustor's beliefs and propensity to delegate.

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1 Introduction

Consider a pharmaceutical firm wishing to invest in a research unit to develop and launch a new drug. The firm may have limited control over the researcher's incentives to pursue a private agenda, for instance, by publishing academic papers that require disclosure of information, or building a reputation for research orientation.[1] While these secondary activities can generate value for society as a whole, they may nevertheless reduce the financed project's profitability. The pharmaceutical firm's decision will naturally be influenced by the value of its alternative safer option, which represents the opportunity cost of investing (or of delegating). Prior to making the final decision, the firm can consult the researcher to try to figure out his true intentions, even if what the researcher actually says does not have a binding effect in contractual terms. Given this scenario, for higher values of the firm's safe option, will a researcher be more prone to make precise statements in relation to his intentions to compensate the investor, and will he tend to promise greater returns? Also, will more generous statements of intent have a different impact on the investment decision, and will a researcher be more or less willing to live up to his promises in order to reward the firm for investing?

The setting described above can be classified under the general category of problems that involve principals choosing to delegate decision making power to agents in the presence of contractual incompleteness. In such situations, trust is an important determinant of the delegation decision, and it is a well-known result in the social science literature that non-binding communication has the potential to enhance trust and facilitate cooperation (see the references cited in the literature review section). However, the unexplored issue that we examine in this paper is whether the interplay between communication and the principal's opportunity cost of delegation affects the choices and beliefs of both players. Moreover, we analyze how the nature of communication, in terms of both the propensity to make more generous promises as well as the precision of the promise, varies based on the opportunity cost of delegation. Indeed, in many settings that share the features of the example described above, the opportunity cost of delegation may vary significantly and potentially have an impact on the role, as well as on the content of communication.[2]

[1] Lerner and Malmendier (2010) show that, when research is non-contractable, although it is possible to write option contracts (i.e., the financing firm is given the unconditional right to terminate the collaboration, in which case it obtains broad property rights to the terminated project), these are second-best optimal and it is never possible to achieve full efficiency with contractual solutions.

[2] In the pharmaceutical firm-research unit example, the former's reluctance to invest may stem from the fact that the firm has a number of safer alternative projects to choose from, and faces a relatively high opportunity cost of engaging with a new research unit of uncertain trustworthiness. On the other hand, a previous investment in a specific R&D alliance automatically implies that breaking away from an existing business relationship is a more costly option, leading to a lower opportunity cost of continuing to delegate. A similar pattern typically characterizes different relations within organizations. The value of a manager's option to refrain from delegat-

Our analysis is based on the lost-wallet game as originally introduced by Dufwenberg and Gneezy (2000). In this game, the trustor (that corresponds to the firm in our example) decides whether to keep or pass an endowment to the trustee (that corresponds to the research unit in our example).[3] If she keeps the endowment, then the game ends with final payoffs being null for the trustee and equal to the endowment for the trustor. If instead she passes, the endowment is increased by some proportion and transferred to the trustee, who then decides how to split the overall amount between himself and the trustor. We enrich the original design by adding one-sided communication, allowing the trustee to send a free form message to the trustor before she makes her choice. To depict how communication and choices interact with either low or high opportunity costs of delegation, we manipulate the size of the initial endowment in the hands of the trustor, setting it either above or below the amount representing the equal split between the two players. We also compare results from the original game without communication with those observed in the enriched version involving communication.

Our claim is that the opportunity cost of delegation will have an impact on the precision of the promises made and on their effectiveness. We develop this claim by proposing a theoretical model and test its empirical implications through a laboratory experiment. Our theoretical framework is characterized by the following two distinguishing features: (1) a positive share of trustors may naively be influenced by promises; (2) trustees have "weak" costs of lying, meaning that they suffer from lying even if this does not lead them to change their actions. In a nutshell, in terms of results we expect higher opportunity costs of delegation to be associated with more precise promises as well as with communication being more effective in inducing delegation.

The idea is that making promises that one cannot live up to is costly. When the opportunity cost of delegation is low, a trustee has weaker incentives to promise to give back large amounts since there are good enough chances that he will be trusted anyway. Moreover, motivated by preferences for fairness, it may be plausible that he intends to give back an amount that is greater than the trustor's outside option. This opens an avenue for making non-precise promises such as "I will give you back at least N\$", thus leaving the set of possible values open to any amount that is (weakly) greater than N\$. On the other hand, when the opportu-

ing to a collaborator is lower, when the manager's remuneration depends on the performance of the team. On the contrary, when the reward is prevalently based on individual performance, we should expect self-interested managers with competitive bonuses to have a higher opportunity cost of trusting their peers. In a looser sense, this setting may capture some features of electoral communication in which a voter in the role of a principal faces a lower opportunity cost of voting for a politician that shares her same ideology, with respect to one that is ideologically distant but may nevertheless turn out to be more honest.

[3]Throughout the paper, we use female pronouns for the trustor and male pronouns for the trustee and interchangeably refer to principal and agent respectively as either trustor and trustee, or Player A and Player B.

nity cost is high, it is very unlikely that the trustee may actually be willing to give back more than what the trustor would get by opting out, so a non-precise promise is unlikely to be believed by sophisticated trustors. By making a high promise the trustee can try to influence the behavior of a credulous trustor, and although this involves a lying cost, unless he makes such promises, the chances of the trustor delegating are very slim. Thus, he is willing to bear the cost of making a promise he will not be able to live up to, but minimizes this cost by making a precise promise. Indeed non-precise promises may induce a naïve trustor to erroneously believe he will receive more than a precise promise with the same reference point N, and therefore involves greater costs of lying for the trustee.

The experimental results confirm the implications of the model and can be briefly summarized as follows: (1) non-precise promises (meaning those that contain a non-unitary set of values delimited by a lower bound) are used more often when the cost of delegation is low; (2) promises contain a higher (lower) reference value when the opportunity cost of delegation is high (low); (3) communication has no effect on the amount that the trustee actually chooses to return; and (4) when the cost of delegation is high, promises increase the trustor's beliefs on the amount she will receive contingent on passing (first order beliefs), as well as the trustee's beliefs on this amount (second order beliefs).

Result (1) provides evidence that the opportunity cost of delegation has an effect on communication format. Result (2) highlights that costly promises are used only when they are strictly necessary, in other words when the trustor's chances of delegating are slim to start with. Result (3) provides support for the "weak" cost of lying hypothesis suggesting that even if lying is costly, it never induces the trustee to alter the amount returned. This amount is predetermined by an individual specific idea of fairness that is not affected by communication. Moreover, (1) and (4) jointly imply that communication attenuates the impact of the opportunity cost of delegation on the chances that the trustor will delegate. In other words, although higher outside options generally imply smaller odds that the trustor will trust the trustee, communication tends to reduce the distance between high and low opportunity cost treatments. This is mainly driven by the fact that while communication is effective in increasing beliefs when the opportunity cost of delegation is high, it is less so when the this cost is low. This second effect is accentuated by what we denote as the "illusion effect", whereby trustees tend to overestimate their ability to influence trustors when making non-precise promises (i.e., they significantly affect second order beliefs, but not first order beliefs).

The rest of the paper is organized as follows. Section 2 reviews the related literature. Section 3 presents the experimental design and theoretical predictions. Section 4 reports the experimental results. Section 5 discusses the use of precise versus non-precise promises and introduces the "illusion effect", and Section 6 concludes.

2 Literature review

The fact that communication triggers cooperation between counterparts with conflicting interests stems from the empirically validated observation that people make promises they do not want to break. In this regard, two possible explanations for why this occurs have been proposed. A first reason is rooted in guilt aversion (e.g., Charness and Dufwenberg, 2006; Battigalli and Dufwenberg, 2007; Battigalli et al., 2013; Khalmetski, 2016; Ederer and Stremitzer, 2017) and a second is related to preferences for keeping promises or costs of lying (e.g., Ellingsen and Johannesson, 2004; Gneezy, 2005; Vanberg, 2008; Kartik et al., 2007; Corazzini et al., 2014, Casella et al., 2018). The guilt aversion explanation is based on the idea that individuals are averse to disappointing others, and live up to their promises since they expect these to affect the beliefs of the trustors. The second explanation instead relies on the assumption that individuals act according to their promises, because they are concerned about the consistency of their behavior with respect to their statements of intent. Both stories of promise-keeping are well relevant and heavily depend on the context (Charness and Dufwenberg, 2010).

Within this literature, our paper is closely related to Charness and Dufwenberg (2006) and Casella et al. (2018).[4] Charness and Dufwenberg (2006) study the impact of non-binding, one-sided, freeform, pre-play communication in a one-shot modified trust game with hidden action. In their framework, after allowing the trustee to send a free form message to the trustor, the latter decides whether to pass (i.e., to allow the former to decide how to split a fixed sum between the two of them or not). Upon being trusted, the trustee faces a binary choice of whether to reciprocate or not (i.e., either to roll a die or not to role). The authors show that free form communication has a positive impact on the trustee's decision to role the die, thus inducing greater trust and cooperation between subjects. Casella et al. (2018) study the effects of competition on promised amounts and trustworthiness, by relying on a lost wallet game in which the trustee sends a fixed form message specifying a non-binding amount to return to the trustor who chooses to pass. The authors compare the results between a setting in which the principal faces one agent only, with those in which there are two agents

[4]Indeed, the research that investigates the positive impact of communication is much broader and there are equally important contributions that we do not discuss in the main body of the text for the sake of brevity of the literature review. For instance, Ben-Ner and Putterman (2009) study communication in a standard trust game and illustrate that it can increase trust as well as trustworthiness. Cadsby et al. (2015) find evidence of the positive role of relational closeness in inducing promise keeping behavior. Servátka et al. (2011) show that communication can do a better job than other incentives, such as (financial) gifts. Brandts et al. (2015) experimentally show that free-form communication, mainly involving the use of promises and discussion of compensations in case of ex-post shocks, increases the relevance and profitability of flexible contracts relative to rigid ones. Dufwenberg et al. (2017) instead investigate the impact of two-side pre-play communication in the lost wallet game, in order to examine the role of informal agreements in inducing cooperation between agents.

sending their promises simultaneously. Their main finding is that competition between agents inflates promises, although messages do not substantially affect beliefs and final choices.

The novel feature of our research question with respect to the literature discussed above is that we study the interplay of communication and the opportunity cost of delegation. Guided by our research question, a key aspect of the experimental design that we share with Casella et al. (2018) is that neither the choice space nor the message space of the trustee are constrained to be binary. For example, while in Charness and Dufwenberg (2006) the trustee can only choose whether to return a greater expected amount to the trustor by choosing whether to role a die or not, and in Gneezy (2005) and Battigalli et al. (2013) the message space is constrained to be binary, in our case no such limitations apply. The richer choice space therefore allows the choice of messages to potentially be more heterogeneous. More specifically, since the amount that the trustee distributes in case delegation occurs can be any amount between 0 and 20 euro, this implies that the reference value contained in a promise is a relevant choice variable. In this respect, our work is closely related to Casella et al. (2018). A major departure of our approach with respect to Casella et al. (2018) is that while they focus on the effects of competition on communication, our central research question concerns the role of the opportunity cost of delegation. Moreover, while they assume fixed form messages, we do not impose any constraint on the message space by allowing for free form messages, which allows us to also investigate how the opportunity cost of delegation affects communication content (i.e., empty messages versus promises as well as the precision of the latter).

Another strand of literature that is related to our work investigates the impact of communication content, in terms of precise versus non-precise promises, on coordination. There seems to be consensus that, if given the opportunity, individuals may strategically opt for imprecise communication in order to conceal information about the true state of the world, and reach either socially or personally beneficial outcomes by increasing contributions to public goods or improving coordination (Serra-Garcia et al., 2011; Agranov and Schotter, 2012; Agranov and Schotter, 2013). Our analysis instead provides some insight on the motivations behind the choice of precise versus non-precise communication, in the attempt to induce trust. More specifically, we explore the impact of the opportunity cost of delegation in determining promise precision. In this respect our paper is close to Frenkel (2014) that provides a theoretical explanation for the fact that imprecise communication may have a reduced commitment value, as it may signal lower willingness to act in line with the specific action promised.

Regarding the choice of precise versus non-precise promises, our paper can also be linked to the recent literature on the role of narratives in shaping economic behavior (Bénabou et al., 2019; Shiller, 2017). This literature mainly focuses on understanding how different narratives may emerge based on the context. In this respect, we show that the size of the opportunity cost of delegation is associated with the emergence of some faulty form of communication (non-precise promises) that may not be effective in producing the desired results. Indeed, our experiment suggests that non-precise promises may give a trustee the false illusion of being able to positively influence a trustor's beliefs on his trustworthiness.

3 Experimental design and testable predictions

3.1 The basic game and experimental treatments

Our experimental design builds on the "lost wallet game" (Dufwenberg and Gneezy, 2000), by introducing one-sided communication. The basic framework consists of a sequential game involving two players, A and B, which we respectively denote as the trustor and the trustee. Player A is endowed with an amount $x > 0$ and chooses whether to keep the endowment or pass it to B.[5] If A keeps the endowment, then the game ends with final payoffs being equal to x for A and 0 for B. On the other hand, if A passes the endowment to B, then B receives an amount y, with $y > x$. Given y, B chooses how to split it between himself and A. In order to analyze the role of communication, we consider both the baseline game without communication and compare it with one in which we allow B to send a free form text message to A at the beginning of the game, before A decides whether to keep the endowment or pass it.

In order to simplify exposition, with a slight abuse of notation, we denote messages with m, where the message space includes both settings with and without communication. In the next section we provide further details on the classification of messages.

The timing of the game depicted in Figure 1 can be summarized as follows:

1) B communicates by sending a message (m) to A

2) A decides either to pass (or delegate) to B, allowing him to dispose of an amount of money y, or to keep the amount x (or not to delegate to B), where c_A^m denotes A's choice conditional on message m, with $c_A^m \in \{pass; keep\}$.

3) If A chooses not to pass to B, she gets the outside option x, B gets 0 and the game ends.

4) If A passes to B, then B is called on to play again and chooses the amount to redistribute to A, where c_B^m denotes B's choice conditional on message m, with $c_B^m \in [0, y]$. Therefore, $y - c_B^m$ denotes the amount B keeps for himself.

[5] In what follows we interchangeably use the terms delegate and pass as synonyms.

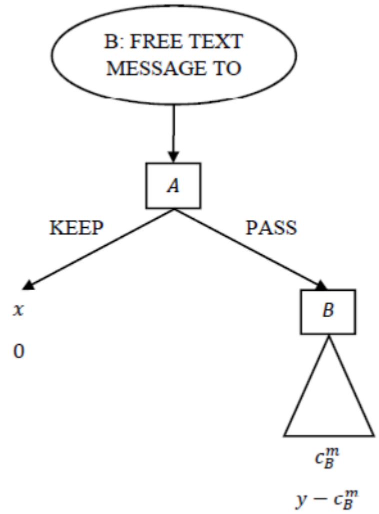

Figure 1: The lost wallet game

The amount x represents the outside option of A, namely the amount she receives if she does not pass to B. Thus, it is a measure of A's opportunity cost of delegating to B because when she passes she relies on B's willingness to return a sufficiently high amount to her, and foregoes the sure amount x.

Our experiment includes four treatments in a $2x2$ design that manipulates two dimensions of the original "lost wallet" game: communication and the size of x. The following table summarizes the main experimental features in the four treatments.

Table 1. The four experimental treatments

	Communication	*No communication*
$x = 7$	LC	LNC
$x = 13$	HC	HNC

In all treatments, we set $y = 20$. The first manipulation is the level of x, being set to the (low) amount of 7 euro in LC and LNC, and to the (high) amount of 13 euro in HC and HNC. Two good reasons motivate the choice of the values of x. First, they are aligned with the parameters used by Dufwenberg and Gneezy (2000) in two of their treatments, providing a natural reference to compare the results of our baseline treatments with. Second, they both differ by 3 euro from the (natural reference of) 10 euro, namely the amount obtained by both A and B when B decides to split y equally. The second dimension that we manipulate concerns the possibility given to B to unilaterally send a text message to A prior to A's choice.

3.2 Theoretical Framework and Predictions

In this section we briefly describe the intuition of the model and relegate the formal analysis to the appendix. As mentioned previously, the two distinctive features of the model are: (i) some trustors are naïve and, to some extent, might believe in unrealistic promises; (ii) trustees are characterized by "weak" costs of lying whereby while they suffer from not living up to their promises this does not affect their choices. Feature (i) is not new to the theoretical literature on communication. In particular, Kartik et al. (2007) explore the role played by costly talk and credulous receivers in determining equilibrium language inflation and information transmission, while Chen et al. (2008) consider lying costs and naïve receivers as versions of perturbed cheap-talk games for which they obtain equilibrium refinements. Feature (ii) is the result of two standard empirically validated behavioral assumptions. The first is that communication carries a psychological cost that originates from the idea that individuals suffer from not living up to their promises (see references in Literature review). The second is based on the intuition that individuals have heterogenous preferences for fairness, so that some may derive greater satisfaction than others from more equitable outcomes.[6] By building on these two features, we present a general and realistic model that provides novel insight on how the opportunity cost of delegation affects the style of communication, its effectiveness, and the level of cooperation between individuals.

3.2.1 Setup

Trustees may differ in terms of their preferences for fairness. More formally, $\alpha_B^t \in [\underline{\alpha}, \bar{\alpha}]$ denotes the reference point for the amount a trustee of type t considers to be fair, where $0 \leq \underline{\alpha} < 7 < \overline{\alpha} < y$. We assume that α_B^t is fixed and does not depend on the opportunity cost of delegation, x. The assumption that $\underline{\alpha} < 7 < \overline{\alpha}$ implies that for low values of the opportunity cost of delegation, some trustee types (but not all) are actually willing to return an amount that would make the trustor better off by delegating.[7] This implies that communication may potentially play a role in signaling the true type to the trustor and affecting her decision to pass.

Trustors are assumed to be of two possible types, those that are sophisticated (S) and rationally update their beliefs on the amount that will be returned if they pass based on

[6] This assumption is consistent with the vast experimental and field studies that indicate that economic decisions are in many cases motivated not only by material self interest, but also by concerns for fairness. This evidence has also lead to the development of theoretical models that incorporate fairness as a determinant of economic behavior (see e.g. Fehr and Gächter, 2000; Sobel, 2005 and Fehr and Schmidt, 2006 for relevant surveys).

[7] In the complete model presented in the appendix, we make a more general assumption that the amount the trustor requires to delegate is not necessarily equal to x, but is always increasing in x.

the equilibrium information contained in the message, and those that are unsophisticated (U) and naively take the message they receive at face value. The share of sophisticated trustors is common knowledge among both trustors and trustees. We denote the beliefs of $U-$ and $S-$ trustors, conditional on message m and on the amount they will receive if they delegate (first-order beliefs) with $\mu_A^m(U)$ and $\mu_A^m(S)$ respectively, and B's beliefs on these beliefs (second-order beliefs) with $\mu_B^m(U)$ and $\mu_B^m(S)$.

To intuitively see how these beliefs are formed, consider that A does not have complete information on the preferences of the specific trustee that she faces.[8] Therefore A's beliefs on the amount that will be returned depends on her beliefs on the distribution of fairness types that she encounters. This distribution can be influenced by equilibrium messages, m. We assume that, in the absence of communication, both S and U trustors have the same distribution of beliefs on α_B^t defined on the support of the true values, $[\underline{\alpha}, \bar{\alpha}]$. When communication is introduced the beliefs of S and U trustor types may no longer coincide, since communication may have a different equilibrium impact on each trustor type.[9]

The trustee's subjective utility, conditional on his fairness type, α_B^t, on the amount that he chooses to redistribute, c_B^m, and on his second order beliefs on the amount that the unsophisticated trustors expect to receive, $\mu_B^m(U)$, is given by:

$$V_B\left(\alpha_B^t, c_B^m, \mu_B^m(U)\right) = y - c_B^m - \phi(\alpha_B^t - c_B^m) - \max[0, l(\mu_B^m(U) - \alpha_B^t)], \tag{1}$$

where $\phi(\cdot)$ is increasing in $|\alpha_B^t - c_B^m|$, and represents B's loss from giving to A an amount that differs from his reference point α_B^t, and $l(\cdot)$ is increasing in $(\mu_B^m(U) - \alpha_B^t)$ and represents the cost of lying, which is increasing in how much the trustee deceives the credulous unsophisticated trustors. Notice that, although the trustee's utility does not directly depend on the beliefs of S trustors, these indirectly determine the trustee's expected utility by influencing the trustee's perceived probability that the trustor passes, $\pi_B^m(x)$.

3.2.2 Communication versus no communication

To facilitate exposition, messages are defined over the following domain: $m \in \{\varnothing, np, pp, e\}$, where $\varnothing$ stands for the absence of communication, np denotes non-precise promises, pp pre-

[8] In this respect, our model is consistent with the framework introduced by Attanasi et al. (2015), in that we relax the assumption that utility functions representing preferences are common knowledge, which is particularly unrealistic in experimental settings.

[9] Formally, a Perfect Bayesian Equilibrium requires that the trustor's beliefs on the distribution of types in the population of trustees must be consistent with the equilibrium communication strategies of the trustees. As is standard, we also assume that the trustor's ex-ante beliefs on the distribution of types in the population of trustees is common knowledge. This is equivalent to assuming that all players have the same perception of the distribution of fairness types within the population.

cise promises, and e empty messages. A precise promise pp is a message stating that the trustee will reward the trustor with an exact amount r, while a non-precise promise np is one in which the trustee states he will reward the trustor with an amount ranging from r to $r_{\max}$, where $r_{\max} > r$.[10] For instance, a non-precise promise such as "I will give you at least 10" implies that $r = 10$ and $r_{max} = y$, and a precise promise such as "I will give you 10", implies that $r = r_{max} = 10$.[11] We introduce costly talk by assuming that $\mu_B^{pp}(U) = r$ and $\mu_B^{np}(U) \geq r$. In other words, for a given reference point, r, the cost of lying is greater for np than for pp since U trustors are naïve implying that their beliefs will be such that $\mu_B^{np}(U) \geq \mu_B^{pp}(U)$. Empty messages, that we denote with e do not contain any explicit reference to an amount that B promises to transfer if A chooses to pass. Therefore, e messages cannot affect $B's$ cost of lying since they have no impact on the beliefs of the unsophisticated trustors, while their impact on sophisticated trustors' beliefs is determined in equilibrium.

3.2.3 Predictions

We now briefly describe the intuition for equilibrium behavior and the main predictions that can be derived. We begin by observing that empty messages are very unlikely to be sent. To see this, note that, for any beliefs $\mu_B^e(S)$, there always exists a corresponding promise such that $\mu_B^{m \neq \varnothing}(S) = \mu_B^e(S)$. Leaving aside the knife edge case in which B is indifferent between making a promise or sending an empty message, it is therefore very unlikely that empty messages will be observed since promises allow for a greater degree of freedom. Therefore, as stated in the first prediction, promises will prevail over empty messages whenever communication is allowed:

$P.1$ *Communication and statements of intent.* Communication implies the prevalence of promises with respect to empty messages.

The next thing to notice is that when the opportunity cost of delegation is low, trustees will generally need to make less generous promises compared to when the opportunity cost is high. To see this first notice that naïve trustors are willing to delegate for less generous promises, when their opportunity cost of delegation is smaller. Furthermore, separating

[10] Notice that based on the prevalent classification of communication in the literature (Fine, 1975; Sainsbury, 1990; Agranov and Schotter, 2012), our definition of non-precise promises includes ambiguous promises (statements of intent that have multiple meanings), and does not include those promises that do not contain an explicit reference amount such as "I will give you something fair", which are normally classified as vague (i.e., statements of intent that may be deficient in meaning, unless one knows exactly where the bounds between words lie). Indeed, in our framework, these vague messages can be assimilated to empty messages in that, like empty messages, they do not affect prior beliefs of unsophisticated trustors on the reference amount.

[11] We omit the upper bound in the representation of non-precise promises to simplify notation, since this dimension does not play a role in our model, and none of the non-precise promises that we observe contain an upper bound that is less than y.

equilibria, those in which trustees credibly (and correctly) convince sophisticated trustors to delegate, also involve lower promises for lower opportunity costs of delegation.[12] This is a consequence of the fact that the lower bound for the promises of trustees that do not convince sophisticated trustors to pass, is given by the minimum amount necessary to convince at least naïve ones to pass.[13] Since this reference point is increasing in x, then in order for separation to occur, it must be that those that credibly convince sophisticated trustors to pass must be promising strictly higher amounts for higher x.

The fact that promises contain smaller reference points when the opportunity cost of delegation is low, implies that non-precise and precise promises are more likely to co-exist in this case. Indeed, since promises tend to be less inflated than when the opportunity cost is low, it is also more likely that trustees may actually be willing to return more than the reference point contained in the promise. To see this, notice that for trustees of fairness type $\alpha_B^t \geq x$, making a non-precise promise with $r \in [x, \alpha_B^t]$ involves no costs of lying for both precise and non precise promises with the same r. These trustees may therefore be indifferent between sending both precise and non-precise promises and thus be willing to send both in equilibrium. Since r is generally lower when $x = 7$, with respect to when $x = 13$, and the distribution of fairness types does not change with x, a greater share of trustee types, will be willing to send both types of promises for lower x. The results described above are more formally stated in the following two predictions.

$P.2$ *Opportunity cost of delegation and promise precision.* When the opportunity cost of delegation is higher, a lower share of non precise promises are used with respect to precise promises.

$P.3$ *Opportunity cost of delegation and promised amounts.* With communication, the opportunity cost of delegation exerts a positive effect on the reference amount, r contained in B's promise.

The model also allows us to derive some predictions on the joint effect of communication and the opportunity cost of delegation on beliefs.

$P.4$ *Communication, beliefs, and the opportunity cost of delegation.* Without communication, there is no effect of the opportunity cost of delegation on A's (first order) and B's (second order) beliefs on the amount distributed by B. With communication instead, the opportunity cost of delegation exerts a greater effect on first and second order beliefs (μ_A^m and μ_B^m).

[12]More specifically, a separating equilibrium that conveys information on the trustees' types requires trustees of higher fairness type promising to return amounts that have excessively high lying costs for low fairness types.

[13]Intuitively, this relies on the reasonable assumption that the marginal benefit of increasing the probability of the trustor of passing above 0 always outweighs the cost of lying.

The first part of $P.4$ follows directly from the assumption that beliefs are not influenced by the outside option. To illustrate the second part, notice that when $x = 7$, trustees may plausibly believe that even in the absence of communication, some trustors expect that they will get more than the outside option, implying that they are already willing to delegate without communication. In this case therefore, communication does not increase beliefs as much as it does when $x = 13$, since in this later case the odds of a trustor passing are very slim in the absence of communication. Thus, setting r sufficiently high increases the beliefs of trustors strictly more when the opportunity cost of delegation is higher.

The fifth prediction follows directly from the ”weak cost of lying” feature, namely that lying negatively affects the trustee's utility but does not induce him to vary the amount he chooses to return which, instead, exclusively depends on preferences for fairness (i.e., α_B^t).

$P.5$ *Communication, B's choice, and the opportunity cost of delegation.* The opportunity cost of delegation exerts no effect on the amount distributed by B, independently of whether communication is allowed or not ($c_B^{m=\varnothing} = c_B^{m\neq\varnothing}$).

Finally, we can also make predictions on $A's$ choice of delegating. First, recall that $P.4$ states that communication will have a greater effect on μ_A^m when the opportunity cost of delegation is high. Therefore, as long as there is a positive monotonic relationship between μ_A^m and the trustor's decision, this implies that communication will have a greater impact on A's choice to pass in HC than in LC. This allows us to state the final prediction, that we refer to as the ”attenuation effect”.

$P.6$ *Communication, A's choice, and the cost of delegation: the attenuation effect.* Communication attenuates the effect of the opportunity cost of delegation on the choice of A to pass (c_A^m).

3.3 Procedures

Upon their arrival, subjects were randomly assigned to a computer terminal. At the beginning of the experiment, subjects were randomly and anonymously assigned to a pair and a role, either A or B. Pairs were kept unchanged throughout the experiment and this was common knowledge. During the experiment, subjects participated in a number of consecutive phases, each involving a different task. Subjects were not informed about the number of phases of the experiment and instructions for each phase were handled at the end of the previous phase. At the beginning of each phase, instructions were read aloud to guarantee common knowledge (instructions used in HC are included in the appendix) and questions were answered

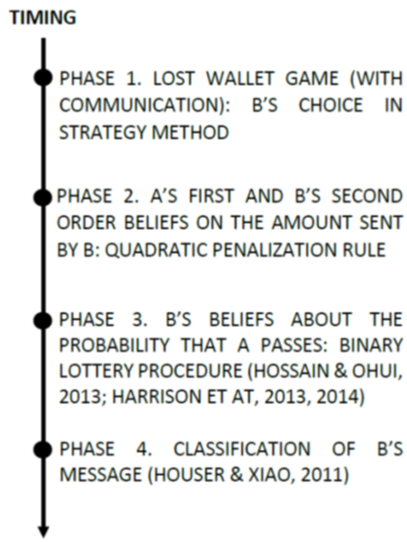

Figure 2: The timing of the experiment

privately. Feedback on the partner's decisions and information about payoffs in each phase was given at the end of the experiment. Figure 2 shows the four phases of HC and LC.

Phase 1: the Lost wallet game. In the first phase, subjects participated in the lost wallet game with one-sided communication. In particular, at the beginning of the phase, B had the possibility to send a text message to A. We imposed only two restrictions on B's message. First, B could not provide any information about his identity, such as name, student id, and number of the computer terminal. Second, the length of the message could not exceed 300 digits. After reading the message, A had to choose whether to pass or keep the endowment x. B made his choice in strategy method. In particular, before being informed about A's decision, B chose the share of y to give if A chose to pass. B knew that his choice would have been implemented only if A had effectively chosen to pass. Our choice of using the strategy method for B's choice is motivated by two main considerations. First, thanks to the strategy method, our analysis is based on a balanced and rich dataset, as we collected choices from all A and B subjects in the experiment. Second, the strategy method allowed us to elicit B's first and second order beliefs in subsequent phases as subjects were only informed about final results at the end of the experiment.

Phase 2: A's first and B's second order beliefs on the amount sent by B to A. We elicited A's first and B's second order beliefs about the amount assigned by B to A. Subjects were paid according to the precision of their estimates by using a rule that gave 3 euro for correct guesses and, in case of errors, assigned a penalization as a quadratic function of the discrepancy between the stated belief and the true value.

Phase 3: B's first order beliefs on the probability that A chose to pass. In the third phase of the experiment, we elicited the probability subjectively attached by B to the two possible actions of A, either passing or keeping x. We rely on the Binary Lottery Procedure (McKelvey and Page, 1990; Schlag and van der Weele, 2013; Hossain and Okui, 2013; Harrison et al., 2014) as a proper incentive compatible mechanism to elicit B's subjective probabilities. More precisely, B was asked to indicate both the probabilities (in integers from 0 to 100) that A passed and kept x. Both probabilities were converted into tickets for a lottery by using a quadratic rule.[14] Then, B participated in the lottery with the number of tickets assigned to the stated probability for the actual choice of A. In case of victory, the lottery gave 3 euro.

Phase 4: a coordination game to classify B's message sent to A in the first experiment. In the last phase, both A and B participated in the incentivized task introduced by Houser and Xiao (2011) and aimed at classifying the messages sent by B to A in phase 1 according to one of two possible categories: a promise - that contained a statement of intent - or an empty message - that did not contain any statement of intent. A and B received 1 euro to add to their overall payments if their classifications matched and nothing otherwise.

The only difference between the treatments with communication (HC and LC) and the treatments with no communication (HNC and LNC) is that in the latter, B was not allowed to send text messages to A and the design did not include phase 4 explained above.

It might be argued that rewarding accuracy of stated beliefs in addition to payments for decisions in the lost wallet game might induce risk-averse subjects to hedge with their stated beliefs against adverse outcomes in the main decisional task. However, there are at least four reasons to believe that the (potential) hedging problem plays a marginal role in our setting. First, there is experimental evidence suggesting that hedging is not a major problem in strategic interaction settings, unless hedging opportunities are very prominent (Blanco et al., 2010). Second, the maximum amount subjects could get from each of the belief elicitation phases was relatively small when compared to the money at stake in the lost wallet game. Third, subjects received instructions only at the beginning of each phase, thus being unable to formulate sophisticated hedging strategies since the beginning of the experiment. Fourth, in order to avoid confusion-driven pseudo-hedging, we explicitly explained to subjects in the instructions of each phase that by stating their beliefs truthfully, they could have minimized the penalization due to errors and maximized the corresponding gains.

At the end of the experiment, subjects were privately paid the sum of the payoffs obtained in the consecutive phases. On average, they earned 12.87 euro (3 euro for showing up) for sessions lasting about 45 minutes, including the time for instructions and payments.

[14]See the instructions in the appendix for more details about the quadratic rule used to convert stated probabilities in tickets).

The experiment took place between March 2015 and June 2016 in the Behavioral and Experimental Laboratory in Social Sciences (BELSS) of Bocconi University, Milan. Participants were mainly students from Economics, Management and Law, recruited by using the SONA recruitment system (www.sona-systems.com) from subject pool of more than 3,000 subjects. The experiment was computerized using the z-Tree software (Fischbacher, 2007).

4 Experimental results

We are mainly interested in assessing how the opportunity cost of delegation affects B's communication style as well as beliefs and choices of A and B in the lost wallet game. We follow the natural order depicted in the theoretical framework. Namely, we first focus on the communication stage and look at how the opportunity cost of delegation influences the distribution of message types. Second, we look at differences across treatments in A's first and B's second order beliefs as well as on how they are determined by B's messages. Finally, we investigate differences across treatments in A's and B's choices and how these are affected by the different treatments. Differences between LNC and HNC represent the natural benchmarks in our analysis, as they partly replicate the "lost wallet" experiment with no communication run by Dufwenberg and Gneezy (2000).

The analysis mainly relies on parametric techniques that allow us to isolate the effects of the determinants of choices and beliefs in a multivariate setting. Nevertheless, we also refer to non-parametric tests (based on independent observations at the subject level) to confirm the main results.

4.1 Communication, message types and promised amounts in LC and HC

The following table shows the distribution of message categories in LC and HC according to the classification made by A and B in the last phase of the experiment. We restrict our attention to pairs of subjects that successfully coordinated their message classifications. Considerations remain qualitatively the same when using the specific classifications made by either A or B.

Table 2. Distribution of messages in HC and LC

	A's Classification			B's Classification			Match		
	e	p	N	e	p	N	e	p	N
LC	4	48	52	3	49	52	3	48	51
HC	7	44	51	3	48	51	2	43	45

Note. This table reports the distribution of messages categories in the two treatments with communication (LC and HC) according to A's classification and B's classification. The table also reports the distribution when A and B coordinated their responses on the same classification. The message categories are: (e)mpty and (p)romise.

We find that 88.24% of the pairs in HC and 98.08% in LC successfully coordinated their message classification. In line with prediction $P.1$, B makes intense use of promises: the share of messages categorized as promises is 94.12% in LC and 95.56% in HC. We do not detect significant difference in the number of promises between LC and HC (according to a two sided proportion test, $p = 0.752$). This suggests that the level of the outside option does not influence B's attitude to send a promise to A.

The free form nature of the message that B can send to A in the treatments with communication represents a distinctive feature of our experimental design and allows us to study how the communication strategy changes in relation to variations in the opportunity cost of delegation. We focus on messages containing statements of intent and we distinguish between precise and non precise promises. A precise promise contains a clear and unitary reference amount (such as *"If you pass, I will send* 10 *euro to you"*). On the contrary, a non precise promise either involves a vague statement of intent containing no reference amount (such as *"If you pass, I will send a fair amount to you"*) or is ambiguous meaning that it involves a non-unitary set of possible values (such as *"If you pass, I will send you an amount that is higher than* 7 *euro"*).[15] The following figure shows the difference in proportions of precise and non-precise promises between LC and HC.

We detect relevant differences in the distribution of promise types, precise and non pre-

[15]The only non-precise promises in the LC treatment that could be considered vague (rather than ambiguous) are the following: *"If you pass seven euro to me you could earn more"* and *"Both of us could earn more than what we did if you kept the money. I have no interest in snatching everything from you when both of us could obtain a higher gain."* In these cases however, vagueness appears to be more related to the intentions rather than to the amount, since B specifies that more "could" be earned without explicitly mentioning an intention to give, while both statements implicitly set the reference amount to 7 euros.

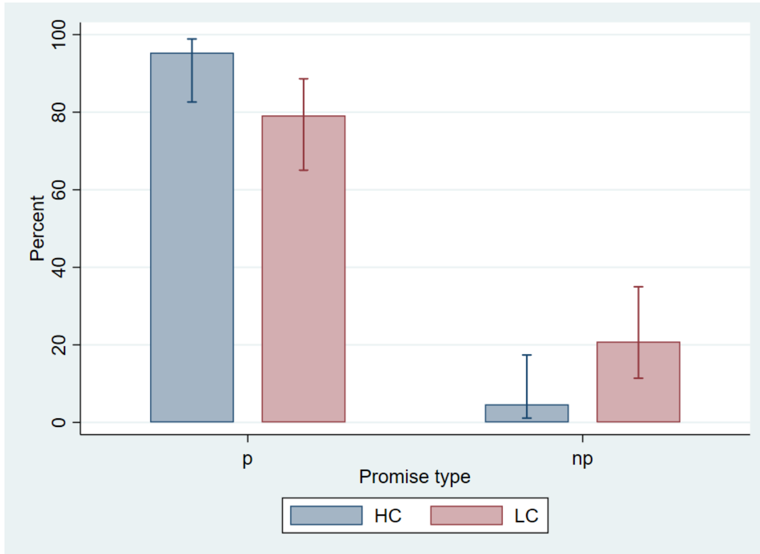

Figure 3: Precise (pp) and non precise (np) promises in LC and HC.

cise, between the two treatments with communication. Indeed, while the proportion of non precise promises in HC is below 5%, it jumps to 20.83% in LC. The difference in the frequency of non precise promises between LC and HC is highly significant according to a proportion test ($p = 0.023$) and is therefore consistent with prediction $P.2$. Overall, these results suggest that the level of the outside option, while not affecting the attitude to make promises, positively influences the precision of B's statement of intent. We summarize these first results that are consistent with predictions $P.1$ and $P.2$ with the following statement:

$R.1$ Communication is mainly used by B to make promises. The level of the opportunity cost of delegation does not influence B's attitude to make promises but it strongly increases its precision: the proportion of non precise promises in LC is 4 times larger than in HC.

Most of the promises in LC and HC contain a statement of intent that is related to a reference amount. We look at whether the mean of the reference amounts in the promises differs between HC and LC. The next table reports descriptive statistics about the reference amounts in the promises. Again, we restrict our attention to pairs that successfully coordinated their message classifcations. Again, results remain qualitatively the same under the alternative classifications.

Table 3. Reference amounts in promises in HC and LC

	A's Classification	N	B's Classification	N	Match	N
LC	9.542	48	9.551	49	9.542	48
	(1.624)		(1.608)		(1.624)	
HC	13.429	42	13.477	44	13.415	41
	(2.154)		(2.118)		(2.179)	

Note. By focusing only on the promises containing a reference amount, this table reports the (mean) amount promised by B to A in phase 1 of LC and HC (standard deviations in parentheses). All the other remarks of Table 2 apply.

Due to the higher cost of delegation and in line with prediction $P.3$, the reference amount in B's promise is higher in HC than in LC (according to a two sided Mann–Whitney rank-sum test, $p < 0.001$). Moreover, while we do not detect any significant difference between the reference amount and the outside option of 13 euro in HC (according to a two sided Wilcoxon signed-rank test: $p = 0.285$), in LC it is significantly higher than the outside option of 7 euro ($p < 0.001$) and tends to be set around the equal split of the endowment (10 euro for both A and B; $p = 0.054$).

$R.2$ The reference amount contained in B's promise is strongly and positively associated with the opportunity cost of delegation: it is close to the level of the outside option in HC, while it tends to the equal split in LC.

4.2 A's and B's beliefs

Does the documented interplay between communication and the opportunity cost of delegation affect A's and B's beliefs? The first part of Table 4 presents summary statistics on B's beliefs about the probability that A passes (π_B^m) as well as on A's first order and B's second order beliefs about the amount sent by B (μ_A^m and μ_B^m, respectively).

Table 4. Descriptive statistics of beliefs and choices, by role and treatment

	Beliefs			*Choices*		
	μ_A^m	μ_B^m	π_B^m	$f(c_A^m = pass)$	c_B^m	N (*per role*)
LNC	5.646	6.583	46.718	0.615	5.577	39
	(3.669)	(3.217)	(32.067)	(0.493)	(3.894)	
HNC	4.081	6.149	21.297	0.216	5.081	37
	(3.902)	(5.049)	(21.104)	(0.417)	(4.970)	
LC	6.569	7.163	54.615	0.500	6.856	52
	(4.276)	(3.952)	(32.761)	(0.505)	(4.092)	
HC	9.154	9.431	30.745	0.353	5.886	51
	(5.912)	(5.517)	(29.216)	(0.483)	(5.168)	

Note. This table reports the proportion of As choosing to pass, $f(c_A^m = pass)$, and the (mean) amount sent by B, c_B^m, (standard deviations in parentheses) in the four treatments. The table also reports mean and standard deviation (in parentheses) of B's beliefs about the probability that A passes, π_B^m. Finally, the table reports A's first and B's second order beliefs on the amount sent by B, μ_A^m and μ_B^m.

As clearly shown by the table, the opportunity cost of delegation substantially increases μ_A^m and μ_B^m only when communication is introduced. The effect is much smaller (and even negative) with no communication. Finally, the opportunity cost of delegation exerts a negative effect on π_B^m.

The parametric analysis reported in Table 5 confirms this preliminary observation and adds further insight on differences in beliefs across treatments. In all regressions, LNC serves as the reference category. The dependent variable in columns (3) and (4), $d\pi_B^m$, is a dichotomic transformation of π_B^m taking a value of one if the probability reported by B is higher than 51 (out of 100). This empirical strategy is motivated by two important considerations. First, it neutralizes potential measurement errors that are due to subjective (mis-)perception of unitary changes in the domain of probability. Second, compared to an absolute number, the dichotomic measure provides clearer and more straightforward information about whether B actually expects A to pass or keep the endowment. Results remain qualitatively the same (although less precise) if we replicate the analysis by replacing the dichotomic measure with the stated probability.

Table 5. A's and B's beliefs

	(1)	(2)	(3)	(4)
	μ_A^m	μ_B^m	$d\pi_B^m$	$d\pi_B^m$
			$m \in \{p, e, \varnothing\}$	$m \in \{p, \varnothing\}$
HC	3.614^{***}	2.613^{**}	-0.190^{**}	-0.182^{**}
	(1.247)	(1.088)	(0.077)	(0.081)
HNC	-1.683	-1.079	-0.332^{***}	-0.343^{***}
	(1.144)	(1.226)	(0.059)	(0.061)
LC	0.944	0.336	0.112	0.144
	(1.089)	(0.910)	(0.096)	(0.099)
$Constant$	5.016^{***}	6.380^{***}		
	(0.802)	(0.598)		
$log\ (pseudo)\ L$	-485.082	-492.069	-95.312	-92.208
$Wald - \chi^2, F - stat$	5.99	2.82	26.53	27.66
$prob.$	0.000	0.040	0.000	0.000
N	179	179	179	173

Note. This table reports Tobit estimates (robust standard errors in parentheses). Columns (1) and (2) analyze difference across treatments in A's first and B's second order beliefs about the amount sent by B, μ_A^m and μ_B^m. Columns (3) analyzes differences in $d\pi_B^m$across treatments. Column (4) replicates the analysis in column (3) by excluding those trustees who, in LC and HC, sent an empty message. HC, HNC and LC are treatment dummies. Significance levels are denoted as follows: $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$.

We document a robust effect of the opportunity cost of delegation on both μ_A^m and μ_B^m only when communication is introduced. Indeed, A's first order beliefs in HC are significantly higher than those in LC ($p = 0.031$), while the difference between HNC and LNC is not significant ($p = 0.143$). Similarly, when looking at B's second order beliefs, the difference between HC and LC is significant ($p = 0.046$), while no difference is detected when comparing HNC with LNC ($p = 0.380$). Interestingly, for both μ_A^m and μ_B^m, we detect no significant difference between LC and LNC (for the coefficient of LC, $p = 0.388$ in the regression based on μ_A^m and $p = 0.713$ in the regression based on μ_B^m). Thus, although communication plays no role in shaping beliefs when the opportunity cost of delegation is low, it amplifies the effects on μ_A^m and μ_B^m of passing from a low to a high opportunity cost of delegation.

These results are also supported by two sided Mann–Whitney rank-sum test: we detect a highly significant difference in A's first order beliefs between HC and LC ($p < 0.010$), while the difference between HNC and LNC only reaches marginal significance ($p = 0.096$). Similarly, when looking at B's second order beliefs, the difference between HC and LC is highly significant ($p < 0.010$), while it does not reach statistical significance when comparing HNC with LNC ($p = 0.846$). No relevant difference between LC and LNC is documented, neither for μ_A^m ($p = 0.097$), nor for μ_B^m ($p = 0.117$).

Finally, as shown in the last two columns of Table 5, the opportunity cost of delegation substantially decreases the proportion of Bs expecting A to pass, both with and without communication. When pooling data in column (3), we detect highly significant differences in $d\pi_B^m$ both between HC and LC ($p < 0.001$) and between HNC versus LNC ($p < 0.001$). The same results are documented in column (4) when excluding those Bs who, in LC and HC, sent an empty message: both the differences between HC and LC ($p < 0.001$) and between HNC and LNC ($p < 0.001$) are highly significant. The last two columns of Table 5 also provide evidence in favor of the idea that B strategically uses communication (mainly in the form of promises) to affect A's choice to pass. Indeed, when the opportunity cost of delegation is high, we find that communication increases the proportion of Bs expecting A to pass, with this effect being stronger when B has sent a promise: the difference between HC and HNC is marginally significant in column (3) ($p = 0.057$) and significant at the 5% level in column (4) ($p = 0.045$). Instead, communication seems to play no role with a low opportunity cost of delegation, neither when considering all messages (in column 3, $p = 0.242$), nor when excluding trustees who sent an empty message (in column 3, $p = 0.148$). These findings provide empirical support for prediction $P.4$ and are summarized in the following statement.

$R.3$ The opportunity cost of delegation exerts a positive effect on A's first and B's second order beliefs on the amount sent by B only with communication. The effect of the opportunity cost of delegation on B's beliefs about the probability that A passes is negative and strong. Finally, when the opportunity cost of delegation is high, promises increase the proportion of Bs expecting A to pass.

We now investigate how communication strategies shape beliefs. We proceed in two steps. First, Table 6 studies the effects of promises (both precise and non-precise) - the most frequent message types - on A's first and B's second order beliefs on the amount sent by B in HC and LC, relative to the corresponding treatments with no communication.

Table 6. Beliefs and message types

	μ_A^m	μ_B^m
H	-1.680	-1.071
	(1.132)	(1.223)
e	-5.870^{**}	-4.611^{*}
	(2.666)	(2.567)
p	1.450	0.627
	(1.075)	(0.912)
$H * e$	6.745^{*}	9.134^{***}
	(3.954)	(3.280)
$H * p$	4.508^{***}	3.007^{*}
	(1.682)	(1.685)
$Constant$	5.043^{***}	6.382^{***}
	(0.793)	(0.597)
$log\ (pseudo)\ L$	-479.926	-490.794
$F - stat$	6.11	2.99
$prob.$	0.000	0.013
N	179	179

Note. This table reports Tobit estimates (robust standard errors in parentheses) to analyze the interplay between message types (as classified in phase 4 by A and B) and the opportunity cost of delegation in determining μ_A^m and μ_B^m. In all regressions, we pool data from LC, HC, LNC and HNC. H is a dummy that takes a value of 1 in HC and HNC and 0 o/w. e (p) is a dummy that takes a value of 1 if the message is classified as Empty (Promise) by the subject whose belief measure is elicited and 0 o/w. The same remarks of Table 5 apply.

When the opportunity cost of delegation is low, and relative to the treatment with no communication, promises do not exert any significant effect on A's first (for the coefficient of p in the first column, $p = 0.179$) and B's second order beliefs about the amount sent by B (in the second column, $p = 0.493$). Opposite results emerge when the opportunity cost of delegation is high. Indeed, in this case, relative to the treatments with no communication, promises positively and significantly affect A's first (for the linear combination of p and $H * p$ in the first column, $p < 0.001$) and B's second (in the second column, $p = 0.011$) order beliefs on the amount sent by B.[16]

$R.4$ When the cost of delegation is high, promises increase both A's first and B's second order beliefs about the amount sent by B. Instead, when the cost of delegation is low, promises do not affect belief measures.

This result therefore provides further evidence in support of prediction $P.4$, by showing that promises have an impact on beliefs only when the opportunity cost of delegation is high.

As stated in $R.1$, the opportunity cost of delegation strongly influences the precision of the communication used by B. Indeed, the number of non precise promises in LC is four times bigger than in HC. Therefore, as a second step in our analysis, we look at the differential effect of precise and non precise promises in LC on A's first and B's second order beliefs on the amount sent by B. We employ the same empirical strategy presented in Table 6 to isolate the effects of the two promise types on beliefs in LC, relative to the corresponding treatment with no communication. Results are reported in Table 7.

[16]The effect of empty messages is more volatile, being negative and significant on both measures of beliefs in LC and positive and significant on B's second order beliefs in HC, although the number of empty messages is too small (see Table 2) to assure robustness and precision of the estimates.

Table 7. Promise precision and beliefs in LC

	μ_A^m	μ_B^m
e	-5.614^{**}	-4.292^{*}
	(2.430)	(2.195)
pp	1.598	0.404
	(1.106)	(0.990)
np	0.805	1.846^{***}
	(1.595)	(0.689)
$Constant$	5.160^{***}	6.454^{***}
	(0.774)	(0.572)
$log\ (pseudo)\ L$	-234.565	-236.822
$F - stat$	3.12	4.67
$prob.$	0.030	0.005
N	91	91

Note. This table reports Tobit estimates (robust standard errors in parentheses) to isolate the effects of precise and non precise promises on μ_A^m and μ_B^m in LC, relative to LNC. e, pp, and np are dummies that take a value of 1 if the message in LC is empty, a precise promise, or a non precise promise, respectively, and 0 o/w. The same remarks of Table 6 apply.

When accounting for the effects of both precise and non precise promises in LC, we find that neither promise type exerts a significant effect on A's first order beliefs ($p = 0.152$ for the coefficient of pp and $p = 0.615$ for the coefficient of np in the first column). On the contrary, we find heterogeneous effects of precise and non precise promises on B's second order beliefs: while sending a non precise promise significantly increases B's second order beliefs relative to the treatment with no communication (for the coefficient of np in the second regression, $p < 0.01$), the effect of sending a precise promise is not significant (for the coefficient of pp, $p = 0.684$).

$R.5$ When the opportunity cost of delegation is low, relative to the treatment with no communication, precise promises affect neither A's first, nor B's second order beliefs on the amount sent by B. On the contrary, non precise promises significantly increase B's second order beliefs but do not exert any significant effect on A's first order beliefs.

$R.5$ thus provides evidence of inconsistency of beliefs between A and B, when non-precise promises are sent. This finding is not a direct implication of our theoretical model since the notion of Bayesian equilibrium implies that beliefs must be correct and consistent in equilibrium. Nevertheless, in section 5 we argue that this inconsistency may be reasonably explained by what we denote as the “illusion effect”, whereby B incorrectly over-weights the effect of using a non precise promise on A's beliefs relative to the amount she expects to receive.

4.3 A's and B's choices

The last step of our analysis is to investigate how delegation and communication affect choices in the lost wallet game. The second part of Table 4 reports summary statistics on A's and B's choices (c_A^m and c_B^m, respectively) in the four treatments of our experiment. We observe a substantial variability in A's choice across treatments, with LNC and HNC registering the highest (61.5%) and the lowest (around 21.6%) proportion of As choosing to pass, respectively. Communication reduces the impact of the opportunity cost of delegation on A's choice. Increasing the opportunity cost of delegation when communication is not allowed reduces the proportion of As choosing to pass by 39.9%. The effect is much smaller in size when communication is introduced, as passing from LC and HC causes a reduction in the proportion of As choosing to pass of 14.7%. On the contrary, the amount sent by B remains relatively stable across treatments, with its average ranging from 5.081 euro in HNC to 6.856 euro in LC.

Table 8 parametrically investigates how the interplay between the opportunity cost of delegation and communication affects A's and B's choices.

Table 8. Choices of A and B

	c_A^m	c_B^m
HC	-0.248^{***}	0.017
	(0.093)	(1.212)
HNC	-0.363^{***}	-1.017
	(0.082)	(1.345)
LC	-0.113	1.400
	(0.101)	(1.049)
$Constant$		5.023^{***}
		(0.804)
$log\ (pseudo)\ L$	-114.457	-476.984
$Wald-\chi^2,\ F-stat$	14.45	1.41
$prob.$	0.002	0.242
N	179	179

Note. The first column reports probit marginal effect estimates (robust standard errors in parentheses). The dependent variable is a dummy that takes a value of 1 if A passes and 0 o/w. The second column reports tobit estimates (robust standard errors in parentheses). The dependent variable is the amount sent by B to A in case A passes.The other remarks of Table 6 apply.

The opportunity cost of delegation substantially reduces the probability that A passes when B is not allowed to communicate, while the effect becomes negligible when communication is introduced. Indeed, results in the first column suggest that while the probability that A passes is significantly lower in HNC than in LNC ($p < 0.001$), we do not detect any significant difference between HC and LC ($p = 0.133$). The previous evidence is confirmed by non-parametric tests. According to a two sided proportion test, the percentage of As choosing to pass is significantly lower in HNC than in LNC ($p < 0.001$), while no significant difference is detected between HC and LC ($p = 0.131$).

Moving to the analysis of B's choice, neither the opportunity cost of delegation, nor communication influence the amount sent by B. Indeed, in the second column, we detect no significant difference in B's choice between HNC and LNC ($p = 0.451$) as well as between HC and LC ($p = 0.230$). Again, these results are supported by non-parametric tests. According to a two sided Mann–Whitney rank-sum test, the difference in the amount sent by B is neither significant between HNC and LNC ($p = 0.632$), nor between HC and LC ($p = 0.502$).

These empirical observations are summarized by the following result, which is consistent with predictions $P.5$ and $P.6$:

$R.6$ Communication attenuates the effects of the opportunity cost of delegation on A's choice to pass. With no communication, the higher the level of the opportunity cost of delegation, the more likely is A to choose to keep. With communication, the level of the opportunity cost of delegation exerts no effect on the probability that A chooses to keep. Neither communication, nor the level of the outside option affect the amount sent by B.

We also run a set of regressions that add A's and B's beliefs as determinants of their choices (results are available upon request). Two main observations follow from this empirical exercise. First, when including μ_A^m in the first regression of Table 8, the difference between LC and HC in the probability that A passes becomes significant ($p < 0.001$), suggesting that $R.3$ is mainly driven by the impact of communication on A's beliefs. Second, the association between choices and belief measures is strong and presents the expected sign, thus confirming the ability of the elicitation mechanisms used in phases 2 and 3 of the experiment to make subjects report accurate beliefs. A's choice to pass is positively and significantly correlated with A's first order beliefs about the amount sent by B ($p < 0.001$). Similarly, the amount sent by B is positively and significantly associated with both B's second order beliefs about the amount A expects him to send ($p = 0.003$) and B's beliefs on the probability that A passes ($p = 0.006$).

The previous results are in line with those reported in Dufwenberg and Gneezy (2000). In their original study, the authors find that the higher the outside option, the more likely is A to take it. Moreover, they find that the amount transferred by B to A is not correlated with the outside option while it is positively associated with B's second order beliefs about what A expects from him.[17]

Given results $R.3$ and $R.6$, it is natural to ask whether first and second order beliefs on the amount sent by B are consistent, and how beliefs relate to B's actual choice. We refer to consistency and correctness of beliefs, whereby the former characteristic refers to the alignment of A's first order and B's second order beliefs while the latter concerns their difference with respect to the amount effectively sent by B. Both these issues are explored

[17]Other studies further explore the result that the amount transfered by B to A is not correlated with the outside option, such as Servátka and Vadovič (2009), Cox et al. (2010) and Woods and Servátka (2019). All of these confirm the robustness of this result to variations in the context.

in Table 9, which reports evidence on the difference between μ_A^m and μ_B^m as well as between belief measures and the actual choice of B, c_B^m.

Table 9. Differences between belief measures and B's choice

	$\mu_A^m - \mu_B^m$	$\mu_A^m - c_B^m$	$\mu_B^m - c_B^m$	N *(per role)*
LNC	-0.937	0.069	1.006	39
	(5.143)	(5.848)	(3.901)	
HNC	-2.068^{*}	-1.000	1.068	37
	(6.057)	(6.266)	(4.941)	
LC	-0.594	-0.287	0.308	52
	(5.995)	(5.491)	(4.059)	
HC	-0.276	3.269^{***}	3.545^{***}	51
	(8.417)	(7.926)	(7.161)	

This table reports differences and significance levels (from two sided Wilcoxon signed-rank tests) between μ_A^m and μ_B^m, between C_B^m and μ_A^m and between C_B^m and μ_B^m. Significance levels are denoted as follows: $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.1$.

The difference between A's first and B's second order beliefs is not significant in LNC, LC, and HNC, while it reaches marginal significance only in HNC. Thus, in all treatments, B formulates beliefs that turn out to be consistently alligned to A's actual expectations. Moreover, in LNC, HNC, and LC, A's first and B's second order beliefs are correct in that they do not significantly differ from the amount sent by B. In HC instead, while belief consistency is confirmed, we find that B consciously chooses to send less than what expected by A.

$R.7$ A's first and B's second order beliefs on the amount sent by B are aligned in all treatments. Belief measures are generally correct and coincide with the effective amount sent by B. Only in the treatment with communication and high opportunity cost of delegation, the amount distributed by B is significantly lower than A's first and B's second order beliefs.

Result $R.7$ provides evidence of deception: while consistently anticipating the positive effect of his message on the counterpart's willingness to pass, B consciously chooses to send less than what expected by A.[18] This result provides indirect evidence of the dynamics of the

[18]The evidence in favor of deception is further confirmed by the observation that, in both treatments with communication, the amount sent by B is significantly smaller than the reference amount contained in his promise (according to a two sided Wilcoxon signed-rank test: $p < 0.001$ in HC; $p = 0.017$ in LC).

model, namely that it is costly for B to lie and he will resort to doing this only when it is the only way to induce some As to pass, which occurs when the opportunity cost of delegation is high.

5 Discussion: non-precise promises and the ”illusion effect”

In this section we briefly comment on the effect of non-precise promises on beliefs illustrated in result $R.5$ and exhibited in Table 7. To begin with, recall from the theoretical predictions in section 3.2.3, that non-precise promises may be used in equilibrium only when signaling is feasible. In other words, when there is a possibility of truthfully convincing S trustors that the trustee will actually leave the trustor better off then if she opts out. When the opportunity cost of delegation is high, the beliefs of S trustors are less relevant because they are less likely to pass anyway. Therefore, the trustor's beliefs on the distribution of the preference types in the population are relevant mainly in LC, and it is in this case that non-precise promises are more likely to sent.

While from a theoretical perspective beliefs are always consistent in a Perfect Bayesian Equilibrium, there are various reasons that may account for the discrepancy of beliefs in an experimental communication game. In our framework this discrepancy becomes salient mainly when the outside option is low and non-precise promises are more numerous. We attribute this discrepancy to what we denote as the “illusion effect”, which is characterized by trustees of high fairness type incorrectly believing that they may signal their type by promising relatively small amounts. To fix ideas, we provide a brief description of the separating equilibrium in which non-precise promises are sent that is formally derived in the appendix.

A separating equilibrium is characterized by a threshold reference value for promises $\underline{r}$, such that trustees that have a fairness type greater than x choose a promise with a reference point $r \geq \underline{r}$, while those that have fairness type less than x set $r < \underline{r}$. This allows sophisticated trustors to distinguish types that will make them better off by delegating. Intuitively, non-precise promises may be jointly used with precise promises in equilibrium only if $\overline{\alpha} > \underline{r}$, since otherwise a trustee can always deviate to a precise promise that (weakly) reduces his cost of lying without affecting the chances that delegation will occur.

The “illusion effect” in this context may originate from the fact that trustees of type $\alpha_B^t > 7$ erroneously (i.e., with respect to sophisticated trustors) believe that they can distinguish themselves from those that have $\alpha_B^t < 7$, by playing the separating equilibrium with $\underline{r} < \overline{\alpha}$ and raising the beliefs of sophisticated receivers. In reality, the sophisticated trustors do not perceive such a significant difference between less and more fair trustees, meaning that even trustees that are less fair are not believed to find it too costly to send a message with a reference point greater or equal to this $\underline{r}$. This leads trustees of high fairness type to believe they are playing the separating equilibrium, while sophisticated trustors believe the pooling equilibrium is being played. This may ultimately account for the difference between the impact that non-precise promises have on first and second order beliefs, explaining why non-precise promises significantly influence μ_B^m without producing such an effect on μ_A^m.[19]

6 Conclusion

Communication is beneficial in many strategic interactions as it generally facilitates cooperation, trust, and the emergence of proficuous norms of conduct. Nevertheless, understanding how communication mediates institutional and pre-existing conditions still represents an important open question for social scientists. In this paper, we consider a trustor-trustee setting, and experimentally study whether communication is comparatively more effective in influencing trust, based on the size of the opportunity cost of delegation. Our analysis relies on the lost wallet game, while introducing a pre-stage involving one-sided, free form, non binding communication from the trustee to the trustor.

Two aspects of the lost wallet game make it an ideal framework to investigate our research question. First, the trustee chooses an action on a richer (non-dichotomous) choice space. On the one hand, this increases message heterogeneity in the communication stage, as promises are naturally anchored to the action space. On the other hand, this allows us to better investigate the extent to which the trustee lives up to his promises. Second, the choice of the trustor depends on the (exogenously set) outside option representing her payoff in case she does not delegate. This allows us to manipulate the size of the outside option to capture situations in which the trustor faces either a high or a low opportunity cost of delegation.

We propose a theoretical model that delivers sharp empirical predictions by incorporating aspects of both costly talk and cheap talk models. In this setting, trustees have beliefs on fairness that are not affected by communication (a cheap talk feature), some trustors are naïve and can be influenced by messages, but talk is costly in the sense that trustees suffer from lying even if this does not lead them to modify their choices on how much to reciprocate (i.e., weak cost of lying hypothesis).

[19] At the end of Appendix A we present a calibration exercise that illustrates how the model can provide further intuition on the ”illusion effect”. Namely, by using our experimental data to calibrate the theoretical model, we show that if trustees of high fairness type incorrectly believe that low fairness types have sufficiently high beliefs on the probability of A passing, then making non-precise promises with a reference point below the even split can be a best reply.

In line with the predictions of the model, we find communication is more effective when the opportunity cost of delegation is high with respect to when it is low. Indeed, in the former case, communication increases the trustor's (first order) and the trustee's (second order) beliefs on the trustee's intentions, as well as attenuating the effects of the opportunity cost of delegation on the trustor's choice to delegate. With a low opportunity cost of delegation, instead, we find that communication plays no role in shaping beliefs and affecting choices. Moreover, we detect no effect of communication on the trustee's choice to pay back the trustor, which is consistent with the weak cost of lying hypothesis.

Another novel result of our study concerns the effects of the opportunity cost of delegation on the communication strategy adopted by the trustee to induce the trustor to delegate. Indeed, when this cost is low, communication becomes less precise, with the trustee's messages containing more non-precise statements of intent. The reduction in message precision is associated with an illusion effect, whereby the trustee wrongly expects non-precise communication to exert positive effects on trustor's beliefs and her propensity to delegate.

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A Appendix: Model Details

We first introduce the details on the role of beliefs and then proceed to describe the equilibrium and derive the empirical predictions. The equilibrium concept we use is Perfect Bayesian Equilibrium (PBE), which requires that the strategies of A and B be mutually best responses to each other, and that beliefs be consistent with these strategies.

A.1 The role of beliefs

Although B, through the cost of lying, is explicitly concerned about A's beliefs on the amount that he will return in case delegation occurs, these beliefs also indirectly affect B's expected utility since they have an impact on the probability that A passes. In particular

$$E_B[U_B(\cdot)] = \pi_B^m(x)V_B(\alpha_B^t, c_B^m, \mu_B^m(U)),$$

where $\pi_B^m(x)$ represents B's beliefs on the probability that A passes conditional on the opportunity cost of delegation, x and on communication, m.

In order to see how π_B^m depends on B's beliefs on A's expectations, we introduce some notation on the relevant first and second order beliefs considering the fact that these beliefs may be affected by communication. We assume that A will choose to delegate if μ_A^m is greater than a subjective threshold value that we denote with $z(x)$. We assume that $z(x)$ is common knowledge and is not influenced by the type of message received, but is increasing in the opportunity cost of delegation, x. Notice that the assumption that $z(x)$ is increasing in x does not exclude that B may believe that A will delegate, even if she receives less then the outside option x, and is therefore consistent with the experimental evidence of Dufwenberg and Gneezy (2000). $\mu_A^m(S)$ and $\mu_A^m(U)$ depend respectively on the beliefs of sophisticated and unsophisticated $A's$ on the distribution of fairness types they face. We assume that, in the absence of communication, both S and U trustors have the same distribution of beliefs on α_B^t defined on the support of the true values, $[\underline{\alpha}, \overline{\alpha}]$, and these beliefs are common knowledge, so that trustees and trustors have the same beliefs on the distribution of fairness types in the population of trustees. We denote these beliefs with distribution functions $G_S^m(\alpha_B)$ and $G_U^m(\alpha_B)$, where m stands for the fact that they can be influenced by equilibrium messages, m. The assumption that S and U have the same distribution of beliefs in the absence of communication implies that $G_S^{\emptyset}(\alpha_B) \equiv G_U^{\emptyset}(\alpha_B)$. These beliefs determine π_B^m, as well as B's second order beliefs on the amount that A expects to receive, ($\mu_B^m(S)$ and $\mu_B^m(U)$). Therefore, in attempting to increase the chances that A passes, B will also be inflating A's beliefs on the amount she expects to receive.

Based on these considerations, the expressions for B's set of beliefs that we elicit in the experiment are the following:

$$\mu_B^m \equiv E_B[\mu_A^m],$$

$$\pi_B^m(x) \equiv Pr_B[\mu_A^m > z_(x)].$$

Notice that μ_B^m may depend on m while $\pi_B^m(x)$ may depend on both x and m. We begin by establishing the following result on the relation between the opportunity cost of delegation and $\pi_B^{\varnothing}(x)$:

Fact 1 $\pi_B^{\varnothing}(x)$ is decreasing in x.

This implies that, in the absence of communication, an increase in the opportunity cost of delegation always reduces B's beliefs on the probability of A passing. This fact stems from the assumption that $S-$ and $U-$ trustors have a distribution of beliefs on α_B^t that does not vary with x and that $z(x)$ is increasing in x.

Assumption 1 $\underline{\alpha} < z(7) < \overline{\alpha} < y$

We know that $z(7) < z(13)$, therefore this implies that communication may play a role in convincing S trustors to pass when the opportunity cost of delegation is low ($x = 7$), while it may or not may not play a role when the opportunity cost of delegation is high ($x = 13$) based on whether $\overline{\alpha} \geq z(13)$ or $\overline{\alpha} < z(13)$.

Assumption 2 $V_B(\alpha, c_B^m, \mu_B^m(U) = y) > 0$ for every $\alpha_B^t \in [\underline{\alpha}, \overline{\alpha}]$.

This implies that for every type t, the utility of passing is always strictly greater than 0 even when the cost of lying is highest.

A.2 Equilibrium behavior: messages, choices and beliefs

To describe equilibrium behavior we start from the final stage of the interaction and work backwards. To simplify the exposition we assume that $\phi(\alpha_B^t - c_B^m) = (\alpha_B^t - c_B^m)^2$ and $l(\alpha_B^t - c_B^m) = (\mu_B^m(U) - \alpha_B^t)$ where λ is a positive constant.

Stage 3: *B's choice of how much to return to A if A passes*

In the final stage, if the trustor passed in the second stage, the trustee is called on to choose the amount to transfer. If this occurs, he chooses c_B^m by maximizing (1). We therefore have:

$$c_B^m = (\alpha_B^t - \frac{1}{2}) \text{ for } m \in \{\varnothing, e, pp, np\}\,, \tag{A1}$$

where it follows that c_B^m does not depend on communication and is strictly increasing in the reference point α_B^t. Also, notice that plugging (A1) into $V_B(\cdot)$ we obtain the following expression:

$$V_B(\alpha_B^t, \mu_B^m) = y - \alpha_B^t + 1/4 - \max[0, (\mu_B^m(U) - \alpha_B^t)],$$

which implies that increasing $\mu_B^m(U)$ above α_B^t is costly and therefore useful only if it produces a strong enough effect on the probability that A will pass.

Stage 2: *Beliefs*

In considering belief formation, it is important to notice that, for a given m, second order beliefs depend on the reference point determined by communication (r), and on the equilibrium beliefs of S and U trustors on the distribution of types in the population of trustees (i.e., $G_S^m(\alpha_B)$ and $G_U^m(\alpha_B)$), as well as on the share of sophisticated trustors (γ):

$$\mu_B^m = \gamma\mu_B^m(S) + (1-\gamma)\mu_B^m(U). \tag{A2}$$

Notice that $\mu_B^m(S) \in [\underline{\alpha}, \overline{\alpha}]$ for any m, while $\mu_B^{\varnothing}(U) \in [\underline{\alpha}, \overline{\alpha}]$, $\mu_B^{pp}(U) = r$ and $\mu_B^{np}(U) \geq r$. Finally empty messages do not affect the beliefs of unsophisticated trustors, but may affect those of the sophisticated in equilibrium.

The trustee's subjective probability that the trustor will pass when sending message m in treatment x is:

$$\pi_B^m \equiv \Pr_B[\mu_A^m > z(x)]. \tag{A3}$$

This last expression highlights how the subjective probability depends on the opportunity cost of delegation (x), and may actually be affected by communication because promises affect B's beliefs on the amount that A expects to receive. Therefore, higher promises increase μ_A^m and have a positive effect on B's beliefs relative to the chances that A will delegate.

Stage 1: *Messages*

In the communication game, equilibria can either be separating, allowing sophisticated trustors to distinguish between high fairness types (denoted with F and for which $\alpha_B^t \geq z_B(x)$), and low fairness types (denoted with N and for which $\alpha_B^t < z_B(x)$), or pooling in which sophisticated trustors do not distinguish between types.[20]

First notice that any informative equilibrium (i.e., one in which communication has an impact on beliefs) that includes e messages must also include promises. To see this, observe that equilibria in which only e messages are sent are non-informative and therefore equivalent to babbling, since besides having no effect on U trustors, these also have no signaling value

[20] Semi-separating equilbria may also exist in which N types pool with F types of lower values of α_B^t, and F types of higher values of α_B^t separate. We abstract from these equilibria in our analysis in order to simplify exposition since this does not affect of our results.

since all trustees send empty messages and therefore also do not have an impact on beliefs of S trustors.

Considering equilibria in which promises are used, in HC e will never be used since no trustor will pass in this case and the trustee is strictly worse off by Assumption 2. In LC instead, those that use empty messages will be immediately identified as $N-$types by S trustors in any equilibrium in which promises are used, because it is costless for F types to set $r \geq z_B(x)$, and will also not be able to affect $U-$trustors' beliefs. Thus, in any equilibrium in which promises are used, empty messages will only be used if N types do not want to affect the beliefs of U trustors (even though they are negatively affecting those of S trustors). This is a knife edge case and therefore very unlikely.

We now consider equilibria in which promises are used. In order for both pp and np promises to be sent, it must be that at least one type is indifferent between sending np and pp. This requires that both types of promises induce the same share of trustors to pass and the same cost of lying. In presenting the communication equilibria we denote m_F and m_N as the reference points (when they differ) of the different messaging strategies for the N and F fairness types respectively.

Separating Equilibria

We consider threshold equilibria in which those types below the threshold are considered of type N and those above are considered of type F. In order for separating equilibria to be relevant $G_S^{\varnothing}(z(x)) > 0$ so that signaling may play a role. Moreover, if trustees want to convince (all) $U-$trustors to accept, they must always set $r \geq z(x)$, since otherwise $U-$trustors would always prefer the outside option x.

We denote $\underline{r}$ as the minimum r such that for $r > \underline{r}$ separation occurs (i.e., such that $N-$types will never set an r above this level because their cost of lying becomes too high compared to the benefit of capturing $S-$types).

Now consider any equilibrium in which both pp and np are used and $\underline{r} \leq pp_F \leq np_F$. If $\underline{r} < \overline{\alpha}$ this can be an equilibrium since np_F carries the same cost of lying and the same chances of passing for $\alpha_B^t \in [\underline{r}, \overline{\alpha}]$ and therefore both messages are feasible. For those trustees with $\alpha_B^t \in [z(x), \underline{r}]$, setting $pp_F = \underline{r}$ is always optimal since it does not reduce their chances of convincing trustors to pass with respect to sending np and it minimizes their cost of lying. Notice indeed that separation implies that they have truthfully conveyed to S trustors that that they will return at least $z(x)$, even if sending a precise promise identifies them as less generous than those who use non-precise promises. Likewise, if $\underline{r} \leq np_F \leq pp_F$ both messages can be used, since some $F-$trustee types with $\alpha_B^t \in [\underline{r}, \overline{\alpha}]$ again do not find it convenient to deviate to either of the two messages since both do not have costs of lying and continue to guarantee the approval of $U-$trustors. The same thing holds for any putative equilibrium in which only np is used, or only pp is used. It follows that the equilibria may involve either the use of only one message type or the use of both. If instead $\underline{r} > \overline{\alpha}$ then only pp_F can be used to signal.

Now let us focus on an $N-$trustee. Considering the separating equilibrium, two cases may arise: 1) either the $N-$trustee sets $z_B(x) = pp_N < \underline{r}$ and convinces the $U-$trustors or 2) $r = \alpha_B^t$ and minimizes his cost of lying without convincing $U-$trustors. By assumption 2, (2) is strictly dominated, which implies that $z_B(x) = pp_N$, and any separating equilibrium involves the $U-$trustors always passing.

Case 1) consider any equilibrium in which both pp and np are used and $z_B(x) \leq pp_N \leq np_N$, this is never an equilibrium since np_N carries a greater cost of lying without increasing the chances of passing and therefore deviating to pp_N is always optimal. If instead $z_B(x) \leq np_N \leq pp_N$ and both messages are used, this is never an equilibrium since N will always find it convenient to deviate to $pp_N = z_B(x)$ since this minimizes his cost of lying and continues to guarantee the approval of $U-$trustors. The same thing holds for any putative equilibrium in which only np is used, since deviating to pp is always optimal. It follows that the only equilibrium message is to set $pp_N = z_B(x)$, since there exists no profitable deviation. It therefore follows that $z(x) \leq \underline{r}$.

Characterization of Separating Equilibria for different values of x

Since $z(x)$ is increasing in x, it follows that $\underline{r}$ is also increasing in x. To see this, denote $\underline{r}_L$ and $\underline{r}_H$ as the reference points above which separation occurs for $x_L < x_H$. We know from the separating equilibrium analysis that $z(x) \leq \underline{r}$ implying that whenever $\underline{r}_L < z(x_H)$, $\underline{r}$ is strictly increasing in x. We now show that this is the case also for $\underline{r}_L > z(x_H)$. Consider a separating equilibrium for x_L , the equilibrium implies that $\alpha_B^t = z(x_L) - \varepsilon$ is willing to set the reference point up to $m_N = \underline{r}_L$ (and pay the corresponding cost of lying from doing so) in order to avoid separation and obtain $\Delta\pi_B(x_L)$ that comes from convincing S trustors to delegate. Now consider a separating equilibrium for x_H. Since for any x, the benefit of convincing S trustors is the same for N types that have $\alpha_B^t < z(x)$ (i.e. $\Delta\pi_B(x_L) = \Delta\pi_B(x_H)$), then the magnitude of the cost of lying that an trustee just below the threshold ($\alpha_B^t = z(x_H) - \varepsilon$) is willing to sustain ($\mu_B^m(U) - \alpha_B^t$) is also the same. This implies that if both separating equilibria exist, it must be that $\underline{r}_L < \underline{r}_H$.

Given that only F types with $\alpha_B^t > \underline{r}$ are willing to send np, and that the distribution of α_B^t does not vary with x, the share of such trustees types is decreasing in $\underline{r}$. Now since we have shown that $\underline{r}$ is increasing in x, it follows that that np promises are less likely to be observed when x is higher.

Pooling Equilibria

When there is pooling all messages have the same meaning for $S-$trustors, so the only reason to send higher messages is to convince $U-$trustors. This implies that, $r \geq z(x)$ in order to convince all the $U-$trustors to pass.

Notice that an equilibrium in which both pp and np are used exists if and only if $z(x) < \underline{\alpha}$, which implies that $S-$trustors will always pass, which is ruled out by assumption 1. To see this, consider a putative equilibrium in which $\underline{\alpha} < z(x)$ and both pp and np are used. In this case all $N-$trustees (for any $\alpha_B^t \in [\underline{\alpha}, z(x)]$) have an incentive to deviate to the message with the lowest cost of lying (pp), which leads to separation and therefore the pooling equilibrium breaks down. Also, if there exists an $\underline{r} \in [z(x), \overline{\alpha}]$ such that some N types are worst off from sending $r > \underline{r}$ then such an $\underline{r}$ cannot sustain a pooling equilibrium, since observing an out of equilibrium $r > \underline{r}$, Bayes' rule can be applied leading trustors to believe that this must be coming from an F type. In order for all messages to have the same meaning it must be that no r is sufficiently high to make the lowest type of trustor (i.e., $\alpha_B^t = \underline{\alpha}$) worst off from sending it.

These considerations lead us to state the following predictions, and it what follows we briefly illustrate how they derive from the model.

$P.1$ *Communication and statements of intent.* Communication implies the prevalence of promises with respect to empty messages.

$P.2$ *Opportunity cost of delegation and promise precision.* When the opportunity cost of delegation is higher, a lower share of non precise promises are used with respect to precise promises.

$P.3$ *Opportunity cost of delegation and promised amounts.* With communication, the opportunity cost of delegation exerts a positive effect on the reference amount, r contained in B's promise.

$P.4$ *Communication, beliefs, and the opportunity cost of delegation.* Without communication, there is no effect of the opportunity cost of delegation on A's (first order) and B's (second order) beliefs on the amount distributed by B. With communication instead, the opportunity cost of delegation exerts a greater effect on first and second order beliefs (μ_A^m and μ_B^m)

$P.5$ *Communication, B's choice, and the opportunity cost of delegation.* The opportunity cost of delegation exerts no effect on the amount distributed by B, independently of whether communication is allowed or not ($c_B^{m=\varnothing} = c_B^{m\neq\varnothing}$).

$P.6$ *Communication, A's choice, and the cost of delegation: the attenuation effect.* Communication attenuates the effect of the opportunity cost of delegation on the choice of A to pass (c_A^m).

It is straightforward to observe that $P.1$, $P.2$, and $P.5$ follow directly from the equilibrium analysis.

To illustrate $P.3$ notice that from the equilibrium analysis it follows that when there is pooling with $x = 7$ there must also be pooling with $x = 13$, and $r \geq z(x)$. If instead there is pooling in $x = 13$ and separating in $x = 7$, r is always higher in pooling than in separating as long as $\underline{r}_L \leq z(13)$. Finally, if there is separating for both values of x, then it is sufficient for $\underline{r}_L \leq z(13)$ in order for r to always be greater when $x = 13$, since the lower bound for r in the separating equilibrium with $x = 13$ is $r = z(13)$. This implies that the average observed value is greater in HC with respect to LC. In the calibration exercise we indeed show that $\underline{r}_L \leq z(13)$ is always satisfied.

The first part of $P.4$ follows directly from the assumption that beliefs are not influenced by the outside option. To illustrate the second part, notice that when the separating equilibrium is played $z(7) < z(13)$ implying that communication increases the beliefs of a greater share of U trustors when $x = 13$ with respect to when $x = 7$. In expectations instead, because the distribution of trustees' fairness types does not change across treatments, the chances of receiving a message from an F (or N) type depends only on the threshold $z(x)$. The ex-ante distribution of beliefs does not not vary based on whether communication occurs or not. The same reasoning applies for pooling equilibria since in this case the beliefs of S trustors do not change.

Finally P.6 follows from the argument in section 3.2.3. However, this effect is reinforced by the "illusion effect", which refers to the trustees of type $\alpha_B^t > z(7)$ incorrectly believing that they may signal their type by promising relatively small amounts. This implies that F types may believe that they can raise beliefs of sophisticated trustors by playing the separating equilibrium with $\underline{r} < \overline{\alpha}$. In reality, sophisticated trustors do not perceive such a significant difference between less and more fair trustees, meaning that even trustees that are less fair are not believed to find it too costly to send a message with a reference point greater or equal to this $\underline{r}$. This leads F-trustees to believe they are playing the separating equilibrium while in reality the pooling equilibrium is being played.

Indeed, if the separating equilibrium never occurs when $x = 7$, this implies that at most a fraction of $U-$trustors will switch from keep to pass when communication is introduced. Given that beliefs are the same in both HNC and LNC and that $z(7) < z(13)$, the fraction of $U-$trustors that pass in the absence of communication is strictly greater when $x = 7$. Now, since in both treatments all trustees set $r \geq z(x)$ so that all $U-$trustors will pass, the increase in the share of $U-$trustors that pass generated by the introduction of communication is strictly greater when $x = 13$.

A.3 Calibrating the model

This calibration exercise serves two purposes. The first is to show that $\underline{r}_L \leq z(13)$, which provides further support for $P.3$, and the second is to give an intuition for how the model may explain the "illusion effect".

As a preliminary observation, notice that Assumption 2 is satisfied, since for any value of $\alpha_B^t \in [0, 20]$ it is straightforward to see that $V_B(\alpha_B^t, \mu_B^m(U)) > 0.$

Our objective is to determine the maximum value of $\underline{r}_L$ that is consistent with the model. Now notice that $\underline{r}_L$ is defined by the reference value such that an N type will prefer to set $pp = z(7) \leq \underline{r}_L$ and convince only U trustors to delegate, with respect to choosing $pp = \underline{r}_L$ and convincing all trustor types to delegate (incentive compatibility constraint). The condition for N to separate is the following:

$$\pi_B^{pp=z(7)}(7)[y - \alpha_B^t + 1/4 - max[0, (z(7) - \alpha_B^t)]] > [y - \alpha_B^t + 1/4 - max[0, (\underline{r}_L - \alpha_B^t)]], \quad (2)$$

where $\pi_B^{pp=z(7)}(7)$ represents the probability of delegation that comes from setting $pp = z(7)$ and therefore convincing all the U trustors. Since we are considering the trustees of N type this implies that $\alpha_B^t < z(x)$ so that this condition becomes:

$$\pi_B^{pp=z(7)}(7)[y + 1/4 + z(7)]] > [y + 1/4 - \underline{r}_L],$$

$$[\underline{r}_L - \pi_B^{pp=z(7)}(7)z(7)] > (1 - \pi_B^{pp=z(7)}(7))[y + 1/4],$$

$$\underline{r}_L > (1 - \pi_B^{pp=z(7)}(7))[20 + 1/4] + \pi_B^{pp=z(7)}(7)z(7).$$

Notice that linear costs of lying imply that the expression above does not depend on the specific value of α_B^t. Now we can calibrate the model to find the upper bound on $\underline{r}_L$. To set $\pi_B^{pp=z(7)}(7)$, we can find a lower bound for this probability by using the probability of passing that B expects in LNC taken from table 4, this is equal 46% which we approximate to 50%. We also set $z(x) = x$ assuming that the lower bound for delegating is equal to the opportunity cost of delegation. We therefore obtain the following:

$$\underline{r}_L = 1/2[81/4] + 1/2[7] = 13.62.$$

This shows that it is reasonable to state that $\underline{r}_L \approx z(13)$, when the separating equilibrium is played.

Moving to the second purpose of the calibration exercise, we illustrate how, in the presence of an "illusion affect", F types may erroneously set $\underline{r}_L$ at a lower value. In order to do this, we assume that F types set $np = \underline{r}_L = 7$ and that $\mu_B^{np=\underline{r}_L}(U) = 10$ implying that these non-precise promises lead trustees to believe that U trustors will believe they will receive 10. We then use these values to obtain the minimum value of $\pi_B^{pp=z(7)}(7)$ that satisfies (2):

$$\pi_B^{pp=z(7)}(7) = \frac{[y + 1/4 - \mu_B^{np=\underline{r}_L}(U)]}{[y + 1/4 + z(x)]} = \frac{20 + 1/4 - 10}{20 + 1/4 - 7} = 77\%.$$

This shows that the the illusion effect can be driven by F types that are overoptimistic about the probability that U will delegate. Indeed if F types believe that N types are sufficiently confident that a great share of trustors are credulous (77%), then they may believe that sending a non-precise promise with $\underline{r}_L = 7$ is sufficient to signal their type. With a less optimistic probability of U passing such as the one used in the calibration which is based on the experimental data from table 4 (50%), this will not allow them to separate since it produces $\underline{r}_L = 13.62$.

B Appendix: Instructions of HC

[Instructions were originally written in Italian. The following instructions refer to HC.]

[Phase 1]

Welcome and thank you for taking part in this experiment!

During the experiment talking to other participants is not allowed.

- If you have any questions during the experiment, raise your hand and an assistant will come to help you.
- By carefully following the instructions you can gain an amount depending on your choices and on the other participants' choices.
- At the end of the experiment the amount you gained will be paid in cash.
- The following rules apply to all participants.

General rules

- At the beginning of the experiment, the computer will randomly and anonymously form groups of two participants.
- During the experiment, each participant will interact exclusively with the other person in his/her group.
- At the beginning of the experiment, participants will be randomly assigned to one of two different roles, called A and B, in such a way that, in each group, one person will have role A and the other person will have role B.

The choices of A and B

- In each group, A will be endowed an amount of 13 euro.
- A chooses whether to KEEP or to PASS the amount of 13 euro.
- If A chooses KEEP, then A gains 13 euro and B gains 0 euro.
- If A chooses PASS, then B receives 20 euro and chooses how much to TRANSFER to A. In this case A gains the amount that B transfers, whereas B gains 20 euro minus the amount transferred to A.

- The following table shows how the gains of A and B are calculated according to their choices:

	A gains	B gains
If A chooses to KEEP 13 euro	13 euro	0 euro
If A chooses to PASS 13 euro to B and B chooses to TANSFER X euro	X euro	(20-X) euro

- B chooses how much to TRANSFER to A before knowing A's choice. At the end of the experiment B's choice will be used to calculate the gains of A and B only if A has in fact chosen to PASS 13 euro.

- Before A makes his choice, B can send him a MESSAGE. The message can contain up to 300 alphanumeric characters. The only restriction on the message content is that B cannot include personal information to reveal her identity (name, computer id, etc.).

[Phase 2]

Before knowing the results of the interaction, each participant has the opportunity to gain an extra amount if he/she will predict his/her partner's choice within the group.

What will A predict? How much does A gain?

- A has to predict the amount that B has chosen to TRANSFER assuming that A has chosen to PASS 13 euro.

- A can gain up to 3 extra euro depending on how accurate his prediction is. Precisely, A's gains will be calculated according to the following rule:

$$gains\ of\ A = 3euro - 0.75 * (prediction\ of\ A - amount\ transfered\ by\ B)^2$$

- According to the rule above, if A's gains are negative, then A will not gain any extra euro.

- Please, pay attention to the following three features about this rule: i) if A exactly predicts the amount transferred by B, then he will gain 3 euro; ii) the penalization due to errors in A's prediction increases in the difference between A's prediction and the amount transferred by B; iii) if the difference between A's prediction and the amount transferred by B is at least 2 euro, A does not gain any extra euro.

- Notice that A has an incentive to state her/his prediction truthfully. Indeed, if the prediction is correct, by truthfully reporting it, A minimizes the penalization that is due to errors and maximizes her/his gains.

What will B predict? How much does B gain?

- B has to predict A's prediction made according the rule above. That is, B has to predict how much A expects that B transfers assuming that A has chosen to PASS 13 euro.
- As before, B can gain up to 3 extra euro depending on how accurate her prediction is. Precisely, B's gains will be calculated according to the following rule:

$$gains\ of\ B = 3euro - 0.75 * (prediction\ of\ B - prediction\ of\ A)^2$$

- According to the rule above, if B's gains are negative, then B will not gain any extra euro.
- Again, please, pay attention to the following three features about this rule: i) if B exactly predicts A's prediction, then she will gain 3 euro; ii) the penalization due to errors in B's prediction increases in the difference between B's prediction and A's prediction; iii) if the difference between B's prediction and A's prediction is more than 2 euro, B does not gain any extra euro.
- As much as for A, B has an incentive to state her/his prediction truthfully. Indeed, if the prediction is correct, by truthfully reporting it, B minimizes the penalization that is due to errors and maximizes her/his gains.

[Phase 3]

Before being informed of the experiment results, participants who play the role of B will have the choice to gain an extra amount according to the following rules.

What will B do? How much does B gain?

- B will be asked to reveal her guess of the likelihood that A has chosen to KEEP 13 euro, and of the likelihood that A has chosen to PASS 13 euro. To do this, the computer will show two frames to B, one positioned on the left and the other on the right. In the left side frame B shall include how likely she guesses that A has chosen to KEEP 13 euro, whereas in the right side frame B shall include how likely she guesses that A has chosen to PASS 13 euro. Each prediction must be a number between 0 and 100, where 0 means that B guesses that A has not made the correspondent choice and 100 means that B is sure that A has made the correspondent choice. Finally, the sum of the two predictions made by B must be equal to 100.

- Given B's predictions, at the end of the experiment B will take part in a lottery and, if lucky, she will gain 3 extra euro.
- The procedure used to determine the result of the lottery is such to make B more willing to make her predictions as accurate as possible. The more likely B guesses a given A's choice, the higher the correspondent prediction must be.
- The computer will assign a score (from 0 to 10,000) to each of the two B's predictions according to the following expressions:

$$Score\ for\ prediction\ of\ B\ on\ A\ choosing\ to\ KEEP\ 13\ euro = \\ = 10000 * \left[1 - \left(1 - \frac{prediction\ of\ B\ on\ A\ choosing\ to\ KEEP\ 13\ euro}{100}\right)^2\right]$$

$$Score\ for\ prediction\ of\ B\ on\ A\ choosing\ to\ PASS\ 13\ euro = \\ = 10000 * \left[1 - \left(1 - \frac{prediction\ of\ B\ on\ A\ choosing\ to\ PASS\ 13\ euro}{100}\right)^2\right]$$

where:

$$prediction\ of\ B\ on\ A\ choosing\ to\ KEEP\ 13\ euro + \\ + prediction\ of\ B\ on\ A\ choosing\ to\ PASS\ 13\ euro = 100$$

- Note that the higher B's prediction in a given frame, the higher the assigned score.
- The lottery result and the eventual assignment of the 3 euro depend on the number of points assigned to B's prediction about the actual choice made by A.
- In particular, at the end of the experiment the computer will randomly draw an integer number between 1 and 10,000 with uniform probability. This random number will be compared to the number of points assigned to B's prediction about the choice in fact made by A. If the random number is not greater than the number of points assigned to B's prediction, B will gain 3 euro; otherwise B gains nothing.
- Example. B guesses that A has chosen to KEEP 13 euro with probability 70 over 100 and, therefore, that A has chosen to PASS 13 euro with probability 30 over 100. In this case, according to the above rules, the computer assigns 9100 points to the former prediction and 5100 points to the latter prediction. Note that expressing a higher prediction for the event considered more likely to occur is always profitable to B because, if she is right, B will have more probability to win the lottery. Suppose that A has chosen to PASS 13 euro so that B will take part in the lottery with 5100 points. Suppose that the random number drawn by the computer is 4812. Since the random number is lower that the score assigned to B's prediction about the choice made by A, B gains 3 euro.

- If B attaches probability 100 over 100 to a given A's choice, then regardless of the random number drawn by the computer, B will gain 3 euro if and only if A has in fact made that choice and will gain nothing if A has made the opposite choice.

- Before confirming her predictions, B will have the opportunity to know how many points have been assigned to her predictions using the "Calculate points" button. B can modify her predictions every time she likes. To confirm predictions, B has simply to click on the "confirm your choice" button.

[Phase 4]

Before being informed of the results of the experiment, you will have the choice to gain an extra amount by classifying the message that B has sent to A at the beginning of the experiment

What shall A and B do? How much do A and B gain?

- During the experiment B has sent a message to A. A will be asked to classify B's message using one of the following categories:
  - PROMISE: a message containing "a promise or a declaration of intent";
  - EMPTY MESSAGE: a message not containing "any promise or declaration of intent"

- B will be asked to predict the category chosen by A in order to classify the message.

- Both A and B gain 1 euro if B predicts the category chosen by A; otherwise both A and B gain nothing.

C Appendix: Message classification in LC and HC

Table A1. Message classification in LC and HC

Message	A's category	B's category	Precision
LC			
Hi, as you have noticed, this is the famous prisoner dilemma that we study in microeconomics 101. If you choose to pass and I type in 10, WE BOTH WIN! It's the smartest thing to do! In this way, we share the gains.	e	p	p
Hi, if you choose to pass 7 euro, I will transfer 10 to you, in such a way, at the end, both of us will earn 10 euro each. Let us trust each other, so that we can both go home happy!!!!	p	p	p
If I was A, I would probably keep 7€... however it seems to me that it is fair to split 20€, so if you pass you will receive 10€ :) I know that you don't trust me, but trust me! You will get 3€ more and we create wealth: from 7€ to 20€	p	p	p
This is my proposal for you: 10 and 10. I imagine that there will be a second round where we will switch roles, so that if I give you 10 now then you'll do the same later. It seems fair to me!	p	p	p
Hi, it is convenient for both of us if you do not keep 7 euro because I can transfer a higher amount such as 10	p	p	np
Hi A, we both know that you will decide the final outcome of this game. You can either trust me or not, in the latter case you would get your 7 euro for sure. If you choose to transfer 7 euro to me, I will give 13 back to you	p	p	p
If you decide to PASS, I will assign an amount of 8 euro to you in order for both of us to earn more than what implied by your possible choice to KEEP.	p	p	p
I can transfer more than 7 euro to you, in this way we can both gain.	p	p	np
I will give 10 euro back to you if you choose to pass your 7.	p	p	p
what are you going to do?	e	e	np
Hi player A, I do not really know how to convince you to pass, I can only tell you that my intention is to give you more than what you would earn by keeping the 7 euro. Hi	p	p	np

Table A1. Message classification in LC and HC (con't)

Message	A's category	B's category	Precision
LC			
Hi A I was thinking that both of us could earn today! For example if you decide to pass the 7 euro to me I will be fair and divide the 20 euro fairly: I get 10 and you get 20. You have my word! In this way you will increase your gains and so will I.	p	p	p
If you pass the 7 euro to me I will give 10 back to you so that both of us will gain!	p	p	p
Hi, I propose that you pass the 7 euro, and I promise that I will give you 9 euro back. In this way you will earn 2 euro more (7 +2), with no trouble.	p	p	p
Hi A. It is better for both of us if you transfer the 7 euro to me; in this way both of us will earn a higher amount because I would transfer more than 7 euro to you.	p	p	np
If you PASS, my intention is to transfer 10 EURO. It is a win win for both :)	p	p	p
You could choose not to pass the 7 euro to me, and in this way you would earn only 7. Instead, if you pass, I would pass 10 to you and you would earn more	p	p	p
If you pass the 7 euro, I will give 12 back to you and keep 8 in order to have gains that are more or less fair.	p	p	p
Hi, it is a pleasure to collaborate with you. I know that you have the possibility to earn only 7 euro, but in such a situation with my endowment of 20 euro we could have a win-win solution by splitting 50-50, namely 10 to you and 10 to me, we could both earn more, isn't it true?	p	p	p
If you pass the 7 euro to me, I'll transfer them back to you, I'll transfer 7 euro, so that you don't lose anything and both of us gain!	p	p	p
[BLANK]	e	e	np
Hi, if you transfer the 7 euro we share 10 fifty-fifty, 10 euro each and we make a good impression. You have the choice.	p	p	p

Table A1. Message classification in LC and HC (con't)

Message	A's category	B's category	Precision
LC			
Listen, both of us can earn 10 euro per game: if you do not keep the 7 euro I'll reward you with 10 euro, so that we both earn 10 euro for each stage instead of 7 for you and 0 for me, or 0 for you and 20 for me	p	p	p
Hi I don't know who you are but I am sure of one point! We both have the opportunity to earn more than 7 Euro, I am not saying that I will pass all of the 20 euro, but we will share fifty-fifty as it is fair, so that we get back a bit of the tuition fees! Hi beauty:)	p	p	p
If you decide not to pass 7 euro you earn only 7 whereas I earn 0; instead, if you decide to pass them to me I can make you earn even more than 7. In my opinion it is the suitable choice because I will make you earn more than 7. Even if I made you earn only 8 you would have a gain of 1 anyway	p	p	np
Hi! From what I understand, both of us can earn a given amount in case you pass. In particular, you can earn more than your 7 euro if I choose a minimum amount of 13 for X. If you decide to pass, I will type in X so that you can have at least 10	p	p	np
Hi! I could choose to transfer 10€ so that both of us will earn 10€.	p	p	p
If you pass seven euro to me you could earn more	p	p	np
The best solution for both of us is certainly to maximize our gains, ten euro each looks like more than fair to me, I believe that also for you it's surely better to pass	p	p	p
Hi! I'll certainly transfer an amount greater than 7 euro; otherwise you wouldn't have an incentive to transfer money to me. I believe that the fairest thing is to give 12 to you and 8 to me :) 10 would be too little in my opinion	p	p	p
Pass 7 euro, I'll transfer 8 to you and both of us gain	p	p	p
If you choose to pass 7 euro, you'll receive 10	p	p	p
Have you got more than 15 euro?	e	e	np

Table A1. Message classification in LC and HC (con't)

Message	A's category	B's category	Precision
LC			
Why am I saying this to you? If you pass, I'll split it evenly: in my opinion in this way we'll reach more or less the expected payment, which is about 12 euro (10+3). Let's try to cooperate in order to remove the pleasure for microeconomists who see only selfish behavior in their models. I'll do it	p	p	p
Hi A! I'll propose an agreement to you, considering that if you decide not to pass you gain 7 euro, I propose you pass me the money, so that it becomes 20 and I commit to give 10 back to you. In this way, we get the same amount and you gain more than 7 euro. I trust you! Bye.	p	p	p
Hi, I'll transfer 10 euro, this is profitable for both of us	p	p	p
Hi, I'm B. If you transfer the amount we both have the chance to earn more by splitting the reward (10€ each) and maximizing our gains. I promise maximum reliability :)	p	p	p
Hi A! If you pass your 7€ to me you'll earn more because I'll give 10 back to you. With this choice both of us will earn something	p	p	p
Let's do it. Hi, I know that the rational choice in this game would be not to pass in the first step. However, the rational choice is not always the most efficient: it is profitable for us to cooperate to take home these 10 euro each. I trust in your sign of faith.	p	p	p
Hi A, if you choose to pass 7 euro, you will earn more	p	p	np
This is my proposal for this game, you transfer 7 euro to me, and I'll equally split the 20 I'll receive. 10 euro each	p	p	p
I don't know whether the actual gains are based on how money is passed in this stage of the experiment but in any case I believe it is appropriate that you pass 7 euro to me and I transfer 13 of my twenty in order to get fair gains	p	p	p
Hi, let us not be intimidated by moral hazard. We have the chance to split either 7 or 20 euro. If you decide to pass, you will earn more than now. Maximize your gain and don't be scared of risking	p	p	np

Table A1. Message classification in LC and HC (con't)

Message	A's category	B's category	Precision
LC			
Both of us could earn more than what we did if you kept the money. I have no interest in snatching everything from you when both of us could obtain a higher gain.	p	p	np
Trust me ! You get three small euro more and we split the twenty. 10 and 10 each	p	p	p
Hi I am B, I'll assign 10€ to you if you decide to pass. So both of us can get half of the total!	p	p	p
If you pass the money to me I'll transfer 10 euro, in this way we both gain and you gain more than 7 euro. I swear	p	p	p
Hi, I know that if I said that I would split it 10 and 10 you wouldn't probably risk, therefore I'll divide the 20 euro in 13 for you and 7 for me, so that both of us earn somethingl. I hope to persuade you to trust me :)	p	p	p
To be quick: 10 (that is more than 7) and 10?	p	p	p
Hi :) I would like to persuade you that the choice to pass 7 euro is more profitable for you because I would give you half of my gains, more than what you would get if you decided to keep it!	p	p	p
If you pass the 7 euro to me, I'll transfer 7 euro to you, so that your earnings will remain 7 euro.	p	p	p
To both make profits, X should be more than 7 and less than 20. Moreover, to persuade you to give me 7 euro, X=10 would warranty a fair reward, so that both of us earn the same amount	p	p	p

Table A1. Message classification in LC and HC (con't)

Message	A's category	B's category	Precision
HC			
If you pass 13€, I will pass 15€ back to you and I will keep 5 for me. This is the only incentive that I can offer to you. Moreover it will be more convenient to earn 20 together than 13 alone.	p	p	p
IF YOU PASS 13 EURO, I WILL GIVE 15 EURO BACK TO YOU IN SUCH A WAY YOU EARN MORE AND I DO NOT GET 0 EURO. I THINK THAT THIS IS CONVENIENT FOR BOTH OF US. THANKS!	p	p	p
I will give 14 euro to you!:) pass the money thankssss	e	p	p
HI I AM B. LET US DO AN HONEST THING. YOU KEEP 15, I KEEP 5. IN THIS WAY WE BOTH EARN, AND YOU GET MORE THAN WHAT YOU WOULD GET BY KEEPING 13.	p	p	p
I will split sum equally if you allow me to decide.	p	p	p
If you decide to transfer the money to me I will leave 15 euro to you. In such a way you earn 2 euro more and I obtain a profit too.	p	p	p
Hi! I propose you to transfer 13 euro to me in such a way that we will both earn. If you pass 13 euro to me I will transfer 13 to you: in this way you earn as much as you could get by keeping it and I take the remaining 7! :)	p	p	p
Ciao! It is 2:20pm, the max payout of the experiment is 30€, here is 20€. This makes me suppose that there will be a second trial. I think it is convenient to build a relationship based on trust. Transfer 13€ to me, I will split it so that we each get 10€.	p	p	p
MAKE A SMART CHOICE	e	e	np
Taking the risk can imply an advantage.	p	p	np
Hi, by making a simple calculation, if you pass the amount to me, I will transfer 14 because for me it's better to have 6 instead of 0 and in this way you would earn a euro more.	p	p	p
Hi A, this is B. If you choose to pass the loot, I will pass 16 euro to you. You gain, I gain.	p	p	p
I will assign 16€ to you, keeping 4 for myself. At least, let me have a coffee.	p	p	p

Table A1. Message classification in LC and HC (con't)

Message	A's category	B's category	Precision
HC			
If you pass 13 euro to me, I will give 14 back to you	p	p	p
14 euro if you pass ;)	p	p	p
Hi! I believe in the dominance of management on economics, and therefore on the higher importance of altruism and cooperation than egoism (yes, reading such a statement would make me bored). I believe in the importance of trust: for this reason I will type in 10, trusting you.	p	p	p
If you decide to pass the 13 euro to me, I will transfer an amount X to you, with X equal to 13 euro, so that you do not lose anything and I get a profit of 7€	p	p	p
Hi A! You have an incentive not to pass, but if we cooperate all of us can be happier: I assure you that if you pass the 20 euro to me I will send 15 back to you so that you earn 2 euro more, I get 5 for a pizza tonight, which is better than nothing :) Pareto improvement, come on! :)	p	p	p
Hi, I think it is a game of interaction therefore if we divide gains equally both of us can win. I hope you will collaborate, see you soon.	p	p	p
[BLANK]	e	e	np
So, given the fact that if you do not decide to transfer the 13 euro, you earn 13. I ask you to transfer it and I will return 15 to you, so that we can both gain. At the end I think that the experiment will be more successful if you earn more than 13	e	p	p
Hi it is better if we transfer the money, because we generate more! if you do not transfer, only 13€ will remain, in THE OPPOSITE CASE WE CAN GENERATE 20....	e	p	np
Dear A, the aim of this experiment is clearly to maximize the gains for both of us. The only thing that is better than 13euro for you is 14 euro. I will be happy to keep 6. In my opinion, they expect this. The payment depends on our behavior, so I am persuaded that this is the best choice.	p	p	p
I will transfer 14 euro to you if you pass the 13 euro	p	p	p

Table A1. Message classification in LC and HC (con't)

Message	A's category	B's category	Precision
HC			
Dear A, I invite you to send the 13 euro to me. You're surely worried that I will give back less to you, but I swear on my honor that this will not happen. I promise that if you renounce to the 13 euro, I will give 15 back to you, so that you can earn 2 euro more (that never hurts) and I will keep 5.	p	p	p
Hi, I have an idea that can make both of us earn. You can choose to pass, while I choose to set x = 13. In this way you do not lose anything, and I earn something too. Perhaps you can think that I am lying, but it is up to you to decide whether or not to trust me.	p	p	p
Hi A, if you transfer the 13 euro to me I guarantee that I will transfer 10 euro to you, so that both of us will be satisfied. 10 euro each. I hope you will accept. thanks ! HI A!! :)	p	p	p
Hi :) I have decided to set x=13 in order to divide gains! at the end for me it would be 7+3(show up fee) anyway, surely better than 0! ahahaha :)	p	p	p
Hi, so: if you choose to pass, I will receive 20 euro. Since your maximum gains are 13 euro, I will pass 15 euro back to you so that I will have at least 5 euro and you will have earned 15. As soon as roles are switched we'll do the same!	p	p	p
Hi. Unfortunately it is not a repeated game and so I have no chance to convince you to trust me, and you have no incentive at all. In any case, I tell you that I will transfer 14 euro to you and I will keep 6 for me. I give you my word, for whatever it is worth!	p	p	p
If you decide to pass, I will transfer 14 euro, so that you will obtain a euro more than what you could get by choosing to keep, while I will earn more than what I would obtain if you keep. Both of us will earn more!	p	p	p

Table A1. Message classification in LC and HC (con't)

Message	A's category	B's category	Precision
HC			
Hi! In order to have an incentive to pass the 13 euro to me, I propose this agreement: if you pass 13, I will give 14 back to you. In this way you could earn something more and I will earn 6 instead of 0. You can trust me! If you pass, I could never dishonor your brave choice!	p	p	p
Unfortunately I have been assigned the role of B that is less dominant than A. However, the same could happen to you. For this reason I ask you to be generous and bet on generosity, in this way both of us can benefit from a safe gain (10, 10) thanks :)	p	p	p
Today's experiment is simple, you must decide between two opportunities. Either you live I die, or we share and get 10 each. You choose. ciaooo	p	p	p
Given the fact that I have been assigned to B, little is better than nothing. If you allow me to have 20 euro I will give 13 back to you.	p	p	p
If you pass 13 euro to me, I will transfer 15 back to you.	p	p	p
Hi A, if you agree to pass the 13 euro, I will transfer half of the money that I will receive, namely 10. Trusting in your collaboration, I send you my warmest greetings.	p	p	p
Let us agree that A always passes the 13 and B passes 10 so that we get 10 and 10 with no risk at each stage. However, this needs trust and honesty, I pass 10 to you as I am B, you pass the 13 to me so that we end up with a good result for both.	p	p	p
Hi, the amount I will select to transfer is equal to 14 euro. It is the only amount that makes it profitable for you to decide to transfer. It also represents the only way for me to earn something. I trust in your trust! :)	p	p	p
If you pass 13 euro you will earn more. I need 5 euro so you will get 15 back, more than the initial 13 and both of us will gain	p	p	p
Hi! I propose an exchange, if you pass 13 euros to me I commit to give 16 back to you in such a way you gain too	p	p	p

Table A1. Message classification in LC and HC (con't)

Message	A's category	B's category	Precision
HC			
Hi, if you pass the money we will split the amount! I woke up early as well xD	p	p	np
Hi, if you choose to pass I will transfer 15 euro to you (that is better than 13 euro) and I will keep 5 euro for me (that is better than 0). In this way, we both gain.	p	p	p
Hi, if you decide to pass 13 euro, you can be certain that the amount you will receive from me is 17 euro. so you will be compensated for taking this risk.	p	p	p
Hi, I propose to transfer your amount of 13 euro to me. I will assign 15 to you later so that you can earn more. I will have the opportunity to keep 5 euro. Optimal solution for both of us	p	p	p
Pass	e	p	np
Since there is only one interaction, if you decide to pass 13 euro to me, that become twenty I will return 13 euro to you, and I will keep 7 for me. this is because otherwise I would earn 0 and you keep 13 in any case. I think this is mutually advantageous.	p	p	p
I know that the most profitable choice for you is to keep 13€, but if you pass I will give 13 euro back to you and both of us will earn something.	p	p	p
Hi A. If you decide to pass your 13 euro then from my 20 euro I will pass 15 to you. It is profitable for both of us, for you because you will earn 2 euro more, for me because I will earn 5 euro instead of 0.	p	p	p
Given the fact that the maximum amount to be earned is 30€, it is obvious that the experiment will be repeated. Therefore, the best way to maximize our payoffs is to split 20€ each time. Indeed, it is very likely that it will be repeated with reversed roles. In this way 10€ x 3 stages gives 30. While 13 x 2 stages gives 26	p	p	p
Let's make sure that the experiment will have a win win outcome. If you decide to pass 13 euro, I'll transfer to 16€ to you so that both of us will gain.	p	p	p