2017

Humans' (Incorrect) Distrust of Reflective Decisions

Antonio Cabrales
University College London

Antonio M. Espín
Middlesex University Business School

Praveen Kujal
Middlesex University

Stephen Rassenti
Chapman University, rassenti@chapman.edu

Humans' (Incorrect) Distrust of Reflective Decisions

Comments
Working Paper 17-05

Humans' (incorrect) distrust of reflective decisions

Antonio Cabrales[1], Antonio M. Espín[2], Praveen Kujal[2] & Stephen Rassenti[3]

Author affiliation:

1. Department of Economics, University College London, London, United Kingdom

2. Department of Economics, Middlesex University Business School, London, United Kingdom

3. Economic Science Institute, Chapman University, Orange CA, USA

ABSTRACT

Recent experiments suggest that social behavior may be shaped by the time available for decision making. It is known that fast decision making relies more on intuition whereas slow decision making is affected by reflective processes. Little is known, however, about whether people *correctly anticipate* the effect of intuition vs. reflection on others' decision making. This is important in everyday situations where anticipating others' behavior is often essential. A good example of this is the extensively studied Trust Game where the trustor, by sending an amount of money to the trustee, runs the risk of being exploited by the trustee's subsequent action. We use this game to study how trustors' choices are affected by whether trustees are externally forced to respond quickly or slowly. We also examine whether trustors' own tendency to stop and reflect on their intuitions (as measured by the Cognitive Reflection Test) moderates how they anticipate the effect of reflection on the behavior of trustees. We find that the least reflective trustors send less money when trustees are forced to respond "reflectively" rather than "intuitively", but we also argue that this is a wrong choice. In general, no group, including the ones with the largest number of reflective individuals, is good at anticipating the (positive) effect of forced delay on others' trustworthiness.

Keywords: trust, trustworthiness, beliefs, reflection, dual-process, intuition

INTRODUCTION

Humans often trust others, but not everyone and not all the time. The extent of our trust is instead dependent on the individual and the situation encountered. Surely the act of trusting is based on our beliefs about other party's behavior. However, it is not clear whether our beliefs regarding *who* can be trusted are correct. Further, are we able to predict *when* someone can be trusted? There is little doubt that these are key questions for understanding human social behavior (DeSteno et al. 2012, Bonnefon et al. 2013, Alguacil et al. 2016, Everett et al. 2016, Jordan et al. 2016, Capraro et al. 2017b). Not in vain, the outcomes of many decisions in the social domain depend on the behavior of others and we need to form expectations regarding that (behavior). For this reason, we often gather information not only about our interaction partners' identity or emotional state (DeSteno et al. 2012, Rule et al. 2013, Alguacil et al. 2016, Everett et al. 2016, Capraro et al. 2017b), but also about the process through which they make decisions (Critcher et al. 2013, Van de Calseyde et al. 2014, Hoffman et al. 2015, Capraro & Kuilder 2016, Jordan et al. 2016).

One bit of information that can be an important determinant of trust is the time others have for decision making. That is, are we more likely to trust those that have less time to respond or those that have sufficient time to contemplate their actions? This is a key question we investigate in this paper. It is well known that time pressure triggers intuitive, automatic decision making, whereas slow decisions are associated with a stronger influence of reflective, deliberative processes (Kahneman 2011, Rand et al. 2012, 2014, Capraro & Cococcioni 2015, Capraro et al. 2017a). There is now plenty of evidence indicating that social behavior is partly driven by the extent to which intuition or reflection dominates the decision process (Rand et al. 2012, 2014, Corgnet et al. 2015, Ponti & Rodríguez-Lara 2015, Capraro et al. 2017a). Thus, in a strategic context it is but natural that we take into consideration whether our interaction partners have sufficient time to reflect upon their choices or not.

Finding out when our interaction partners can be trusted is likely to have been essential for individual success in social species such as humans. Since evolution has hardwired human psychology with emotional "modules" designed to process informational cues in fitness-relevant situations and behave adaptively without conscious deliberation (Tooby & Cosmides 1990, Damasio 1994, Bechara et al. 1997), it seems likely that *humans have evolved an ability to anticipate correctly the consequences of external time restrictions on other's trustworthiness.*

Here we shed light on this issue by studying a canonical example of strategic interaction where the correct expectation of others' behavior is key to making optimal decisions. We conduct a one-shot Trust Game (TG; Berg et al. 1995) experiment in which a "trustor" can send a certain amount of her endowment to a "trustee" and is informed about the time constraint under which the trustee is making their decision: the trustee, on the other hand, reciprocates to the trust placed in her either quickly, in one condition, or after a delay, in the other. Correctly anticipating the trustee's response is essential for the trustor as her final payoff depends crucially on the trustee's trustworthiness. If the trustor believes that the trustee is trustworthy enough, then the trustor maximizes her payoff by sending the entire endowment. This is the efficient outcome. Yet, full trust is risky and leaves the trustor vulnerable to receiving nothing.

In our experiment, trustors were informed that trustees would have to make their decisions either within a time limit of 10 seconds (i.e., the *time pressure* condition) or after 10 seconds have elapsed (i.e., the *time delay* condition). We implement this manipulation as a weak experimental implementation. If it leads to differences between conditions, these should represent a lower bound of the potential effect. That is, we expect that a more binding (<10 seconds), or relaxed (>10 seconds), time constraint would only amplify the effect. According to the evidence we review in what follows, we predict that in our experiment:

1. Trustors will display *greater trust in the time pressure condition* than in the time delay condition, as they expect trustees to be more trustworthy.
2. For the evolutionary reasons we stated earlier, we also hypothesize that these expectations will be in fact correct, i.e., *time-pressured trustees should be more trustworthy*.

While the effect of forcing fast vs. slow decision making in social interactions has been extensively studied (Rand et al. 2012, 2014, Capraro & Cococcioni 2015, Bouwmeester et al. 2017, Capraro et al. 2017a), less research has been conducted in understanding whether people correctly anticipate such an effect. The available evidence in general suggests that calculated decisions may be met with distrust by others. Specifically, those individuals who (on their own) deliberate upon their choices, either by looking carefully at the payoffs or by delaying their decisions, appear to be perceived as less prosocial (Capraro & Kuilder 2016; but see Evans & van de Calseyde 2017), and are trusted less (Jordan et al. 2016). This occurs even when calculated and uncalculated decisions are equally prosocial (Jordan et al. 2016). The moral character of people who make (moral) decisions quickly is also rated more positively than that of people who make them slowly, even if their final decisions are identical (Critcher et al. 2013). Moreover, people who express deontological moral judgments, which are thought to be less calculated than consequentialist/utilitarian judgments (Koenings et al., 2007, Greene 2014), are trusted more (Everett et al. 2016, Sacco et al. 2016, Capraro et al. 2017b). Interestingly, people seem to anticipate this effect and tend to reflect less upon their cooperative decisions when potential interaction partners are observing compared to when they are not (Jordan et al. 2016). This is consistent with uncalculated cooperation being used as a signal of trustworthiness, which may indeed serve a long-run self-interested (fitness-maximizing) goal (Hoffman et al. 2015).

However, it is unclear whether people attach a greater positive value (i.e., they trust more) to less reflective decisions when the reflective vs. intuitive character of decisions is *externally imposed* rather than being an outcome of an endogenous process. If this is the case, then the effects of the time constraint would not only be related to inferences about the decision maker’s underlying disposition but also to beliefs about the consequences of reflection itself. The only experiment, to our knowledge, that has evaluated how individuals perceive the effect of external time constraints on the social behavior of a “hypothetical” individual was conducted by Evans & van de Calseyde (2017). They use similar time constraints as ours in a

Public Goods Game. They find that fast decisions are not expected to be more, nor less, cooperative than slow decisions when time constraints are externally imposed. Given that expectations were elicited for a "hypothetical" person they cannot check whether they were in fact correct or biased.

In our implementation of the TG, trustors faced no time constraints. Both players started with an endowment of $10. The trustor, moving first, could send any amount between $0 and $10 (in $0.01 increments) which would then be tripled before reaching the trustee. Finally, the trustee had to decide which part of the received amount (i.e., 3 x *trusted amount*) she wanted to return to the trustor. Thus, in an "ideal" scenario in terms of social efficiency and equity of outcomes, the trustor would send the entire endowment and the trustee would return exactly half of the total amount resulting in a payoff of $20 for both players. However, in this case an untrustworthy trustee can take home $40 leaving the trustor with nothing. See Methods for further details.

As mentioned, we predict that in general expectations will be correct, which means that forcing trustees to reflect on their choices will lead them to override an intuitive reciprocal response and behave more egoistically. A number of previous results indeed suggest that intuitive (vs. reflective) decision making may trigger more trustworthy behavior in one-shot interactions (Rand et al. 2012, 2014, Rand & Nowak 2013, Halali et al. 2014), although others indicate that the observed relationship could depend on a set of factors including the presence of mistakes, previous experience in similar experiments, the particular weights of different distributional motives, and the specific social environment individuals regularly face (Rand & Kraft-Todd 2014, Capararo & Cococcioni 2015, Corgnet et al. 2015, 2016, Recalde et al. 2015, Capraro et al. 2017a).

To shed further light on this issue, we examine the role of reflection on the trustors' side. If the time constraints faced by the other party give rise to ancient fitness-relevant outcomes, trustors' automatic reactions to information may be particularly adaptive (Tooby & Cosmides 1990, Bechara et al. 1997). In other words, participants' first intuition may be better than their second thoughts when it comes to decide how much to trust in each of our experimental conditions. It has indeed been shown that reflection can lead to poorer decision making compared to intuition in complex decisions (Dijksterhuis et al. 2006, Usher et al. 2011, Dijksterhuis & Strick 2016). On the other hand, if reflective processes are activated to correct automatic "irrational" responses (Kahneman 2011, Toplak et al. 2014) then it might be that highly reflective trustors form more accurate expectations about the effect of time constraints on trustees' decisions. In the specific case of anticipating others' behavior in strategic settings, there is evidence that suggests that cognitive reflection can improve decision making by overriding incorrect intuition (Burnham et al. 2009, Schnusenberg & Gallo 2011, Brañas-Garza et al. 2012, Fehr & Huck 2016, Ma-Kellams & Lerner 2016).

Thus, there are reasons to expect that *reflection may lead to either better or worse behavioral adjustment* to our experimental conditions than intuition. To test these competing hypotheses, we assess the trustors' cognitive styles using the Cognitive Reflection Test (CRT; Frederick 2005, Toplak et al. 2014), which is designed to measure the respondent's disposition to rely on reflection vs. intuition. Trustors were asked to complete a 7-item CRT after playing the TG (see Methods). Here, we opted for a trait-level analysis because the use of external time constraints on trustors' decisions (i.e., a state-level analysis, as we did for trustees) might confound the expected effect of time constraints with the effect arising from similarity or false consensus (Ross et al. 1977); that is, individuals might simply trust more those (trustees) who are imposed the same time restrictions they face. Nonetheless, there is evidence that trait-level and state-level analyses lead to qualitatively similar conclusions regarding the effect of reflection/intuition on subjects' social decisions and beliefs (Ma-Kellams & Lerner 2016, Capraro et al. 2017a).

RESULTS

Figure 1 displays the Kernel density estimation for the distribution of amount trusted separately for the two conditions (n=75 in each condition). Although the effect is in the predicted direction there are no significant differences in average trust (OLS regression with robust standard errors: coeff of *time delay* = -0.38, p=0.42, n=150). Mean (±robust SEM) amount sent: time delay = 4.92±0.35, time pressure = 4.54±0.31. However, as can be seen from Figure 1, the amount sent by trustors in the time delay condition is concentrated between $2 and $5, whereas, in the time pressure condition the distribution is flatter. Indeed, the likelihood of sending an amount between $2 and $5 is significantly higher under time delay compared to the time pressure condition (probit regression with robust standard errors [from now on standard errors are always robust]: mfx of *time delay* = 0.20, p<0.01, n=150). The regression analyses can be found in supplementary Table S1. Thus, we have established

Result 1: Trust levels are more concentrated in low-to-medium values in the time delay condition as compared to the time pressure condition.

These results give partial support to our initial hypothesis where we posited that the time delay condition should trigger more distrust than the time pressure condition. Interestingly, Evans & van de Calseyde (2017) found that individuals expected fast decisions to be more extreme (i.e., either full defection or full cooperation) than slow decisions in a Public Goods Game, although not significantly so when response times were externally imposed. Similar expectations of extremity might have attenuated the (hypothesized) detrimental effect of time delay (vs. pressure) on expected trustworthiness and might help explain why extremely low trust levels are not more likely to arise in the time delay condition.

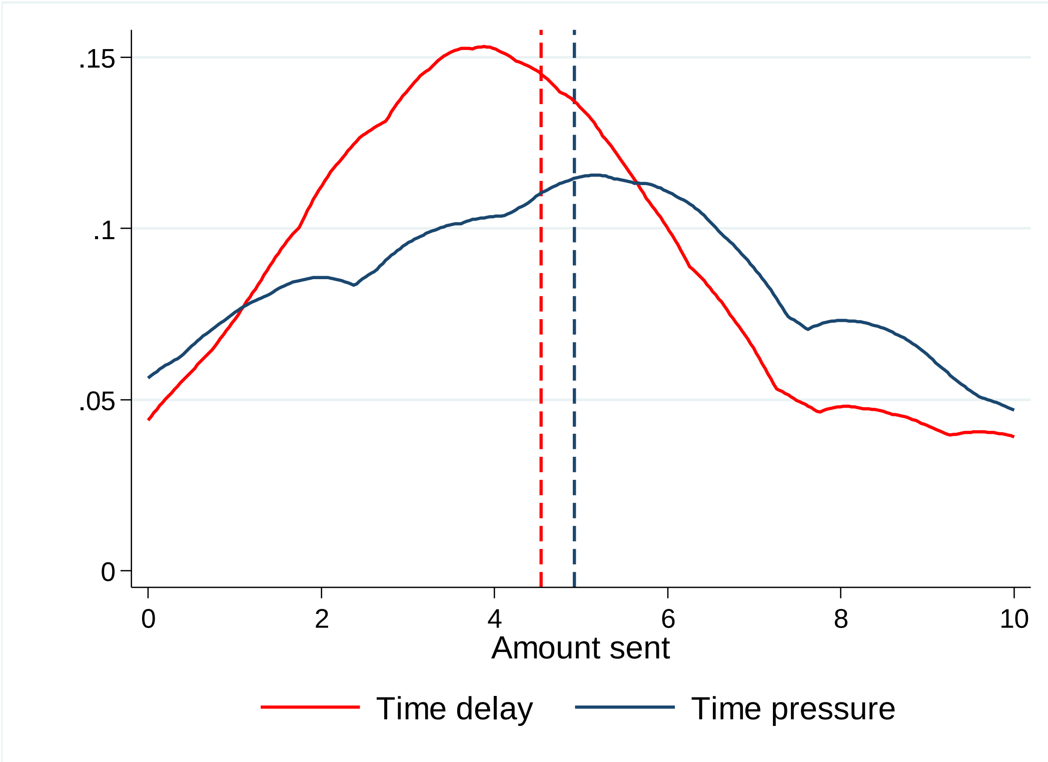


Figure 1. Kernel density estimation for amount trusted in the time delay (solid red line) and time pressure (solid blue line) conditions. Dashed vertical lines depict means (time delay: red line, time pressure: blue line).

In Figure 2, we present the amount returned (±90% CI) in the two conditions as a function of the amount received. We estimate this effect using fractional polynomial analysis which allows us to capture complex non-linear relationships. It can be observed that for amounts received above $15 (i.e., amount trusted = $5), trustees in the time delay condition seem to return higher amounts than in the time pressure condition. While the positive relationship between amount returned and amount received apparently displays some concavity in the time pressure condition, using OLS estimation we cannot reject that the relationship is linear (i.e., not concave; a regression with *amount received* and *amount received squared* as explanatory variables yields p>0.19 for *amount received squared* in both conditions). Thus, we run OLS regressions in which amount received is assumed to have a linear effect on amount returned.

First, we conduct a main effects analysis with the amount received and condition as explanatory variables: both yield significant estimates (coeff of *amount received* = 0.31, p<0.01, n=150; coeff of *time delay* = 1.08, p=0.03). Second, we analyze the interaction between the two variables, which is also significant (coeff of *time delay* × *amount received* = 0.15, p<0.01, n=150). This tells us that in the time delay condition the amount returned increases significantly more with the amount received relative to the time pressure condition (coeff *of amount received*: in time pressure condition = 0.24, $p<0.01$; in time delay condition = 0.39, $p<0.01$; Wald tests on the interaction model coefficients). These analyses can be found in Table S2.

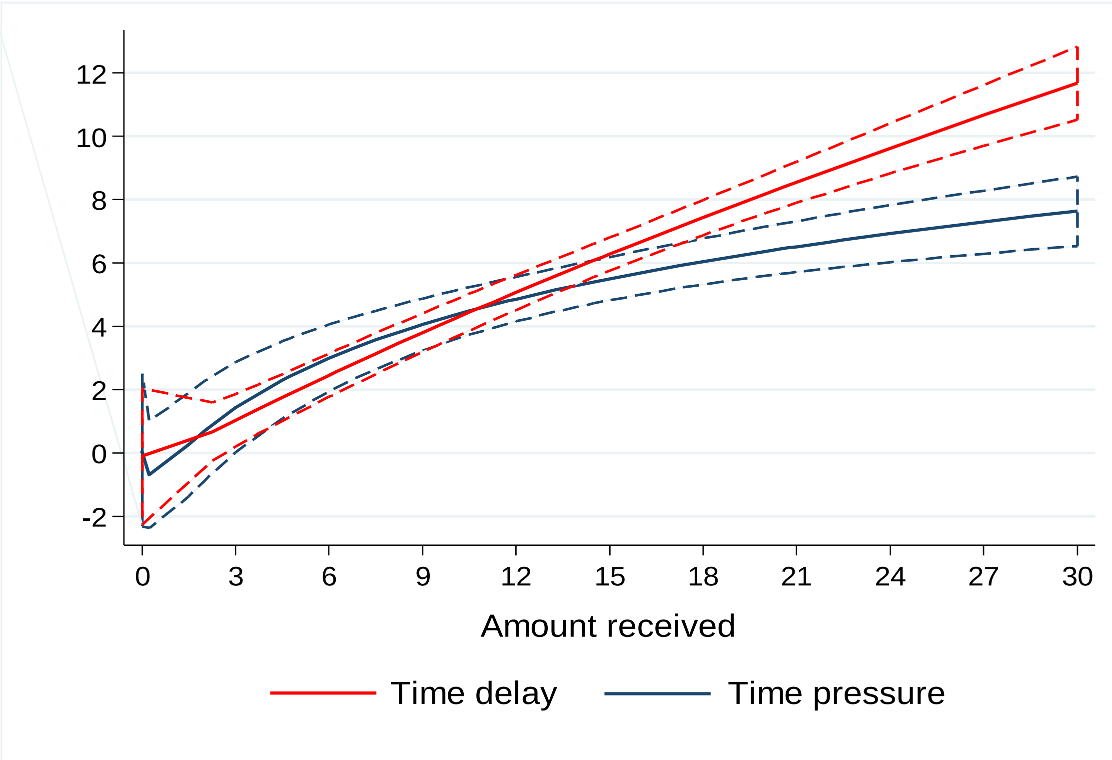


Figure 2. Fractional polynomial estimation of amount returned as a function of amount received in the time delay (solid red line) and time pressure (solid blue line) conditions. Dashed lines depict 90% CI.

According to the model estimates, trustees in the time delay condition return significantly more, but only in response to trusted amounts of $5 or more ($p>0.07$ for all trusted amounts of $4 or less; Wald tests on the interaction coefficients). For trustees who were sent $5 (i.e., who received $15), the model reports that the amount returned is significantly higher in the time delay compared to the time pressure condition ($6.09 and $4.88, respectively; $p=0.02$, Wald test). The largest difference is estimated for trustees who were trusted with the whole endowment (i.e., those receiving $30; $12.00 and $8.55, respectively; $p<0.01$, Wald test). This is consistent with the observation from Figure 2. We, therefore, establish

Result 2: Trustees in the time delay condition are more trustworthy.

How are the subjects' earnings affected by the above behavioral patterns? Figure 3 shows that in general trustees earn much more than trustors. This is confirmed in an OLS regression, with earnings as a function of player role and condition (coeff of *trustee* = 8.56, $p<0.01$, $n=300$), where we also observe that the time condition does not exert a significant effect on earnings (coeff of *time delay* = -0.38, p=0.53). However, the interaction between role and condition is significant (coeff of *time delay ×trustee* = -2.97, p=0.01), indicating that trustors earn significantly more in the time delay, than in the time pressure, condition ($11.01 vs. $8.90, p=0.02; Wald test). Whereas, trustees earn (marginally) less in the time delay, than in the time pressure, condition ($18.08 vs. $19.94, p=0.09; Wald test). Table S3 presents the regression analysis on earnings.

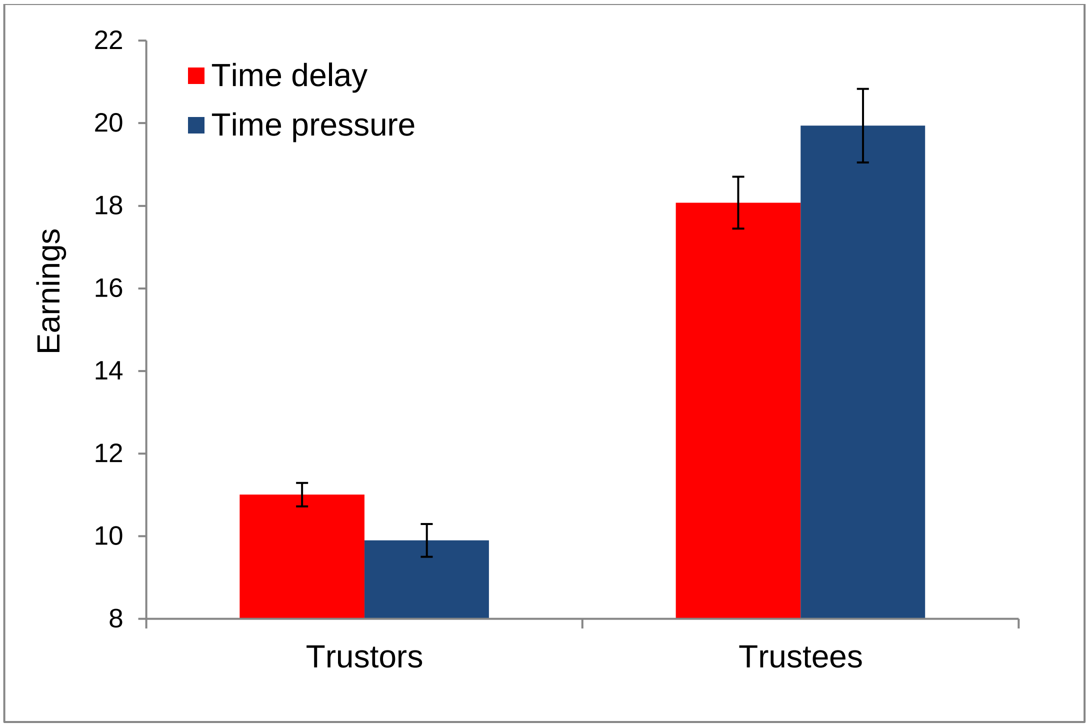


Figure 3. Mean (±robust SEM) earnings for trustors and trustees in the time delay (red bar) and time pressure (blue bar) conditions.

As mentioned above, in the time delay condition trustees were more responsive to the amount received. That is, they returned more relative to the time pressure condition for amounts trusted of $5 or more. This is reflected in the earnings of the trustors. Figure 4 shows how the amount trusted impacts trustors' earnings (estimated using fractional polynomial analysis) in the two conditions. An OLS regression with *amount sent* and *amount sent squared* as explanatory variables of trustors' earnings does not allow us to reject linearity in either condition (i.e., *amount sent squared* is non-significant; p>0.17 in both cases). Thus, we assume that the relationship between earnings and amount trusted is linear. We find that the interaction between condition and trusted amount is indeed significant in explaining trustors' earnings (coeff of *time delay ×amount sent* = 0.45, p<0.01, n=150). As a result, greater trust is, the more (marginally) trustors' earn in the time delay condition (coeff of *amount sent* = 0.18, p=0.08; Wald test), and the less they earn in the time pressure condition (coeff of *amount sent* = -0.27, p=0.02; Wald test). A series of Wald tests on the model coefficients reveal that trustors in the time delay condition earn more than those in the time pressure condition for trusted amounts of $5 ($11.09 vs. $9.88, *p*=0.02) or more (the largest difference is for trusted amount of $10: $12.00 vs. $8.55, *p*<0.01) but not for trusted amounts of $4 or less (*p*>0.07 in all cases), which mimics our earlier results. We then observe that,

Result 3: Trustors in the time delay condition earn more than in the time pressure condition for high, but not low, trusted amounts.

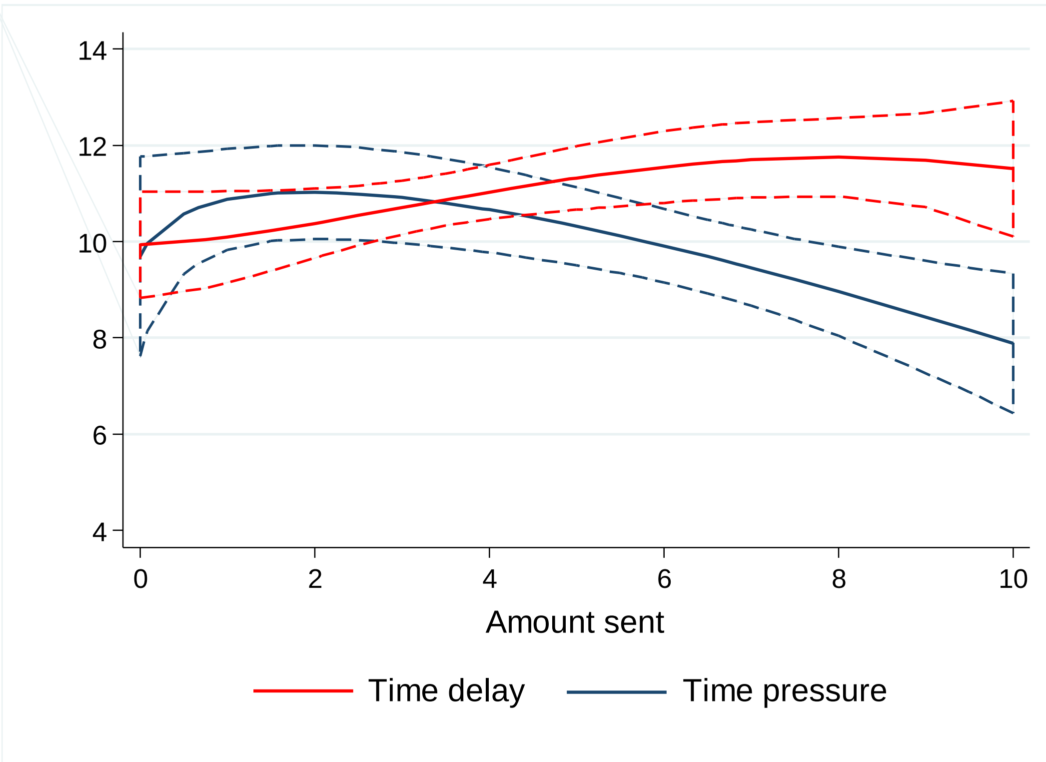


Figure 4. Fractional polynomial estimation of trustors' earnings as a function of amount trusted in the time delay (solid red line) and time pressure (solid blue line) conditions. Dashed lines depict 90% CI.

On average, trustors earned more in the time delay condition than their counterparts in the time pressure condition. However, they would have earned even more had they sent $5 or more. Yet, as stated earlier, trustors in the time delay condition were more likely to send amounts between $2 and $5, so probably they were also less likely to send $5 or more. If we run a probit regression estimating the likelihood of sending $5 or more as a function of the condition, we find that *time delay* coefficient is indeed negative although weakly significant (mfx of *time delay* = -0.13, *p*=0.10, *n*=150; see Table S1).

Taken together, these results suggest that, if anything, under time delay trustees are trusted less—or, at least, trust decisions are more concentrated in low-to-medium values—even though they are more trustworthy than their time-pressured counterparts. This allows us to conclude that

Result 4: Trustees in the time delay condition are trusted less than they should be.

Our findings thus partially support the hypothesis that individuals distrust reflective decisions compared to intuitive decisions. Yet, our second hypothesis, stating that individuals are good at anticipating the effect of external time constraints on others' trustworthiness, is clearly rejected.

Accounting for the trustors' cognitive styles

In general, it would be profitable to trust individuals who are forced to respond reflectively rather than intuitively. Yet trustors do not seem to correctly anticipate this effect. This might, however, depend on the trustor's cognitive style. Now we study whether more reflective or more intuitive individuals, as measured by their CRT scores, form better expectations regarding the actions of trustees and, therefore, trust more in the time delay than in the time pressure condition.

Figure 5 displays the Kernel density estimation for the distribution of the trusted amount in the time delay and time pressure conditions, broken down into terciles of CRT score (*Low CRT*: CRT score ≤ 2, n=50; *Med CRT*: $2 \leq$ CRT score ≤ 3, n=54; *High CRT*: CRT score ≥ 4, n=46). The regression analysis based on CRT terciles is presented in Table S4. We first observe that High CRT individuals trust more on average than both Low and Med CRTs (OLS regression controlling for condition: p<0.01in both cases; Low and Med CRTs do not significantly differ: p=0.73). This is consistent with previous research showing that more reflective people are more trustful (Corgnet et al. 2016). We also find a positive effect of cognitive reflection on amount trusted using the raw CRT score (ranging between 0 and 7), instead of terciles, as explanatory variable (coeff of *CRT score* = 0.35, p<0.01). Thus, the higher the CRT score of the trustor, the more efficient is the outcome.

Regarding the effect of the time manipulations on trust, Low CRT individuals trust significantly less in the time delay condition than in the time pressure condition (OLS regression: coeff of *time delay* = -1.55, p=0.03; mean amount sent: time delay = 3.47±0.41, time pressure = 5.02±0.57). However, although both Med CRT and High CRT individuals trust slightly more in the time delay than in the time pressure condition, the effect of condition is similar and far from significant in both cases (Med CRT: coeff of *time delay* = 0.24, p=0.74; High CRT: coeff of *time delay* = 0.20, p=0.83). The interaction between Low CRT and condition is indeed marginally significant (coeff of *time delay* × *Low DR* = -1.70, p=0.07), suggesting that the effect of time delay on trust is more negative among Low CRT individuals relative to the rest.

Interestingly, note that only High CRT trustors display average trust levels above the $5 threshold mentioned earlier (about $6 in both conditions), thus being the only group able to reap the benefits from the positive effect of time delay on trustworthiness. Low CRTs also reach the $5 threshold on average but, only in the time pressure condition. Nevertheless, High

CRTs are also partially wrong since they trust too much in the time pressure condition: they would have earned more by trusting less (see Figure 4).

If we split the sample into above- and below-median CRT instead of terciles, we find a significant difference between conditions for below-median (OLS regression: coeff of *time delay* = -1.23, *p*=0.03, *n*=77) but not for above-median CRTs (coeff of *time delay* = 0.48, *p*=0.50, *n*=73).

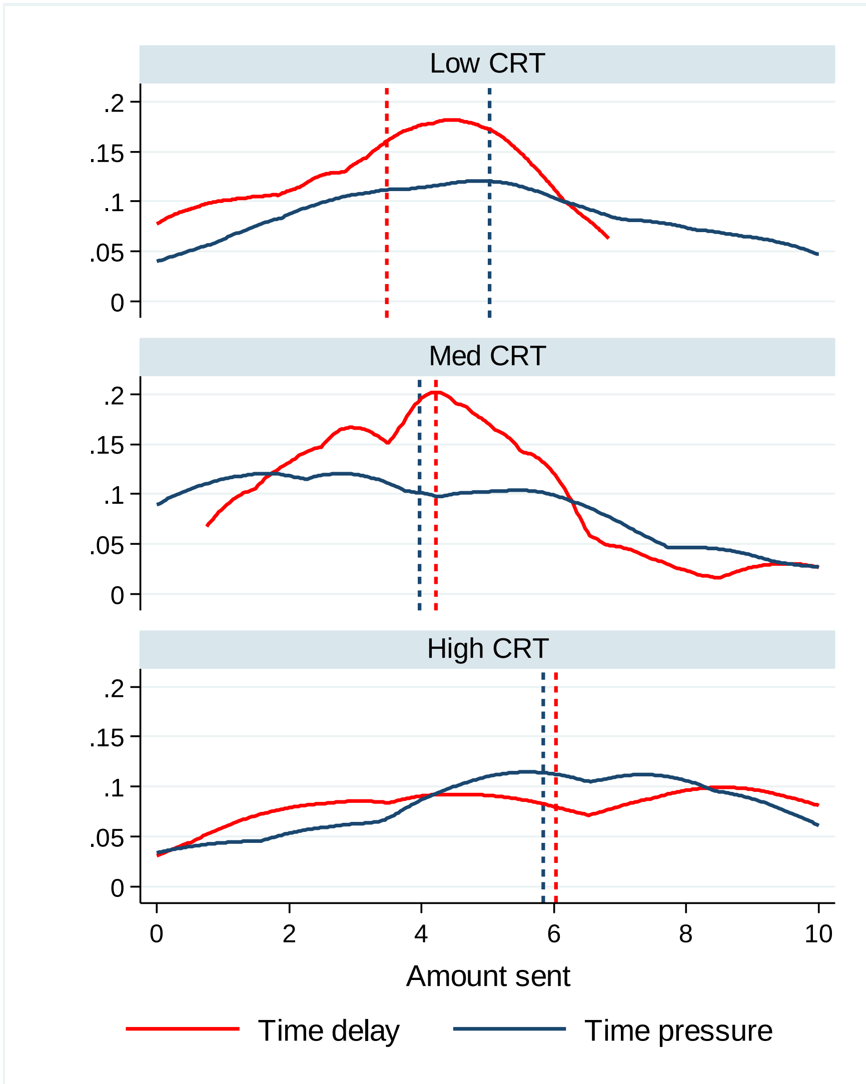


Figure 5. Kernel density estimation for amount trusted in the time delay (solid red line) and time pressure (solid blue line) conditions, broken down into CRT terciles. Dashed vertical lines depict means (time delay: red line, time pressure: blue line).

Thus, none of the competing hypotheses is fully supported by the data since a (significantly) positive effect of the time delay condition is not observed in any group, neither among the least nor among the most reflective individuals. The only clear conclusion we can draw from this section is that,

Result 5: Non-reflective individuals distrust delayed decisions.

It can be seen in Figure 5 that the maximum amount sent by Low CRT trustors in the time delay condition is \$6.83 whereas in all the remaining cases (i.e., all combinations of condition and CRT tercile, including the time pressure condition for Low CRTs) at least some individuals send the whole endowment. Indeed, the positive effect of CRT score on trust is only evident in the time delay condition (coeff of *CRT score* = 0.48, $p<0.01$) but not in the time pressure condition (coeff of *CRT score* = 0.22, $p=0.20$; see Figure 5).

As can be seen in the supplementary tables, all these results are robust to controlling for the decision maker's gender (Frederick 2005, Bosch-Domènech et al. 2014, Cueva et al. 2016), distributional social preferences (Kanagaretnam et al. 2009, Espín et al. 2016, Capraro et al. 2017a, Corgnet et al. 2015), time preferences (Espín et al. 2012, 2015) and risk preferences (Kanagaretnam et al. 2009, Houser et al. 2010), that could work as potential confounding factors.

DISCUSSION

Our results indicate that individuals do not correctly anticipate how the time available for decision making affects their partners' choices in interactions where such an ability seems crucial, i.e., trust relationships. This is important in practical applications in both the public and the private spheres (Camerer et al. 2003). For example "cooling-off" periods are often proposed in situations such as negotiations (Cramton & Tracy 1994, Oechssler et al. 2008), divorce decisions (in Korea, see Lee 2013) and consumer purchases (Sher 1973) where trust is a key consideration. Furthermore, stock markets across the world have built in circuit breakers in case of unusually large price movements with the aim of downplaying panic selling and other "irrational" patterns (although it remains unclear whether the benefits of such regulatory practices overcome their costs; Lauterbach & Ben-Zion 1993, Goldstein & Kavajecz 2004, Parisi & Smith 2005). Our research suggests that the individuals involved in these transactions might not correctly anticipate the effect of forced delay in decisions and this could lead to significant efficiency losses.

Previous findings indicate that not only a self-interested expectation of being reciprocated but also the trustor's (distributive) social preferences may matter for trust decisions in the TG (Kanagaretnam et al. 2009, Espín et al. 2016). However, there is no reason to think that the trustors' social preferences toward the trustees should be affected by the experimental manipulation in which we place the trustees. Therefore, any difference in trust between our experimental conditions should emanate from a differential anticipation of trustworthiness.

Our results thus add to recent evidence indicating that people are not good at integrating external information to predict others' behavior in social settings (Capraro & Kuilder 2016, Capraro et al. 2017b), which has important implications for the understanding of human social behavior.

Note that the finding that forced delay triggers more trustworthiness than time pressure among our trustees might be due to several factors (Rand & Kraft-Todd 2014, Capraro & Cococcioni 2015, Corgnet et al. 2015, Capraro et al. 2017a), including a lower presence of mistakes (Kahneman 2011, Recalde et al. 2015). In fact, although we allowed subjects to familiarize themselves with the decision slider prior to making their choices (see Methods) and we do not find evidence of greater randomness in trustees' responses in the time pressure condition (variance-comparison test, $f(74, 74)=1.02$, $p=0.92$), an error-based explanation cannot be completely ruled out. However, independently of the reasons leading to a differential effect on trustees, this study is primarily concerned with the question whether participants in our experiments can correctly anticipate such an effect. The answer is that they cannot.

We observe that trust levels are more concentrated in low-to-medium values in the time delay than in the time pressure condition, but they are not significantly lower on average. This only partially supports our initial prediction, based on related research (Hoffman et al. 2015, Everett et al. 2016, Jordan et al. 2016, Capraro et al. 2017b), that reflective decisions would be met with distrust. What we find is that such a prediction is only true for those individuals who are less likely to reflect on their intuitions (that is, those scoring low in the CRT). Thus, it appears that people's first intuition is to distrust reflective decisions and that further reflection leads to partially override this bias. Yet, although at different levels, all individuals have incorrect responses to some extent: both reflective and non-reflective trust non-reflective decisions too much; non-reflective individuals, in addition, trust reflective decisions too little. These findings are consistent with recent research suggesting that reflection may be better than intuition when it comes to predict others' feelings (i.e., reflection leads to higher "empathic accuracy"; Ma-Kellams & Lerner 2016) and actions (Brañas-Garza et al. 2012, Fehr & Huck 2016).

Our results, therefore, qualify previous findings by showing that reflective decisions are met with distrust (Hoffman et al. 2015, Everett et al. 2016, Jordan et al. 2016, Capraro et al. 2017b) particularly by non-reflective individuals. Further, trait reflectiveness is positively related with trust only if trustees are not forced to decide quickly (either without time constraints, as in Corgnet et al. 2016, or with forced delay, as in our time delay condition).

METHODS

A total of 300 students (63% females) from Chapman University in the US participated in our experiments. These participants were recruited from a database of more than 2000 students. A subset of the whole database received invitations at random for participating in the current study. The local IRB approved this research. All participants provided informed consent prior to participating. No deception was used. Participants were paid the amount earned during the experiment (mean±SD = $14.73±6.75) plus a $7 show-up fee.

We conducted 20 sessions with a minimum of 6 and a maximum of 22 participants. Sessions lasted for approx 30 minutes. Participants were randomly assigned to either a time pressure or a time delay session (*n*=150 in each condition) and subsequently to either the trustor (labeled as “individual A”) or the trustee (“individual B”) role of the Trust Game (Berg et al. 1995). Thus, we collected data from 75 participants in each condition/role. This sample size was determined a priori to detect a medium size effect (*d*=0.50) with 85% power: minimum *n*=73 in each condition/role. Participants were unaware of the existence of another experimental condition. All procedures were computerized.

Upon arrival to the laboratory, subjects were randomly assigned to cubicles (which impeded visual contact between them) and were randomly matched with another anonymous participant of the other role in the game. Subsequently, the instructions for their specific role were displayed on the computer screen. Participants in both roles started the game with $10. Before learning the rules of the game, subjects familiarized themselves with the image and the pointer of the decision slider (without any values on it). This was done to reduce potential mistakes, especially by trustees in the time pressure condition. Trustors were then asked which part of their $10 they wanted to send to the trustee and were informed that the trustee would receive three times the amount transferred. Trustees were subsequently asked to decide what proportion of the amount received to return back to the trustor. In the time pressure [delay] condition, participants in both roles were informed that *trustees* had to make their decision before [after] a 10-second timer expired.

All these instructions were common knowledge. In both conditions, trustees saw the timer on the screen counting down from 10 to 0. An identical slider bar was used by all participants to decide how much money to transfer to the other party and how much to keep by clicking on the desired point of the slider (in $0.01 increments). For trustors, the maximum amount to transfer was $10, whereas for trustees the amount to share was three times the amount received. All subjects respected the time constraints since, otherwise, they would not be allowed to make their decision. Average (±SD) response time among trustees was 7.79 sec (±2.37) in the time pressure condition and 32.70 sec (±14.10) in the time delay condition.

After playing the TG, all participants completed a questionnaire in which we assessed their (i) risk preferences using a multiple-price-list lottery task (Holt & Laury 2002), (ii) distributional social preferences using a series of mini-dictator games (Bartling et al. 2009, Corgnet et al. 2015), (iii) time preferences using a multiple-price-list intertemporal choice task (adapted from Espín et al. 2015), and (iv) cognitive styles using an extended version of the Cognitive Reflection Test (Frederick 2005, Toplak et al. 2014). The CRT consists of a set of questions that all have an intuitive, yet incorrect, answer that should be first ignored to be able to obtain the correct answer. Thus, CRT scores provide a measure of people's tendency to suppress automatic/intuitive responses in favor of reflective/deliberative ones. The average (±SD) CRT score was 2.77 (±2.06). Participants were paid an extra fixed amount of $3 for responding to the questionnaire and were unaware of its existence prior to playing the TG.

Full experimental instructions, including those of all the tasks included in the questionnaire which are used in this study, can be found in Appendix B.

Acknowledgments:

Kujal would like to acknowledge the financial support of ESI for the experiments. Thanks are due to Jeff Kirchner for programming, and to Jeff Kirchner and Megan Lutje for running the experiments.

Authors' contributions

The authors' names appear in alphabetical order. All of them contributed equally to all parts of this research.

References

Alguacil, S., Madrid, E., Espín, A. M., & Ruz, M. (2016). Facial identity and emotional expression as predictors during economic decisions. *Cognitive, Affective, & Behavioral Neuroscience*, 1-15.

Bartling, B., Fehr, E., Maréchal, M. A., & Schunk, D. (2009). Egalitarianism and competitiveness. *American Economic Review*, *99*(2), 93-98.

Bechara, A., Damasio, H., Tranel, D., & Damasio, A. R. (1997). Deciding advantageously before knowing the advantageous strategy. *Science*, *275*(5304), 1293-1295.

Berg, J., Dickhaut, J., & McCabe, K. (1995). Trust, reciprocity, and social history. *Games and Economic Behavior*, *10*(1), 122-142.

Bosch-Domènech, A., Brañas-Garza, P., & Espín, A. M. (2014). Can exposure to prenatal sex hormones (2D: 4D) predict cognitive reflection?. *Psychoneuroendocrinology*, *43*, 1-10.

Bonnefon, J. F., Hopfensitz, A., & De Neys, W. (2013). The modular nature of trustworthiness detection. *Journal of Experimental Psychology: General*, *142*(1), 143.

Bouwmeester, S., Verkoeijen, P. P. J. L., Aczel, B., Barbosa, F., Bègue, L., Brañas-Garza, P., Chmura, T. G. H., Cornelissen, G., Døssing, F. S., Espín, A. M., et al. (2017). Registered Replication Report: Rand, Greene & Nowak (2012). *Perspectives on Psychological Science*.

Brañas-Garza, P., Garcia-Muñoz, T., & Hernán González, R. (2012). Cognitive effort in the beauty contest game. *Journal of Economic Behavior & Organization*, *83*(2), 254-260.

Burnham, T. C., Cesarini, D., Johannesson, M., Lichtenstein, P., & Wallace, B. (2009). Higher cognitive ability is associated with lower entries in a p-beauty contest. *Journal of Economic Behavior & Organization*, *72*(1), 171-175.

Camerer, C., Issacharoff, S., Loewenstein, G., O'donoghue, T., & Rabin, M. (2003). Regulation for conservatives: Behavioral economics and the case for “asymmetric paternalism”. *University of Pennsylvania Law Review*, *151*(3), 1211-1254.

Capraro, V., & Cococcioni, G. (2015). Social setting, intuition and experience in laboratory experiments interact to shape cooperative decision-making. *Proceedings of the Royal Society B*, *282*, 1811.

Capraro, V., Corgnet, B., Espín, A. M., & Hernán González, R. (2017a). Deliberation favours social efficiency by making people disregard their relative shares: Evidence from USA and India. *Royal Society Open Science*, *4*(2), 160605.

Capraro, V., & Kuilder, J. (2016). To know or not to know? Looking at payoffs signals selfish behavior, but it does not actually mean so. *Journal of Behavioral and Experimental Economics*.

Capraro, V., Sippel, J., Zhao, B., Hornischer, L., Savary, M., Terzopoulou, Z., Faucher, P., & Griffioen, S. F. (2017b). Are Kantians better social partners? People making deontological judgments are perceived to be more prosocial than they actually are. *Available at SSRN: https://ssrn.com/abstract=2905673*

Corgnet, B., Espín, A. M., & Hernán-González, R. (2015). The cognitive basis of social behavior: cognitive reflection overrides antisocial but not always prosocial motives. *Frontiers in Behavioral Neuroscience*, *9*, 287.

Corgnet, B., Espín, A. M., Hernán-González, R., Kujal, P., & Rassenti, S. (2016). To trust, or not to trust: cognitive reflection in trust games. *Journal of Behavioral and Experimental Economics*, *64*, 20-27.

Cramton, P. C., & Tracy, J. S. (1994). Wage Bargining with Time-Varying Threats. *Journal of Labor Economics*, *12*(4), 594-617.

Critcher, C. R., Inbar, Y., & Pizarro, D. A. (2013). How quick decisions illuminate moral character. *Social Psychological and Personality Science*, *4*(3), 308-315.

Cueva, C., Iturbe-Ormaetxe, I., Mata-Pérez, E., Ponti, G., Sartarelli, M., Yu, H., & Zhukova, V. (2016). Cognitive (ir) reflection: new experimental evidence. *Journal of Behavioral and Experimental Economics*, *64*, 81-93.

Damasio A. R. (1994). *Descartes' error: emotion, reason, and the human brain.* New York: Putnam.

DeSteno, D., Breazeal, C., Frank, R. H., Pizarro, D., Baumann, J., Dickens, L., & Lee, J. J. (2012). Detecting the trustworthiness of novel partners in economic exchange. *Psychological Science*, 0956797612448793.

Dijksterhuis, A., Bos, M. W., Nordgren, L. F., & Van Baaren, R. B. (2006). On making the right choice: The deliberation-without-attention effect. *Science*, *311*(5763), 1005-1007.

Dijksterhuis, A., & Strick, M. (2016). A case for thinking without consciousness. *Perspectives on Psychological Science*, *11*(1), 117-132.

Espín, A. M., Brañas-Garza, P., Herrmann, B., & Gamella, J. F. (2012). Patient and impatient punishers of free-riders. *Proceedings of the Royal Society B: Biological Sciences*, *279*(1749), 4923.

Espín, A. M., Exadaktylos, F., Herrmann, B., & Brañas-Garza, P. (2015). Short-and long-run goals in ultimatum bargaining: impatience predicts spite-based behavior. *Frontiers in Behavioral Neuroscience*, *9*, 214.

Espín, A. M., Exadaktylos, F., & Neyse, L. (2016). Heterogeneous motives in the Trust Game: a Tale of two Roles. *Frontiers in Psychology*, *7*, 728.

Evans, A. M., & van de Calseyde, P. P. (2017). The effects of observed decision time on expectations of extremity and cooperation. *Journal of Experimental Social Psychology*, *68*, 50-59.

Everett, J. A., Pizarro, D. A., & Crockett, M. J. (2016). Inference of trustworthiness from intuitive moral judgments. *Journal of Experimental Psychology: General*, *145*(6), 772.

Fehr, D., & Huck, S. (2016). Who knows it is a game? On strategic awareness and cognitive ability. *Experimental Economics*, *19*(4), 713-726.

Frederick, S. (2005). Cognitive reflection and decision making. *The Journal of Economic Perspectives*, *19*(4), 25-42.

Goldstein, M. A., & Kavajecz, K. A. (2004). Trading strategies during circuit breakers and extreme market movements. *Journal of Financial Markets*, *7*(3), 301-333.

Greene, J. (2014). *Moral tribes: emotion, reason and the gap between us and them*. Atlantic Books Ltd.

Halali, E., Bereby-Meyer, Y., & Meiran, N. (2014). Between self-interest and reciprocity: The social bright side of self-control failure. *Journal of Experimental Psychology: General*, *143*(2), 745.

Hoffman, M., Yoeli, E., & Nowak, M. A. (2015). Cooperate without looking: Why we care what people think and not just what they do. *Proceedings of the National Academy of Sciences*, *112*(6), 1727-1732.

Holt, C. A., & Laury, S. K. (2002). Risk aversion and incentive effects. *American Economic Review*, *92*(5), 1644-1655.

Houser, D., Schunk, D., & Winter, J. (2010). Distinguishing trust from risk: An anatomy of the investment game. *Journal of Economic Behavior & Organization*, *74*(1), 72-81.

Jordan, J. J., Hoffman, M., Nowak, M. A., & Rand, D. G. (2016). Uncalculating cooperation is used to signal trustworthiness. *Proceedings of the National Academy of Sciences of the USA*, *113*(31):8658-63.

Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.

Kanagaretnam, K., Mestelman, S., Nainar, K., & Shehata, M. (2009). The impact of social value orientation and risk attitudes on trust and reciprocity. *Journal of Economic Psychology*, *30*(3), 368-380.

Koenigs, M., Young, L., Adolphs, R., Tranel, D., Cushman, F., Hauser, M., & Damasio, A. (2007). Damage to the prefrontal cortex increases utilitarian moral judgements. *Nature*, *446*(7138), 908-911.

Lauterbach, B., & Ben-Zion, U. (1993). Stock market crashes and the performance of circuit breakers: Empirical evidence. *The Journal of Finance*, *48*(5), 1909-1925.

Lee, J. (2013). The impact of a mandatory cooling-off period on divorce. *The Journal of Law and Economics*, *56*(1), 227-243.

Ma-Kellams, C., & Lerner, J. (2016). Trust your gut or think carefully? Examining whether an intuitive, versus a systematic, mode of thought produces greater empathic accuracy. *Journal of Personality and Social Psychology*, *111*(5), 674-685

Oechssler, J., Roider, A., & Schmitz, P. W. (2015). Cooling Off in Negotiations: Does it Work?. *Journal of Institutional and Theoretical Economics JITE*, *171*(4), 565-588.

Parisi, F., & Smith, V. L. (2005). *The law and economics of irrational behavior*. Stanford University Press.

Ponti, G., & Rodriguez-Lara, I. (2015). Social preferences and cognitive reflection: evidence from a dictator game experiment. *Frontiers in Behavioral Neuroscience*, *9*, 146.

Rand, D. G., Greene, J. D., & Nowak, M. A. (2012). Spontaneous giving and calculated greed. *Nature*, *489*(7416), 427-430.

Rand, D. G., & Kraft-Todd, G. T. (2014). Reflection does not undermine self-interested prosociality. *Frontiers in Behavioral Neuroscience*, *8*, 300.

Rand, D. G., & Nowak, M. A. (2013). Human cooperation. *Trends in Cognitive Sciences*, *17*(8), 413-425.

Rand, D. G., Peysakhovich, A., Kraft-Todd, G. T., Newman, G. E., Wurzbacher, O., Nowak, M. A., & Greene, J. D. (2014). Social heuristics shape intuitive cooperation. *Nature Communications*, *5*, 3677.

Recalde, M. P., Riedl, A., & Vesterlund, L. (2015). Error prone inference from response time: the case of intuitive generosity in public-good games. *University of Pittsburgh, Department of Economics, Working Paper Series 15/004*.

Ross, L., Greene, D., & House, P. (1977). The "false consensus effect": An egocentric bias in social perception and attribution processes. *Journal of Experimental Social Psychology*, *13*(3), 279-301.

Rule, N. O., Krendl, A. C., Ivcevic, Z., & Ambady, N. (2013). Accuracy and consensus in judgments of trustworthiness from faces: Behavioral and neural correlates. *Journal of Personality and Social Psychology*, *104*(3), 409.

Sacco, D. F., Brown, M., Lustgraaf, C. J., & Hugenberg, K. (2016) The adaptive utility of deontology: Deontological moral decision-making fosters perceptions of trust and likeability. *Evolutionary Psychological Science*, 1-8.

Schnusenberg, O., & Gallo, A. (2011). On cognitive ability and learning in a beauty contest. *Journal for Economic Educators*, *11*(1), 13-24.

Sher, B. D. (1967). The cooling-off period in door-to-door sales. *UCLA Law Review*, *15*, 717.

Tooby, J., & Cosmides, L. (1990). The past explains the present: Emotional adaptations and the structure of ancestral environments. *Ethology and Sociobiology*, *11*(4-5), 375-424.

Toplak, M. E., West, R. F., & Stanovich, K. E. (2014). Assessing miserly information processing: An expansion of the Cognitive Reflection Test. *Thinking & Reasoning*, *20*(2), 147-168.

Usher, M., Russo, Z., Weyers, M., Brauner, R., & Zakay, D. (2011). The impact of the mode of thought in complex decisions: Intuitive decisions are better. *Frontiers in Psychology*, *2*, 37.

Van de Calseyde, P. P., Keren, G., & Zeelenberg, M. (2014). Decision time as information in judgment and choice. *Organizational Behavior and Human Decision Processes*, *125*(2), 113-122.

Appendix A. Supplementary Tables

Table S1. Effect of condition (time delay vs. time pressure) on trustors' choices.

	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b
time delay	-0.378	-0.432	0.565***	0.578***	-0.336	-0.380*
	(0.472)	(0.464)	(0.217)	(0.224)	(0.206)	(0.213)
gender (male)		0.525		0.186		-0.025
		(0.500)		(0.226)		(0.217)
envy		-0.528**		0.216*		-0.248**
		(0.226)		(0.118)		(0.110)
compassion		0.334		0.004		0.170
		(0.226)		(0.110)		(0.108)
risk aversion		-0.035		0.015		-0.032
		(0.099)		(0.058)		(0.052)
impatience		0.016		-0.017		0.029
		(0.046)		(0.023)		(0.022)
Constant	4.919***	5.459***	-0.750***	-1.224**	0.151	0.416
	(0.356)	(1.072)	(0.161)	(0.560)	(0.146)	(0.505)
F/Chi^2	0.641	1.986*	6.751***	10.875*	2.647	11.510*
ll	-371.122	-366.908	-91.318	-88.848	-102.621	-97.750
R^2/*pseudo*-R^2	0.004	0.059	0.036	0.062	0.013	0.060
N	150	150	150	150	150	150

Notes: OLS estimates in model 1 (dep var: trusted amount, in $), probit estimates in model 2 (dep var: =1 if trusted amount between $2 and $5, =0 otherwise) and model 3 (dep var: =1 if trusted amount is $5 or more, =0 otherwise). Control variables, obtained from the questionnaire, are: *gender* (=1 if male, =0 if female), *envy* (number of disadvantageous-inequality averse choices, from 0 to 3), *compassion* (number of advantageous-inequality averse choices, from 0 to 3), *risk aversion* (number of risk averse choices, from 0 to 10), and *impatience* (number of impatient choices, from 0 to 20). Robust standard errors are presented in parentheses. *, **, *** denote significance at the 10, 5 and 1 per cent levels, respectively (two-tailed).

Table S2. Effect of condition (time delay vs. time pressure) on trustees' choices.

	Model 1a	Model 1b	Model 2a	Model 2b
time delay	1.081**	0.961**	-1.029	-0.785
	(0.485)	(0.476)	(0.630)	(0.647)
amount received	0.309***	0.309***	0.245***	0.255***
	(0.027)	(0.028)	(0.038)	(0.040)
t delay X a received			0.149***	0.126**
			(0.051)	(0.055)
gender (male)		-0.206		-0.129
		(0.543)		(0.542)
envy		-0.051		-0.084

		(0.270)		(0.266)
compassion		0.784***		0.692***
		(0.249)		(0.248)
risk aversion		-0.172		-0.170
		(0.118)		(0.118)
impatience		-0.013		-0.028
		(0.056)		(0.056)
Constant	0.251	0.410	1.205**	1.457
	(0.412)	(1.024)	(0.484)	(1.167)
F	73.924***	21.106***	59.134***	21.050***
ll	-376.286	-370.676	-372.747	-368.123
R^2	0.450	0.490	0.476	0.507
N	150	150	150	150
Wald Tests				
a received + t delay X a received			0.394***	0.381***
			(0.034)	(0.036)
*t delay + t delay X a received*3*			-0.580	-0.406
			(0.524)	(0.527)
*t delay + t delay X a received*6*			-0.132	-0.027
			(0.446)	(0.438)
*t delay + t delay X a received*9*			0.317	0.352
			(0.411)	(0.401)
*t delay + t delay X a received*12*			0.765*	0.731*
			(0.432)	(0.429)
*t delay + t delay X a received*15*			1.214**	1.110**
			(0.500)	(0.512)
*t delay + t delay X a received*18*			1.662***	1.489**
			(0.601)	(0.629)
*t delay + t delay X a received*21*			2.111***	1.867**
			(0.719)	(0.764)
*t delay + t delay X a received*24*			2.559***	2.246**
			(0.849)	(0.909)
*t delay + t delay X a received*27*			3.008***	2.625**
			(0.986)	(1.060)
*t delay + t delay X a received*30*			3.456***	3.004**
			(1.126)	(1.215)

Notes: OLS estimates (dep var: amount returned, in $). Wald Tests on the interaction coefficients: *a received + t delay X a received* refers to the effect of *amount received* in the time delay condition (its effect in the time pressure condition is given by the coefficient of *amount received* in the same model); *t delay + t delay X a received**Z refers to the effect of time delay for an amount received of $Z. A description of the control variables can be found in the notes of Table S1. Robust standard errors are presented in parentheses. *, **, *** denote significance at the 10, 5 and 1 per cent levels, respectively (two-tailed).

Table S3. The determinants of players' earnings.

	Model 1	Model 2	Model 3	Model 4
time delay	-0.378	1.108**	1.081**	-1.029
	(0.604)	(0.490)	(0.485)	(0.630)
trustee	8.556***	10.042***		
	(0.604)	(0.979)		
t delay X trustee		-2.973**		
		(1.198)		
amount sent			-0.072	-0.266**
			(0.081)	(0.114)
t delay X a sent				0.448***
				(0.153)
Constant	10.641***	9.898***	10.251***	11.205***
	(0.417)	(0.399)	(0.412)	(0.484)
F	103.519***	70.626***	2.630*	3.173**
ll	-920.725	-917.639	-376.286	-372.747
R^2	0.403	0.416	0.038	0.082
N	300	300	150	150
Wald Tests				
t delay + t delay X trustee		-1.864*		
		(1.094)		
a sent + t delay X a sent				0.183*
				(0.102)
*t delay + t delay X a sent*1*				-0.580
				(0.524)
*t delay + t delay X a sent*2*				-0.132
				(0.446)
*t delay + t delay X a sent*3*				0.317
				(0.411)
*t delay + t delay X a sent*4*				0.765*
				(0.432)
*t delay + t delay X a sent*5*				1.214**
				(0.500)
*t delay + t delay X a sent*6*				1.662***
				(0.601)
*t delay + t delay X a sent*7*				2.111***
				(0.719)
*t delay + t delay X a sent*8*				2.559***
				(0.849)
*t delay + t delay X a sent*9*				3.008***
				(0.986)
*t delay + t delay X a sent*10*				3.456***

							(1.126)	

Notes: OLS estimates (dep var: earnings, in $). Models 1 and 2 refer to both players whereas Models 3 and 4 refer only to trustors. Wald Tests on the interaction coefficients: *t delay + t delay X trustee* refers to the effect of *time delay* among trustees (its effect among trustors is given by the coefficient of *time delay* in the same model); *a sent + t delay X a sent* refers to the effect of *amount sent* in the time delay condition (its effect in the time pressure condition is given by the coefficient of *amount sent* in the same model); *t delay + t delay X a sent**Z refers to the effect of time delay for an amount sent of $Z. We avoid regressions with control variables since players' earnings do not only depend on their own decision. Robust standard errors are presented in parentheses. *, **, *** denote significance at the 10, 5 and 1 per cent levels, respectively (two-tailed).

Table S4. Effect of condition (time delay vs. time pressure) on trustors' choices – CRT terciles

	Model 1	Model 1b	Model 2a low CRT	Model 2b low CRT	Model 3a med CRT	Model 3b med CRT	Model 4a high CRT	Model 4b high CRT
time delay	-0.368	-0.411	-1.548**	-1.664**	0.236	0.457	0.200	0.047
	(0.457)	(0.451)	(0.712)	(0.754)	(0.711)	(0.733)	(0.949)	(0.989)
med CRT vs. low CRT	-0.178	-0.257						
	(0.510)	(0.511)						
high CRT vs. low CRT	1.637***	1.369**						
	(0.600)	(0.639)						
high CRT vs. med CRT	1.816***	1.626***						
	(0.588)	(0.613)						
gender (male)		0.183		0.827		-0.397		0.389
		(0.490)		(0.887)		(0.736)		(1.037)
envy		-0.405*		-0.219		-0.775*		-0.025
		(0.231)		(0.452)		(0.390)		(0.488)
compassion		0.235		0.416		0.390		-0.018
		(0.226)		(0.352)		(0.393)		(0.446)
risk aversion		-0.059		-0.065		-0.205		-0.143
		(0.095)		(0.105)		(0.217)		(0.275)
impatience		0.029		0.023		0.034		0.070
		(0.045)		(0.081)		(0.079)		(0.097)
Constant	4.476***	5.161***	5.019***	5.042***	3.973***	6.056***	5.830***	6.133**
	(0.461)	(1.093)	(0.577)	(1.325)	(0.581)	(2.038)	(0.666)	(2.718)
F	4.009***	2.877***	4.721**	1.649	0.110	0.909	0.044	0.319
ll	-365.049	-362.664	-117.480	-115.922	-126.198	-122.900	-117.993	-117.439
R^2	0.082	0.110	0.085	0.140	0.002	0.117	0.001	0.025
N	150	150	50	50	54	54	46	46

Notes: OLS estimates (dep var: trusted amount, in $). Model 1 employs the whole sample of trustors, whereas models 2, 3, and 4 refer to Low CRT, Med CRT and High CRT trustors, respectively. A description of the control variables can be found in the notes of Table S1. Robust standard errors are presented in parentheses. *, **, *** denote significance at the 10, 5 and 1 per cent levels, respectively (two-tailed).

Appendix B. Experimental instructions
[screenshots explanations and treatment manipulations in brackets]

Trustors

Screen 1

Welcome

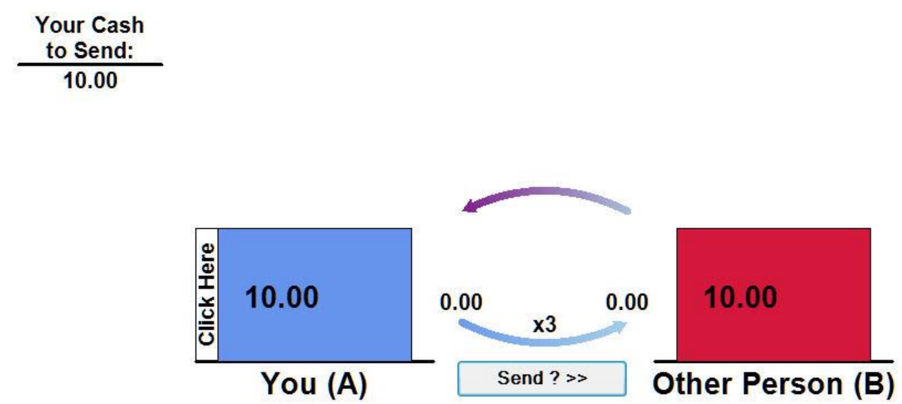
You have been selected at random as an individual A and will be paired with an individual B (also selected at random).

You (individual A) have received a $10 endowment which will be used for decision making in the experiment. Individual B has received a $10 endowment as well. Individual B will keep their initial endowment regardless of the decision either you or they make.

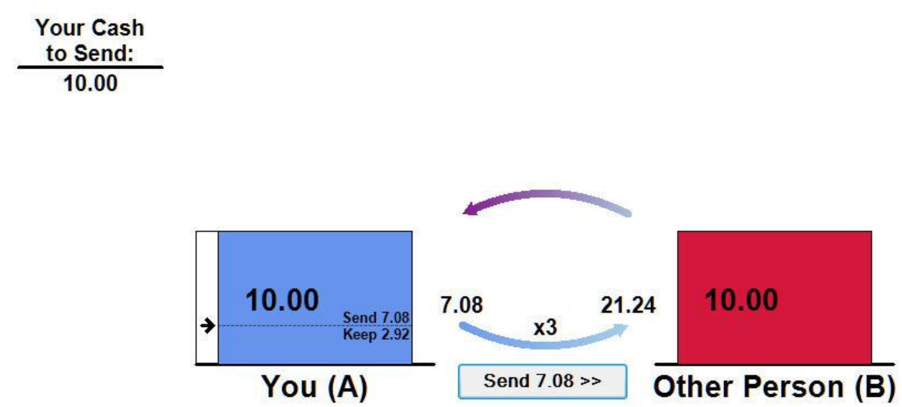
You (individual A) will make your decision first.

Individual B will make their decision after you.

Please familiarize yourself with the slider bar by clicking in the area that says "Click Here". It will be used in the decision making stage.



[After clicking on "Click Here". Example of practice decision]



In the experiment today you will interact with the other individual only once. You will not know the identity of the other individual. Similarly, the other individual will not know any details about you. Please do not talk to anyone during the experiment.

Screen 2

The Decision Task

You can transfer any proportion (between $0-$10) of your endowment to individual B.

Individual B will receive 3 times the amount that you transfer (1 becomes 3, 2 becomes 6, and so on.)

Individual B has to decide what proportion of the amount received to return back to you.

Your Profit =

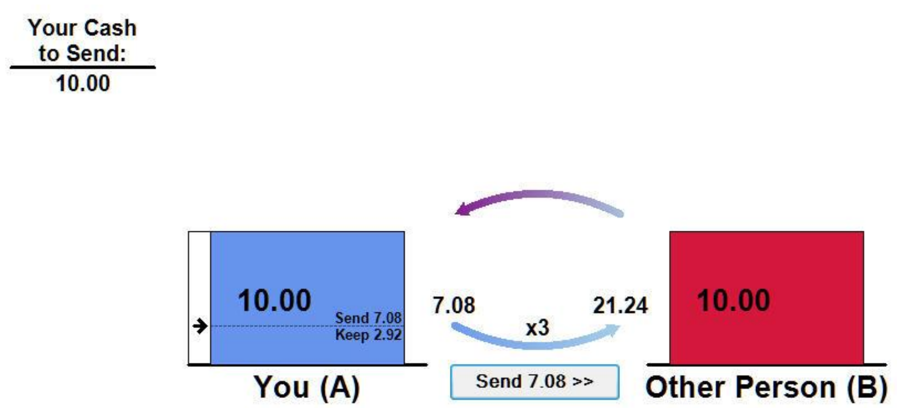
Endowment - (Amount you sent to individual B) + (Amount individual B returns to you)

You will be paid in cash at the end of the experiment.

Individual B can only make their decision **<u>after [before]</u>** 10 seconds has elapsed. That is, after being informed of the amount received, they can only make their final decision **<u>after [before]</u>** 10 seconds has elapsed.

If you have any questions, please raise your hand and a monitor will come by to answer them. If you are finished with the instructions, please click the Start button. The instructions will remain on your screen until everyone has clicked the Start button. We need *everyone* to click the Start button before we can begin.

[After clicking on "Start". Example of actual decision]



Trustees

Screen 1

Welcome

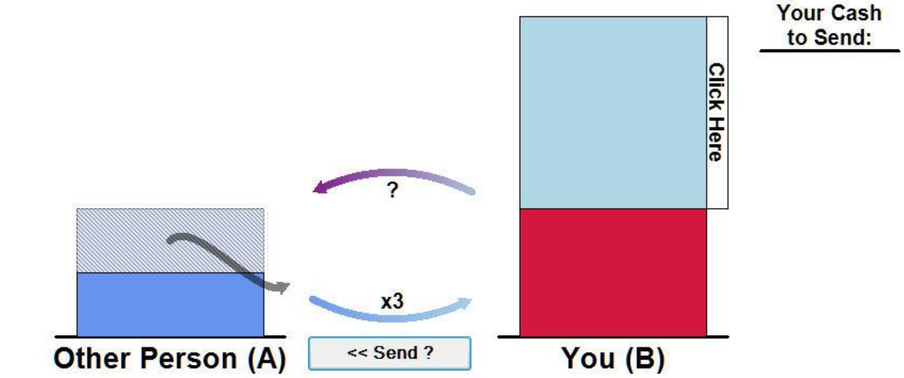
You have been selected at random as an individual B and will be paired with an individual A (also selected at random).

Individual A has received a $10 endowment which will be used for decision making in the experiment. You (individual B) have received a $10 endowment as well. You will keep your initial endowment regardless of the decision either you or individual A makes.

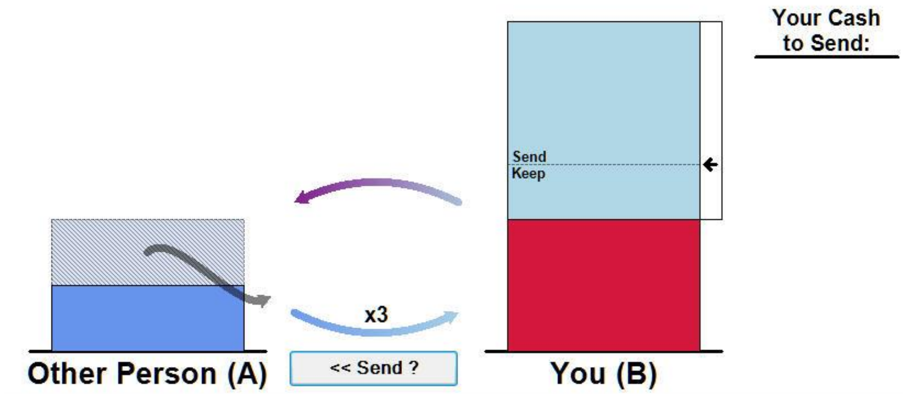
Individual A will make their decision first.

You (individual B) will make your decision after individual A.

Please familiarize yourself with the slider bar by clicking in the area that says "Click Here". It will be used in the decision making stage.



[After clicking on “Click Here”. Example of practice decision]



In the experiment today you will interact with the other individual only once. You will not know the identity of the other individual. Similarly, the other individual will not know any details about you. Please do not talk to anyone during the experiment.

Screen 2

The Decision Task

You (individual B) will receive a certain amount of money. This amount is 3 times the amount that individual A sent you.

Individual A can send you any proportion of their $10 endowment and knows that the amount sent is multiplied by 3.

You have to decide how much (between $0 and "the amount received") of this multiplied amount to return to individual A. You can only make your decision **after [before]** a 10 second timer has elapsed.

Your Profit =

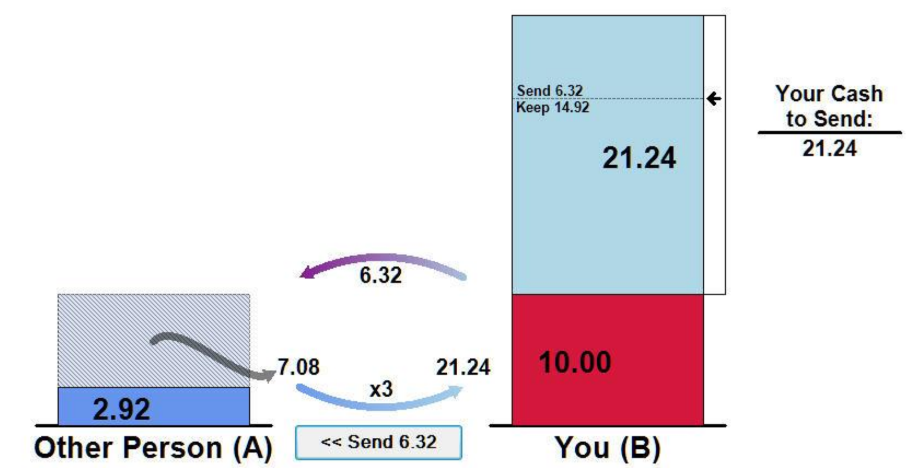
Endowment + (Multiplied amount individual A sent to you) - (Amount you returned to individual A).

You will be paid in cash at the end of the experiment.

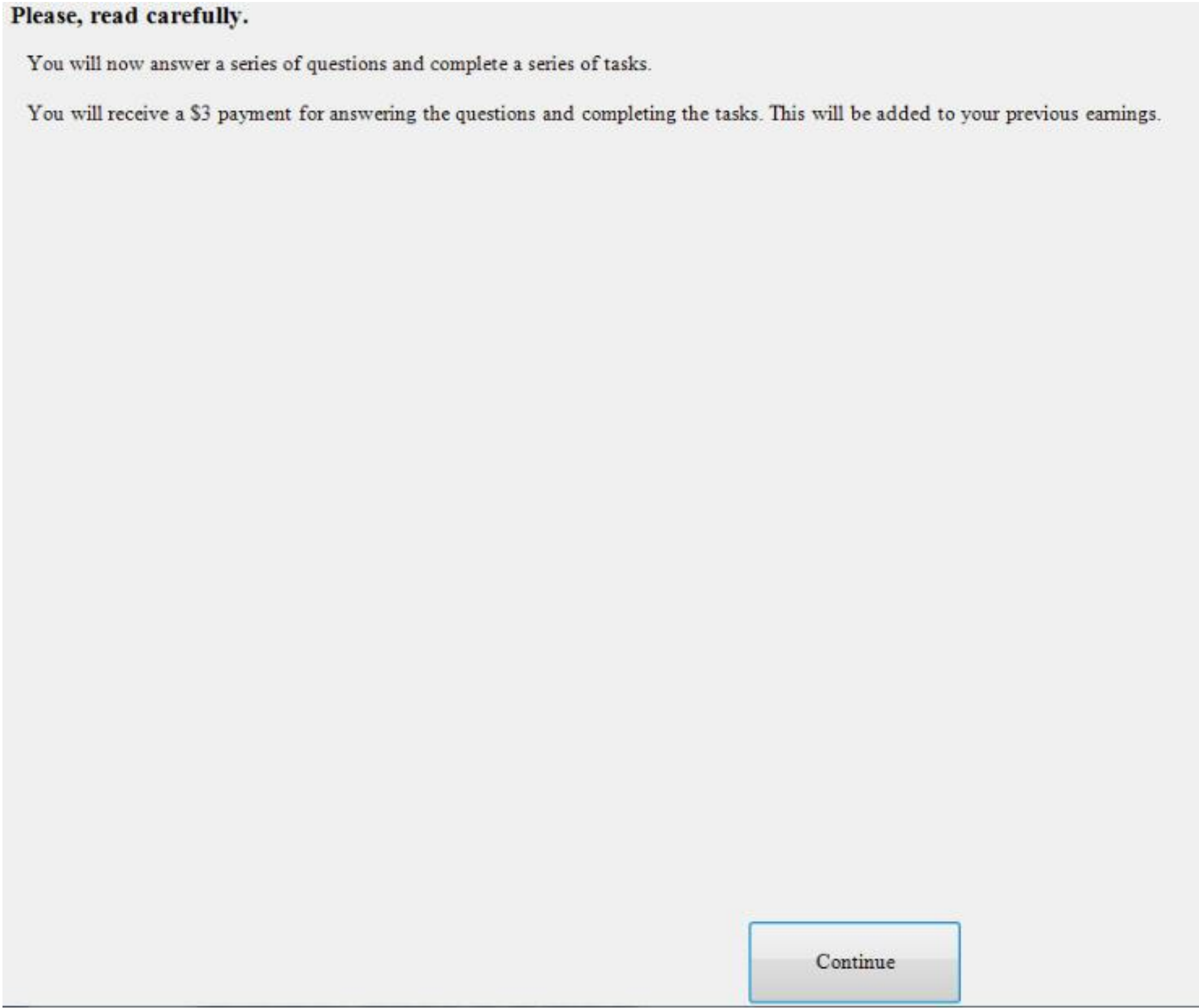
Please make your decision **after [before]** the 10 second timer has finished.

If you have any questions, please raise your hand and a monitor will come by to answer them. If you are finished with the instructions, please click the Start button. The instructions will remain on your screen until everyone has clicked the Start button. We need *everyone* to click the Start button before we can begin.

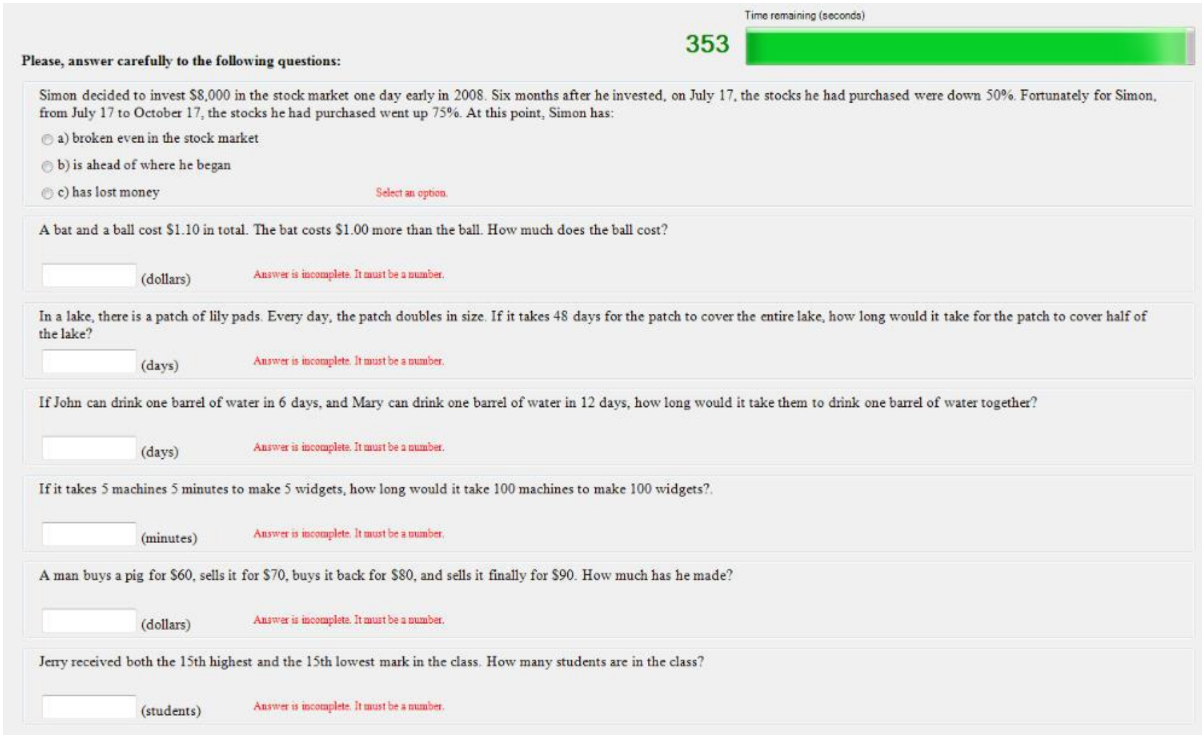
[After clicking on "Start". Example of actual decision]



Questionnaire screenshots (identical for all participants)



Cognitive Reflection Test


Time remaining (seconds)

353

Please, answer carefully to the following questions:

Simon decided to invest $8,000 in the stock market one day early in 2008. Six months after he invested, on July 17, the stocks he had purchased were down 50%. Fortunately for Simon, from July 17 to October 17, the stocks he had purchased went up 75%. At this point, Simon has:

- a) broken even in the stock market
- b) is ahead of where he began
- c) has lost money

Select an option.

A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost?

(dollars) Answer is incomplete. It must be a number.

In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

(days) Answer is incomplete. It must be a number.

If John can drink one barrel of water in 6 days, and Mary can drink one barrel of water in 12 days, how long would it take them to drink one barrel of water together?

(days) Answer is incomplete. It must be a number.

If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?.

(minutes) Answer is incomplete. It must be a number.

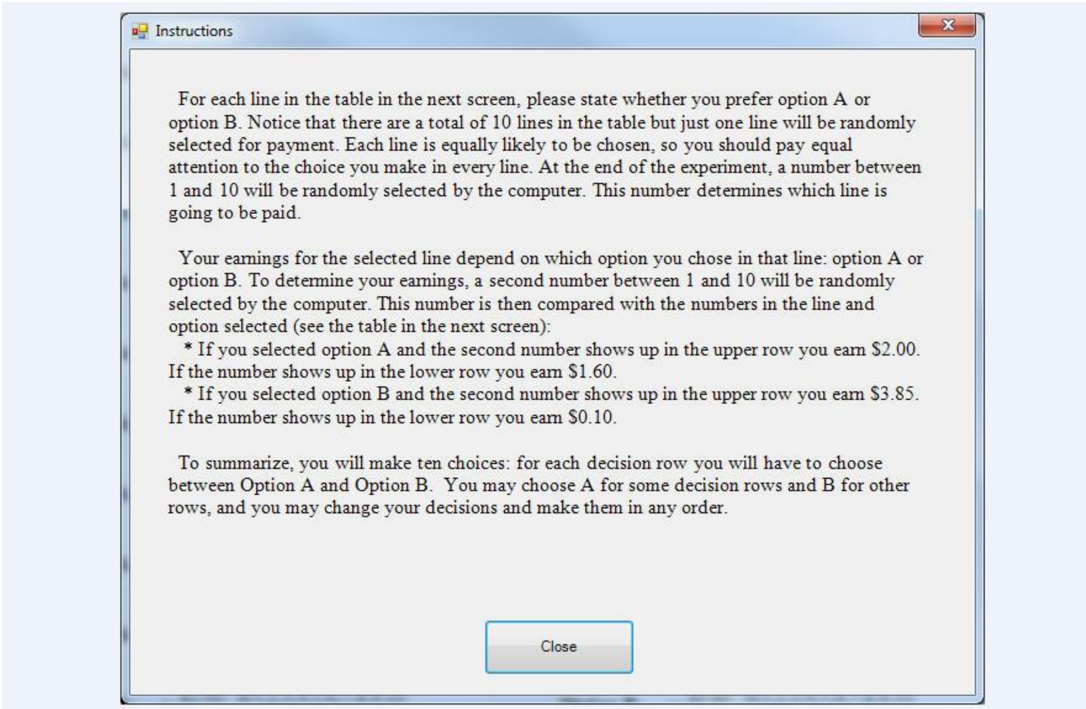
A man buys a pig for $60, sells it for $70, buys it back for $80, and sells it finally for $90. How much has he made?

(dollars) Answer is incomplete. It must be a number.

Jerry received both the 15th highest and the 15th lowest mark in the class. How many students are in the class?

(students) Answer is incomplete. It must be a number.

Risk preferences task



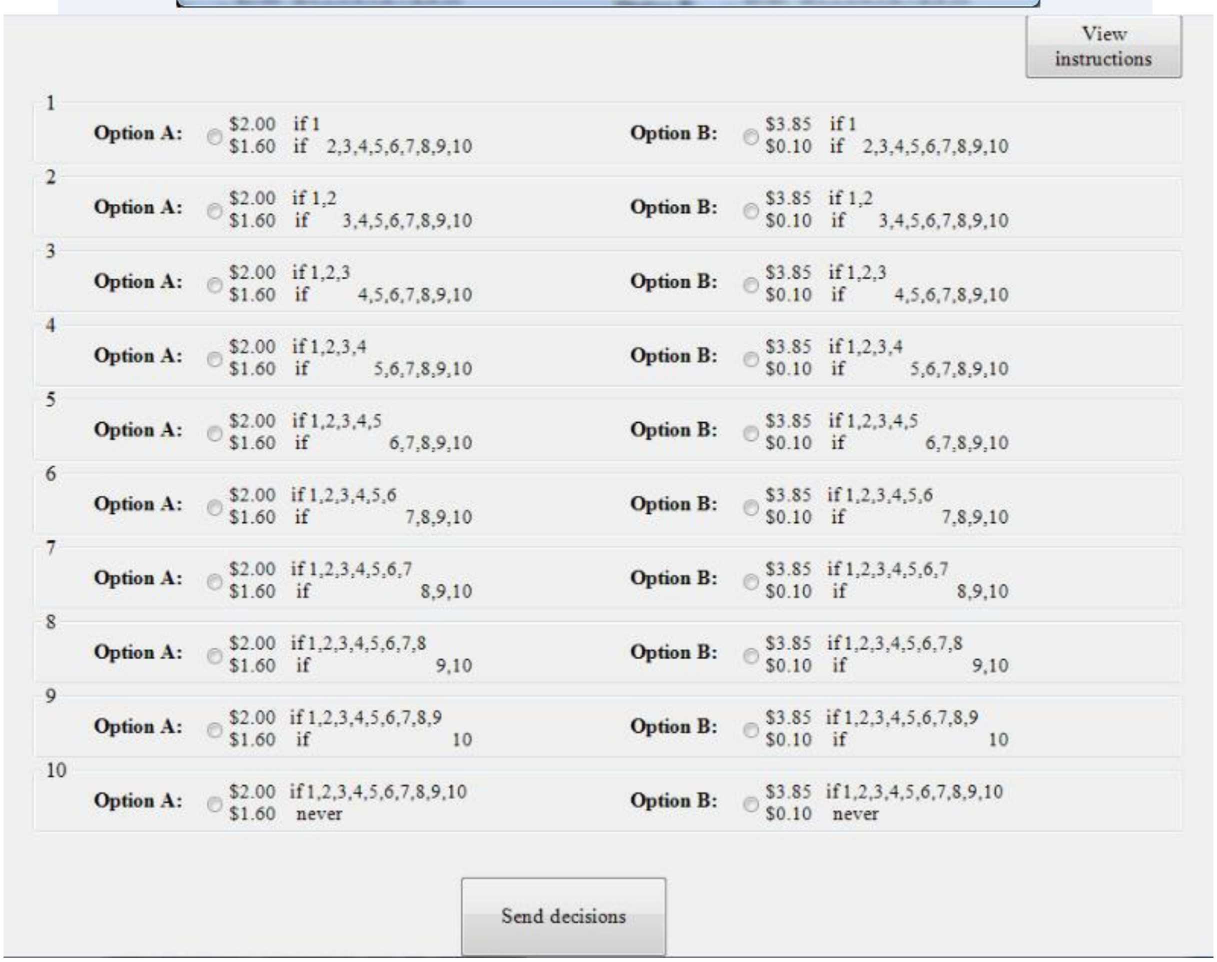
Instructions

For each line in the table in the next screen, please state whether you prefer option A or option B. Notice that there are a total of 10 lines in the table but just one line will be randomly selected for payment. Each line is equally likely to be chosen, so you should pay equal attention to the choice you make in every line. At the end of the experiment, a number between 1 and 10 will be randomly selected by the computer. This number determines which line is going to be paid.

Your earnings for the selected line depend on which option you chose in that line: option A or option B. To determine your earnings, a second number between 1 and 10 will be randomly selected by the computer. This number is then compared with the numbers in the line and option selected (see the table in the next screen):
 * If you selected option A and the second number shows up in the upper row you earn $2.00. If the number shows up in the lower row you earn $1.60.
 * If you selected option B and the second number shows up in the upper row you earn $3.85. If the number shows up in the lower row you earn $0.10.

To summarize, you will make ten choices: for each decision row you will have to choose between Option A and Option B. You may choose A for some decision rows and B for other rows, and you may change your decisions and make them in any order.

Close

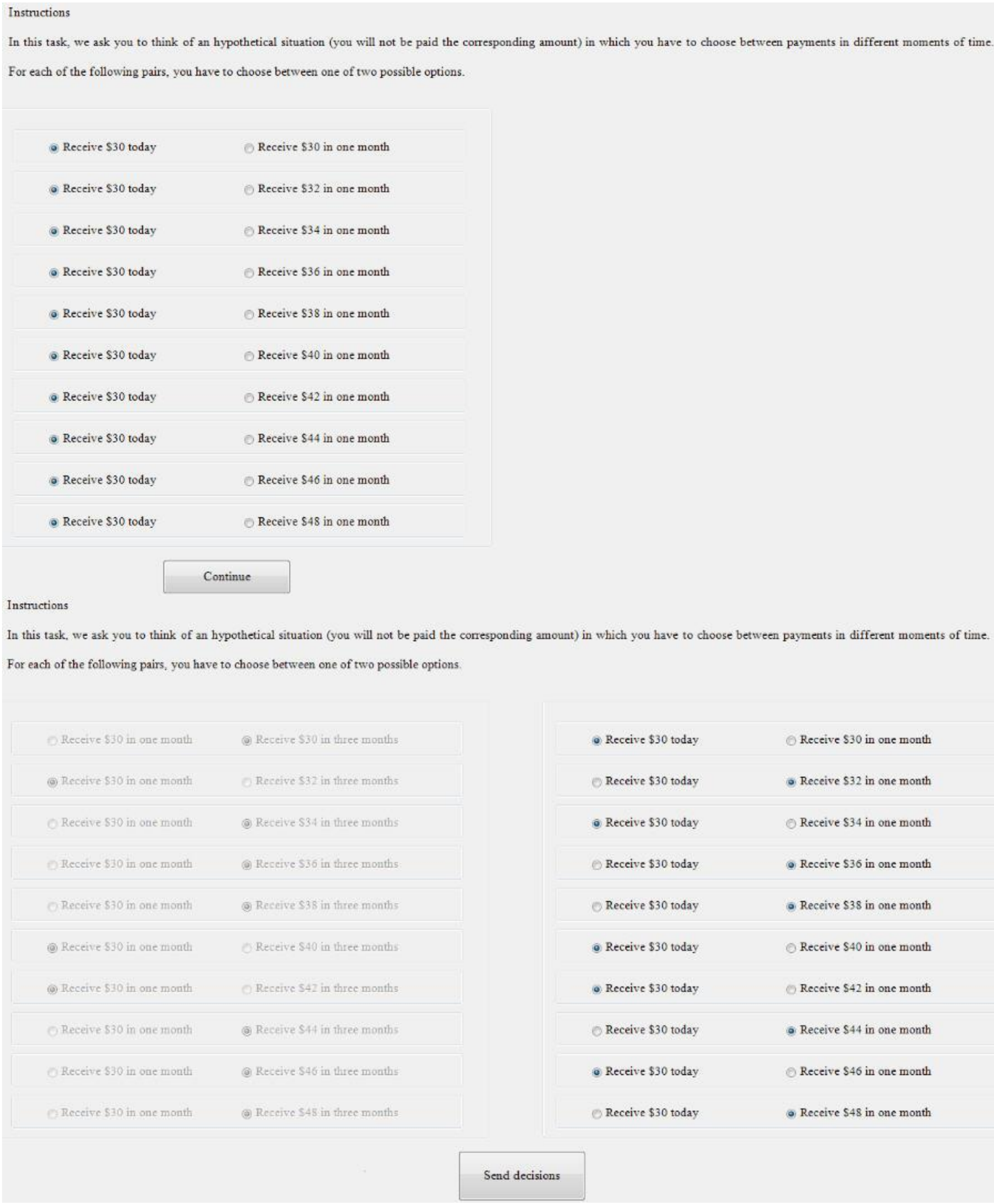


View instructions

1	**Option A:**	$2.00 if 1 $1.60 if 2,3,4,5,6,7,8,9,10	**Option B:**	$3.85 if 1 $0.10 if 2,3,4,5,6,7,8,9,10
2	**Option A:**	$2.00 if 1,2 $1.60 if 3,4,5,6,7,8,9,10	**Option B:**	$3.85 if 1,2 $0.10 if 3,4,5,6,7,8,9,10
3	**Option A:**	$2.00 if 1,2,3 $1.60 if 4,5,6,7,8,9,10	**Option B:**	$3.85 if 1,2,3 $0.10 if 4,5,6,7,8,9,10
4	**Option A:**	$2.00 if 1,2,3,4 $1.60 if 5,6,7,8,9,10	**Option B:**	$3.85 if 1,2,3,4 $0.10 if 5,6,7,8,9,10
5	**Option A:**	$2.00 if 1,2,3,4,5 $1.60 if 6,7,8,9,10	**Option B:**	$3.85 if 1,2,3,4,5 $0.10 if 6,7,8,9,10
6	**Option A:**	$2.00 if 1,2,3,4,5,6 $1.60 if 7,8,9,10	**Option B:**	$3.85 if 1,2,3,4,5,6 $0.10 if 7,8,9,10
7	**Option A:**	$2.00 if 1,2,3,4,5,6,7 $1.60 if 8,9,10	**Option B:**	$3.85 if 1,2,3,4,5,6,7 $0.10 if 8,9,10
8	**Option A:**	$2.00 if 1,2,3,4,5,6,7,8 $1.60 if 9,10	**Option B:**	$3.85 if 1,2,3,4,5,6,7,8 $0.10 if 9,10
9	**Option A:**	$2.00 if 1,2,3,4,5,6,7,8,9 $1.60 if 10	**Option B:**	$3.85 if 1,2,3,4,5,6,7,8,9 $0.10 if 10
10	**Option A:**	$2.00 if 1,2,3,4,5,6,7,8,9,10 $1.60 never	**Option B:**	$3.85 if 1,2,3,4,5,6,7,8,9,10 $0.10 never

Send decisions

Time preferences task



Instructions

In this task, we ask you to think of an hypothetical situation (you will not be paid the corresponding amount) in which you have to choose between payments in different moments of time.

For each of the following pairs, you have to choose between one of two possible options.

Receive $30 today	Receive $30 in one month
Receive $30 today	Receive $32 in one month
Receive $30 today	Receive $34 in one month
Receive $30 today	Receive $36 in one month
Receive $30 today	Receive $38 in one month
Receive $30 today	Receive $40 in one month
Receive $30 today	Receive $42 in one month
Receive $30 today	Receive $44 in one month
Receive $30 today	Receive $46 in one month
Receive $30 today	Receive $48 in one month

Continue

Instructions

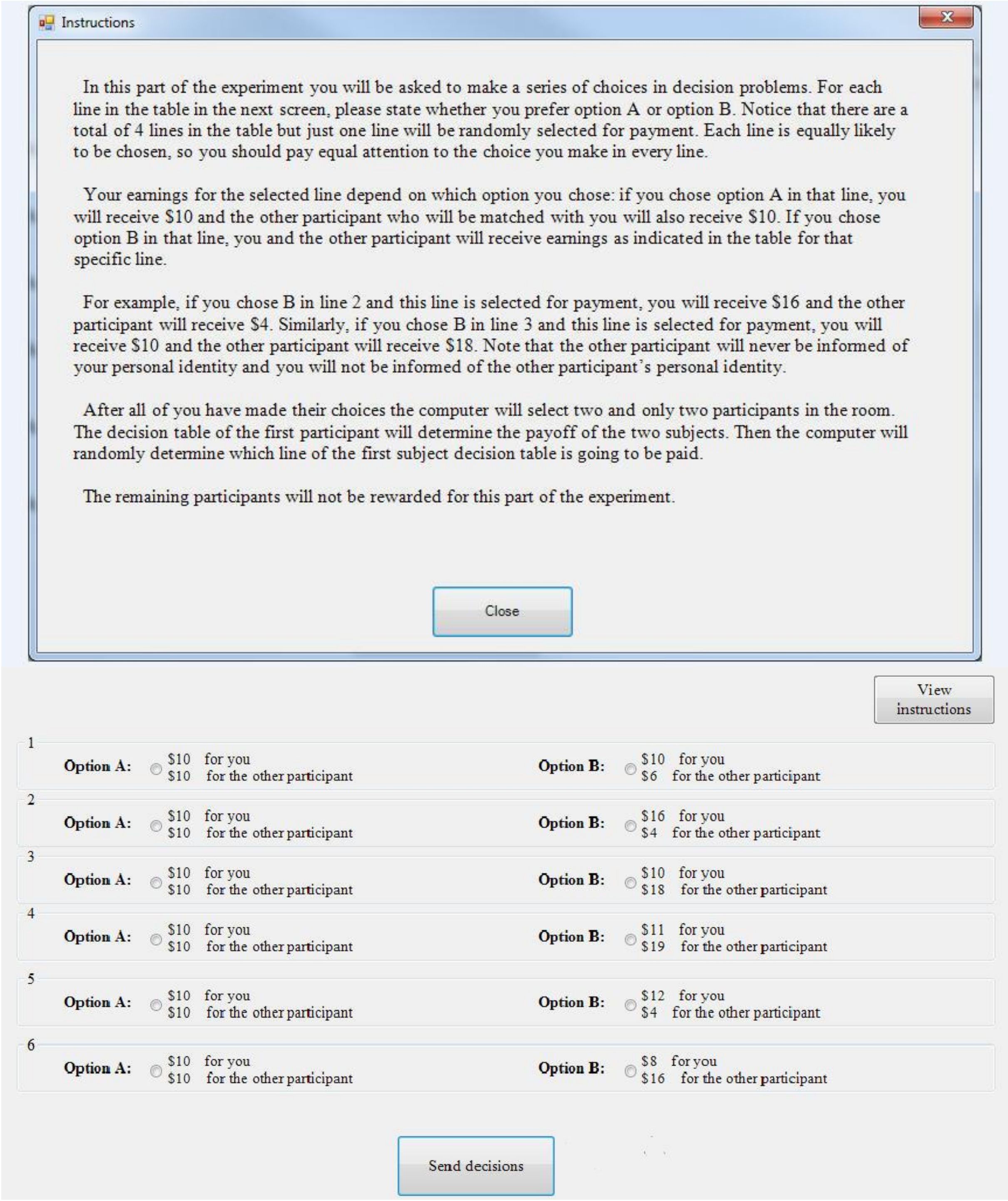
In this task, we ask you to think of an hypothetical situation (you will not be paid the corresponding amount) in which you have to choose between payments in different moments of time.

For each of the following pairs, you have to choose between one of two possible options.

Receive $30 in one month	Receive $30 in three months	Receive $30 today	Receive $30 in one month
Receive $30 in one month	Receive $32 in three months	Receive $30 today	Receive $32 in one month
Receive $30 in one month	Receive $34 in three months	Receive $30 today	Receive $34 in one month
Receive $30 in one month	Receive $36 in three months	Receive $30 today	Receive $36 in one month
Receive $30 in one month	Receive $38 in three months	Receive $30 today	Receive $38 in one month
Receive $30 in one month	Receive $40 in three months	Receive $30 today	Receive $40 in one month
Receive $30 in one month	Receive $42 in three months	Receive $30 today	Receive $42 in one month
Receive $30 in one month	Receive $44 in three months	Receive $30 today	Receive $44 in one month
Receive $30 in one month	Receive $46 in three months	Receive $30 today	Receive $46 in one month
Receive $30 in one month	Receive $48 in three months	Receive $30 today	Receive $48 in one month

Send decisions

Distributional social preferences task



Instructions

In this part of the experiment you will be asked to make a series of choices in decision problems. For each line in the table in the next screen, please state whether you prefer option A or option B. Notice that there are a total of 4 lines in the table but just one line will be randomly selected for payment. Each line is equally likely to be chosen, so you should pay equal attention to the choice you make in every line.

Your earnings for the selected line depend on which option you chose: if you chose option A in that line, you will receive $10 and the other participant who will be matched with you will also receive $10. If you chose option B in that line, you and the other participant will receive earnings as indicated in the table for that specific line.

For example, if you chose B in line 2 and this line is selected for payment, you will receive $16 and the other participant will receive $4. Similarly, if you chose B in line 3 and this line is selected for payment, you will receive $10 and the other participant will receive $18. Note that the other participant will never be informed of your personal identity and you will not be informed of the other participant's personal identity.

After all of you have made their choices the computer will select two and only two participants in the room. The decision table of the first participant will determine the payoff of the two subjects. Then the computer will randomly determine which line of the first subject decision table is going to be paid.

The remaining participants will not be rewarded for this part of the experiment.

Close

View instructions

1	**Option A:**	$10 for you $10 for the other participant	**Option B:**	$10 for you $6 for the other participant
2	**Option A:**	$10 for you $10 for the other participant	**Option B:**	$16 for you $4 for the other participant
3	**Option A:**	$10 for you $10 for the other participant	**Option B:**	$10 for you $18 for the other participant
4	**Option A:**	$10 for you $10 for the other participant	**Option B:**	$11 for you $19 for the other participant
5	**Option A:**	$10 for you $10 for the other participant	**Option B:**	$12 for you $4 for the other participant
6	**Option A:**	$10 for you $10 for the other participant	**Option B:**	$8 for you $16 for the other participant

Send decisions