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I'm in a hurry, I don't want to know! The effects of time pressure and transparency on self-serving behavior

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I'm in a hurry, I don't want to know! The effects of time pressure and transparency on self-serving behavior

Johannes Jarke* Johannes Lohse†

Abstract

In a laboratory experiment, using a game in which a "decider" determines her own payoff and the payoff of a "stakeholder" by choosing between two payoff allocations, we analyze the effect of time pressure on self-serving behavior under two transparency conditions. Under "transparent consequences" the decider instantly observes that her payoff maximizing ("self-serving") option is payoff minimizing for the stakeholder. Under "hidden consequences" there is initial uncertainty whether that option is payoff minimizing or maximizing for the stakeholder, but the information is obtainable at no cost. We find that (i) time pressure has no effect under transparent consequences, but (ii) significantly increases self-serving behavior under hidden consequences, (iii) despite having no effect on the frequency of information revelation. These results have major ramifications for organizational design and contribute to the understanding of the cognitive and motivational aspects of pro-social behavior.

1 Introduction

Tightly clocked work processes, due dates and deadlines are ubiquitous features of modern organizational reality. By facilitating coordination (Janicik & Bartel, 2003; Massey et al., 2003), commitment (O'Donoghue & Rabin, 1999; Ariely & Wertenbroch, 2002) and negotiation efficiency (Stuhlmacher et al., 1998; Sutter et al., 2003) they are important instruments for increasing organizational performance. But the extant literature also highlights potential downsides of deadlines and time pressure, which manifest themselves both at the individual (e.g. Amabile et al., 1976) and organizational level (e.g. Nordqvist et al., 2004; Chiocchio et al., 2015).

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In this paper we report on an experiment designed to investigate one potentially adverse effect of time pressure that is not well understood, yet.[1] We test the hypothesis that time pressure could increase the incidence of "self-serving" conduct, that is, behaviors that are privately beneficial but externally harmful. Suppressing self-serving conduct is key for organizational performance: for a team to function effectively—or even efficiently—its members need to help one another, i.e. confer a benefit to others at a cost to themselves, or abstain from opportunism, i.e. forgoing private benefits that imply an external cost (e.g. Fukuyama, 1995; Gill & Stone, 2015). In our experiment we implement such decision situations in which the choice of a "decider" affects her own welfare as well as the one of a "stakeholder" in a stylized way by means of a simple allocation (or "dictator") game: The decider can split a budget of €10 in two ways, either €5 for both or €8 for herself and €2 for the stakeholder. Thus, choosing the second over the first option can be interpreted as the performance of an self-serving action in the sense defined above.

There is now a sizable experimental literature showing that intrinsic, pro-social motivations, such as preferences for equitable outcomes (Bolton & Ockenfels, 2000), fairness (Fehr & Schmidt, 1999) or moral norms (López-Pérez, 2008, 2010), can keep self-serving behavior at bay. However, such motivations are often susceptible to even minor changes in the specific structure of an interaction (Gintis et al., 2005; Fehr & Gintis, 2007; Dana et al., 2007). Against this background the question whether time pressure is such a situational feature that moderates the extent of self-serving behavior arises naturally.

We implemented our basic allocation game under four experimental conditions, which are motivated by two streams of literature that both suggest a relationship between time pressure and the extent of self-serving behavior, one more direct, the other more indirect and conditional. First, in a baseline condition the payoffs are perfectly transparent to the players and the deciders have unlimited time to make a decision. We contrasted this condition with a treatment that was identical except that deciders faced a tough time limit. This contrast is motivated by the hypothesis that time pressure could impede moral reasoning. A prominent theory recurring in the emerging literature on the cognitive basis of pro-social behavior holds that humans are inherently predisposed to act in their own self-interest, while pro-social behavior requires reflection to invoke higher principles of moral reasoning (Kohlberg, 1963, 1976). Thus, if time pressure or other forms of cognitive load "tax" reflection, self-interested affect will tend to dominate over moral considerations. Competing theories from the same literature hold the opposite, i.e. a positive link between intuition and pro-social behavior (Haidt, 2007; Rand et al., 2012; Dreber et al., 2016). The extant experimental evidence on these two opposing views is inconclusive,[2] but they rely on essentially the same mechanism, namely

[1] For a broader discussion of the effects of time pressure on other aspects of organizational decision making we refer to Kocher & Sutter (2006) and Kocher et al. (2013).

[2] Some studies are pro reflection (Piovesan & Wengström, 2009; Achtziger et al., 2015; Fiedler et al., 2013; Lohse et al., 2016; Lohse, 2016; Capraro & Cococcioni, 2016; Kocher et al., 2016), some pro intuition (Rand et al., 2014, 2012; Rand, 2016; Lotito et al., 2013; Schulz et al., 2014; Cappelen

cognitive load, which is why we call this the "cognitive load mechanism". It predicts *some* effect of time pressure, that is, the frequency of self-serving decisions should be different in the two conditions. If an effect materializes, its direction would be informative with respect to the two competing theories about what motivation is more intuitive, self-serving or pro-social.

The other two conditions are identical to the first two except that the decider is not automatically informed about how her choice influences the payoff of the stakeholder, but only that her payoff-maximizing option can either benefit or harm the stakeholder relative to the alternative option.[3] However, the exact payoffs can be revealed at basically no cost (a click on a button). Again, we contrast a condition with and one without time pressure. Those conditions are inspired by a recent series of experiments on the link between transparency and self-serving behavior (Dana et al., 2007; Larson & Capra, 2009; Matthey & Regner, 2011; Grossman, 2014). These experiments have consistently shown that in similar settings as our "hidden information" condition (without time pressure) a significant fraction of deciders deliberately opted to forgo information about the stakeholder's payoffs, and conditionally select the alternative that maximizes their own payoffs.[4] This avoidance of being informed has been interpreted as "strategic ignorance": the deliberate decision not to reveal whether ones self-serving actions help or harm another person. Staying ignorant exploits "moral wiggle room" and thereby protects ones self-image of being a pro-social person while still choosing the potentially self-serving option (Dana et al., 2007; Lazear et al., 2012; Grossman & van der Weele, 2013). Extending this interpretation, time pressure could provide decision makers with an *additional* excuse for not getting informed about the payoff consequences and hence could enlarge the scope of "moral wiggle room".[5] Hence, we call this the "exculpation mechanism". It predicts that under time pressure decision-makers should be more likely to ignore information and consequently display increased levels of self-serving behavior than without a time constraint. The "cognitive load mechanism" predicts the opposite: since "strategic ignorance" requires cognitive deliberation, it should be less frequent under time pressure than under unlimited time.[6]

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et al., 2016), and some yield ambiguous results (Tinghög et al., 2013; Verkoeijen & Bouwmeester, 2014; Kessler & Meier, 2014; Grossman et al., 2014; Hauge et al., 2016).

[3] In the former case, the decider's payoff-maximizing option is also the stakeholder's payoff maximizing option, so there is no conflict of financial interest.

[4] In the conditions without time pressure we essentially replicate Dana et al. (2007). Slight deviations from their design are motivated and discussed in section 2.

[5] This extension would also be in line with recent evidence on lying behavior (Shalvi et al., 2012). Here, lying has been found to be more frequent under time pressure, even in situations where no justification for lying is available. Without time pressure the absence of justifications prevents individuals from lying, presumably because without time pressure ignoring the lack of justifications cannot be easily exculpated.

[6] For the same reasons as outlined above, the "cognitive load mechanism" does not predict a clear effect on the frequency of self-serving choices after the revelation decision; it depends critically on whether time pressure increases or decreases the frequency of self-serving choices after revealing the payoffs. We should also emphasize that the two mechanisms motivate our experiment, but that it

We present the experimental results in section 3. In the conditions without time pressure we replicate a core finding from the extant literature (Dana et al., 2007): almost half of the deciders choose to remain ignorant, and almost all of the ignorant deciders select the self-serving option. The effects of time pressure can be summarized in three key results: First, if deciders are perfectly informed about the payoff consequences of their choice, time pressure has no effect on the distribution of choices. Second, if these consequences are initially hidden but obtainable at no cost, time pressure significantly increases the frequency of self-serving choices. Third, time pressure does not affect the incidence of payoff revelations in a significant way.

In section 4 we discuss the implications of those results. First, we believe that they have obvious and major ramifications for management and organizational design. Structures and processes that impose time pressure on decision-makers can increase self-serving behavior, but only if it is easy for decision-makers to ignore the external consequences of their actions. In other words, given time pressure, more transparency about external consequences of ones actions renders decision-making "immune" against time pressure.

Second, our results contribute to the emerging literature on the cognitive underpinnings of pro-social behavior referred to above. So far, all studies in this field are based on tasks in which it is fairly obvious how choices affect the outcomes of other participants. This abstracts from one defining feature of natural decision-making situations, in which this link is often more opaque. For instance, it might not be instantly observable (but knowable in principle) to members of a team how particular actions or omissions affect other members or overall team performance.

Finally, our results provide an interesting perspective on different mechanisms that could underpin pro-social behavior in our setting. Specifically, our results are favoring the "exculpation mechanism" over the "cognitive load mechanism". But they also lend additional support to the notion that the revelation decision is less "strategic" than previously thought (Grossman, 2014).

2 Experiment

The decision-task we use in our experiment is a modified dictator game similar to Dana et al. (2007) and Larson & Capra (2009).[7] Our 128 undergraduate student subjects, recruited from various departments at the University of Heidelberg through ORSEE (Greiner, 2004), were randomly matched into pairs. Choices were

is not designed to test them against each other (although our results are informative in this respect) because they are not mutually exclusive. There may also be additional mechanisms underlying a relationship between time pressure and self-serving behavior.

[7] We deliberately used slightly different payoffs: in Dana et al. (2007) the more equitable distribution was also the joint payoff maximal one. This allows not only for altruistic or fairness motivations but also for a joint payoff maximization motive (e.g. Charness & Rabin, 2002; Engelmann & Strobel, 2004; Blanco et al., 2011). We used a variant of the task in Dana et al. (2007) in which joint payoffs are constant but only the distribution changes, since we wanted to isolate the pure conflicting interest element in the game.

Table 1: Payoff consequences

(a) TC and TCT

Alternative	Player *B*	Player *A*
Option *X*	€ 5	€ 5
Option *Y*	€ 8	€ 2

(b) HC and HCT

Alternative	Player *B*	Player *A*
Option *X*	€ 5	€ ?
Option *Y*	€ 8	€ ?

then elicited using the strategy method, i.e. both subjects in a pair made a choice before the computer randomly assigned subjects to role *B* (the "decider") or to role *A* (the "stakeholder") with equal odds. In all conditions, the decider determined her own payoffs and the payoffs of the stakeholder by choosing between two payoff allocations, described to subjects as option *X* and option *Y*. In the instructions subjects went through an example on how to read the payoff table and how to select their preferred option. The exact payoffs associated with each option were only revealed (or not fully revealed depending on the condition) on the actual decision screen. The subjects entered their one-shot decision privately and anonymously via a computer interface using z-Tree (Fischbacher, 2007).

We implemented a two-by-two between-subjects full factorial design. In the baseline condition (TC, for "transparent consequences") the payoff consequences of the two options *X* and *Y* were perfectly transparent, i.e. subjects were automatically informed about the payoffs on the decision screen before choosing their preferred option, and there was no time constraint. The payoff structure is shown in table 1a: selecting option *Y* maximizes the payoff of the decider but reduces the payoff of the stakeholder as compared to the equitable distribution implemented by option *X*.

The "hidden consequences" condition (HC) was identical to TC except that the decider was not automatically informed about the full payoff consequences of the two options. Instead, on the subjects' decision screen the payoffs for the stakeholder were replaced by a question mark, as shown in table 1b, and subjects were instructed that a question mark could either represent a payoff of € 5 or a payoff of € 2.[8] By just clicking a button the decider could instantly reveal the true underlying game before choosing between option *X* and *Y*, but she could also decide to make her choice under ignorance by not clicking the button.

The "transparent consequences under time pressure" condition (TCT) was identical to TC except that the decider was exposed to a time limit of five seconds to make her decision. This limit was set at one standard deviation below the mean response time in the TC, such that it could be expected to be binding for the average subject. Since time pressure cannot be exogenously enforced, we incentivized subjects to comply with the time limit in both conditions by subtracting € 1 from their

[8] Thus, in comparison to Dana et al. (2007) we increased the ambiguity with respect to the possible underlying games and thus the potential scope of a "moral wiggle room".

Table 2: Summary of decisions

	Overall		Revealed	Not Revealed
Condition	Option *Y*	Revealed	Option *Y*	Option *Y*
TC	61.5%			
TCT	53.1%			
HC	62.5%	53.1%	41.2%	86.7%
HCT	89.5%	42.1%	81.3%	95.5%

final earnings if they did not comply. Subjects learned about the time constraint just before entering the decision screen, in order to assure that all mental effort associated with the decision was in fact exerted during the limited time period and not before.

Finally, the "hidden consequences under time pressure" condition (HCT) combines both factors namely time pressure and the fact that subjects were not automatically informed about the payoff consequences of their actions. Clearly, the decision in HCT is more complex than in TCT, since the decider also has to choose whether to reveal the payoff information or not. To render the time constraint in TCT and HCT comparable, we also set the limit one standard deviation below the mean response time in the HC, resulting in a time limit of eight seconds. In other words, the time limits differed in absolute terms but were the same in relative terms.

Each pair was randomly assigned to one of the four conditions. In total there were eight sessions in which we collected data from 26 subjects in the TC, 32 in the HC and the TCT, respectively, and 38 in the HCT condition. Detailed procedures can be found in appendix A, and the full instructions in appendix B. The average subject spent about 30 minutes in the laboratory and earned €6.83, including a fixed show-up fee of €2, with a minimum of €3, a maximum of €10, and a standard deviation of €2.42.

3 Results

The key results of our experiment are summarized in table 2. In line with previous evidence on the presence of "strategic ignorance", we find that in a situation in which the external consequences of their decision are initially unknown (the HC condition) about half of the deciders choose to remain ignorant, and among the latter there is a significantly larger frequency ($p = 0.012$, Fisher's exact test) of *Y* choices compared to the deciders that revealed the true external consequences.[9]

Our main treatment is concerned with the effects of time pressure. A manipu-

[9] In appendix C we compare our results from the TC and HC conditions to the respective conditions in Dana et al. (2007) and Larson & Capra (2009) in more detail. Apart from a generally higher level of *Y* choices, which is most likely due to differences in the payoff structure, they are very similar to the results of the other two studies.

Table 3: Regressions with the probability of selecting option Y as dependent variable

	Probability of selecting option Y			
	Logit	Probit	IV Probit	IV Probit
Time pressure	0.708	−0.215		
	(0.382)	(0.335)		
Decision time			0.235	-0.853^{b}
			(0.368)	(0.361)
Hidden payoffs	1.042	0.025	no	yes
	(0.569)	(0.338)		
Interaction	7.200^{b}	1.148^{b}		
	(6.051)	(0.489)		
Constant	1.600	0.293	−0.272	2.711^{a}
	(0.648)	(0.251)	(0.719)	(0.923)
n	128	128	58	70
Wald χ^2	10.36	12.01	0.41	5.57
Prob > χ^2	0.0157	0.0074	0.5230	0.0183
Pseudo R^2	0.0856	0.0856		
Wald χ^2 exogeneity			0.00	0.00
Prob > χ^2 exogeneity			0.9948	0.9456

"Time pressure" indicates whether the decision was made under a time limit (1 = yes, 0 = no). "Hidden payoffs" indicates whether the stakeholder's payoffs were initially hidden (1 = yes, 0 = no). "Interaction" is the product of "Time pressure" and "Hidden payoffs". "Decision time" is the natural logarithm of actual time elapsed between the screen appearance and the decision submission. The first column reports the odds ratios of a logistic regression with respective robust standard errors in parentheses. Superscripts indicate whether a two-tailed z-test rejects the H_0 that the odds ratio is equal to one at a significance level of 1 percent (a), 5 percent (b) or 10 percent (c), respectively. The second through fourth columns report the coefficients of probit regressions with respective robust standard errors in parantheses. Superscripts indicate whether a two-tailed z-test rejects the H_0 that the coefficient is equal to zero at a significance level of 1 percent (a), 5 percent (b) or 10 percent (c), respectively. The regression in the third and fourth column uses "Decision time" as treatment variable and "Time pressure" as an instrument. The third column contrasts the TC and TCT conditions, the fourth column the HC and HCT conditions.

Table 4: Regressions with the probability of payoff revelation as dependent variable

	Probability of payoff revelation		
	Logit	Probit	IV Probit
Time pressure	0.642	−0.278	
	(0.321)	(0.304)	
Decision time			0.217
			(0.253)
Constant	1.133	0.078	−0.528
	(0.404)	(0.223)	(0.572)
n	70	70	70
Wald χ^2	0.83	0.83	0.73
Prob > χ^2	0.3620	0.3612	0.3917
Pseudo R^2	0.0088	0.0088	
Wald χ^2 exogeneity			4.64
Prob > χ^2 exogeneity			0.0313

"Time pressure" indicates whether the decision is was made under a time limit (1 = yes, 0 = no). "Decision time" is the natural logarithm of actual time elapsed between the screen appearance and the decision submission. The first column reports the odds ratios of a logistic regression with respective robust standard errors in parantheses. Superscripts indicate whether a two-tailed z-test rejects the H_0 that the odds ratio is equal to one at a significance level of 1 percent (a), 5 percent (b) or 10 percent (c), respectively. The second and third columns report the coefficients of probit regressions with respective robust standard errors in parantheses. Superscripts indicate whether a two-tailed z-test rejects the H_0 that the coefficient is equal to zero at a significance level of 1 percent (a), 5 percent (b) or 10 percent (c), respectively. The regression in the third column uses "Decision time" as treatment variable and "Time pressure" as an instrument.

lation check ascertains that time pressure indeed significantly ($p = 0.000$, Fisher's exact test) reduced median decision times (i.e. the time that subjects spent on the decision screen) across both information conditions from 13 to 5 seconds.

Result 1 *Under transparent consequences, time pressure has no effect on the choice of an average decider.*

In TC, 62 percent (16 out of 26) selected the self-serving option Y compared to 53 percent (17 out of 32) in TCT. A Fisher's exact test does not reject the hypothesis that those proportions are equal ($p = 0.599$). As an alternative demonstration based on the regression results in table 3 (first and second column), a z-test does not reject the hypothesis that the probability of a random decider choosing option Y is equal in TC and TCT. Thus, there is no evidence of a "direct" time pressure effect as predicted by the "cognitive load mechanism".

Result 2 *Under hidden consequences, time pressure increases the frequency of Y choices.*

In HC, 63 percent (20 out of 32) of the deciders selected the self-serving option Y compared to 89 percent (34 out of 38) in HCT. A Fisher's exact test now rejects the hypothesis that those proportions are equal at an error probability of one percent ($p = 0.010$). Thus, under non-transparent consequences, time pressure increases the degree of self-serving behavior by a medium-to-large effect, as shown also by the significant regression coefficients of the interaction term in table 3 (first and second column). Put differently, if decision-makers have to decide under time pressure (TCT and HCT) obscuring the payoff consequences for the stakeholder increases the incidence of self-serving behavior from 53 percent (TCT) to 89 percent (HCT). Again, a Fisher's exact test clearly rejects the hypothesis that these proportions are equal ($p = 0.001$).

Interestingly, result 2 is not driven by a decrease in payoff revelations:

Result 3 *Under hidden consequences, time pressure has no significant effect on the frequency of payoff revelations.*

Without time pressure (HC), 53 (17 out of 32) percent of the deciders revealed the stakeholder's payoffs compared to 42 percent (16 out of 38) in the time pressure condition (HCT), yielding a standardized effect of $d = 0.2188$ in the direction suggested by the "exculpation mechanism". However, the null hypothesis that the effect is zero cannot be rejected at a five percent error probability (Fisher's exact test, $p = 0.472$).[10] This is also shown by the regression results in the first and second columns of table 4.

[10] Given the sample sizes in the two conditions, an effect of $d \geq 0.6983$ would be required to reject the null at five percent error probability and 80 percent power, or alternatively, at least 317 and 377 subjects in the two conditions, respectively, to detect the found effect.

Since result 2 is not due to differences in the revelation decision, it has to be driven by a shift in distribution choices. Comparing choices in HC and HCT shows that this shift is indeed very pronounced among those subjects who reveal payoffs. Among those deciders who do not reveal payoffs, 87 (13 out of 15) percent selected option Y without time pressure (HC) compared to 96 percent (21 out of 22) under time pressure (HCT). This difference in proportions is not significant (Fisher's exact test, $p = 0.554$). However, among deciders who reveal payoffs there is large and significant ($p = 0.032$) difference: without time pressure (HC) 41 percent (7 out of 17) selected option Y, whereas under time pressure (HCT) 81 percent (13 out of 16) did so.[11]

The third and fourth column in table 3 and the third column in table 4 provide an additional robustness check for our time pressure results. In principle, it is possible that not all subjects are affected equally by time pressure, since subjects could violate the time constraint. Thus, as an alternative approach we consider at the relationship between subjects' response times—as measured by (the natural logarithm of) actual times elapsed between the screen appearance and the decision submission—and choices of option Y. As response times are potentially endogenous, we follow Angrist et al. (1996) and use assignment to the time pressure treatment as an instrument. By design, treatment assignment is random and hence truly exogenous, while still being highly correlated with decision times (Kendall's $\tau_b = -0.6612$, z-test of independence $p = 0.0000$). The third column in table 3 indicates that there is no relationship between response times and choices as long as consequences are automatically revealed (TC and TCT), while the fourth column confirms that subjects who spent more time on the decision screen are less likely to choose option Y when consequences are hidden (HC and HCT). The third column of table 4 indicates no significant relationship between decision time and the probability of payoff revelation.

4 Discussion and Conclusion

Our results provide interesting insights in at least four respects. First, we believe that they have obvious and major ramifications for organizational design and management. Result 2 suggests that structures and processes that impose time pressure on decision-makers can increase self-serving behavior. This increase could hamper organizational performance for the reasons outlined in the introduction. Result 1 adds the important qualification that this effect of time pressure is only present if the structure of the interaction makes it easy for individual decision-makers to ignore the external consequences of their decisions. In contrast, if consequences are perfectly transparent there is no way to ignore them because it is virtually impossible to consciously "un-know" something. Put differently, increasing the transparency of external consequences limits the adverse effects of time pressure. This

[11] To investigate whether this is due to differences in the processing of new information would require a a more complex design tailored to this question and is thus left for further research.

is not only in line with the intuition that more transparency increases cooperation in teams, it also identifies a specific mechanism that moderates this relationship: transparency renders decision-making "immune" against time pressure.

Second, our results are informative with respect to the two mechanisms outlined in the introduction. The "cognitive load mechanism" suggests a "direct" time pressure effect, i.e. a different frequency of Y choices under TCT compared to TC. This is inconsistent with result 1. Under hidden consequences the "cognitive load mechanism" predicts more revelations under time pressure, which is inconsistent with result 3. Result 2 points towards the "exculpation mechanism", but result 3 is inconsistent with its prediction as well. Thus, further theorizing (and subsequent testing) about the cognitive processes underlying the relationship between time pressure, transparency and self-serving behavior appears to be a fruitful avenue for further research. The remaining two points can be taken as starting ingredients.

Third, result 3 provides a qualification for the "strategic ignorance" literature: the dominant interpretation of the finding that many deciders refuse to reveal the payoff consequences to the stakeholder is that they *deliberately* and *strategically* choose to remain ignorant, pursuing the aim of exploiting "moral wiggle room" (Dana et al., 2007; Lazear et al., 2012; Grossman & van der Weele, 2013; Grossman, 2014). Result 3 gives reason to believe that the revelation decision is less "strategic" as previously thought, because if time pressure made strategic reasoning more difficult, we should observe significantly *more* revelations under time pressure (which we do not). This is in line with Grossman (2014), who finds that defaults have a strong influence on the revelation decision. Again, if the choice to remain ignorant was mainly strategic, we would not expect that defaults mattered in a significant way.

Finally, results 1 and 2 speak to an emerging literature concerned with the cognitive underpinnings of pro-social behavior. Inspired by dual-process models of decision-making (Kahneman, 2003), researchers in both economics and psychology are investigating the question whether pro-social behavior follows from intuition (System 1) or reflection (System 2) (Dreber et al., 2016). Several studies have used time-pressure or cognitive load to exogenously vary the relative importance of System 1 and System 2 in a variety of preference elicitation tasks, such as public good games (Rand et al., 2012, 2014; Tinghög et al., 2013; Verkoeijen & Bouwmeester, 2014), dictator games (Schulz et al., 2014), ultimatum games (Cappelletti et al., 2011), or donation tasks (Kessler & Meier, 2014). While some of these studies find evidence in favor of intuitive pro-sociality, other studies detect no systematic relationship or alternatively suggest that deliberation is a key driver of self-serving choices. So far, all studies on intuition and pro-social behavior have used tasks in which it is fairly obvious how choices affect the outcomes of other participants. This abstracts from one defining feature of natural decision environments, in which this link is often more opaque. The fact that in our experiment time pressure had no effect on pro-social behavior if consequences were transparent (result 1) but a large effect if they were hidden (result 2) constitutes an important and interesting piece of new evidence about the different mechanisms underpinning of

pro-social behavior.

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A Procedures

Upon entering the laboratory, subjects were randomly assigned to computer terminals. Booths separated the participants visually, ensuring that they made their decisions anonymously and independently. Direct communication among them was strictly forbidden for the duration of the entire session. Furthermore, subjects did not receive any information on the personal identity of any other participant, neither before nor while nor after the experiment.

The experimental instructions that explained the structure of the game and the procedural rules were shown on-screen (see supplementary material). The experiment was framed in an abstract way using neutral language and avoiding value laden terms in the instructions. Post-experimental debriefings attested that no participant had difficulties in comprehending the instructions. The decisions were made by buttons to be clicked with the computer mouse. After the game, subjects were asked to answer a short questionnaire while the experimenter prepared the payoffs. Subjects were then informed about their payoffs, and then individually called to the experimenter booth, paid out (according to a random number matched to their decisions; no personal identities were used throughout the whole experiment) and dismissed.

B Instructions

Here we report the transscripted instructions in English, the original instructions were in German and are available upon request.

Screen 1

Dear participant,

thank you for supporting our research by your participation. On this screen you will find general instructions regarding the process of this study:

- You will complete some tasks and questionnaires on your computer.
- Please follow the instructions on the screen in front of you.
- At the end of todays session you will receive a monetary compensation.
- This monetary compensation has been financed by the Ministry of Education and Research.
- You will receive a fixed sum of 2 Euro for taking part in this experiment.
- Furthermore, you can earn additional amounts.
- These additional amounts reflect the decisions made during todays session.
- There will be instructions for each task. Please read them **carefully**
- Of course, your decisions and earnings will be treated **anonymously**. For this purpose you have created an anonymous password at the beginning of this study.
- Please do not communicate with the other participants here in this room. Otherwise we will have to exclude you from the study. In this case you will receive no earnings.

Screen 2

General information:

- You will interact with one other participant here in this room. Thus there are **two participants** per group.
- You will be matched anonymously and randomly making it impossible to find out which participant you are interacting with.
- In the decision task there will be **two different roles**. Which role you will take will be determined by a lottery at the end of the experiment.

- If you have role *A* the other participant will take role *B* and vice versa. The probability of taking a certain role (just as in a fair coin flip) will be 50%.

Roles and decisions:

- In **role** *A* you cannot take an active decision.
- In **role** *B* it will be your task to distribute an amount of money between yourself and the other participant.
- You will be shown different allocations in a table and you will have to pick **one specific** allocation.
- For the final payment of both participants it is only relevant how the participant in role *B* decides.

Role assignment and final payment:

- Initially both participants select their preferred allocation, for the case that they are assigned role *B*.
- By a random lottery it will be determined if you or the other participant will have role *B*.
- The participant, who is assigned to role *B*, will determine the payments for both participants in his group.

On the next screen we will explain to you how to read the table displaying the different allocations.

Screen 3

- On this screen you can familiarize yourself with the layout of the decision screen.
- All numbers we display on this screen are only valid for this **example screen**.
- On the actual decision screen the numbers will be **different**.
- You can choose between option *X* and option *Y*.
- The **first column** displays the amounts you **receive yourself**, if you choose a specific option.
- The **second column** displays the amounts **the other participant** receives, if you choose a specific option.
- If you e.g. choose option *X* you will receive 10 and the other participant will receive 20.

- If you e.g. choose option *Y* you will receive 20 and the other participant will receive 40.
- On the decision screen the numbers reflect the amounts of Euros that you and the other participant will receive at the end of the experiment.

	You Receive	The other participant receives
Option *X*	10	20
Option *Y*	20	40

Screen 4 (HC and HCT only)

- The **second column** displays the amounts **the other participant** receives, if you choose a specific option.
- On the decision screen this column will contain **question marks** instead of numbers.
- Each question mark **hides** the actual payment the other participant will receive if you pick a certain option.
- This hidden amount can either be 2 or 5.
- On the decision screen there will be a button that reveals the exact amounts hidden behind the question marks.
- You are free to select option *X* or option *Y* **without** revealing the exact amounts that the other participant will receive.
- The other participant will not be informed whether you revealed the payments or not.

	You Receive	The other participant receives
Option *X*	10	?
Option *Y*	20	?

Screen 5

- You have completed the instructions.
- From now on your choices can have an impact on your earnings.

Screen 6 (TCT and HCT only)

- Please decide spontaneously in the next task.
- You will have 5[TCT]/8[HCT] seconds to enter your decision.
- If you need more time you will lose 1 Euro.

This screen closes automatically after 12 seconds and the task starts immediately.

C Baseline results in comparison

Here we compare our results from the TC and HC conditions to the respective conditions in Dana et al. (2007, DWK in the following) and Larson & Capra (2009, LC in the following). In their TC condition, a majority of 74 percent in DWK and 78 percent in LC of the deciders selected the equal split option. In ours only a minority of 38 percent (10 out of 26) of the deciders did so, which is most likely to the different payoff structure that keeps joint payoffs constant across the two options. In fact, this level is in line with standard dictator game experiments that also keep joint payoffs constant (Fehr & Schmidt, 2006).

In the HC condition of DWK (LC), 50 percent (47 percent) of deciders revealed the stakeholder's true payoffs and 37 percent (22 percent) selected the equal split option. Conditionally, 75 percent (40 percent) of the revealing and none (none) of the non-revealing deciders chose the "fair" option. In our hidden information condition, 53 percent (17 out of 32) of deciders revealed the stakeholder's true payoffs and 38 percent (12 out of 32) selected the equal split option, 59 percent (10 out of 17) of the revealing and 13 percent (2 out of 15) of the non-revealing deciders.