UNIVERSITÀ
DI SIENA
1240

QUADERNI DEL DIPARTIMENTO

DI ECONOMIA POLITICA E STATISTICA

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Does Focality Depend on the Mode of Cognition? Experimental Evidence on Pure Coordination Games

n. 771 – Gennaio 2018

Abstract

We conduct a laboratory experiment to study how the mode of reasoning affects pure coordination in problems with and without an exogenous anchor that can serve as a focal point. The mode of reasoning is manipulated in the lab by requiring subjects to decide quickly (time pressure treatment) and, alternatively, by requiring subjects to motivate their decisions in a few lines of text (motivation treatment). This is meant to induce, respectively, a fast and intuitive mode of reasoning as opposed to a slow and deliberative one. Experimental data suggest that: (i) subjects take to the lab pre-existing focalities that may have a common cultural root; (ii) the anchor is strongly focal and crowds out pre-existing focalities; (iii) such crowding out only happens for deliberative subjects. As a result, the anchor has an ambiguous effect on the overall ability of subjects to coordinate, making its desirability heavily dependent on the likelihood that subjects follow a slow and deliberative mode of reasoning.

JEL classification code: C91; D01.

Keywords: focal points, intuition, deliberation, time pressure, motivation.

1 Introduction

Dual process theories of conscious cognition suggest that humans take decisions under two alternative modes of reasoning: either quickly and relying on heuristics (intuition), or slowly and after careful scrutiny of costs and benefits (deliberation) (Evans and Stanovich, 2013). In this paper we study how the mode of reasoning affects the ability of individuals to coordinate on the same action in pure (and abstract) coordination games. We assess this issue by a laboratory experiment aiming at manipulating the mode of reasoning of subjects playing pure coordination games with and without an exogenous anchor that can serve as a focal point.

In order to inform the experimental design for the lab, we preliminarily investigated the ruling social norms in simple pure coordination games by conducting an online experiment where 655 individuals participated (for two weeks up to April 3rd, 2015).

In this experiment subjects were confronted with four different choice problems, concerning colors, numbers, geometrical shapes, and letters, where one alternative out of three had to be selected. These choice problems were presented under the two following conditions: in the first there was no graphical anchor, while in the second there was a graphical anchor suggesting one of the options as focal; in particular, we placed four symbols representing the options at the four corners of the screen, with one option appearing twice while the other options appearing just once. Subjects were also asked to take the Cognitive Reflection Test, in its original form (Frederick, 2005). The following facts were observed: (i) the distribution of choices over alternatives was significantly different from the uniform distribution that one would expect if they were chosen randomly, (ii) in the absence of the anchor, the distribution of choices made by low CRT individuals (score either 0 or 1) is not significantly different from distribution of choices by high CRT individuals (score either 2 or 3), and (iii) in the presence of the anchor, the distribution of choices by low CRT individuals is significantly different from the distribution of choices by high CRT individuals.

If we interpret the CRT score as a proxy of the mode of reasoning (with high CRT individuals being more likely than low CRT individuals to use deliberation instead of intuition), then we are tempted to conclude that the mode of reasoning has no effect in coordination games, unless an anchor is provided. To better study the issue in a controlled setting, and to assess the causal relationship from mode of reasoning to choice, we have conducted a laboratory experiment at the LABSI facilities of the University of Siena, in April-July 2016.

Overall, experimental results provide evidence that more thoughtful reflection increases the focality of the anchor, at the expenses of other sources of focality, possibly culturally

rooted (such as the individual preference for a color, number, shape or letter). More precisely, (i) subjects seem to come to the lab with pre-existing focalities that are likely to have cultural roots, (ii) the anchor is also quite focal, and so its introduction can crowd out pre-existing focalities, and (iii) the anchor is very focal for deliberative subjects, while it is not much so for intuitive subjects. This interpretation of the experimental data rests on the assumption that subjects in the control treatment, on average, reflect about their decision more than they do in the time pressure treatment, and less than they do in the motivation treatment.

Our results suggest that an exogenously given anchor that can serve as a focal point may or may not be interpreted (and used) as such, depending on the mode of reasoning. This leads to the conclusion that an exogenously given anchor that is set in contrast with pre-existing cultural focalities can either foster the ability of subjects to coordinate or impair it, depending on the mode of reasoning which is mostly adopted by subjects.

The paper is organized as follows. Section 2 reviews the relevant literature. Section 3 illustrates the experimental design. Section 4 provides a description of the experimental data, suggesting a number of potential results. Section 5 presents the baseline econometric analysis for what regards the anchor focality, while Section 6 presents the results on the likelihood of coordination. Section 7 investigates the robustness of the results found in Section 5 and Section 6 to the inclusion of several psychological measures. Section 8 investigates the decision-making of experimental subjects on the basis of beliefs and preferences elicited at the of the experiment. Section 9 collects final remarks and suggestions for future research.

2 Related Literature

Dual process theories have been widely investigated in psychology, mainly with unincentivized experiments (see, for a review, Evans and Stanovich, 2013). Incentivized experiments have been run to investigate the effects that intuition and reasoning have on pro-social behavior in prisoner dilemma games and public good games (Rand et al., 2012).[1] Coordination games have received large attention in economics, especially from the experimental literature (Van Huyck et al., 1990, 1991). However, to our knowledge, no experiment has been conducted to assess the effects that intuition and reasoning have on the behavior of individuals in pure coordination setting. The only contribution that comes close is Belloc et al. (2017), where an experiment is run to analyze the role of intuitive versus deliberative thinking in stag hunt games: here coordination is not pure, since hunting stag is Pareto superior if coordination is achieved, while hunting hare is less risky because it pays more when miscoordination

[1] See Spiliopoulos and Ortmann, 2014; Rand, 2016 for a review of the findings.

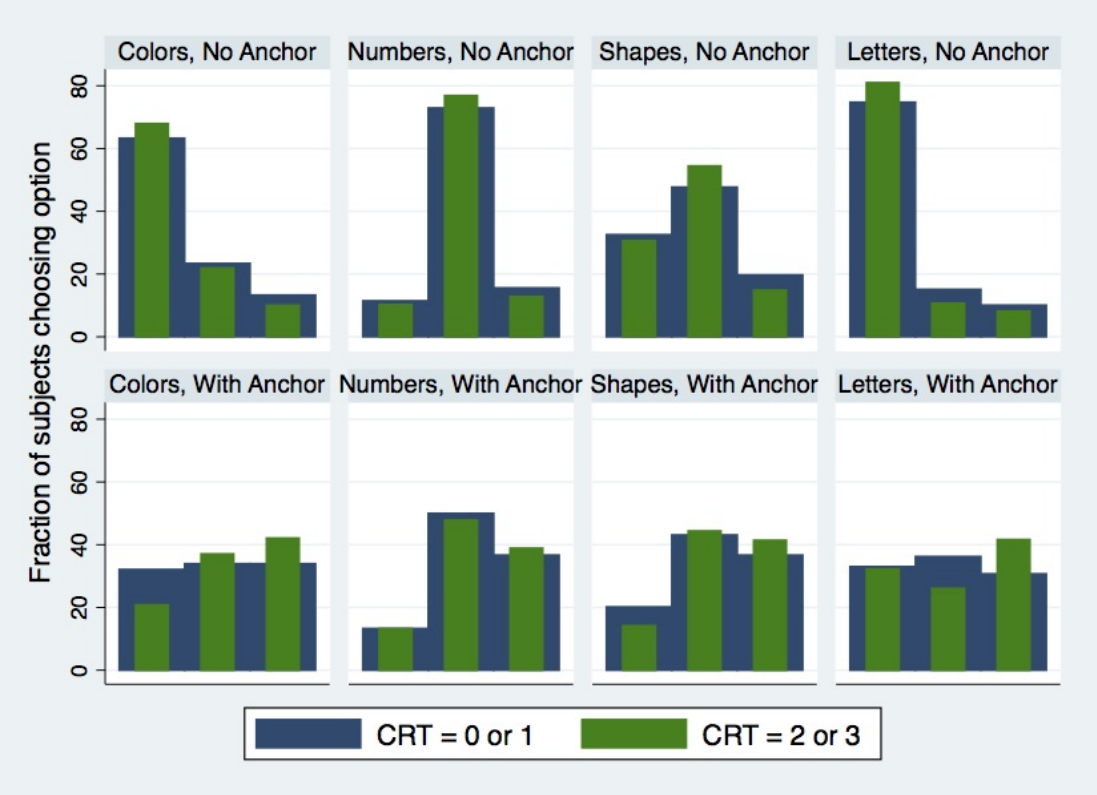

Figure 1: Distribution of choice by coordination game played and CRT scores. In each of the eight subgraphs, the left bar represents the first option, the central bar the second option and the left bar the third option. Options are, respectively, Colors: green-orange-violet, Numbers: 2-3-4, Shapes: triangle-circle-square, Letters: A-I-U. If present, the anchor always points to the third option available (Colors: violet, Numbers: 4, Shapes: square; Letters: U).

occurs.

In the following we review the literature on dual process theories on the one hand, and on coordination games on the other hand. Our contribution places at the intersection of the two.

Dual process theories. The experimental literature offers and tests a variety of models of dual process theories (Evans, 2008), differing with each other in the way they assign attributes to intuition and deliberation (see also the discussions in Kahneman, 2003).

A substantial part of the literature defines intuition as an automatic and unconscious process that takes place very quickly, typically in less than a second (Strack and Deutsch, 2004). Many experiments have been conducted investigating the role of such kind of intuition for pro-social behavior, using techniques based on ego depletion (Xu et al., 2012; Halali et al.,

2013; Achtziger et al., 2015, 2016; Duffy and Smith, 2014) or cognitive load (Cappelletti et al., 2011; Schulz et al., 2014).[2] Another part of the literature defines intuition as a mode of reasoning, so not as fully unconscious and automatic, but as entailing some reflection and in particular the use of heuristics (Rand et al., 2014; Stromland et al., 2016; Cappelen et al., 2016; Butler et al., 2014). In this approach intuition is a substantially slower process than in the previous approach. Our analysis falls into the second approach. In this respect we are closer to Rubinstein (2016), who classifies instinctive decision-making as involving a minimum amount of reasoning.[3]

Coordination, focality, and cognition. Schelling (1960) is the first to observe that focal points can help coordination in the absence of explicit communication. Since then, the literature has produced a large number of contributions trying to assess how cognition leads to focalities that can be used as coordination devices.[4] Most of the contributions focus on experimental evidence.

From a theoretical perspective, Alós-Ferrer and Kuzmics (2013) provide a general formal framework to define and analyze the concepts of focal points and frames for normal form games. Mehta et al. (1994) investigate the role of labeling as a driver of focality. Crawford et al. (2008) show that even minute payoff asymmetries can impair focal points as a tool to achieve coordination. Agranov and Schotter (2012) show that coarse communication can facilitate coordination. Chen (2017) finds experimental evidence that the ability to exploit shared focalities to coordinate improves if individuals are let free to sort themselves in groups. Alaoui and Penta (2017) provide an experimental design strategy to disentangle cognitive and behavioral effects in level-k behavior.[5] Bardsley et al. (2010) and Bardsley and Ule (2017) compare cognitive hierarchy theory (which is closely related to level-k reasoning) and

[2]The idea that the two processes are parallel and competitive has been explored. Achtziger and Alós-Ferrer (2013) offer a hybrid model and an experiment in which decisions are the result of the interaction of (deliberative) optimization based on Bayesian updating of beliefs and (intuitive) reinforcement learning, finding that that response times are longer in case of conflicting decision by the two processes. This finding is rationalized in a more general model in Alós-Ferrer (2016) where a dual-process/multi-strategy approach is combined with the standard diffusion model, with a utility decision process and a heuristic decision process which are treated as diffusion processes of evidence accumulation (see also Caplin and Martin, 2016, for a hybrid model considering drift-diffusion).

[3]Fischbacher et al. (2013) after classifying heterogeneous subjects into types, suggest that RT is shorter for a selfish type who only examines own payoffs, and longer for a fair type that must examine also others payoffs.

[4]See Casajus (2012) for a comprehensive overview on the topic.

[5]See Friedenberg et al. (2017) for a theoretical framework concerning level-k reasoning in general games.

team reasoning as alternative explanations of how players use focal points to coordinate. Costa-Gomes et al. (2009) make use of the experimental data in Van Huyck et al. (1990, 1991) to assess which model between cognitive hierarchy/level-k reasoning, logit quantal response equilibrium (McKelvey and Palfrey, 1995) and noisy introspection (Goeree and Holt, 2004) better explains subjects' strategic thinking in coordination problems. Bacharach and Bernasconi (1997) and Blume and Gneezy (2010) study the effects of cognition on coordination in the framework of variable frame theory (Bacharach, 1993). We stress that our contribution is the first experimental test of dual process theories in coordination settings.

3 Experimental design

The experiment was conducted at the LABSI, an experimental laboratory at the University of Siena. The experimental interface was developed using z-Tree (Fischbacher, 2007). Participants were recruited from a pool of university students using HROOT (Hamburg Registration and Organization Online Tool) (Bock et al., 2014). In total 138 subjects participated, in nine different sessions over three days.

The participants were all asked to play a sequence of games consisting of 8 one-shot coordination games, similarly to the setting used in the online experiment described in the Introduction. In each game subjects faced three possible options and they had to pick one. In game 1 and 5 the options were colors: green, orange, violet. In game 2 and 6 the options were numbers: 2, 3, and 4. In game 3 and 7 the options were geometric shapes: a triangle, a circle, and a square. In game 4 and 8 the options were letters: A, I, U. Moreover, in the last four games (5, 6, 7, and 8) a graphical anchor was added suggesting one of the options as focal: four symbols representing the options at the four corners of the screen, with one option appearing twice while the other options appearing just once. The anchor was in all cases the third option (color "violet" for game 5; number "4" for game 6; shape "square" for game 7; letter "U" for game 8). No feedback information was provided during the game sequence. For each game, the payoff was equal to 2 euro if the subject chose the option most chosen for that game in the current session, and 0 otherwise; if two options were most chosen, then a payoff of 2 euro was assigned with probability 1/2 to the subjects choosing either option.

The experimental setting was identical for all individuals (same lab, same instructions, same instructions reader), except for the implementation of three different treatments: a time pressure treatment (TT) where subjects were forced to pick an option in 6 seconds, a motivation treatment (MT) where agents were forced to wait 10 seconds before taking a

decision and then asked to write down a motivation for their choice, and a control treatment (CT) where no such manipulations were operated. Three sessions were run in each of the three days during which the experiment was conducted: one session for each treatment, following three different orders.

Before playing the eight coordination games, an example of a coordination game with three alternatives represented by animal pictures was illustrated to the experimental subjects. Both the game and the mechanics of payments were described, with specific examples illustrating what happens in two distinct cases: when a single option is the most chosen and when two options are the most chosen. For details on the instructions see the Appendix B.

Subjects made their decisions individually, with no interaction with other subjects during the experiment except for the determination of payoffs which took place at the end of the last game. Subjects were not allowed to use any electronic device or to write on paper.

No feedback information was provided to participants during the play of the eight coordination games. After all decision were taken and payoffs calculated, subjects were informed of their individual payoff. Participants were paid an amount of euro equal to the game payoff plus 5 euro of show up fee. Average total payoff was 9.5 euro out of a maximum of 16, while the average payment was 14.5 euro (9.5 plus the show up fee). A session lasted on average 45 minutes.

In order to guarantee a homogeneous and intense pressure of time to pick an option in the time pressure treatment, it was important to avoid delayed or anticipated start of the various games that would be induced by requiring that each game is played simultaneously by all subjects. Hence, we did not require play to be simultaneous: subjects decided their actions in all 8 games independently of the timing of the opponents' choices. Payoff were calculated only after that all subjects in a session took all their decisions.

After all games were played by all participants in the session, a final questionnaire was administered through the laboratory computers with the aim of collecting information regarding game theory experience, level of education, gender, field of study, preferences for the option proposed, typical mode of reasoning, personality traits, and beliefs on opponents' play. For details on the questionnaires see the Appendix C.

4 Descriptive experimental evidence

The minimum number of participants in a session was 14, while the maximum was 16. For each treatment there were 46 participants, allocated to three distinct sessions in three distinct days. This produced 368 choice observations per treatment, 189 for coordination games

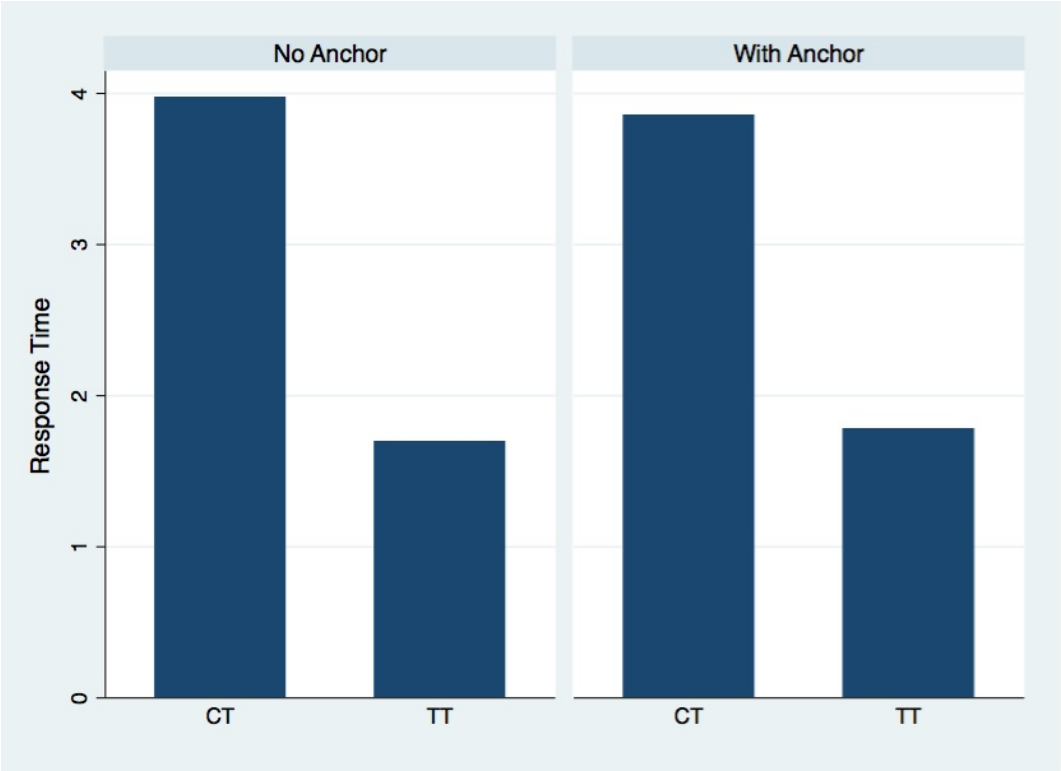

Figure 2: Average response time for Control Treatment (CT) and Time pressure Treatment (TT) for games with and without anchor

without anchor and 189 for coordination games with anchor. In the time pressure treatment all subjects managed to make their decision in 6 seconds, allowing us to record choices without any missing observation. Still, average decision time was substantially smaller in the time pressure treatment with respect to the control treatment (see Figure 2) and, of course, much smaller with respect to the motivation treatment (due to the ten seconds of forced delay).

Looking at choice data across treatments and games three basic results emerge starkly.

Result **1** (Focal points exist without anchor)**.** *When no anchor is exogenously provided, distribution of choices is still significantly different from the uniform distribution in CT, TT, and DM.*

As reported in Figure 3 actual play in games 1, 2, 3, and 4, where no anchor was provided, appears to be non-random. Indeed, the distribution of actual choices is rather different from what would be observed if subjects played randomly (the Epps-Singleton test rejects this hypothesis at 1% significance). More precisely, in game 1 the color green seems to be focal,

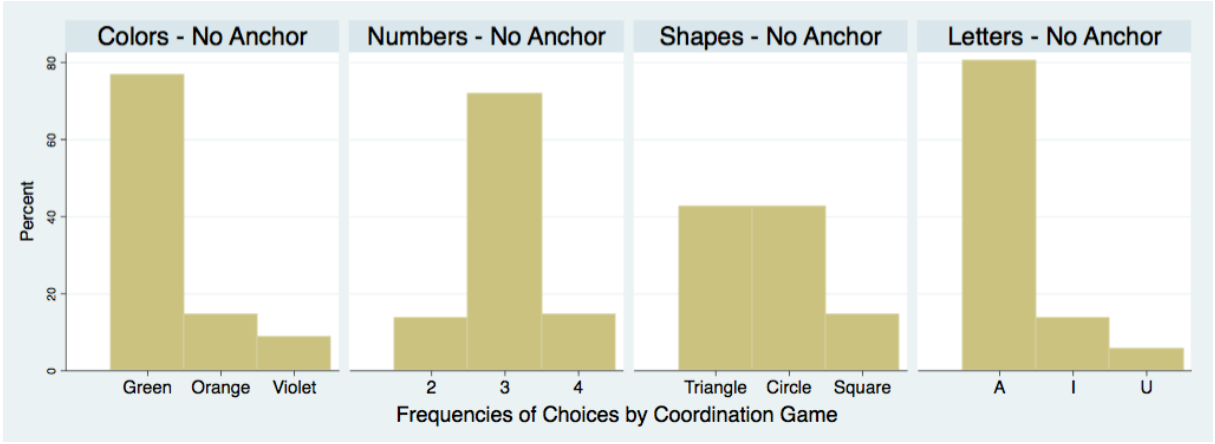

Figure 3: Distribution of choice by coordination game played when no anchor was provided. In each of the four subgraphs, the left bar represents the first option, the central bar the second option and the right bar the third option. Options are, respectively, Colors: green-orange-violet, Numbers: 2-3-4, Shapes: triangle-circle-square, Letters: A-I-U.

as it is the number 3 in game 2; in game 3 both triangle and circle seem to be focal, while in game 4 the focal option seem to be letter A.

It looks natural to ask why experimental subjects may have these focal options and not others. From the data collected with the questionnaire administered at the end of the experiment, it appears that the focality of an option – in the absence of the anchor – is strongly correlated with individual preference for that. In Section 8 we study in greater detail this issue.

Result **2** (Without anchor, the mode of reasoning does not affect coordination)**.** *When no anchor is exogenously provided, distribution of choices is not significantly different in CT, TT, and DM.*

Actual play in the first four coordination games seem to be unaffected by treatments. This is in line with what found in our online experiment (see the Introduction). Figure 4 shows that the distribution of choices under MT and TT are both very close to the distribution of choices under CT (the Epps-Singleton test never rejects the hypothesis that any two distributions of choices are equal). So, it seems that the manipulation of the mode of reasoning in the lab does not alter the strength of focality (at least when such focality is not explicitly induced by the experimenters by means of the anchor). This is confirmed if we look at pooled data over games and options, as shown by the three graphs in the first row of Figure 5: the distribution of choices between the first two options and the third one is constant across treatments.

Result **3** (With anchor, the mode of reasoning affects coordination)**.** *When the anchor is*

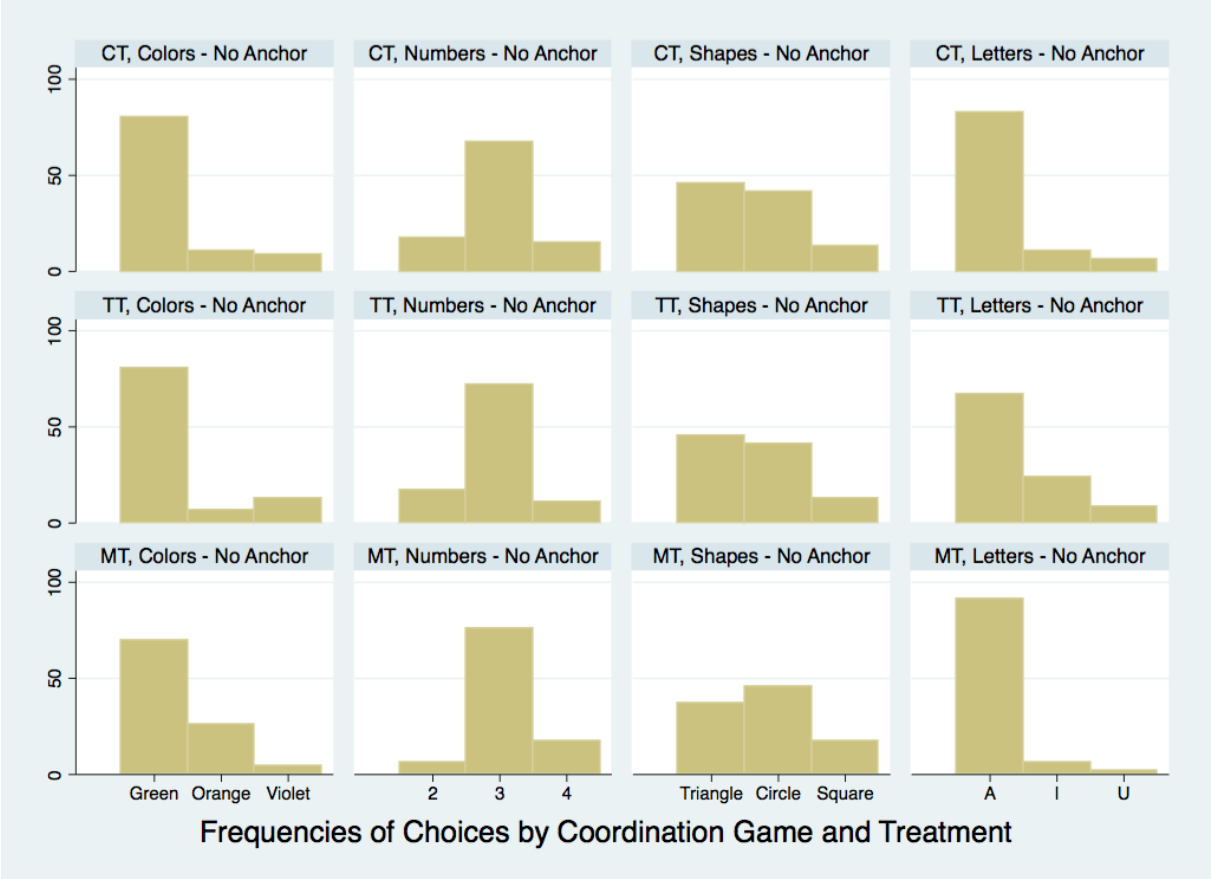

Figure 4: Distribution of choice by coordination game played and treatment (CT = Control Treatment, TT = Time pressure Treatment, MT = Motivation Treatment) when no anchor was provided. In each of the twelve subgraphs, the left bar represents the first option, the central bar the second option and the right bar the third option. Options are, respectively, Colors: green-orange-violet, Numbers: 2-3-4, Shapes: triangle-circle-square, Letters: A-I-U.

exogenously provided, the distribution of choices is significantly different in CT, TT, and MT. In particular, the anchor is chosen significantly more in MT than in CT, and significantly more in CT than in TT.

In contrast to what observed for games without anchor, when the anchor is provided (games 5, 6, 7, and 8) the treatments seem to have a non-negligible effect on the distribution of choices. This is particularly evident from pooled data over games and options (second row of Figure 5): with respect to CT, TT induces a less frequent choice of the anchor (third option) while MT induces a more frequent choice of the anchor. These differences are statistically significant at 5%. Looking at the distribution of choices for each game we also see substantial differences across treatments, as illustrated by Figure 6. These data suggest

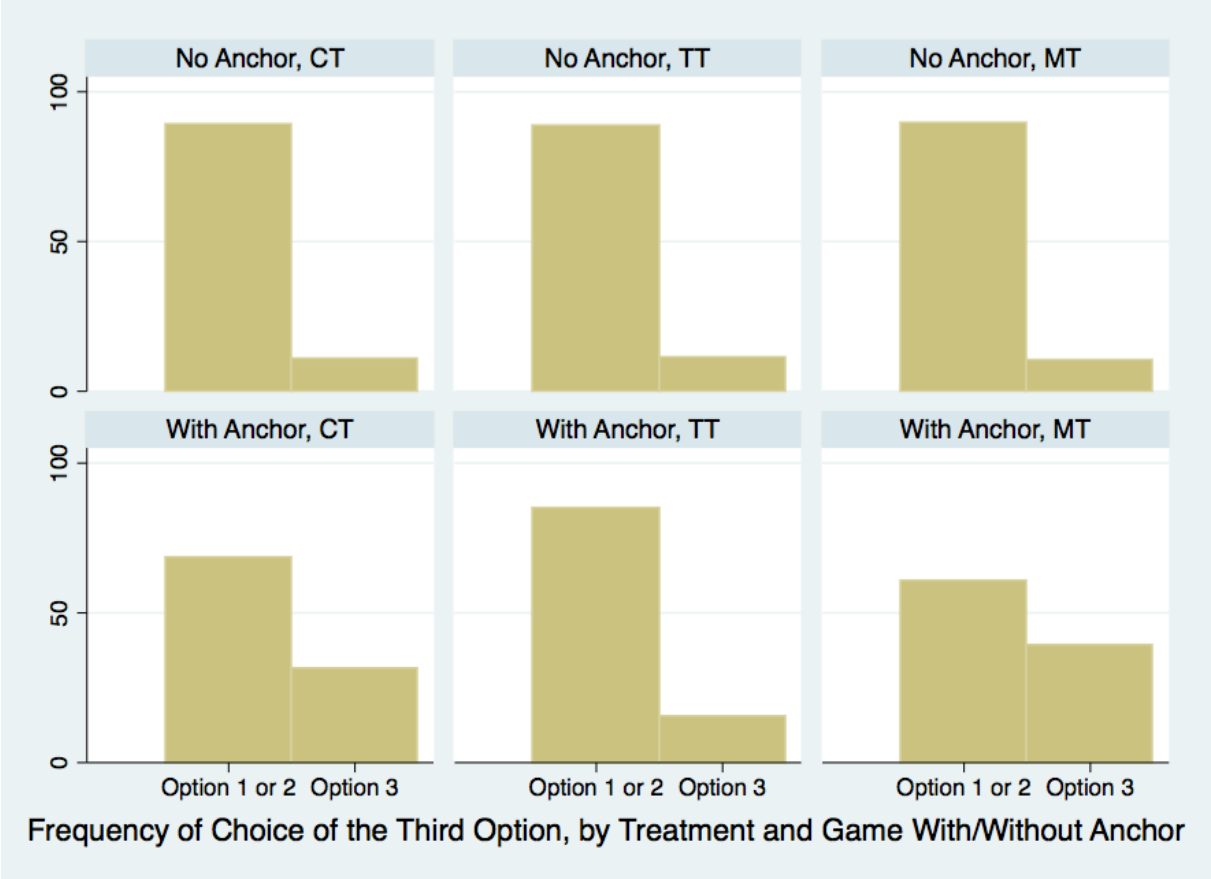

Figure 5: Distribution of choice of third option by treatment (CT = Control Treatment, TT = Time pressure Treatment, MT = Motivation Treatment) and by the presence/absence of the anchor.

that overall play differs starkly across treatments for each game. However, distributional differences have different magnitudes depending on the game. In particular, the frequency of the choice of the anchor does not seem to react to treatments in the same way in all games: it appears to be most reactive in game 6 (numbers) and least reactive in game 7 (geometric shapes).

Overall these results confirm what we found with the online experiment, suggesting that the mode of reasoning does affect behavior in coordination games by affecting the relative focality of options. However, it does so in a non-trivial way. When there are only culturally shared focal options, more or less reflection seems not to lead to different choices. Instead, when there are competing focal options, one culturally shared and the other suggested through an explicit anchor, more reflection favors the explicit focality over the culturally shared one.

The issue of potential confounding factors deserves particular attention with our experi-

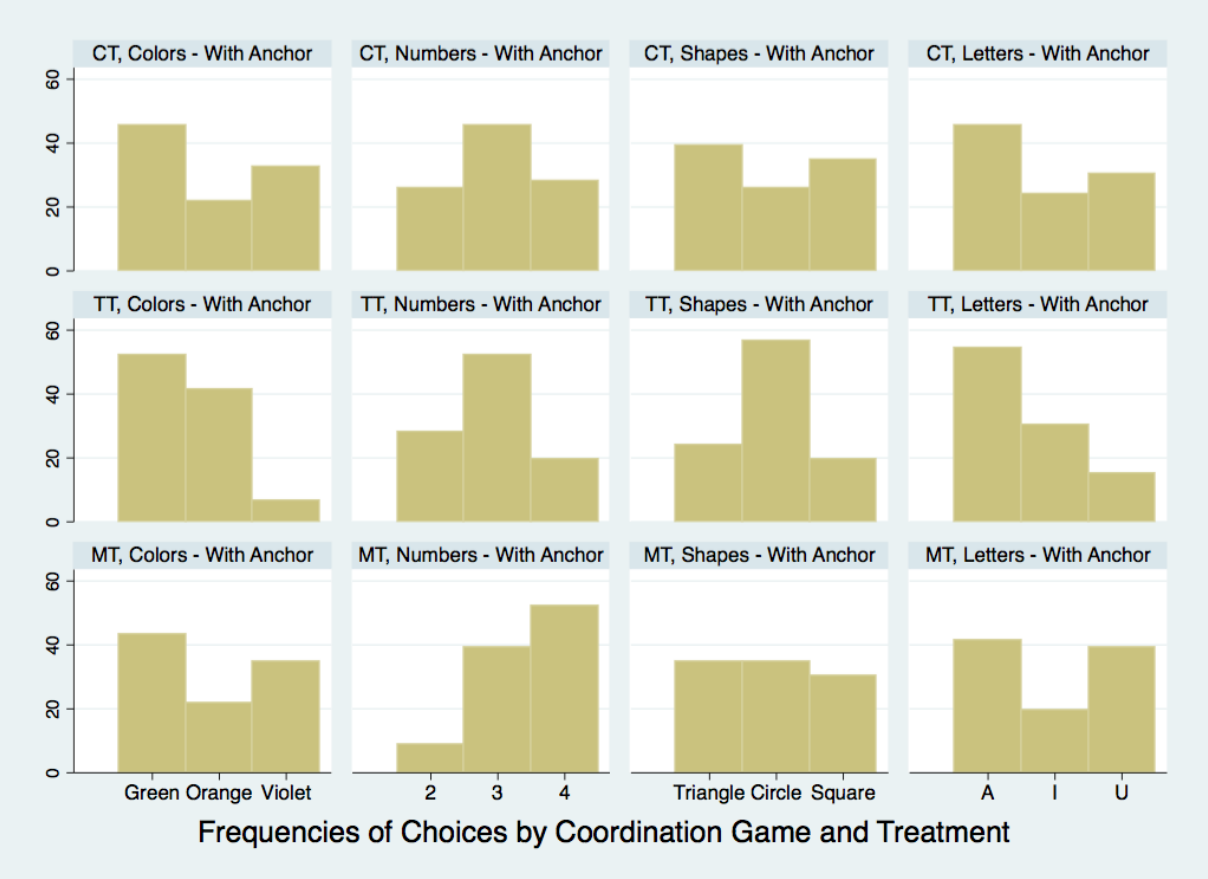

Figure 6: Distribution of choice by coordination game played and treatment (CT = Control Treatment, TT = Time pressure Treatment, MT = Motivation Treatment) when the anchor on the third option was provided. In each of the twelve subgraphs, the left bar represents the first option, the central bar the second option and the right bar the third option. Options are, respectively, Colors: green-orange-violet, Numbers: 2-3-4, Shapes: triangle-circle-square, Letters: A-I-U.

mental data because the participants that showed up turned out to be quite different across treatments. Summary statistics for individual characteristics are reported in Table 1. As one can see from the reported standard errors, basically each sub-sample of treated participants is statistically different from the other two. So, it might be the case that our results have a spurious nature. In order to test this we conduct an articulated econometric analysis in Section 5.

Variable	Mean CT (Std. Dev.)	Mean TT (Std. Dev.)	Mean MT (Std. Dev.)	Min	Max
female	.673913	.5434783	.5434783	0	1
	(.4694178)	(.4987842)	(.4987842)		
game theory experience	.326087	.5217391	.3913043	0	1
	(.4694178)	(.5002073)	(.4887067)		
employed, regular	.0217391	.282155	.0217391	0	1
	(.0869565)	(.1460291)	(.1460291)		
employed, occasional	.5652174	.6304348	.6086957	0	1
	(.4964034)	(.4833442)	(.4887067)		
volunteer, regular	.1304348	.0434783	.0217391	0	1
	(.2042088)	(.3372397)	(.1460291)		
volunteer, occasional	.3043478	.5217391	.2608696	0	1
	(.4607571)	(.5002073)	(.4397067)		
postgraduate	.4130435	.5217391	.6086957	0	1
	(.4930509)	(.5002073)	(.4887067)		
father education	1.822222	1.913043	1.782609	1	3
	(.7980167)	(.6870095)	(.7206731)		
mother education	1.826087	1.95454	1.869565	1	3
	(.7020204)	(.6388931)	(.7114079)		
enrolled Economics/Business	.4130435	.5869565	.4347826	0	1
	(.4930509)	(.4930509)	(.4964034)		
enrolled Physics/Engineer/Math	.0869565	.0652174	.1086957	0	1
	(.282155)	(.2472452)	(.3116807)		
enrolled Law/Political science	.1521739	.0652174	.1086957	0	1
	(.3596784)	(.2472452)	(.3116807)		

Table 1: Average characteristics of experimental subjects by treatment group. At least one mean difference for each variable is statistically significant at 5% level. The group of subjects in the CT shows the largest mean differences.

5 Econometric analysis: Focality

Our empirical strategy to study focality is to use as dependent variable the choice of the third option (Violet, 4, Square, U), to be regressed on three main kinds of variables: the presence of the anchor, treatments, and interactions of these.

The baseline empirical model that we estimate is the following:

$$\begin{aligned} option3_{ir} &= \phi_d\, day + \phi_s\, session + \phi_g\, game + \\ &+ \beta_a\, anchor_{ir} + \beta_t\, TT_{ir} + \beta_m\, TM_{ir} + \\ &+ \beta_{at}\, anchor_{ir} \times TT_{ir} + \beta_{am}\, anchor_{ir} \times TM_{ir} \end{aligned} \tag{1}$$

where $option3_{ir}$ is equal to 1 if the choice of individual i (from 1 to 138) in round r (from 1 to 8) is the third option (either Violet, 4, Square, or U) and equal to 0 otherwise; ϕ_d, ϕ_s, and ϕ_g are, respectively, the day, session, and game type (colors, numbers, shapes, letters)

Probability of choosing third option: All treatments

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS	OLS	OLS	OLS	OLS
treat_time	0.0054	0.0081	0.0211	-0.0063	-0.0067	-0.1338**
	(0.0303)	(0.0293)	(0.0378)	(0.0307)	(0.0308)	(0.0597)
treat_motivation	-0.0054	-0.0029	0.0392	0.0190	0.0183	0.1370**
	(0.0330)	(0.0338)	(0.0426)	(0.0355)	(0.0348)	(0.0675)
timeXanchor	-0.1685***	-0.1685***	-0.1827***	-0.1279**		
	(0.0575)	(0.0577)	(0.0592)	(0.0558)		
motivationXanchor	0.0815	0.0815	0.0769	0.1173*		
	(0.0778)	(0.0782)	(0.0791)	(0.0683)		
anchor	0.2065***	0.1884***	0.1963***	0.0038		
	(0.0466)	(0.0550)	(0.0562)	(0.1300)		
Observations	1,104	1,104	1,080	1,080	540	540
R-squared	0.081	0.098	0.149	0.193	0.047	0.202
Anchor	No & Yes	No & Yes	No & Yes	No & Yes	No	Yes
Day FE	No	Yes	Yes	Yes	Yes	Yes
Session FE	No	Yes	Yes	Yes	Yes	Yes
Game type FE	No	Yes	Yes	Yes	Yes	Yes
Anchor interacted	Only Ts	Only Ts	Only Ts	All var	-	-
Individual controls	No	No	Yes	Yes	Yes	Yes

Table 2: Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

fixed effects; $anchor_{ir}$ is equal to 1 in the presence of the anchor and equal to 0 otherwise; TT_{ir} is equal to 1 under the time pressure treatment and equal to 0 otherwise; TM_{ir} is equal to 1 under the motivation treatment and equal to 0 otherwise.

In addition, we consider as regressors a number of controls at the individual level: gender (male or female), mother's and father's education (7th grade, 12th grade, college), postgrade enrollment (yes or no), some knowledge of game theory (yes or no), employment (none, occasional, regular), volunteering (none, occasional, regular), and study area (economics, physical sciences, social sciences, other).

Table 2 shows the estimates for the baseline model. In a nutshell, the main facts that emerge are:

R1. the anchor strongly increases the likelihood that the third option is chosen;

R2. no treatment affects the choice of the third option independently of the anchor;

R3. the time pressure treatment almost offsets the positive impact of the anchor;

R4. the motivation treatment increases the positive impact of the anchor;

R5. the two treatments have opposite and comparable effects.

More precisely, when fixed effects and controls are not included (column (1)), $anchor_{ir}$ has a positive and large effect that is statistically significant (at 1%), while both TT_{ir} and TM_{ir} are small and statistically not significant; $anchor_{ir} \times TT_{ir}$ has a strong negative and statistically significant effect (at 1%), that is smaller but very close to the positive effect of the anchor; instead, $anchor_{ir} \times TM_{ir}$ has a positive moderate effect that however is not statistically significant. These facts are basically unchanged when fixed effects are introduced (column (2)) and controls are added (column (3)); if anything, the difference between the positive effect of $anchor_{ir}$ and the negative effect of $anchor_{ir} \times TT_{ir}$ tends to zero. When all controls are included, observations fall from 1104 to 1080 since some subjects did not provide information of parent's education.

When all interactions between controls and the anchor are included (column (4)) $anchor_{ir}$ loses any substantial impact, $anchor_{ir} \times TT_{ir}$ maintains its negative impact but reduced to about two-thirds and remains statistically significant (at 5%), while $anchor_{ir} \times TM_{ir}$ increases its positive impact and becomes statistically significant (at 10%). To further investigate the effects of treatments in the presence of the anchor, we split the observations in two subsamples and we run again the regression with full controls. Without anchor (column (5)), no effect of treatments can be detected. Instead, in the presence of the anchor (column (6)) both treatments have large and statistically significant effects that are of similar magnitude and opposite sign.

Overall, findings R1-R5 suggest that more thoughtful reflection increases the focality of the anchor. However, since the estimated treatment effects in Table 2 capture the impact with respect to the control treatment, such an interpretation rests on the assumption that under the control treatment subjects reflect, on average, more than in the time pressure treatment and less than in the motivation treatment. This assumption, although reasonable, should not be taken for granted, especially because the experimental subjects in the control treatment are quite heterogeneous with respect to the other two treatments (see Table 1).

To test the robustness of such interpretation we run again the six regressions of Table 2 but for the reduced sample where observations of the control treatment are excluded. Table 3 reports the estimated coefficients, with the coefficient of the treatment variable

Probability of choosing third option: Only TT and MT

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS	OLS	OLS	OLS	OLS
treat_time	0.0109	0.0125	-0.0071	-0.0164	-0.0165	-0.2572***
	(0.0331)	(0.0328)	(0.0398)	(0.0374)	(0.0366)	(0.0605)
timeXanchor	-0.2500***	-0.2500***	-0.2596***	-0.2409***		
	(0.0709)	(0.0714)	(0.0725)	(0.0718)		
anchor	0.2880***	0.2446***	0.2492***	0.0667		
	(0.0624)	(0.0667)	(0.0675)	(0.1784)		
Observations	736	736	720	720	360	360
R-squared	0.090	0.123	0.167	0.213	0.063	0.239
Anchor	No & Yes	No & Yes	No & Yes	No & Yes	No	Yes
Day FE	No	Yes	Yes	Yes	Yes	Yes
Session FE	No	Yes	Yes	Yes	Yes	Yes
Game type FE	No	Yes	Yes	Yes	Yes	Yes
Anchor interacted	Only TT	Only TT	Only TT	All var	-	-
Individual controls	No	No	Yes	Yes	Yes	Yes

Table 3: Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

now representing the effect of the time pressure treatment with respect to the motivation treatment. In short, figures are quite stable over the six regressions and, moreover, are perfectly consistent with the estimates obtained for the larger sample. In particular, the estimated differential impact between time pressure and motivation is very close to the sum of the impacts estimated separately (Table 2, column (4) and (6)).

6 Econometric analysis: Coordination

In this section we study how the likelihood that experimental subjects coordinate on the same option is affected by the presence of the anchor, the mode of reasoning, and the interaction between these.

Table 4 shows the estimates for an empirical model that is the same as (1) but for the dependent variable which is replaced by $COORD_{irt}$, measuring the fraction of subjects that have chosen the same option as subject i in round r of treatment $t \in \{CT, TT, MT\}$. In other words, $COORD_{irt}$ is a measure of the likelihood that, in round r, subject i coordinates with another subject that is randomly chosen from the sample of subjects in the same treatment.

In a nutshell, the main facts that emerge are:

R6. the anchor strongly decreases the likelihood of coordination;

R7. the time pressure treatment mitigates the reduction in the likelihood of coordination, but only when the anchor is present;

R8. the motivation treatment does not seem to have significant effects on the likelihood of coordination.

More precisely, when fixed effects and controls are not included (column (1)), $anchor_{ir}$ has a negative and large effect that is statistically significant (at 1%), while both TT_{ir} and TM_{ir} are small and statistically not significant; $anchor_{ir} \times TT_{ir}$ has a strong positive and statistically significant effect (at 1%), that is between one-half and one-third of the negative effect of the anchor; instead, $anchor_{ir} \times TM_{ir}$ has a positive small effect that however is not statistically significant. These facts are basically unchanged when fixed effects are introduced (column (2)) and controls are added (column (3)). When all controls are included, observations fall from 1104 to 1080 since some subjects did not provide information on parent's education.

When all interactions between controls and the anchor are included (column (4)) the estimated coefficient of $anchor_{ir}$ slightly increases in absolute terms remaining negative, while $anchor_{ir} \times TT_{ir}$ and $anchor_{ir} \times MT_{ir}$ are basically unchanged. To further investigate the effects of treatments in the presence of the anchor, we split the observations in two subsamples and we run again the regression with full controls. Without anchor (column (5)), no effect of treatments can be detected. Instead, in the presence of the anchor (column (6)) the time pressure treatment has positive and strong statistically significant impact. Table 5 shows that similar estimates are obtained when we restrict the empirical analysis to the samples of the time pressure treatment and the motivation treatment.

Overall, findings R6-R8 suggest that more thoughtful reflection does not help coordination, while an intuitive mode of reasoning can help coordination insofar as it allows to mitigate the negative effects of the competing focality of the anchor. This in turn means that even if the deliberative mode of reasoning is successful in making the anchor more focal, it actually translates into less coordination.

7 Robustness analysis: Adding CRT, REI40, and BIG5

In order to check the robustness of the results presented in Sections 5 and 6, we re-estimate the coefficients presented, respectively, in Table 2 and 4 augmenting the empirical models

Probability of coordination: All treatments

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS	OLS	OLS	OLS	OLS
treat_time	-0.0321	-0.0330	-0.0261	-0.0200	-0.0200	0.0656***
	(0.0257)	(0.0256)	(0.0258)	(0.0271)	(0.0273)	(0.0126)
treat_motivation	0.0281	0.0273	0.0135	0.0067	0.0065	0.0094
	(0.0259)	(0.0260)	(0.0258)	(0.0263)	(0.0264)	(0.0100)
timeXanchor	0.0933***	0.0933***	0.0979***	0.0857***		
	(0.0250)	(0.0251)	(0.0259)	(0.0275)		
motivationXanchor	-0.0111	-0.0111	-0.0110	0.0025		
	(0.0260)	(0.0261)	(0.0265)	(0.0266)		
anchor	-0.2124***	-0.2681***	-0.2659***	-0.2958***		
	(0.0184)	(0.0289)	(0.0296)	(0.0556)		
Observations	1,104	1,104	1,080	1,080	540	540
R-squared	0.185	0.314	0.336	0.345	0.231	0.095
Anchor	No & Yes	No & Yes	No & Yes	No & Yes	No	Yes
Day FE	No	Yes	Yes	Yes	Yes	Yes
Session FE	No	Yes	Yes	Yes	Yes	Yes
Game type FE	No	Yes	Yes	Yes	Yes	Yes
Anchor interacted	Only Ts	Only Ts	Only Ts	All var	-	-
Individual controls	No	No	Yes	Yes	Yes	Yes

Table 4: Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

with psychological measures collected at the end of the experiment.

Tables 6 and 7 present the estimates when we include a measure of CRT, administered in its original form, i.e., the 3 questions form (Frederick, 2005), and the Rational-Experiential Inventory with 40 items (REI40). More precisely, CRT is measured by crt_23_i which takes value 1 when individual i responded correctly to 2 or 3 of the CRT questions, and value 0 otherwise. Moreover, REI40 provides four measures of rational-experiential cognition: rational ability (i.e, perceived ability to use logical and analytic thinking) is measured by $rability_i$; rational engagement (i.e., perceived reliance on and enjoyment of using logical and analytic thinking) is measured by $rengagement_i$; experiential ability (i.e., perceived ability with respect to one's intuitive impressions and feelings) is measured by $eability_i$; experiential engagement (i.e., perceived reliance on and enjoyment of using feelings and intuitions) is measured by $eengagement_i$. Each of the REI40 variables is coded to take value from 1

Probability of coordination: Only TT and MT

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS	OLS	OLS	OLS	OLS
treat_time	-0.0603**	-0.0611**	-0.0416*	-0.0237	-0.0247	0.0506***
	(0.0245)	(0.0241)	(0.0231)	(0.0235)	(0.0235)	(0.0139)
timeXanchor	0.1044***	0.1044***	0.1089***	0.0732***		
	(0.0249)	(0.0251)	(0.0256)	(0.0262)		
anchor	-0.2235***	-0.2611***	-0.2581***	-0.3299***		
	(0.0183)	(0.0295)	(0.0301)	(0.0660)		
Observations	736	736	720	720	360	360
R-squared	0.163	0.294	0.314	0.327	0.241	0.083
Anchor	No & Yes	No & Yes	No & Yes	No & Yes	No	Yes
Day FE	No	Yes	Yes	Yes	Yes	Yes
Session FE	No	Yes	Yes	Yes	Yes	Yes
Game type FE	No	Yes	Yes	Yes	Yes	Yes
Anchor interacted	Only TT	Only TT	Only TT	All var	-	-
Individual controls	No	No	Yes	Yes	Yes	Yes

Table 5: Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

(minimum) to 5 (maximum).

The estimates reported in Tables 6 and 7 show that our results are robust to the inclusion of CRT and REI40 measures. Moreover, REI40 measures do not seem to capture at all why subjects choose the third option (with or without the anchor) or to affect the likely of coordination. A high CRT score seems to go with a lower likelihood to choose the third option, but only when the anchor is absent, and with a higher probability of coordination, especially when the anchor is absent. This is consistent with the idea that high CRT individuals are more likely to stay away from options that are less likely to be played by the majority (this is confirmed by data on stated beliefs collected at the end of the experiment and documented in the next section; see in particular Figure 8).

Tables 8 and 9 present the estimates when we include a measure of the BIG5 personality traits (Digman, 1990) as measured by the Ten Items Personality Measure (TIPI) (Gosling et al., 2003, 2014). More precisely, extraversion is measured by $extrav_i$, agreeableness by $agreeable_i$, conscientiousness by $conscientious_i$, emotional stability by $emotion\_stable_i$, and openness to experiences by $open_i$. Each of the BIG5 variables is coded to take value from 1 (minimum) to 14 (maximum).

Probability of choosing third option: All treatments, CRT and REI40 included

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS	OLS	OLS	OLS	OLS
treat_time	0.0094	0.0117	0.0243	-0.0031	-0.0036	-0.1305**
	(0.0294)	(0.0289)	(0.0373)	(0.0305)	(0.0306)	(0.0607)
treat_motivation	-0.0101	-0.0064	0.0342	0.0140	0.0133	0.1320*
	(0.0337)	(0.0341)	(0.0432)	(0.0363)	(0.0349)	(0.0676)
timeXanchor	-0.1685***	-0.1685***	-0.1827***	-0.1279**		
	(0.0576)	(0.0579)	(0.0594)	(0.0559)		
motivationXanchor	0.0815	0.0815	0.0769	0.1173*		
	(0.0780)	(0.0783)	(0.0793)	(0.0685)		
anchor	0.2065***	0.1884***	0.1963***	0.0038		
	(0.0467)	(0.0551)	(0.0564)	(0.1303)		
crt_23	-0.0525	-0.0379	-0.0349	-0.0349	-0.0701**	0.0003
	(0.0417)	(0.0437)	(0.0374)	(0.0376)	(0.0282)	(0.0654)
rability	-0.0048	-0.0124	-0.0090	-0.0090	-0.0019	-0.0160
	(0.0339)	(0.0367)	(0.0296)	(0.0297)	(0.0223)	(0.0496)
rengage	0.0143	0.0082	0.0002	0.0002	0.0085	-0.0081
	(0.0327)	(0.0349)	(0.0272)	(0.0274)	(0.0244)	(0.0470)
eability	-0.0496	-0.0423	-0.0357	-0.0357	0.0145	-0.0858
	(0.0379)	(0.0392)	(0.0380)	(0.0383)	(0.0371)	(0.0637)
eengage	-0.0084	-0.0013	-0.0005	-0.0005	-0.0117	0.0106
	(0.0293)	(0.0294)	(0.0278)	(0.0279)	(0.0301)	(0.0442)
Observations	1,104	1,104	1,080	1,080	540	540
R-squared	0.089	0.103	0.152	0.196	0.055	0.209
Anchor	No & Yes	No & Yes	No & Yes	No & Yes	No	Yes
Day FE	No	Yes	Yes	Yes	Yes	Yes
Session FE	No	Yes	Yes	Yes	Yes	Yes
Game type FE	No	Yes	Yes	Yes	Yes	Yes
Anchor interacted	Only Ts	Only Ts	Only Ts	All var	-	-
Individual controls	No	No	Yes	Yes	Yes	Yes

Table 6: Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

The estimates reported in Tables 8 and 9 show that our results are robust to the inclusion of measures of personality traits. Overall, extraversion, agreeableness, and conscientiousness seem to play a minor role. Openness seems to play a non-negligible role, going with a higher

Probability of coordination: All treatments, CRT and REI40 included

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS	OLS	OLS	OLS	OLS
treat_time	-0.0343	-0.0351	-0.0269	-0.0208	-0.0226	0.0668***
	(0.0244)	(0.0244)	(0.0248)	(0.0261)	(0.0262)	(0.0130)
treat_motivation	0.0318	0.0310	0.0184	0.0117	0.0132	0.0127
	(0.0253)	(0.0254)	(0.0254)	(0.0259)	(0.0262)	(0.0097)
timeXanchor	0.0933***	0.0933***	0.0979***	0.0857***		
	(0.0251)	(0.0252)	(0.0259)	(0.0276)		
motivationXanchor	-0.0111	-0.0111	-0.0110	0.0025		
	(0.0260)	(0.0261)	(0.0266)	(0.0267)		
anchor	-0.2124***	-0.2681***	-0.2659***	-0.2958***		
	(0.0185)	(0.0289)	(0.0297)	(0.0557)		
crt_23	0.0429***	0.0395**	0.0379**	0.0379**	0.0576**	0.0181*
	(0.0150)	(0.0154)	(0.0153)	(0.0153)	(0.0251)	(0.0107)
eengage	0.0052	0.0057	0.0095	0.0095	0.0213	-0.0023
	(0.0113)	(0.0115)	(0.0118)	(0.0119)	(0.0221)	(0.0084)
eability	0.0177	0.0153	0.0081	0.0081	0.0052	0.0110
	(0.0156)	(0.0158)	(0.0160)	(0.0161)	(0.0302)	(0.0114)
rengage	-0.0112	-0.0150	-0.0186	-0.0186	-0.0283	-0.0088
	(0.0119)	(0.0123)	(0.0118)	(0.0119)	(0.0206)	(0.0098)
rability	0.0022	0.0071	0.0058	0.0058	0.0154	-0.0038
	(0.0112)	(0.0113)	(0.0125)	(0.0126)	(0.0198)	(0.0128)
Observations	1,104	1,104	1,080	1,080	540	540
R-squared	0.193	0.322	0.341	0.350	0.241	0.100
Anchor	No & Yes	No & Yes	No & Yes	No & Yes	No	Yes
Day FE	No	Yes	Yes	Yes	Yes	Yes
Session FE	No	Yes	Yes	Yes	Yes	Yes
Game type FE	No	Yes	Yes	Yes	Yes	Yes
Anchor interacted	Only Ts	Only Ts	Only Ts	All var	-	-
Individual controls	No	No	Yes	Yes	Yes	Yes

Table 7: Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

likelihood to choose the third option and a smaller probability of coordination. Emotional stability seems to be the most relevant trait, going with a lower likelihood to choose the third option and a greater probability to coordinate. This translates, respectively, in a higher

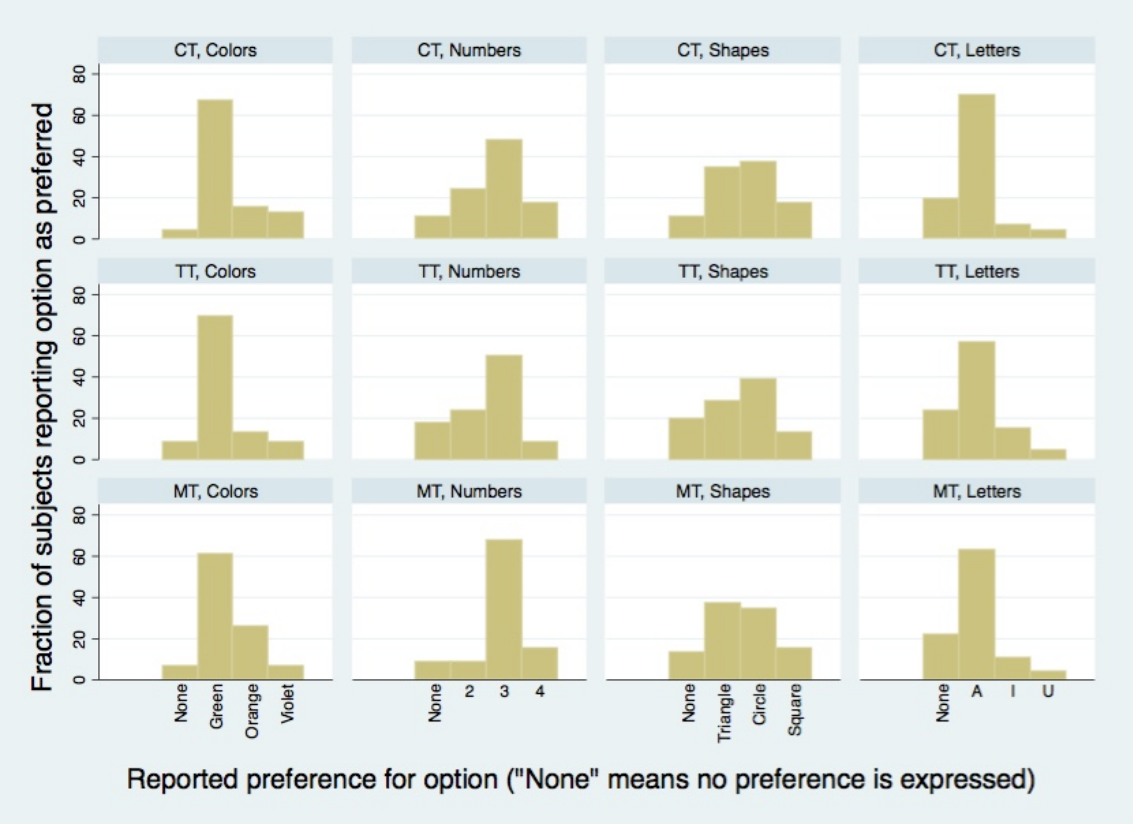

Figure 7: Share of subjects that report to prefer a given option, by sample treatment.

and a lower probability of coordination. Moreover, for all these regressors the estimated coefficient is larger for the games where the anchor is present (column (6)) with respect to the games where the anchor is absent (column (5)). This is consistent with the idea that the anchor is more focal for subjects who are more open to experience, perhaps because they pay more attention to the anchor, while it is less focal for more emotionally stable subjects, perhaps because they are less affected by changes in the decision environment (data on stated beliefs collected at the end of the experiment, which are documented in the next section, are consistent with these interpretations; see in particular Figure 9).

8 Preferences, beliefs and best replies

We interpret the treatment effects presented in Section 5 as the results of successful manipulation of the mode of reasoning. However, one may wonder whether treatment effects are the artifact of some other mechanism.

One candidate as an alternative explanation is the presence of systematic differences in

Probability of choosing third option: All treatments, BIG5 personality traits included

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS	OLS	OLS	OLS	OLS
treat_time	0.0110	0.0166	0.0219	-0.0055	-0.0063	-0.1326**
	(0.0311)	(0.0292)	(0.0361)	(0.0296)	(0.0298)	(0.0586)
treat_motivation	-0.0033	-0.0001	0.0310	0.0108	0.0124	0.1265*
	(0.0315)	(0.0325)	(0.0404)	(0.0331)	(0.0320)	(0.0654)
timeXanchor	-0.1685***	-0.1685***	-0.1827***	-0.1279**		
	(0.0576)	(0.0579)	(0.0594)	(0.0559)		
motivationXanchor	0.0815	0.0815	0.0769	0.1173*		
	(0.0780)	(0.0783)	(0.0793)	(0.0685)		
anchor	0.2065***	0.1884***	0.1963***	0.0038		
	(0.0467)	(0.0551)	(0.0564)	(0.1303)		
extrav	0.0084	0.0085*	0.0058	0.0058	0.0053	0.0062
	(0.0053)	(0.0051)	(0.0049)	(0.0049)	(0.0046)	(0.0089)
agreeable	-0.0066	-0.0069	-0.0105	-0.0105	-0.0122	-0.0088
	(0.0070)	(0.0068)	(0.0067)	(0.0067)	(0.0075)	(0.0113)
conscientious	0.0094	0.0086	0.0118*	0.0118*	0.0089	0.0147
	(0.0067)	(0.0067)	(0.0061)	(0.0061)	(0.0060)	(0.0098)
emotion_stable	-0.0187***	-0.0207***	-0.0172***	-0.0172***	-0.0109*	-0.0235**
	(0.0061)	(0.0064)	(0.0060)	(0.0060)	(0.0060)	(0.0103)
open	0.0122*	0.0139**	0.0122*	0.0122*	0.0050	0.0195*
	(0.0070)	(0.0069)	(0.0064)	(0.0064)	(0.0058)	(0.0102)
Observations	1,104	1,104	1,080	1,080	540	540
R-squared	0.105	0.124	0.166	0.210	0.063	0.225
Anchor	No & Yes	No & Yes	No & Yes	No & Yes	No	Yes
Day FE	No	Yes	Yes	Yes	Yes	Yes
Session FE	No	Yes	Yes	Yes	Yes	Yes
Game type FE	No	Yes	Yes	Yes	Yes	Yes
Anchor interacted	Only Ts	Only Ts	Only Ts	All var	-	-
Individual controls	No	No	Yes	Yes	Yes	Yes

Table 8: Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

individual preferences for the available options. Indeed, if the subjects of the different treatments had systematically different preferences over colors, numbers, shapes and letters, then differences in behaviors that are observed across treatments might be imputed to differences

Probability of coordination: All treatments, BIG5 personality traits included

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS	OLS	OLS	OLS	OLS
treat_time	-0.0332	-0.0350	-0.0269	-0.0207	-0.0207	0.0650***
	(0.0255)	(0.0253)	(0.0254)	(0.0267)	(0.0266)	(0.0127)
treat_motivation	0.0279	0.0272	0.0150	0.0083	0.0067	0.0123
	(0.0253)	(0.0253)	(0.0254)	(0.0258)	(0.0256)	(0.0104)
timeXanchor	0.0933***	0.0933***	0.0979***	0.0857***		
	(0.0251)	(0.0252)	(0.0259)	(0.0276)		
motivationXanchor	-0.0111	-0.0111	-0.0110	0.0025		
	(0.0260)	(0.0261)	(0.0266)	(0.0267)		
anchor	-0.2124***	-0.2681***	-0.2659***	-0.2958***		
	(0.0185)	(0.0289)	(0.0297)	(0.0557)		
extraversion	-0.0025	-0.0025	-0.0030	-0.0030	-0.0074*	0.0014
	(0.0021)	(0.0021)	(0.0024)	(0.0024)	(0.0042)	(0.0016)
agreeableness	0.0038	0.0044*	0.0030	0.0030	0.0042	0.0018
	(0.0026)	(0.0026)	(0.0029)	(0.0030)	(0.0053)	(0.0023)
emotional_stability	0.0039*	0.0050**	0.0051**	0.0051**	0.0076*	0.0026
	(0.0022)	(0.0023)	(0.0024)	(0.0024)	(0.0041)	(0.0020)
conscientiousness	-0.0027	-0.0031	-0.0019	-0.0019	-0.0045	0.0007
	(0.0029)	(0.0030)	(0.0027)	(0.0028)	(0.0046)	(0.0022)
openness	-0.0008	-0.0014	-0.0008	-0.0008	0.0021	-0.0038*
	(0.0029)	(0.0029)	(0.0029)	(0.0029)	(0.0049)	(0.0021)
Observations	1,104	1,104	1,080	1,080	540	540
R-squared	0.190	0.321	0.340	0.349	0.241	0.103
Anchor	No & Yes	No & Yes	No & Yes	No & Yes	No	Yes
Day FE	No	Yes	Yes	Yes	Yes	Yes
Session FE	No	Yes	Yes	Yes	Yes	Yes
Game type FE	No	Yes	Yes	Yes	Yes	Yes
Anchor interacted	Only Ts	Only Ts	Only Ts	All var	-	-
Individual controls	No	No	Yes	Yes	Yes	Yes

Table 9: Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

in preferences. To test this alternative explanation we elicited subjects' preferences. Figure 7 shows that such explanation is at odds with the experimental data: the subjects that participated in the three treatments are rather similar in terms of reported preferences. This is

Own and others' preferences for options

VARIABLES	(1) Others' preference for Option 1	(2) Others' preference for Option 2	(3) Others' preference for Option 3
own preference for Option 1	20.6412***	0.9546	1.8433
	(2.5735)	(2.2771)	(1.8901)
own preference for Option 2	3.2752	15.1164***	3.1168*
	(2.5073)	(2.4461)	(1.8164)
own preference for Option 3	7.8533**	5.2085*	11.4947***
	(3.5025)	(3.1084)	(2.6535)
Observations	540	540	540
R-squared	0.275	0.216	0.119
Day FE	Yes	Yes	Yes
Session FE	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes

Table 10: Expected share of subjects (0-100) that declared to prefer a given option, for colors, numbers, shapes, and letters. Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

confirmed by the Epps-Singlenton test which rejects the null hypothesis that the distribution of reported preferences are different between any two treatment samples.[6]

Another important issue is what kind of reasoning actually takes places under the intuitive and the deliberative modes of reasoning. In this regard a natural question to ask is whether the intuitive mode of reasoning induces to rely more on own preferences (and so, in a sense, to be less strategic) or to form beliefs that give more weight to what is thought to be the most widespread preference (a sort of cultural focality built on believed preferences). In order to investigate this issue we elicited subjects' beliefs about others' preferences and beliefs about others' actual choices. Elicitation took place at the end of the experiment but before providing any feedback information about games.

Table 10 reports the results of regressing the guessed preferences of other experimental subjects on own preferences. Estimates show that own preferences correlate positively with the expected preference of other experimental subjects, suggesting that subjects use some introspection to guess others' preferences.

[6]The Epps-Singleton test gives a p-value of 0.339 for control and time pressure treatments, a p-value of 0.580 for time pressure and motivation treatments, and a p-value of 0.432 for control and motivation treatments.

Expected average play and own preferences

VARIABLES	(1) Expected share of Option 1 choices	(2) Expected share of Option 2 choices	(3) Expected share of Option 3 choices
pref_option1	8.8293***	-7.8472***	-0.9670
	(2.5274)	(2.6642)	(1.9804)
pref_option2	-6.2585**	6.2393**	0.0223
	(2.4862)	(2.7987)	(1.8535)
pref_option3	-1.1280	-7.6068**	8.7442***
	(3.2784)	(3.3414)	(2.9761)
anchor	-5.7200***	-2.4400	8.1600***
	(2.0293)	(2.3375)	(2.5002)
pref_op1Xanchor	0.5608	2.5665	-3.1886
	(2.0902)	(2.4189)	(2.3236)
pref_op2Xanchor	4.7566**	-0.6332	-3.6966
	(2.2028)	(2.4982)	(2.6031)
pref_op3Xanchor	0.9343	2.8329	-4.0350
	(2.7172)	(2.8831)	(3.3847)
Observations	1,080	1,080	1,080
R-squared	0.192	0.218	0.134
Day FE	Yes	Yes	Yes
Session FE	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes

Table 11: Expected share of subjects (0-100) that choose a given option, for colors, numbers, shapes, and letters, and with and without anchor. Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

Table 11 reports the results of regressing guessed play on own preferences, taking into account the presence of the anchor. Estimates show that own preference correlates positively with expected play which, in the light of the regressions in Table 10, suggests that preferring a certain option leads to expect other subjects to prefer more such option too, and that this in turn leads to expect that such option is more likely to be chosen. However, expected play seems to be less sensitive than expected others' preferences to own preferences, suggesting that introspection is not the only driver of decision-making.

Expected average play and own preferences:
Control treatment (1, 2, 3), Time treatment (4, 5, 6), and Motivation treatment (7, 8 ,9)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Expected % Op. 1	Expected % Op. 2	Expected % Op. 3	Expected % Op. 1	Expected % Op. 2	Expected % Op. 3	Expected % Op. 1	Expected % Op. 2	Expected % Op. 3
pref_option1	7.7705*	-6.8094**	-0.9552	6.7607	-10.2301**	3.4597	8.2555**	-4.7283	-3.5981
	(4.6131)	(3.0744)	(4.5205)	(4.3129)	(4.5817)	(2.7404)	(3.5790)	(3.1963)	(3.4726)
pref_option2	-4.3674	8.6244**	-4.2343	-6.6870	2.5601	4.1268*	-10.9130***	9.4686**	1.2980
	(4.9774)	(4.1214)	(4.3030)	(4.1469)	(4.5756)	(2.2147)	(3.6219)	(3.7646)	(3.7921)
pref_option3	-1.2830	-2.5623	3.8131	-8.8602	-8.4501	17.2892***	-1.8203	-8.7920*	10.6246
	(5.1447)	(4.5728)	(4.8874)	(5.6136)	(5.4905)	(3.7548)	(5.7949)	(5.0127)	(6.3847)
anchor	-6.2500*	-0.7500	7.0000**	-1.8750	-2.9687	4.8437	-10.6087**	-3.1739	13.7826**
	(3.1063)	(1.6971)	(3.3164)	(2.3677)	(4.8096)	(2.8817)	(4.5909)	(3.5987)	(6.4073)
pref_op1Xanchor	2.8409	0.6364	-3.4773	-1.9731	5.3738	-3.4007	2.1472	1.2637	-3.6031
	(3.6810)	(2.0029)	(3.8411)	(2.8749)	(4.9933)	(3.2355)	(4.1909)	(3.7264)	(5.2621)
pref_op2Xanchor	2.7083	-1.1250	-1.5833	-0.4327	2.5841	-2.1514	12.6712**	-2.9823	-8.5951
	(3.5650)	(2.3128)	(3.2331)	(2.6979)	(4.9727)	(3.2163)	(4.8065)	(3.9153)	(6.6080)
pref_op3Xanchor	-1.6250	0.1250	1.5000	-0.5096	4.9687	-5.6130	8.0824	3.7529	-11.8352
	(3.7756)	(3.4020)	(5.2961)	(3.5542)	(5.0314)	(3.4015)	(5.8709)	(4.9104)	(7.1068)
Observations	360	360	360	352	352	352	368	368	368
R-squared	0.266	0.318	0.239	0.244	0.236	0.203	0.282	0.288	0.252
Day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Treatment	CT	CT	CT	TT	TT	TT	MT	MT	MT

Table 12: Expected share of subjects (0-100) that choose a given option, for colors, numbers, shapes, and letters, and with and without anchor, and by treatment. Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

Best reply to reported expected average play							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	OLS	OLS	OLS	OLS	OLS	OLS	OLS
treat_time	0.0217	0.0186	0.0142	0.0119	0.00748	0.0090	0.0313
	(0.0509)	(0.0511)	(0.0513)	(0.0517)	(0.0501)	(0.0516)	(0.0572)
treat_motivation	0.0109	0.0086	-0.0179	-0.0179	-0.0160	-0.0135	-0.0688
	(0.0481)	(0.0480)	(0.0499)	(0.0497)	(0.0485)	(0.0482)	(0.0512)
game5678	-0.1087***	-0.0725	-0.0704	-0.0825	-0.155**		
	(0.0392)	(0.0590)	(0.0604)	(0.1343)	(0.0765)		
timeXanchor	0.0109	0.0109	0.0202	0.0248	0.0255		
	(0.0589)	(0.0592)	(0.0614)	(0.0623)	(0.0610)		
motivationXanchor	-0.0543	-0.0543	-0.0519	-0.0520	-0.0516		
	(0.0562)	(0.0565)	(0.0574)	(0.0553)	(0.0584)		
pref_option1					0.0778	0.0800	0.1010
					(0.0602)	(0.0632)	(0.0753)
pref_option2					0.0230	0.0224	0.0569
					(0.0623)	(0.0654)	(0.0795)
pref_option3					-0.137	-0.1297	-0.0640
					(0.0879)	(0.0894)	(0.1070)
pref_op1Xanchor					0.0327		
					(0.0810)		
pref_op2Xanchor					0.0574		
					(0.0854)		
pref_op3Xanchor					0.0952		
					(0.119)		
Observations	1,104	1,104	1,080	1,080	1,080	540	540
R-squared	0.021	0.037	0.065	0.079	0.075	0.073	0.082
Anchor	No & Yes	No & Yes	No & Yes	No & Yes	No & Yes	No	Yes
Day FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Session FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Game type FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Anchor interacted	Only Ts	Only Ts	Only Ts	All var	All var	-	-
Individual controls	No	No	Yes	Yes	Yes	Yes	Yes

Table 13: Best reply to reported expected average play, controlling for treatments, anchor and preferences. Residuals (in parentheses) are always clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

To explore in greater detail the last conjecture, we re-estimated the regressions in Table 11 separately for each treatment sample. Table 12 reports the estimates. Overall, figures suggest that own preferences are more important for the reported beliefs under the time pressure treatment, while the presence of the anchor is most relevant for the reported beliefs

under the motivation treatment, with the control treatment being somewhat in between the other two treatments. This is consistent with the idea that the intuitive mode of reasoning leads subjects to form beliefs that rely more on what they prefer and what they believe others prefer, while the deliberative mode of reasoning leads to form beliefs that rely more on the characteristics of the game played.

A further interesting issue is to what extent actual play is consistent with subjects best replying to their (reported) beliefs. To investigate this we constructed the variable $bestreply_{ir}$ which takes value = 1 if subject i in round r best replied to his reported beliefs for the game in round r, and 0 otherwise. Interestingly, about 71% of choices are consistent with best reply to reported beliefs. Of the remaining 29% of choices, about 13% are equal to the preferred option which is different from the one expected to be the most chosen, while about 16% are neither the preferred nor the one expected to be the most chosen. Of course, for the subjects who prefer the option which they also believe to be the most chosen, it is impossible to distinguish between best reply behavior and a simpler rule like "choose my preferred option".

In order to explore the determinants of best reply behavior we estimate an empirical model similar to (1) but with two differences: first, $bestreply_{ir}$ is the dependent variable and, second, dummies for preferred options and their interactions with anchor are included. Table 13 reports the estimates. All regressors seem to play a negligible role with the only exception of the anchor, which seems to affect negatively the probability of best replying to reported beliefs; however, statistical significance is weak as it goes beyond the 10% level in two regressions only (no controls, column (1), and all controls and interactions, column (5)). Overall this suggests that best replying to reported beliefs is systematic and it is not affected by treatments – and hence we conjecture by the mode of reasoning – and by preferences, while beliefs can be – and indeed are – well affected.

A disclaimer is necessary here. Since beliefs are elicited at the end of the experiment, after all decisions are taken, we cannot disentangle genuine best reply behavior (truthful reporting of beliefs) from a pure rationalization of own behavior (beliefs are reported in order to justify own decisions). So, it remains to establish to what extent the described findings apply to actual decision-making or to its ex-post rational reconstruction.

Lastly, we exploit reported beliefs to test the interpretation of the role of CRT and BIG5 measures presented in Section 7. Figure 8 shows the average belief that the third option is the most chosen option by game type and CRT score, for the case without anchor. These data suggest that a higher CRT leads to a lower (wrong) expectation that the third option is the most chosen one. Figure 9 shows how the same belief varies for low/high emotional stability

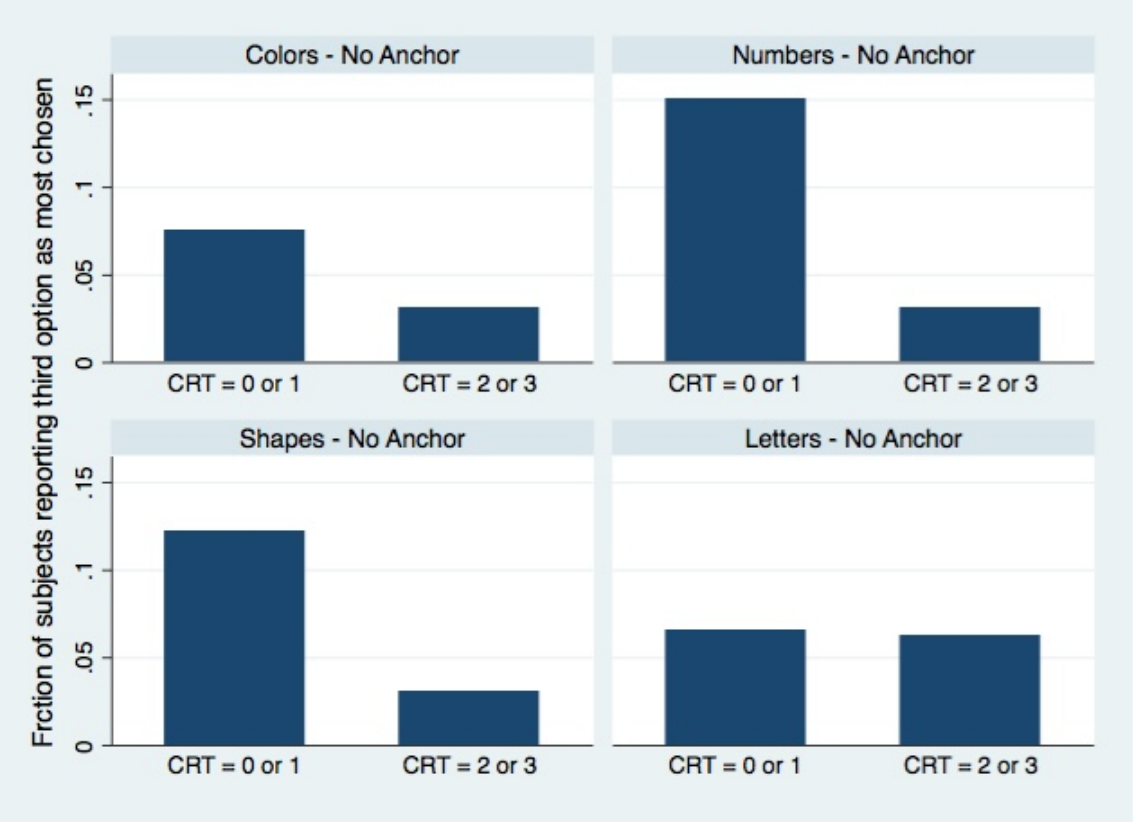

Figure 8: Fraction of subjects that report to expect that the third option is mostly chosen, by different CRT scores, for the first four games (without anchor).

and openness, with and without anchor. These data suggest that only in the presence of the anchor these two personality traits play a role.

9 Conclusions

In this paper we have provided experimental evidence on the relationship between the mode of reasoning – i.e., reflection or intuition – and the ability of agents to coordinate. In particular, the mode of reasoning does not significantly affect the outcome of a few simple coordination problems when no anchor is given by the experimenter; in this case, the ability of agents to coordinate to some extent points to the existence of cultural focalities as a driver of choice. When instead agents are faced with an external anchor, reflective agents are significantly more likely to follow the anchor with respect to intuitive agents. We stress that a greater reliance on the anchor does not necessarily increase coordination, at least if the anchor contrasts with the preexisting cultural focalities. This in turn implies that inducing

Figure 9: Fraction of subjects that report to expect that the third option is mostly chosen, for high (8-14) and low (1-7) scores of Conscientiousness, Emotional Stability, and Openness, with and without anchor.

agents to rely more on reflection may end up in a lower degree of coordination.

From a methodological point of view, we used a time pressure treatment to induce greater reliance on intuition, and a motivation treatment to induce greater reliance on reflection. While the time pressure treatment is standard[7] in the literature (see, e.g., Rand, 2016), our motivation treatment is innovative – so far deliberation has been sometimes prompted employing a preliminary reflective task (e.g., Paxton et al., 2012), sometimes by means of priming (e.g., Rand et al., 2012), but mostly using a forced time delay on decisions (e.g., Capraro and Cococcioni, 2016).

The observed differences in agents' behavior under the motivation treatment and the control treatment suggest that the motivation treatment has indeed proven effective to induce greater reliance on reflection. We believe that the behavioral effects of the mode of reasoning are worth being investigated in a large variety of problems and environments, and that the

[7]Other standard treatments used to prompt intuition are priming (e.g., Butler et al., 2013), cognitive load (e.g., Cappelletti et al., 2011), and ego depletion (e.g., Achtziger et al., 2016).

motivation treatment can be fruitfully applied for such experimental investigations.

References

Achtziger, A. and C. Alós-Ferrer (2013). Fast or rational? a response-times study of bayesian updating. *Management Science 60*(4), 923–938.

Achtziger, A., C. Alós-Ferrer, and A. K. Wagner (2015). Money, depletion, and prosociality in the dictator game. *Journal of Neuroscience, Psychology, and Economics 8*(1), 1.

Achtziger, A., C. Alós-Ferrer, and A. K. Wagner (2016). The impact of self-control depletion on social preferences in the ultimatum game. *Journal of Economic Psychology 53*, 1–16.

Agranov, M. and A. Schotter (2012). Ignorance is bliss: an experimental study of the use of ambiguity and vagueness in the coordination games with asymmetric payoffs. *American Economic Journal: Microeconomics 4*(2), 77–103.

Alaoui, L. and A. Penta (2017). Reasoning about others reasoning. Mimeo.

Alós-Ferrer, C. (2016). A dual-process diffusion model. *Journal of Behavioral Decision Making*.

Alós-Ferrer, C. and C. Kuzmics (2013). Hidden symmetries and focal points. *Journal of Economic Theory 148*(1), 226–258.

Bacharach, M. (1993). Variable universe games. In K. Binmore, A. Kirman, and P. Tani (Eds.), *Frontiers of Game Theory*. MIT Press, Cambridge, MA.

Bacharach, M. and M. Bernasconi (1997). The variable frame theory of focal points: An experimental study. *Games and Economic Behavior 19*(1), 1–45.

Bardsley, N., J. Mehta, C. Starmer, and R. Sugden (2010). Explaining focal points: cognitive hierarchy theory versus team reasoning. *The Economic Journal 120*(543), 40–79.

Bardsley, N. and A. Ule (2017). Focal points revisited: Team reasoning, the principle of insufficient reason and cognitive hierarchy theory. *Journal of Economic Behavior & Organization 133*(Supplement C), 74–86.

Belloc, M., E. Bilancini, L. Boncinelli, and D. Simone (2017). A social heuristics hypothesis for the stag hunt: Fast- and slow-thinking hunters in the lab. Mimeo.

Blume, A. and U. Gneezy (2010). Cognitive forward induction and coordination without common knowledge: An experimental study. *Games and Economic Behavior 68*(2), 488–511.

Bock, O., I. Baetge, and A. Nicklisch (2014). hroot: Hamburg registration and organization online tool. *European Economic Review 71*, 117–120.

Butler, J. V., L. Guiso, and T. Jappelli (2013). Manipulating reliance on intuition reduces risk and ambiguity aversion.

Butler, J. V., L. Guiso, and T. Jappelli (2014). The role of intuition and reasoning in driving aversion to risk and ambiguity. *Theory and Decision 77*(4), 455–484.

Caplin, A. and D. Martin (2016). The dual-process drift diffusion model: Evidence from response times. *Economic Inquiry 54*(2), 1274–1282.

Cappelen, A. W., U. H. Nielsen, B. Tungodden, J.-R. Tyran, and E. Wengström (2016). Fairness is intuitive. *Experimental Economics 19*(4), 727–740.

Cappelletti, D., W. Güth, and M. Ploner (2011). Being of two minds: Ultimatum offers under cognitive constraints. *Journal of Economic Psychology 32*(6), 940–950.

Capraro, V. and G. Cococcioni (2016). Rethinking spontaneous giving: Extreme time pressure and ego-depletion favor self-regarding reactions. *Scientific Reports 6*(27219).

Casajus, A. (2012). *Focal points in framed games: Breaking the symmetry*, Volume 499. Springer Science & Business Media.

Chen, R. (2017). Coordination with endogenous groups. *Journal of Economic Behavior & Organization 141*(Supplement C), 177–187.

Costa-Gomes, M. A., V. P. Crawford, and N. Iriberri (2009). Comparing models of strategic thinking in van huyck, battalio, and beil's coordination games. *Journal of the European Economic Association 7*(2-3), 365–376.

Crawford, V. P., U. Gneezy, and Y. Rottenstreich (2008). The power of focal points is limited: even minute payoff asymmetry may yield large coordination failures. *American Economic Review 98*(4), 1443–1458.

Crosetto, P. and A. Filippin (2013). The bomb risk elicitation task. *Journal of Risk and Uncertainty 47*(1), 31–65.

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual review of Psychology 41*(1), 417–440.

Duffy, S. and J. Smith (2014). Cognitive load in the multi-player prisoner's dilemma game: Are there brains in games? *Journal of Behavioral and Experimental Economics 51*, 47–56.

Evans, J. S. B. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annual Review of Psychology 59*, 255–278.

Evans, J. S. B. and K. E. Stanovich (2013). Dual-process theories of higher cognition: Advancing the debate. *Perspectives on Psychological Science 8*(3), 223–241.

Fischbacher, U. (2007). z-tree: Zurich toolbox for ready-made economic experiments. *Experimental economics 10*(2), 171–178.

Fischbacher, U., R. Hertwig, and A. Bruhin (2013). How to model heterogeneity in costly punishment: Insights from responders' response times. *Journal of Behavioral Decision Making 26*(5), 462–476.

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

Friedenberg, A., W. Kets, and T. Kneeland (2017). Bounded reasoning: Rationality or cognition. Mimeo.

Goeree, J. K. and C. A. Holt (2004). A model of noisy introspection. *Games and Economic Behavior 46*(2), 365–382.

Gosling, S., P. Rentfrow, and J. Potter (2014). Norms for the ten item personality inventory. *Unpublished data*.

Gosling, S. D., P. J. Rentfrow, and W. B. Swann (2003). A very brief measure of the big-five personality domains. *Journal of Research in Personality 37*(6), 504–528.

Halali, E., Y. Bereby-Meyer, and A. Ockenfels (2013). Is it all about the self? the effect of self-control depletion on ultimatum game proposers. *Frontiers in Human Neuroscience 7*(240).

Kahneman, D. (2003). Maps of bounded rationality: Psychology for behavioral economics. *American Economic Review 93*(5), 1449–1475.

McKelvey, R. D. and T. R. Palfrey (1995). Quantal response equilibria for normal form games. *Games and Economic Behavior 10*(1), 6–38.

Mehta, J., C. Starmer, and R. Sugden (1994). The nature of salience: An experimental investigation of pure coordination games. *American Economic Review 84*(3), 658–673.

Pacini, R. and S. Epstein (1999). The relation of rational and experiential information processing styles to personality, basic beliefs, and the ratio-bias phenomenon. *Journal of Personality and Social Psychology 76*(6), 972.

Paxton, J. M., L. Ungar, and J. D. Greene (2012). Reflection and reasoning in moral judgment. *Cognitive Science 36*(1), 163–177.

Rand, D. G. (2016). Cooperation, fast and slow: Meta-analytic evidence for a theory of social heuristics and self-interested deliberation. *Psychological Science 27*(9), 1192–1206.

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

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

Rubinstein, A. (2016). A typology of players: Between instinctive and contemplative. *Quarterly Journal of Economics 131*(2), 859–890.

Schelling, T. C. (1960). *The strategy of conflict*. Harvard University Press.

Schulz, J. F., U. Fischbacher, C. Thöni, and V. Utikal (2014). Affect and fairness: Dictator games under cognitive load. *Journal of Economic Psychology 41*, 77–87.

Spiliopoulos, L. and A. Ortmann (2014). The bcd of response time analysis in experimental economics. *Experimental Economics*, 1–51.

Strack, F. and R. Deutsch (2004). Reflective and impulsive determinants of social behavior. *Personality and Social Psychology Review 8*(3), 220–247.

Stromland, E., S. Tjotta, and G. Torsvik (2016). Cooperating, fast and slow: Testing the social heuristics hypothesis. Mimeo.

Van Huyck, J. B., R. C. Battalio, and R. O. Beil (1990). Tacit coordination games, strategic uncertainty, and coordination failure. *American Economic Review 80*(1), 234–248.

Van Huyck, J. B., R. C. Battalio, and R. O. Beil (1991). Strategic uncertainty, equilibrium selection, and coordination failure in average opinion games. *Quarterly Journal of Economics 106*(3), 885–910.

Xu, H., L. Bègue, and B. J. Bushman (2012). Too fatigued to care: Ego depletion, guilt, and prosocial behavior. *Journal of Experimental Social Psychology 48*(5), 1183–1186.

A Online experiment

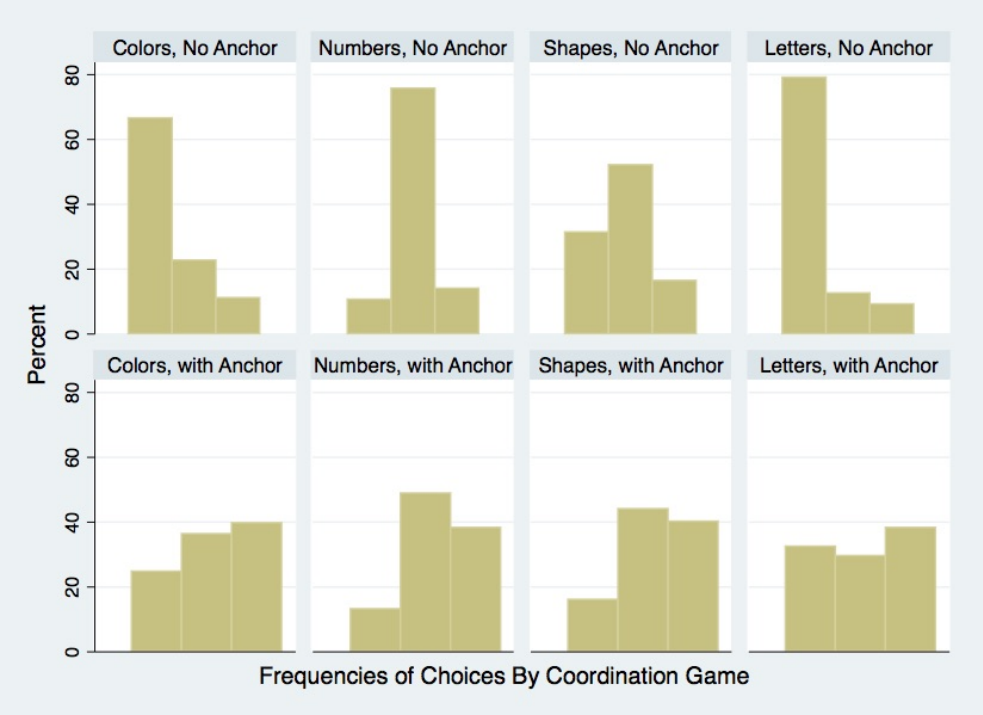

Figure 10: Distribution of choice by coordination game played. In each of the eight subgraphs, the left bar represents the first option, the second bar the second option and the third bar the third option. If present, the anchor always points to the third option available. Options are, respectively, Colors: green-orange-violet, Numbers: 2-3-4, Shapes: triangle-circle-square, Letters: A-I-U.

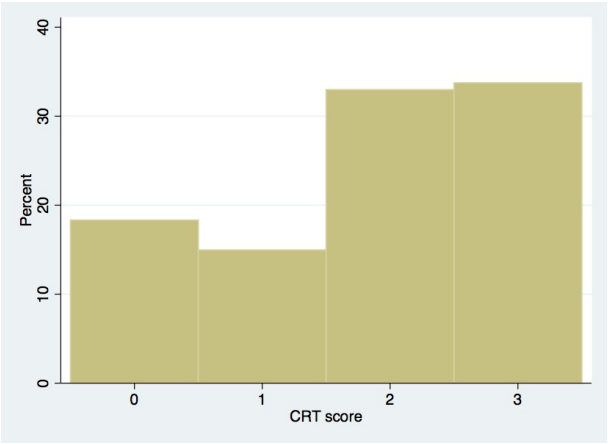

Figure 11: Distribution of the number of correct answers in the Cognitive Reflection Test. The test was administered online, after the eight coordination games. The number of participants was 655.

		Option 1		Option 2		Option 3	
Game	Anchor	CRT=0,1	CRT=2,3	CRT=0,1	CRT=2,3	CRT=0,1	CRT=2,3
Colors	No	63.30	67.96	23.39	21.97	13.30	10.07
Colors	Yes	32.11	20.82	33.94	37.07	33.94	42.11
Numbers	No	11.47	10.30	72.94	76.89	15.60	12.81
Numbers	Yes	13.30	13.27	50.00	47.83	36.70	38.90
Shapes	No	32.57	30.66	47.71	54.46	19.72	14.87
Shapes	Yes	20.18	14.19	43.12	44.39	36.70	41.42
Letters	No	74.77	81.01	15.14	10.76	10.09	8.24
Letters	Yes	33.03	32.27	36.24	26.09	30.73	41.65

Table 14: Distribution of choices across the the eight coordination games, conditional on the CRT score being high (either 2 or 3) or low (either 0 or 1).

	All games		No anchor		Anchor	
Samples compared	D	p-value	D	P p-value	D	p-value
actual vs uniform	0.0834	0.000	0.1145	0.000	0.2179	0.000
low CRT vs high CRT	0.0166	0.906	0.0318	0.599	0.0650	0.015

Table 15: Two-sample Kolmogorov-Smirnov test for equality of distribution functions. First row reports the test for actual choices and randomly generated choices. Second row reports the test for choices by low CRT score (0 or 1) and choice by high CRT score (2 or 3). Null hypothesis is that choices are distributed identically in the two samples.

	All games		No Anchor		Anchor	
Samples compared	z	p-value	z	p-value	z	p-value
actual vs uniform	6.312	0.0000	16.401	0.0000	-7.341	0.0000
low CRT vs high CRT	-1.288	0.1977	1.561	0.1186	-3.519	0.0004

Table 16: Two-sample Wilcoxon rank-sum (Mann-Whitney) test for equality of distribution functions. First row reports the test for actual choices and randomly generated choices. Second row reports the test for choices by low CRT score (0 or 1) and choice by high CRT score (2 or 3). Null hypothesis is that choices are distributed identically in the two samples.

	All games		No Anchor		Anchor	
Samples compared	W2	p-value	W2	p-value	W2	p-value
actual vs uniform	95.962	0.0000	382.074	0.0000	88.822	0.0000
low CRT vs high CRT	1.846	0.76399	5.108	0.16403	12.600	0.01340

Table 17: Two-sample Epps-Singleton two-sample test for equality of discrete distributions. First row reports the test for actual choices and randomly generated choices. Second row reports the test for choices by low CRT score (0 or 1) and choice by high CRT score (2 or 3). Null hypothesis is that choices are distributed identically in the two samples.

B Instructions (translated)

Slide 1 [**Common to all treatments**]

During this experimental session you will participate in 8 games. In each game you will be asked to select an option about:
- numbers
- colors
- shapes
- letters

Slide 2a [**Control treatment**]

In each game the objective is to coordinate with as many other participants as possible, who will select an option about the same matter.
Each time that you select the same option as the majority of participants, you gain 2 euros.
When you select a different option, you do not gain anything.
The maximum gain that you can obtain is 16 euros plus the show up fee.

Slide 2b [**Time pressure treatment**]

In each game the objective is to coordinate with as many other participants as possible, who will select an option about the same matter.
Each time that you select the same option as the majority of participants, you gain 2 euros.
When you select a different option, you do not gain anything.
The maximum gain that you can obtain is 16 euros plus the show up fee.
YOU MUST MAKE A DECISION WITHIN 6 SECONDS!
Decisions made after 6 seconds will give you no euros.

Slide 2c [**Motivation treatment**]

In each game the objective is to coordinate with as many other participants as possible, who will select an option about the same matter.
Each time that you select the same option as the majority of participants, you gain 2 euros.
When you select a different option, you do not gain anything.
You will have to wait at least 10 seconds before making any decision.
The maximum gain that you can obtain is 16 euros plus the show up fee.

Slide 3 [**Common to all treatments**]

Example.
Try to select one among the following animals.
[image of rabbit, cow, sheep]

Slide 4 [**Common to all treatments**]

Suppose that the 16 participants to the game have chosen as follows:
4 have chosen cow
5 have chosen rabbit

7 have chosen sheep
Then, the software will assign you 2 euros to each participant who has chosen sheep and nothing to all others. This means that:
You gain 2 euros if you have chosen sheep and 0 euro otherwise.

Slide 5 [Common to all treatments]

If, instead, more than one option has been selected by the same number of of participants, e.g.:
4 have chosen cow
6 have chosen rabbit
6 have chosen sheep
Then, the software will randomly assign you 2 euros to each of the 6 participants who have chosen rabbit or each of the 6 participants who have chosen sheep, and 0 euros to all others. This means that:
you could gain 2 euros with probability 50% if you have chosen rabbit or sheep and, and 0 euro otherwise.

Slide 6a [Control and motivation treatments]

Wait.
You will participate in the first game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.

Slide 6b [Time pressure treatment]

Wait.
You will participate in the first game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.
Beware that you will have only 6 seconds to make a decision.

Slide 7a [Control treatment]

[image of green, orange, violet]

Slide 7b [Time pressure treatment]

[image of green, orange, violet]
[seconds counter: from 6 to 0]

Slide 7c [Motivation treatment]

Before making your decision, write briefly your motivation for it and then confirm by pressing OK
[image of green, orange, violet]
[motivation form]

Slide 8a [Control and motivation treatment]

Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.

Slide 8b [**Time pressure treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.
Beware that you will have only 6 seconds to make a decision.

Slide 9a [**Control treatment**]
[image of 2, 3, 4]

Slide 9b [**Time pressure treatment**]
[image of 2, 3, 4]
[seconds counter: from 6 to 0]

Slide 9c [**Motivation treatment**]
Before making your decision, write briefly your motivation for it and then confirm by pressing OK
[image of 2, 3, 4]
[motivation form]

Slide 10a [**Control and motivation treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.

Slide 10b [**Time pressure treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.
Beware that you will have only 6 seconds to make a decision.

Slide 11a [**Control treatment**]
[image of triangle, round, square]

Slide 11b [**Time pressure treatment**]
[image of triangle, round, square]
[seconds counter: from 6 to 0]

Slide 11c [**Motivation treatment**]
Before making your decision, write briefly your motivation for it and then confirm by pressing OK
[image of triangle, round, square]
[motivation form]

Slide 12a [**Control and motivation treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.

Slide 12b [**Time pressure treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.
Beware that you will have only 6 seconds to make a decision.

Slide 13a [**Control treatment**]
[image of A, I, U]

Slide 13b [**Time pressure treatment**]
[image of A, I, U]
[seconds counter: from 6 to 0]

Slide 13c [**Motivation treatment**]
Before making your decision, write briefly your motivation for it and then confirm by pressing OK
[image of A, I, U]
[motivation form]

Slide 14a [**Control and motivation treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.

Slide 14b [**Time pressure treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.
Beware that you will have only 6 seconds to make a decision.

Slide 15a [**Control treatment**]
[image of green, orange, violet, with anchor]

Slide 15b [**Time pressure treatment**]
[image of green, orange, violet, with anchor]
[seconds counter: from 6 to 0]

Slide 15b [**Motivation treatment**]
Before making your decision, write briefly your motivation for it and then confirm by pressing OK
[image of green, orange, violet, with anchor]
[motivation form]

Slide 16a [**Control and motivation treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.

Slide 16b [**Time pressure treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.
Beware that you will have only 6 seconds to make a decision.

Slide 17a [**Control treatment**]
[image of 2, 3, 4, with anchor]

Slide 17b [**Time pressure treatment**]
[image of 2, 3, 4, with anchor]
[seconds counter: from 6 to 0]

Slide 17c [**Motivation treatment**]
Before making your decision, write briefly your motivation for it and then confirm by pressing OK
[image of 2, 3, 4, with anchor]
[motivation form]

Slide 18a [**Control and motivation treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.

Slide 18b [**Time pressure treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.
Beware that you will have only 6 seconds to make a decision.

Slide 19a [**Control treatment**]
[image of triangle, round, square, with anchor]

Slide 19b [**Time pressure treatment**]
[image of triangle, round, square, with anchor]
[seconds counter: from 6 to 0]

Slide 19c [**Motivation treatment**]
Before making your decision, write briefly your motivation for it and then confirm by pressing OK
[image of triangle, round, square, with anchor]
[motivation form]

Slide 20a [**Control and motivation treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.

Slide 20b [**Time pressure treatment**]
Wait.
You will participate in a new game in a few moments.
You will be asked to make a decision with the objective of coordinating with the other participants.
Beware that you will have only 6 seconds to make a decision.

Slide 21a [**Control treatment**]
[image of A, I, U, with anchor]

Slide 21b [**Time pressure treatment**]
[image of A, I, U, with anchor]
[seconds counter: from 6 to 0]

Slide 21c [**Motivation treatment**]
Before making your decision, write briefly your motivation for it and then confirm by pressing OK
[image of A, I, U, with anchor]
[motivation form]

Slide 22 [**Common to all treatments**]
You have completed the eight games.
Please wait that all other participants complete the eigth games and that the session goes on with the final questionnaire.

C Final questionnaire

Socio-demographic information: gender, Italian/EU citizenship, field of study (economics/business, physics/engineering/mathematics, law/political science, other), course year (undergrad/grad), parents' education (8th grade, 12th grade, degree), work status, experience of volunteering, number of people with whom one spends at least 1 hour per week/meets almost everyday.

Psychological information: trust in others, confidence in one's knowledge of others' reasoning, CRT (3 items, Frederick, 2005), personality traits (BIG5 as measured by TIPI, Gosling et al., 2003), preference for information processing (rational-experiential inventory as measured by REI40, Pacini and Epstein, 1999), time preference (not incentivized), risk aversion (as measured by Crosetto and Filippin, 2013, but not incentivized).

Preferences: colors (green, orange, violet, none), numbers (2,3,4, none), shapes (triangle, circle, square, none), letters (A,I,U, none).

Beliefs about other subjects: others' preference for colors (green, orange, violet, none), others' preference for numbers (2,3,4, none), others' preference for shapes (triangle, circle, square, none), others' preference for letters (A,I,U, none), others' choices in games 1-8.