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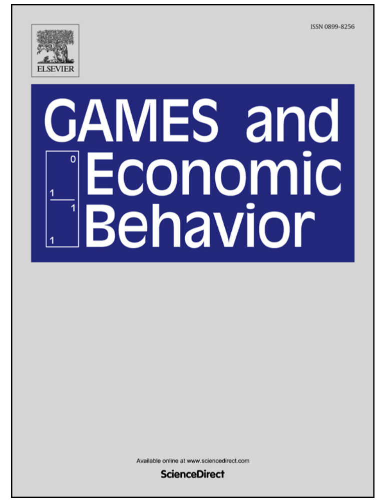

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Overcoming coordination failure in games with focal points: An experimental investigation*

David Rojo Arjona† Stefania Sitzia‡ Jiwei Zheng§

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Abstract

We experimentally test whether increasing the salience of payoff-irrelevant focal points (Schelling, 1960) can counteract the negative impact of conflicts of interest on coordination. The intuition is that, in the presence of conflict, the solution to the coordination dilemma offered by the focal point loses importance. Increasing its salience increases its relevance and, therefore, coordination success. When we vary label salience between subjects, we find support for this conjecture in games with a constant degree of conflict, similar to battle of the sexes games, but not in games that feature outcomes with different degrees of payoff inequality and efficiency. In an additional experiment in which we vary label salience within subjects, choices are found not to be affected by our salience manipulation. Yet, the proportion of choices consistent with the focal point is significantly greater than that in the between-subject design.

Keywords: coordination games, focal points, salience, conflict of interest, battle-of-the-sexes.

JEL Codes: C72, C78, C91, D91

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†The George L. Argyros School of Business and Economics, Chapman Univeristy. Email: rojoarjo@chapman.edu

‡Corresponding author. School of Economics and Centre for Behavioural and Experimental Social Science, University of East Anglia, Norwich (UK). Email: s.sitzia@uea.ac.uk

§Department of Economics, Lancaster University Management School, Lancaster (UK). Email: j.zheng18@lancaster.ac.uk

1 Introduction

If husband and wife lose each other in a department store without a prior agreement on where to meet, they are likely to look for an "obvious" place. A place (e.g., the lost-and-found stand) that they both "must 'mutually recognize' [as] some unique signal that coordinates their expectations" (Schelling, 1960, p. 54). Using anecdotes such as this, as well as "unscientific experiments", Schelling shows that payoff-irrelevant features of a strategic situation often offer a solution, a focal point, that allows individuals to coordinate more successfully than what conventional game theory predicts, provided these features are both visible to all players and common knowledge.

According to Schelling, players use these payoff-irrelevant features to label strategies and identify a solution even in games in which interests are not completely aligned - e.g., battle of the sexes games. (Imagine for example that the wife prefers to meet in the travel agency section and the husband in the sport section, and both are aware of this). Coordinating on this solution however, requires "discipline" as:

> "The need for agreement overrules the potential disagreement, and each must concert with the other or lose altogether" (Schelling, 1960, p. 60).

Players simply have to accept what nature has chosen as the signal for coordination:

> "Beggars cannot be choosers about the source of their signal or about its attractiveness compared with others that they can only wish were as conspicuous. [...] The conflict gets reconciled - or perhaps we should say ignored - as a by-product of the dominant need for coordination." (Schelling, 1960, pp. 66, 59).

Experimental evidence supports Schelling's theory of focal points mostly in games without conflicts of interest. In these games, often referred to as pure coordination games, payoffs for both players and across equilibria are the same (e.g. Mehta et al., 1994; Crawford et al., 2008; Isoni et al., 2013). By contrast, in games with conflicts of interest the effectiveness of focal points is greatly reduced (e.g. Crawford et al., 2008; Isoni et al., 2013; Parravano and Poulsen, 2015). Although the coordination failure observed in these games has been shown to be compatible with level-k thinking (Crawford et al., 2008; Faillo et al., 2017; van Elten and Penczynski, 2020), alternative hypotheses have been investigated. These hypotheses mostly concern, directly or indirectly, payoff-related mechanisms.

For example, Isoni et al. (2013) investigate whether the negative effect of conflict on coordination, documented on matching games (i.e. games in which players are required to choose the same object) such as the battle of the sexes, carries over to bargaining games in which players make claims on a surplus, represented by valuable discs. Coordination occurs if no disc is claimed by both bargainers. They find that, even in these games, conflict damages coordination, although to a lesser extent than what is reported by Crawford et al. (2008). Penczynski et al. (2021) split the payoffs of battle of the sexes games in an attempt to highlight players' common interest in coordinating. They find that when the common interest payoffs are highly salient, coordination improves, but the presence of conflict still damages coordination. Parravano and Poulsen (2015) change the size of the payoffs and thus the incentives to coordinate. Their results are consistent with Crawford et al. (2008). Finally, Isoni et al. (2019) investigate whether, varying the amount of information that players have on the payoffs, affects coordination. Their experimental manipulation, however, is mostly ineffective. See Isoni et al. (2022) for a review of focal points in experimental bargaining games and Rojo Arjona (2020) for a comprehensive review of focal point experiments.

The literature above shows that payoff-related mechanisms have had limited success in overcoming coordination failure in the presence of conflict. In the spirit of Schelling's theory of focal points, our contribution focuses instead on a label-based mechanism consisting of a salience manipulation of the focal point.

The importance of salience in these games can be better understood by referring back to the husband and wife's anecdote. If the consorts have opposing preferences of where to meet, attention might shift from the focal point to the conflict, leading to doubts as to what each consort will do: is she(he) going to go to her(his) preferred place? Is she(he) going to go to my preferred place? These doubts, in the absence of communication, might prevent the "meeting of minds" that Schelling poses as the basis for coordination. The conflict of interest reduces the perceived importance of the focal point as a solution to the coordination problem and, at the same time, increases that of the payoffs. But because payoffs cannot offer a unique solution, coordination is less likely to occur. We experimentally investigate whether increasing the salience of the focal point helps increase its perceived importance. The intuition is that, in Schelling's words, increasing the salience of the "obvious place" will increase its "power of suggestion", so that the obvious place now "commands [more] attention" than before.

Our experimental design builds on the pie game by Crawford et al. (2008) as this study is the first one to provide evidence against Schelling's theory, and the game lends itself nicely to salience manipulations. In the pie game, two players are presented with a 3-slice pie with one slice uniquely coloured. Players, without communicating, simultaneously choose one of the slices, and coordinate if they choose the same slice. In our experiment, the uniquely coloured slice is red, and we manipulate its salience (obviousness) by increasing the number of the non-salient slices. To this effect, we employ four types of pies with two, three, seven and eleven slices. The greater the number of these slices, the greater the salience of the red slice.

Like previous studies, we employ: a pure coordination game (PC) as a benchmark to evaluate coordination success in other games and the effectiveness of our salience manipulation; four games with different degrees of conflict of interest between players ($A1 - A4$); a hi-lo game (HL) that, like pure coordination games does not feature conflict of interest but, unlike these games, one coordinated outcome Pareto-dominates the others; two games in which coordinated outcomes vary for the degree of inequality between players' payoffs ($B1 - B2$) and another two in which also payoff efficiency, intended as the sum of payoffs, is varied ($B3 - B4$). We implemented these games within subjects and the pie types between subjects.

We find that the proportion of red slice choices increases as the number of slices increases. This is the case for both PC games, and, as hypothesised, for games $A1 - A4$, although the presence of conflict of interest still affects the frequency of red slice choices negatively. More specifically, for the pie with only two slices, our results broadly replicate those found in the literature (e.g., Crawford et al., 2008). For the pie with 11 slices, our results are instead more in line with Schelling's. Here, we find that the proportion of the red slice choices increases by about 20% in both PC and $A1 - A4$ games compared to the 2-slice pie. Thus, our findings in these games reconcile both the stylised facts highlighted in previous experiments and Schelling's theory of focal points. Increasing salience has, by contrast, no effect in most of the $B1 - B4$ games.

Although this between-subject experiment (BSE henceforth) cleanly tests our conjecture, we also report the results of an additional experiment in which the pie types are implemented within subjects (WSE henceforth). Interestingly, in this experiment we find that, in almost all games, the frequency of red slice choices is greater than that in BSE. In addition, we do not find significant differences across pie types as we do for BSE.

We believe that the main driver of these results are spillovers of salience, as a solution concept, from pies with a large number of slices to pies with fewer slices. Once the importance of the focal point as a coordination device is recognised in one context (e.g., 11-slice pie), it can be applied to another one (e.g., 2-slice pie). In WSE in addition, for the 11-slice pie, coordination rates in most games are greater than those in BSE. This suggests that, in this experiment, there might also be an increase in the label salience of the red slice compared to BSE. To explain our results, we propose a combination of spillover effects and what we call 'variation' of pies effect. Varying the pie types within subjects increases the label salience of the red slice further and spillovers of salience level out the proportion of RS choices across pie types.

There is a growing literature that studies behavioural spillovers in both cooperation and coordination games (e.g. Bednar et al., 2012; Cason et al., 2012; Haruvy and Stahl, 2012). Those relevant to our study are spillovers of a concept or rule that once learnt in one game is applied to another one. Example of such spillovers include the concept of Pareto-dominance that is transferred from stag-hunt games to order statistics games (Cooper and Kagel, 2005), or the transfer of norms of cooperation from weak-link games to Prisoners' dilemmas games (Knez and Camerer, 2000).

The remainder of the paper is organised as follows. Section 2 deals with the experimental design. Section 3 sets out the hypothesis. Section 4 is devoted to the main results of BSE, and Section 5 provides the further experimental evidence from WSE. Finally, Section 6 concludes.

2 Experimental Design

2.1 Game Description

Coordination games with payoff-irrelevant cues feature two players, indexed $i = \{1, 2\}$; a set of n pure strategies $\{s_1, ..., s_n\}$, indexed j; and a set of n labels $\{l_1, ..., l_n\}$, with a one-to-one correspondence between labels and strategies. The set of labels is identical for and known by both players. If players choose the same strategy j, their payoffs are given by $\pi_{ij} > 0$; otherwise is $\pi_{ij} = 0$.

2.2 Frame Selection

A typical experimental procedure to induce label salience consists of attaching one label to each strategy so that one stands out. Crawford et al. (2008), for example, use a coordination game in which strategies are labelled "X" and "Y". Their results show that "X" is more salient than "Y". By contrast, in the 3-slice pie game by the same authors, or in the games employed by Hargreaves-Heap et al. (2014), salience comes from one label being unique, an oddity. By definition, oddities require more than two strategies and, as the frequency of non-unique labels increases, the oddity becomes less frequent and therefore more salient.

In our experiment we use variations of the pie game (see figure 1). Our pies feature $n \in \{2, 3, 7, 11\}$ slices with colour as labels. Specifically $l_1 = \{red\}$ and $l_j = \{white\}$ for $j \neq 1$. Players' payoffs are given by $\pi_{1j} = a$ and $\pi_{2j} = b$ if $j \neq 2$ and $\pi_{1j} = c$ and $\pi_{2j} = d$ if $j = 2$. When $n = 2$, l_1 is salient by virtue of its colour. As evidenced by research in psychology and neuroscience, the colour red possesses some unique features that make it

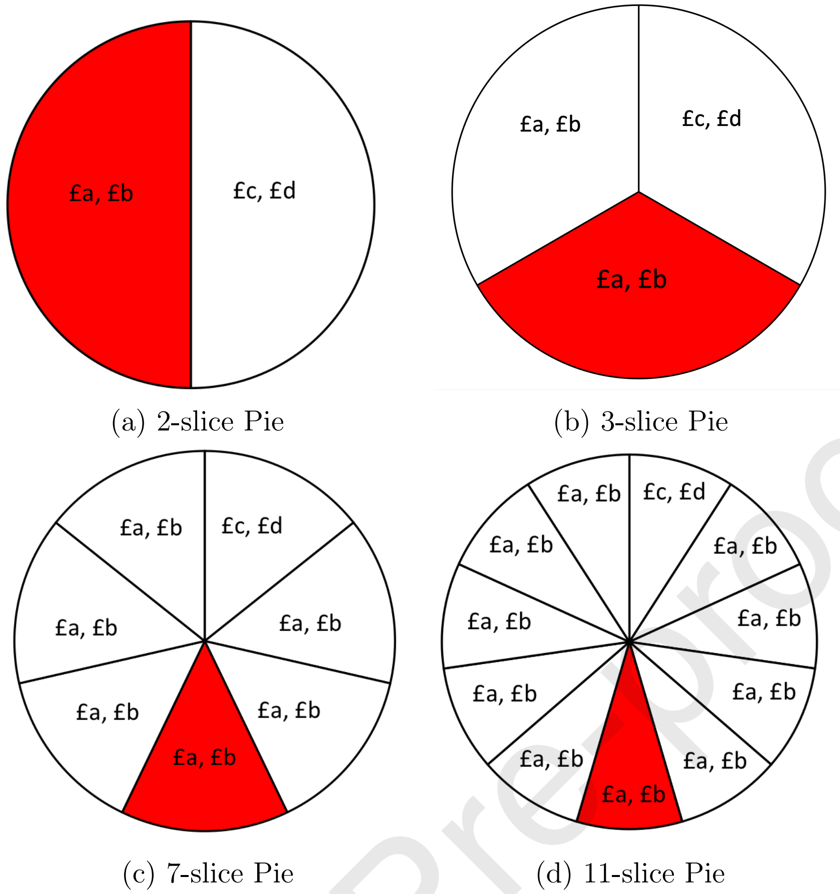


Figure 1: Pies used in the experiment

stand out compared to other colours (see Elliot and Maier, 2014, for a review).[1] When $n > 2$, l_1 becomes more salient as it is an oddity, and as n increases, its relative frequency $(\frac{1}{n})$ decreases becoming visually more salient. Thus, by increasing the number of slices we vary the label salience of l_1.[2,3]

We denote the unique Red Slice with coordinated payoffs (a, b) by RS, the slice with coordinated payoffs (c, d) by PS (Payoff Salient slice), and the remaining White slices with

[1]This research demonstrates the special features that the colour red has, compared to other colours. Red is visually salient and attracts more attention than other colours (Etchebehere and Fedorovskaya, 2017), it seems to suggest an object's importance, and it sticks to memory better than other colours (Kuhbandner et al., 2015). Research on visual systems in humans suggests that the visual salience of an object also depends on its uniqueness and rarity, and not only to features such as colour, shape, etc. (Jiang et al., 2013).

[2]It seems natural to argue that increasing the number of slices increases the label salience not only of the red slice but also of the slice with payoffs (c, d). However, a simple visual inspection of the pies, and the reviewed evidence in footnote 1, suggest that the label salience of this slice is lower than that of the red slice. It is of course possible that PS might feature payoffs that make this slice salient, but this is not label salience. Our data will provide the ultimate test for this empirical question.

[3]Although we cannot exclude that subjects in our experiment could use labels outside the experimenters' control, we found evidence that these alternative labels must be observationally equivalent to ours, as the red slice was still the most prevalent choice.

the same coordinated payoffs (a, b) as RS by W.

2.3 Payoff Configurations

We employ 10 games whose payoff configurations are reported in table 1. These have been selected because of their possible interaction with label salience.

Games	RS (W) (a, b)	PS (c, d)
PC	10, 10	10, 10
HL	10, 10	11, 11
$A1$	10.1, 10	10, 10.1
$A2$	11, 10	10, 11
$A3$	13, 8	8, 13
$A4$	15, 6	6, 15
$B1$	12, 9	10, 11
$B2$	11, 10	9, 12
$B3$	20, 10	10, 11
$B4$	18, 12	10, 11

Table 1: Game Payoffs

PC is a pure coordination game (i.e., $a = b = c = d$) routinely used in the literature as a benchmark against which behaviour in other games is compared to. HL is a hi-lo game with the slice PS being the Pareto-dominant equilibrium and the slice RS being label-salient but Pareto-dominated (i.e., $a = b < c = d$). This payoff configuration creates a tension between label salience and payoff dominance.

$A1-A4$ are games with a *constant degree of conflict* in which $a > c$, $d > b$, and in addition $a = d$ and $b = c$ (battle of the sexes type of games). The degree of conflict, measured by the difference $a - b = d - c$, progressively increases from $A1$ to $A4$. These games, similar in structure to some of the games in Crawford et al. (2008) and Isoni et al. (2013, 2019), are key to test our label salience hypothesis.

The remaining games explore a subset of games in which outcomes differ in the degree of payoff inequality and efficiency.[4] $B1 - B2$ are games in which the degree of conflict differs across equilibria (i.e., $a > b$ and $d > c$). In $B1$, the label salient equilibrium produces a more unequal distribution of payoffs between players than PS, while in $B2$ the opposite holds. In

[4]As the focus of our experiment is on games with a constant degree of conflict, i.e., $A1 - A4$, we only explore a limited range of games with these payoff features. This was done to limit the number of rounds in the experiment, whilst obtaining some useful insights into possible interactions between some salient features of the payoffs and label salience.

$B3 - B4$, the sum of players' payoffs (payoff efficiency) in RS is greater than that in PS as is the inequality of payoffs between players.[5]

We will indicate the two players as $P1$ (player 1) and $P2$ (player 2). $P1$ has the higher payoff on the focal point (RS) and W slices when present, and the lower payoff on PS. This distinction is not meaningful in games PC and HL.

2.4 Implementation

We implemented the pie types in both a between-subject and within-subject experiments (BSE and WSE, respectively). In both experiments, subjects faced 10 payoff configurations with each pie type in WSE while in BSE, to keep the number of tasks constant across experiments, they faced the payoff configurations four times with the same pie type. The 10 payoff configurations were randomised in both experiments and in the within-subject also the pie types.

To avoid creating additional label cues, potentially arising from the relative position of the slices (see Blume and Gneezy, 2010), pies were randomly rotated across participants and, for $n > 3$, RS and PS were kept apart (see figure 1). Each slice reported the coordinated payoffs, and, to make sure that subjects were aware of the consequences of not coordinating, the dis-coordination payoffs were reported on the top of the screen. Each participant was randomly paired with another participant in the room in each game. Feedback was only provided at the end of the experiment and only for a randomly selected task. This task, in addition to a participation fee of £2, determined the earnings for the whole experiment.

The experimental sessions were run at the University of East Anglia. A total of 98 and 210 participants took part in WSE and BSE respectively.[6] They were recruited using the hRoot system (Bock et al., 2014) from the general student population. The experiment was run on individual computer terminals with zTree (Fischbacher, 2007). Upon arrival, subjects were asked to read the instructions (see Appendix A) and to answer a questionnaire to test their understanding. Average earnings for both experiments, inclusive of the participation fee, were around £9.61 in WSE and £7.89 for BSE.

3 Hypotheses

Our key experimental manipulation is to increase label salience by increasing the number of pie slices. In the introduction, we have proposed a mechanism that links salience to the

[5]See Galeotti et al. (2019) for interactions between conflict of interest and inequity aversion.

[6]In BSE, the number of subjects in the 2-slice pie, 3-slice pie, 7-slice pie and 11-slice pie treatments are respectively 54, 56, 58 and 42.

recognition of labels as a useful means to achieve coordination. The more salient a label is, the greater the chances that it will be recognised as important in this regard. Based on this mechanism our hypothesis is:

Hypothesis: For any given game, an increase in label salience leads to an increase in the proportion of RS choices.

Notably, the two theories most commonly used to explain behaviour in the games of concern predict no change in behaviour when label salience increases, unless one were to introduce additional assumptions.

In level-k (Crawford et al., 2008), players differ in their level of strategic sophistication. Level-0 players are influenced by both label and payoff salience. However, they have a payoff bias in that, other things equal, they favour payoff over label salience. They choose the strategy associated to the outcome with the largest own-payoff with a probability $p > 1/2$. If payoffs are the same across strategies, they choose the salient label with a probability $p > 1/2$. An increase in label salience therefore does not affect level-0's behaviour. As higher-level players anchor their beliefs on the behaviour of level-0 players, and best respond to those beliefs, level-k predicts no change as the number of slices increases.[7]

In team reasoning (Sugden, 1993; Bacharach, 2006), players look for a rule, the best rule, that, if followed by both players, maximises the chances of coordination leading to the best possible outcome for both players as a team. If an outcome stands out by virtue of the labels attached to the strategies, for example RS in the pie game, players should choose the corresponding label when no better rule is available. As our manipulation is only making RS more salient, the best rule remains the same.

While neither level-k nor team reasoning predict any change in behaviour when label salience increases, our conjecture, if supported by our results, can inform their future development.[8]

[7]It is debated whether level-0 players are an empirical reality or only exists in the mind of higher-level players. Extensive discussions on the subject can be found in Costa-Gomes et al. (2001), Costa-Gomes and Crawford (2006), Crawford and Iriberri (2007), Arad and Rubinstein (2012) and van Elten and Penczynski (2020).

[8]Variable frame theory and variable frame level-N theory (Bacharach, 1993; Bacharach and Bernasconi, 1997; Bacharach and Stahl, 2000), allow for variations in players' ability in identifying labels that are unique but not necessarily salient. If labels are however already salient, increasing salience further predicts no change in behaviour. These theories can however be modified to have players differ in the ability of identifying a solution to the coordination problem. The greater the salience of a label, the greater the likelihood that players will see that label as a means to coordination. The main difference between these two models is in how they explain coordination. The first does it by extending the principles of rationality, the second, by contrast, by assuming that players have a bounded rationality.

4 Results

In this section we report the results for BSE, in which the number of slices is varied between subjects.

4.1 Summary Statistics

Table 2 reports the distribution of RS, PS and pooled W choices (when W slices are present) broken down by game and pie type.

	Slice	PC	HL	$A1$	$A2$	$A3$	$A4$	$B1$	$B2$	$B3$	$B4$
#	RS/W	(10,10)	(10,10)	(10.1,10)	(11,10)	(13,8)	(15,6)	(12,9)	(11,10)	(20,10)	(18,12)
	PS	(10,10)	(11,11)	(10,10.1)	(10,11)	(8,13)	(6,15)	(10,11)	(9,12)	(10,11)	(10,11)
2	RS	0.70	0.04	0.54	0.53	0.55	0.54	0.35	0.75	0.72	0.85
	PS	0.30	0.96	0.46	0.48	0.45	0.46	0.65	0.25	0.29	0.15
3	RS	0.83	0.17	0.73	0.61	0.67	0.59	0.43	0.75	0.59	0.69
	PS	0.08	0.81	0.20	0.29	0.26	0.33	0.48	0.17	0.34	0.24
	W	0.08	0.03	0.08	0.10	0.08	0.08	0.09	0.09	0.08	0.08
7	RS	0.92	0.26	0.78	0.69	0.67	0.66	0.53	0.70	0.60	0.65
	PS	0.03	0.71	0.15	0.26	0.27	0.29	0.43	0.23	0.35	0.29
	W	0.10	0.03	0.08	0.05	0.07	0.06	0.06	0.08	0.06	0.07
11	RS	0.92	0.27	0.77	0.72	0.72	0.72	0.51	0.77	0.64	0.72
	PS	0.01	0.73	0.30	0.24	0.26	0.25	0.46	0.20	0.35	0.26
	W	0.07	0.01	0.04	0.04	0.03	0.05	0.03	0.04	0.03	0.03

Table 2: BSE – Distribution of choices over slices by game and pie type

W slices are seldom chosen – no more than 10% of the times (e.g., $A2$). PS choices are modal only in HL, consistently with subjects following the payoff-dominant strategy, and in some of the $B1$ games. In all other games, RS is the most frequently chosen slice. Hence, the subsequent analysis will focus on this slice only.

Upon inspection of figure 2, which reports the proportion of RS choices by game and pie type, we observe three main patterns in our data.

(a) Consistently with the literature, the salient label (RS in our case) is chosen less often in games with a constant degree of conflict than in PC.

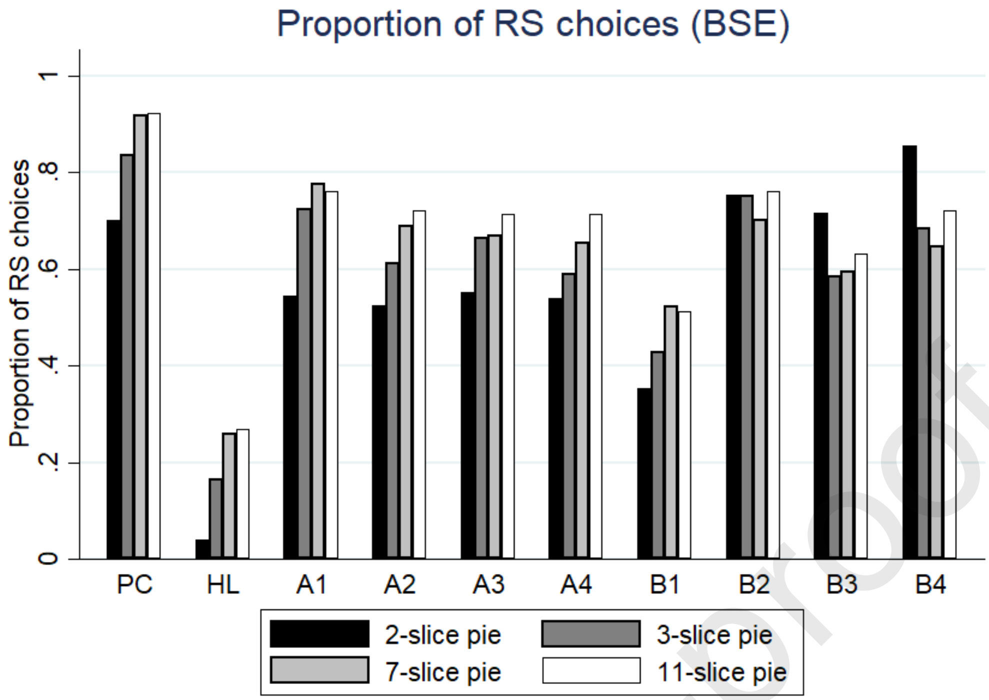


Figure 2: BSE – Proportion of RS choices by game and pie type

(b) In line with our hypothesis, the proportion of RS choices increases, with few exceptions, as the number of slices increases.

(c) The proportion of RS choices in $B2$, $B3$ and $B4$, does not seem to be positively correlated with the number of slices.

4.2 The effect of salience on RS choices

The patterns highlighted above are supported by a more formal statistical analysis on RS choices. We run two sets of logit regressions with clusters at the subject level. For all regressions, we report the marginal effects. In both sets, the dependent variable takes value one if subjects choose RS, and zero otherwise.

In the first set of models (table 3) we analyse the overall effect of salience on RS choices. Model 1 only includes the data for PC and games with a constant degree of conflict $A1 - A4$. Model 2 only includes data for HL and $B1 - B4$. Model 3 uses both sets of data. As independent variables we employ indicator variables for: the pie types (with the *2-slice* pie as baseline); the games, with PC as baseline in models 1 and 3, and HL in model 2. Finally, we employ *Period* to control for experience effects.

In the second set of regressions (table 4), model 1 only includes the data for PC and

$A1-A4$, model 2 the data for the remaining games HL and $B1-B4$, and model 3 all data. As independent variables we employ the number of slices that features in a pie, i.e., *# Slices*, and the absolute differences in players' payoffs in the slice RS, i.e., *Payoff Difference in RS*. As payoff efficiency might also play a role in games HL and $B1-B4$, models 2 and 3 include the variable *Relative Efficiency in RS*, which measures the ratio between the sum of the payoffs in RS and that in PS.[9]

PC and games with a constant degree of conflict. Consistently with the literature, the salient label, RS in our experiment, is chosen less often in games with a constant degree of conflict $A1-A4$ than in PC. Evidence for this can be found in models 1 and 3 in table 3. In these models, the estimated marginal effects associated with $A1-A4$ are negative and significant. This indicates a decrease in the frequency of RS choices in these games compared to the baseline PC.

Model 1 in the second set of regressions (table 4) provides further support for this effect. The marginal effect of *Payoff Difference in RS* shows that an increase of one unit in *Payoff Difference in RS* decreases the probability of choosing RS by 1.4%.

Result 1 *Our results are consistent with the negative effect of conflict on label salient choices reported in the literature.*

In line with our hypothesis and pattern (b), the number of slices appears to be positively related to the frequency of RS choices. In model 1 of table 3, the estimated margins of the indicator variables for the number of slices are positive and significant. However, differences in the marginal effects between 3-slice pie and 7-slice pie, 3-slice pie and 11-slice pie, 7-slice pie and 11-slice pies are not significant at a 10% significance level (Wald test).

In model 1 of table 4, the marginal effect of *# Slices* is positive and strongly significant. For each additional slice, the model estimates a 1.9% increase in RS choices. These results are robust to different model specifications (see table B.2 in appendix B) and when we break down the analysis by player (see tables B.3 and B.4 in appendix B). For example, figure 3 presents the predicted margins and the 95% confidence intervals, for games PC and $A1-A4$, of a model that includes *# Slices* and *Payoff Difference in RS* allowing for quadratic effects of these two variables, and several interaction terms.

Result 2 *In PC and $A1-A4$, in line with our hypothesis, we find evidence that, as the number of slices increases, the likelihood of choosing RS increases.*

[9] When we remove this variable, the significance of *# Slices* remains unchanged in both models, see first two columns of table B.1 in appendix B.

	Model 1	Model 2	Model 3
3-slice	0.114**	-0.018	0.048
	(0.048)	(0.042)	(0.042)
7-slice	0.171***	0.004	0.088**
	(0.046)	(0.043)	(0.041)
11-slice	0.196***	0.038	0.117***
	(0.049)	(0.050)	(0.045)
PC	Baseline	–	Baseline
HL	–	Baseline	-0.662***
			(0.029)
$A1$	-0.142***	–	-0.142***
	(0.022)		(0.022)
$A2$	-0.208***	–	-0.208***
	(0.024)		(0.024)
$A3$	-0.194***	–	-0.194***
	(0.023)		(0.023)
$A4$	-0.222***	–	-0.222***
	(0.023)		(0.023)
$B1$	–	0.273***	-0.389***
		(0.026)	(0.026)
$B2$	–	0.561***	-0.101***
		(0.028)	(0.024)
$B3$	–	0.451***	-0.211***
		(0.032)	(0.30)
$B4$	–	0.545***	-0.117***
		(0.033)	(0.029)
Period	0.001*	0.001**	0.001***
	(0.000)	(0.000)	(0.000)
# Obs.	4,200	4,200	8,400

Note: The dependent variable is an indicator variable for RS choice. The table reports marginal effects. Standard errors are clustered at the subject level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: BSE – The importance of pie type on RS choices

Other games. So far, we have focused on PC and $A1 - A4$. These games allow for a controlled test of how increasing salience affects RS choices as conflict is constant across pure equilibria. Games HL and $B1 - B4$ are useful to explore the effect of a change in salience on RS choices in the presence of other payoff considerations. These include: a payoff dominant equilibrium that does not coincide with the payoff-irrelevant focal point (HL); different

	Model 1	Model 2	Model 3
# Slice	0.019***	0.005	0.012**
	(0.006)	(0.005)	(0.005)
Payoff Difference in RS	-0.014***	-0.032***	-0.008***
	(0.002)	(0.004)	(0.001)
Relative Efficiency of RS		1.026***	0.404***
		(0.079)	(0.056)
Period	0.001*	0.001**	0.001***
	(0.001)	(0.001)	(0.000)
# Obs.	4,200	4,200	8,400

Note: The dependent variable is an indicator variable for RS choice. Model 1 only employs the data for PC and $A1 - A4$, model 2 the data for the remaining games $HL, B1 - B4$, and model 3 all data. The table reports the marginal effects. Standard errors are clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: BSE – The importance of conflict, payoff inequality, and efficiency on RS choices

degrees of inequality in players' payoffs across equilibria (i.e. difference in players' payoffs in each coordinated outcome); and different degrees of payoff efficiency across equilibria (i.e. the sum of players' payoff in each coordinated outcome).

The results from model 2, in both tables 3 and 4, do not provide support for our hypothesis. However, they provide evidence that the relative efficiency of RS has a positive effect on the likelihood of choosing RS, and that the difference in players' payoffs in RS has, instead, a negative effect.[10] A closer inspection of figure 2 reveals that the lack of support for our manipulation might be driven by games $B2 - B4$ (a regression analysis in table B.5 in appendix B provides support for this).

Result 3 *In $B2 - B4$, increasing the number of slices does not increase the likelihood of choosing RS.*

In these games, the RS slice features either lower payoff inequality ($B2$), or greater efficiency ($B3 - B4$), than PS. Coupling label salience with these payoffs' characteristics might increase further the salience of this slice via its payoffs (see Faillo et al., 2017; Galeotti et al., 2019; Anbarcı et al., 2018, for the importance of efficiency and inequality in coordination games without labels). As a consequence, if the overall perceived importance of RS as a coordination device has reached an upper bound, any further increase in label salience

[10]The payoff difference in RS for B games can also be used as proxy for the relative inequality in players' payoffs between RS and PS. This is because the ranking of the B games in this respect is uniquely determined by the payoff difference in RS alone.

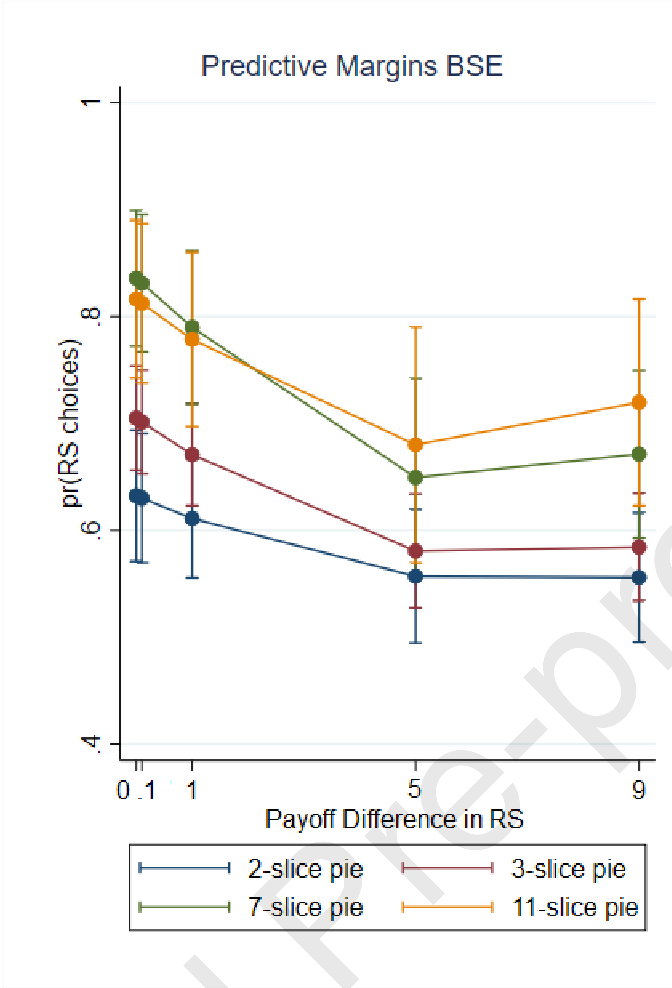


Figure 3: Predicted Margins PC and $A1 - A4$

would be ineffective. This might explain why our salience manipulation does not work in these games.

Using the same logic, in HL and $B1$, PS is the payoff salient slice, as it is the payoff dominant equilibrium or it features lower payoff inequality than RS. Hence, the salience of RS is likely to come only from its label. As a ceiling effect is arguably less likely, increasing the number of slices can increase its salience further.[11]

All games. When pooling both datasets together (model 3 in table 3), the estimated marginal effects of the number of slices, compared to the 2-slice pie baseline, are smaller than in model 1, but still significant for 7-slice and 11-slice pies. The other comparisons (i.e., 3-slice pie vs 7-slice pie, 3-slice pie vs 11-slice pie, and 7-slice pie vs 11-slice pie) are not significant at 10% level. In model 3 table 4 we observe qualitatively similar results.

[11]Limited to pure coordination games, Hargreaves-Heap et al. (2017) find evidence that coincidental (divergent) characteristics of the labels can have positive (negative) effects on label salient choices.

To summarise, our results show that, in line with the literature, an increase in the degree of conflicts of interest reduces the power of the focal point but also that, in line with our hypothesis, an increase in label salience leads to an increase in the proportion of RS choices. In games $B2-B4$, in which payoffs reflect additional considerations such as payoff inequality and efficiency, our manipulation is mostly ineffective.

4.3 Coordination

In this subsection, we analyse how increasing the salience of RS affects coordination rates. A change of $X\%$ in the frequency of RS choices is not always informative about the direction and extent of the associated change in the corresponding coordination rate. This, in fact, depends on the proportion of RS choices before the $X\%$ change. This effect is caused by the non-linear and non-monotonic relationship between choices and coordination rates. In addition, coordination rates also offer some insights into the desirability of an increase in label salience, not immediately obvious just by looking at RS choices.

Let us define the expected coordination rate (ECR) as the probability that two randomly selected players $P1$ and $P2$ choose the same slice j for a given game and pie type.

$$ECR = \sum_j \frac{n_{1j}}{N_1}\frac{n_{2j}}{N_2} \tag{1}$$

The ratios $\frac{n_{1j}}{N_1}$ and $\frac{n_{2j}}{N_2}$ indicate the proportion of $P1$ and $P2$ choosing slice j. In PC and HL, in which the distinction between $P1$ and $P2$ is not relevant, we pooled the data and matched a randomly selected player with all players except herself. Therefore, the ECR in expression (1) collapses into the same ECR in Mehta et al. (1994).

Table 5 reports the ECR by game and pie type. As a benchmark, we also report the expected coordination rates relative to the Mixed Strategy Nash Equilibrium ($MSNE$) for the 2-slice pie. To test for differences in ECRs we have run the bootstrap test employed by Bardsley et al. (2010) and Sitzia and Zheng (2019). The results of the test appear at the bottom of the table.

Providing further support to our results, we find that increasing the number of slices has a significant impact on coordination rates. In PC and $A1-A4$, we find that ECRs increase as the number of slices increases. Negative effects, by contrast, arise in HL and $B1-B4$. In HL an increase in the number of slices has a negative impact on coordination. This is because, as the payoff dominance associated to PS is a successful coordination rule, increasing the number of slices reduces its effectiveness as the proportion of RS choices increases. A similar mechanism is at work in $B1$ in which the lower payoff inequality, compared to RS, makes

	PC	HL	$A1$	$A2$	$A3$	$A4$	$B1$	$B2$	$B3$	$B4$
RS (W)	(10,10)	(10,10)	(10.1,10)	(11,10)	(13,8)	(15,6)	(12,9)	(11,10)	(20,10)	(18,12)
PS	(10,10)	(11,11)	(10,10.1)	(10,11)	(8,13)	(6,15)	(10,11)	(9,12)	(10,11)	(10,11)
$MSNE$ (2-slice)	0.500	0.501	0.500	0.499	0.472	0.408	0.495	0.495	0.492	0.506
2-slice	0.58	0.93	0.50	0.50	0.49	0.49	0.54	0.62	0.58	0.74
3-slice	0.71	0.68	0.57	0.47	0.50	0.42	0.40	0.60	0.46	0.53
7-slice	0.84	0.57	0.63	0.54	0.51	0.50	0.46	0.54	0.46	0.50
11-slice	0.85	0.59	0.61	0.58	0.57	0.57	0.46	0.62	0.52	0.57
SL 3>2	***	###	***	##		###	###		###	###
SL 7>2	***	###	***	***			###	###	###	###
SL 11>2	***	###	***	***	***	***	###		##	###
SL 7>3	**	##		*		**	**			
SL 11>3	**	#		***	*	***	**		*	
SL 11>7						**		*	*	*

Note: Significance in line with a positive effect of RS is indicated as follows *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Significance in the opposite direction is indicated as follows ### $p < 0.01$, ## $p < 0.05$, # $p < 0.1$.

Table 5: BSE – Expected coordination rates

PS a more attractive choice. In $B2$ the decrease in ECRs does not appear to be systematic. Finally, in $B3-B4$ the drop in the proportion of RS choices in pies with more than two slices (see figure 2) leads to a significant difference in ECRs between the 2-slice pie and the other ones. This is a puzzling result and at odds with our previous explanation, namely, that in these games, RS is very salient because label salience is reinforced by payoff salience. It is of course possible that, in pies with more than two slices, the attractiveness of PS as a decision rule, that features less unequal payoffs, also increases as the number of slices increases, and this might explain why the proportion of RS choices drops in these pies compared to the 2-slice pie. However, this is no more than speculation. Finally, in all B games the effectiveness of our manipulation seems to start kicking in when the number of slices increases further.

5 Further Experimental Evidence

In this section, we present the results of WSE, where subjects face variations in both games and pie types.

Table 6 reports the distribution of RS, PS and pooled W choices (when present) broken down by game and pie type.

As in BSE, W slices in WSE are seldom chosen – no more than 6% of the times (i.e., PC). PS choices are modal only in HL. In all other games, RS is still the most frequently chosen slice. In figure 4, we observe the following patterns:

(a) Consistently with the results in BSE and the literature, RS is chosen less often in games with a constant degree of conflict $A1 - A4$ than in PC.

(b) Unlike in BSE, the proportion of RS choices does not increase as the number of slices increases. The only exceptions are HL and $A4$.

	Slice	PC	HL	$A1$	$A2$	$A3$	$A4$	$B1$	$B2$	$B3$	$B4$
#	RS/W	(10,10)	(10,10)	(10.1,10)	(11,10)	(13,8)	(15,6)	(12,9)	(11,10)	(20,10)	(18,12)
	PS	(10,10)	(11,11)	(10,10.1)	(10,11)	(8,13)	(6,15)	(10,11)	(9,12)	(10,11)	(10,11)
2	RS	0.96	0.16	0.85	0.77	0.76	0.66	0.54	0.87	0.75	0.86
	PS	0.04	0.84	0.15	0.24	0.25	0.34	0.46	0.13	0.26	0.14
3	RS	0.95	0.18	0.87	0.85	0.78	0.73	0.65	0.83	0.71	0.83
	PS	0.03	0.82	0.12	0.14	0.21	0.27	0.33	0.13	0.27	0.14
	W	0.02	0.00	0.01	0.01	0.01	0.01	0.02	0.04	0.02	0.03
7	RS	0.93	0.23	0.83	0.76	0.79	0.79	0.57	0.80	0.73	0.85
	PS	0.01	0.76	0.14	0.23	0.17	0.17	0.43	0.17	0.25	0.14
	W	0.06	0.01	0.03	0.02	0.04	0.04	0.00	0.03	0.03	0.01
11	RS	0.95	0.28	0.84	0.80	0.80	0.82	0.57	0.82	0.72	0.83
	PS	0.01	0.72	0.13	0.17	0.17	0.15	0.43	0.16	0.29	0.14
	W	0.04	0.00	0.03	0.03	0.03	0.03	0.00	0.02	0.00	0.03

Table 6: WSE – Distribution of choices over slices by game and pie type

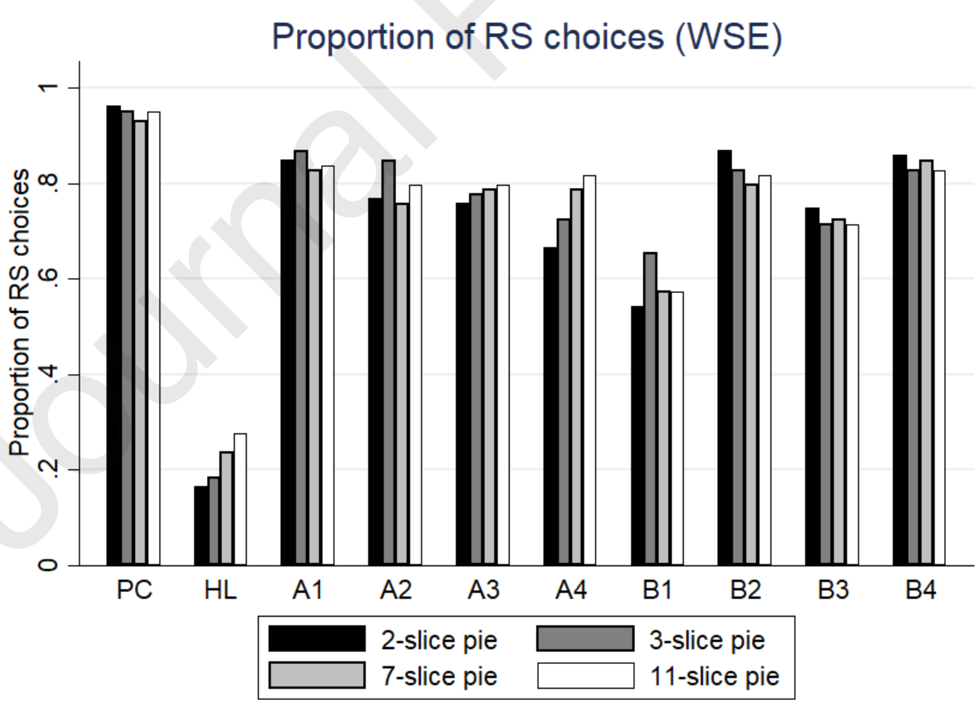


Figure 4: WSE – Proportion of RS choices by game and pie type

As we did for BSE, we estimate two sets of logit regressions with clusters at the subject level (tables 7 and 8). Each set includes all the models we estimated with the BSE data, and an additional one (model 4). This model is the same as model 3 with two more variables: an indicator variable for WSE, and, to account for differential experience effects between experiments, an interaction term between *Period* and *WSE*. In all models, the dependent variable takes value one if subjects choose *RS* and zero otherwise. Both tables report the marginal effects.

In sharp contrast with the results in BSE, in WSE we do not find evidence of a significant effect of our salience manipulation on the likelihood of choosing *RS* (models 1-3 in tables 7 and 8).

Result 4 *In WSE, the proportion of RS choices does not significantly vary across pie types.*

Model 4, however, provides strong evidence that *RS* is chosen significantly more often in WSE than in BSE. This result suggests that *RS* in this experiment is very salient.

Result 5 *In WSE, the proportion of RS choices is significantly greater than in BSE.*

Table 8 confirms the importance of *RS*'s payoff difference and relative efficiency on *RS* choices. The direction of these effects is the same as in BSE. These results are robust to other model specifications and the addition of interaction terms (see table B.2 in appendix B for further details). For example, figure 5 reports the predictive margins of the same model we estimated for BSE and reported in figure 3. As the coordination rates do not add anything new to this analysis, they are reported in table B.6 in appendix B.

5.1 Explaining *RS* choices in WSE

The proportion of *RS* choices is surprisingly, and substantially, greater in WSE than in BSE. One possible explanation consistent with this result is that subjects do not pay attention to the payoffs and choose *RS* as a default rule in WSE. However, we can rule this out as in *HL* the modal choice is the payoff-dominant slice *PS*. Thus, we can conclude that subjects, in choosing *RS* deliberately, are responding to the experimental monetary incentives.

The lack of variation of the proportion of *RS* choices across pie types might be the result of spillover of salience from pies with a large number of slices to pies with fewer slices. Spillover of salience can be thought of as a form of learning that helps recognise over time the importance of the focal point as a coordination device. In BSE subjects face only one pie type, therefore any spillover of salience across pies is absent. Thus, comparing behaviour

	Model 1	Model 2	Model 3	Model 4
WSE	–	–	–	0.112***
				(0.027)
3-slice	0.037*	0.003	0.019	0.039
	(0.021)	(0.018)	(0.016)	(0.029)
7-slice	0.017	-0.008	0.004	0.062**
	(0.024)	(0.021)	(0.018)	(0.029)
11-slice	0.041	0.002	0.021	0.085***
	(0.025)	(0.022)	(0.020)	(0.030)
PC	Baseline	–	Baseline	Baseline
HL	–	Baseline	-0.734***	-0.685***
			(0.037)	(0.023)
*A*1	-0.101***	–	-0.101***	-0.129***
	(0.028)		(0.028)	(0.017)
*A*2	-0.154***	–	-0.153***	-0.191***
	(0.027)		(0.027)	(0.018)
*A*3	-0.170***	–	-0.168***	-0.186***
	(0.029)		(0.029)	(0.018)
*A*4	-0.196***	–	-0.196***	-0.213***
	(0.027)		(0.026)	(0.018)
*B*1	–	0.365***	-0.371***	-0.383***
		(0.040)	(0.040)	(0.022)
*B*2	–	0.616***	-0.117***	-0.106***
		(0.038)	(0.026)	(0.018)
*B*3	–	0.512***	-0.222***	-0.214***
		(0.042)	(0.036)	(0.023)
*B*4	–	0.626***	-0.108***	-0.114***
		(0.044)	(0.031)	(0.022)
Period	0.003***	0.003***	0.003***	0.002***
	(0.001)	(0.001)	(0.001)	(0.000)
# Obs.	1,960	1,960	3,920	12,320

Note: The dependent variable is an indicator variable for *RS* choice. The table reports the marginal effects. Standard errors are clustered at the subject level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: WSE – The importance of pie type on RS choices

in BSE and WSE might be useful to understand whether our results are indeed driven by such an effect.

Figure 6 reports the proportion of RS over time by pie type and experiment. We observe large variations in the data. In the early periods, differences in proportions are small between

	Model 1	Model 2	Model 3	Model 4
WSE				0.111***
				(0.0267)
# Slice	0.003	-0.000	0.001	0.008**
	(0.002)	(0.002)	(0.002)	(0.003)
Payoff Difference in RS	-0.014***	-0.034***	-0.006***	-0.007***
	(0.002)	(0.008)	(0.002)	(0.001)
Relative efficiency of RS		1.134***	0.397***	0.400***
		(0.142)	(0.0811)	(0.046)
Period	0.003***	0.002**	0.002***	0.001***
	(0.001)	(0.001)	(0.001)	(0.000)
# Obs.	1,960	1,960	3,920	12,320

Note: The dependent variable is an indicator variable for RS choices. Model 1 only employs data for PC and $A1 - A4$, model 2 those for games $HL, B1 - B4$, and model 3 all data. The table reports marginal effects. Standard errors are clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8: WSE – The importance of conflict, payoff inequality, and efficiency on RS choices

experiments. Only for the 2- and 3-slice pies, however, do these differences become more pronounced in later periods.

We test separately for each experiment and pie type (Wilcoxon signed-rank test), whether the proportion of RS choices significantly differ between the first and last ten periods. In WSE we find that this is the case for the 2-slice and the 3-slice pie ($p < 0.004$ and $p < 0.071$, respectively) but not for 7-slice and 11-slice pie ($p < 0.578$ and $p < 0.733$, respectively). In BSE by contrast, we find no significant difference except for the 11-slice pie ($p < 0.034$).

Model 4 in table 7, unlike non-parametric tests, controls for the order in which games are played over time, as this is randomised across subjects. This model also includes an interaction term between *Period* and WSE. We have estimated this model separately for each pie type and report the predictive margins of RS choices by period and experiment with the corresponding 95% confidence interval (figure 7). For all pies, the probability of choosing RS is greater in WSE than in BSE.[12] Furthermore, for pies with 2 and 3 slices, this probability increases over time at a significantly greater rate in WSE than in BSE. By contrast, in pies with 7 and 11 slices, we do not find significant differences between experiments.[13]

In BSE, an increase in the probability of choosing RS over time, if any (figure 7), can

[12] Although the results of the estimations presented in figure 7 show that the probability of choosing RS is consistently greater in WSE than BSE, differences between experiments are not significant in the first period in any pie type (all p-values > 0.1).

[13] The estimated interaction term $WSE \times$ *Period* is significant for 2- and 3-slice pies but not for 7- and 11-slice pies (see table B.7 in appendix B).

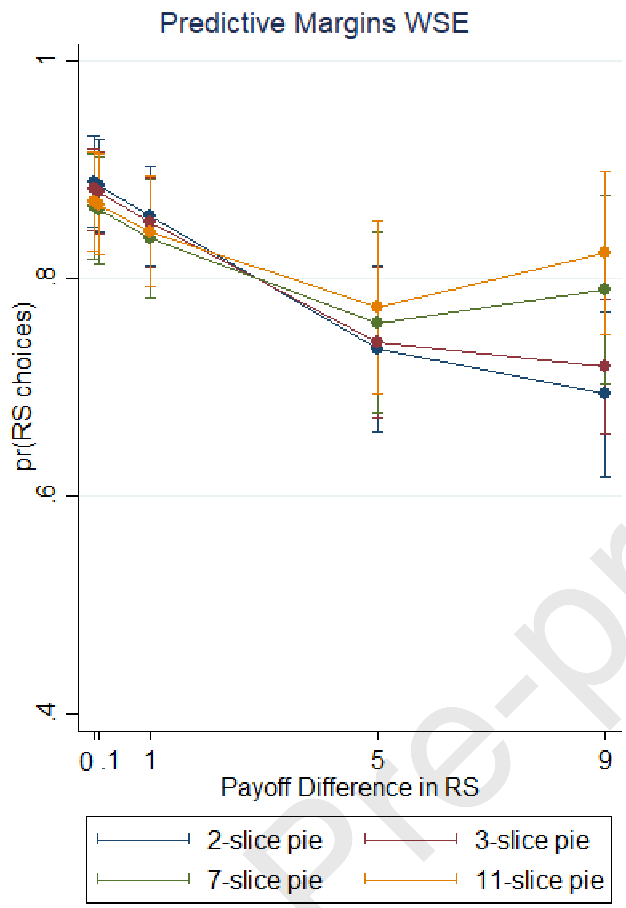
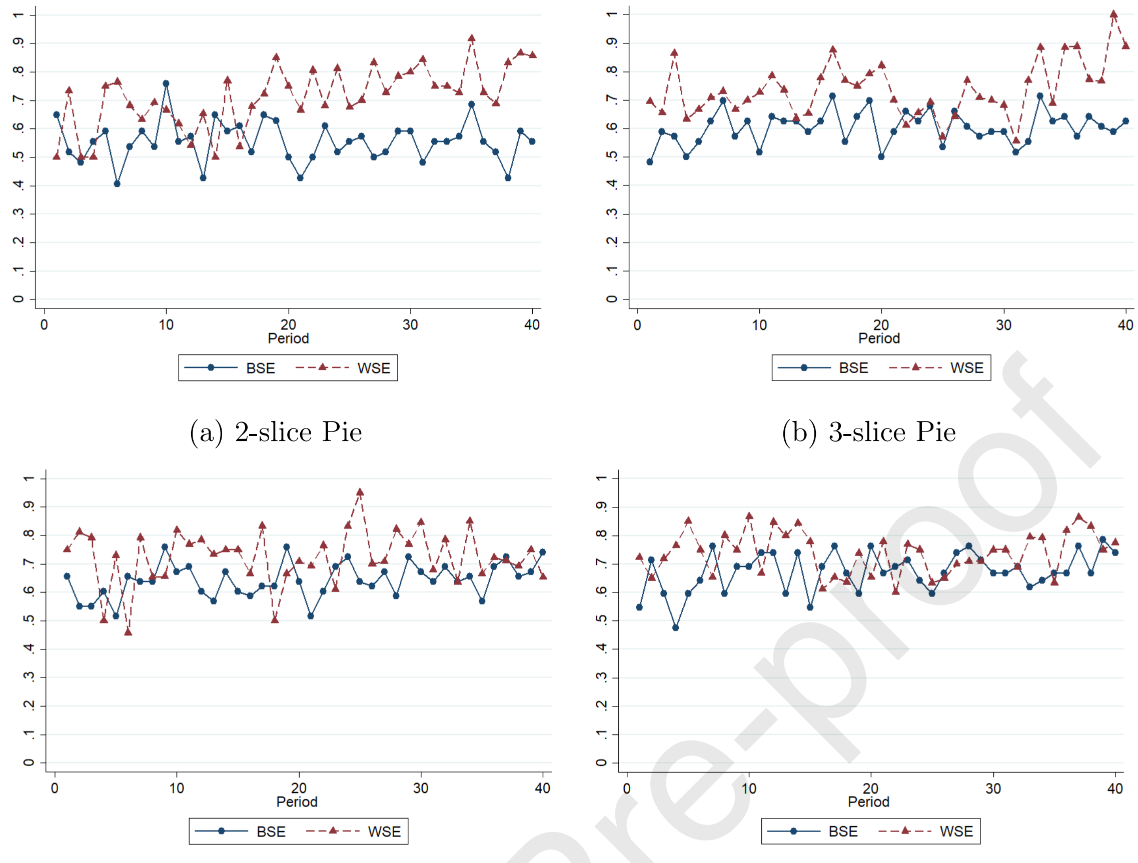


Figure 5: Predicted Margins PC and $A1 - A4$

be explained by experience effects deriving, possibly, from repeated exposure to the same pie type with different payoffs. However, differences between experiments in pies with 2 and 3 slices are compatible with the presence of additional sources of learning in WSE. Spillover of salience from pies with a large number of slices to pies with fewer ones could explain this additional learning.

Further evidence of spillovers of salience can be found comparing RS choices in the 2-slice pie between experiments. In BSE, the only potential source of salience of RS in the 2-slice pie is the colour, as spillovers of salience from pies with more slices are not possible. In pies with more slices, instead, salience also comes from RS being the odd-one-out, with the number of slices providing a positive, but not significant, contribution. This is not the case in WSE if the salience of RS in pies with many slices spills over to RS in the 2-slice pie, making it therefore more salient. In support of this, we do indeed find that RS is chosen significantly more often in WSE than in BSE (Mann-Whitney test $p < 0.001$).



(a) 2-slice Pie

(b) 3-slice Pie

(c) 7-slice Pie

(d) 11-slice Pie

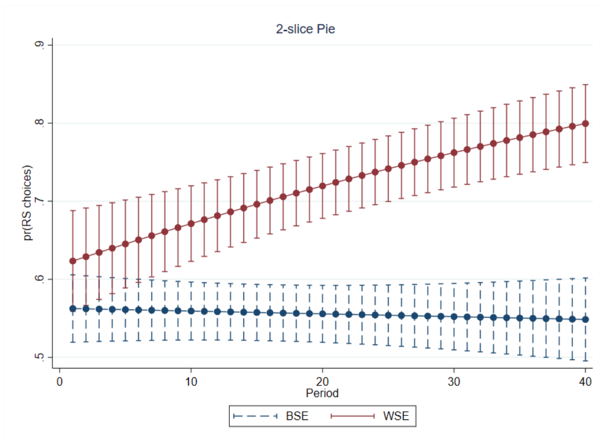
Figure 6: Proportions of *RS* choices across periods

Spillover effects are also consistent with the lack of a significant difference in the proportion of *RS* choices in the 11-slice pie between experiments (Mann-Whitney test $p = 0.202$), as salience spills over from this pie to the other ones. In this pie however, we find that the *ECR*s in most games are significantly greater in *WSE* than in *BSE*.[14] It seems therefore important to understand why this might be the case.

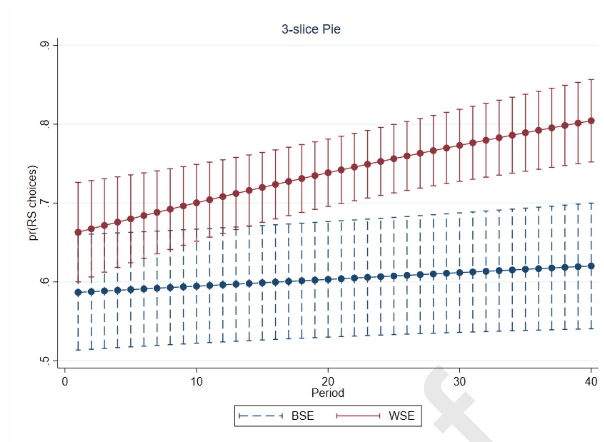
A potential explanation for this difference might relate to the variation of pies in *WSE*. Varying the number of slices within subjects might make the red slice very salient in all pies ('variation' effect), including the 11-slice pie.[15] The intuition behind the 'variation' effect is somewhat related to the intermixed-blocked effect documented in cognitive psychology (e.g. Gibson, 1969; Hall, 2003; Lavis et al., 2011). When animals or humans are presented with

[14]The *ECR* in the 11-slice pie games in *WSE* is significantly greater than that in *BSE* (bootstrap test) for *A*1, *A*2, *A*4, *B*1 and *B*4 ($p < 0.047$); *A*3 and *B*3 ($p < 0.090$); but not for *PC*, *HL* and *B*2 ($p > 0.101$).

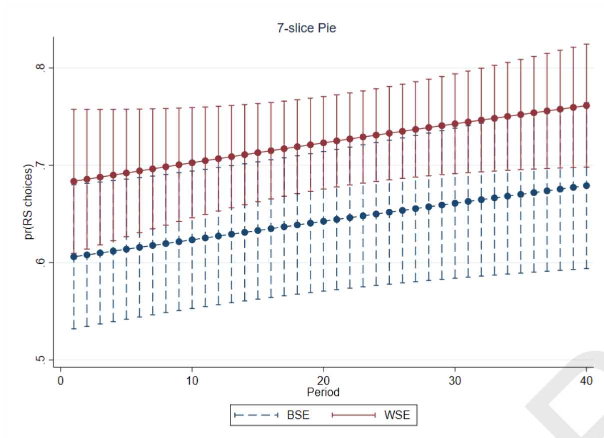
[15]It might be argued that, the greater proportion of *RS* choices in *WSE* compared to that in *BSE* in the first few periods (see figure 7) is not consistent with the 'variation' effect. Notice that however, the estimation of the margins are informative about the time trend but not necessarily about differences between any given period, as we are imposing linearity between periods and the likelihood of choosing *RS*.



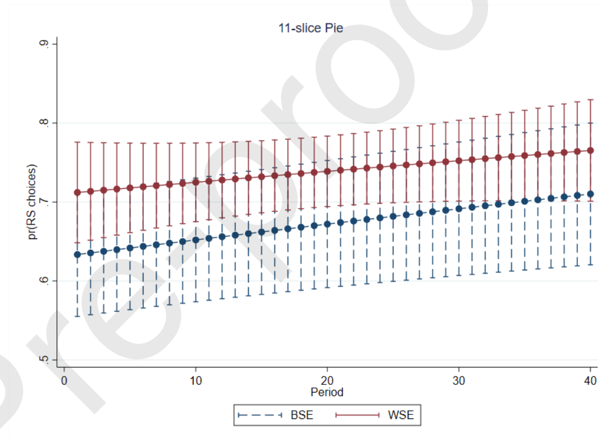
(a) 2-slice Pie



(b) 3-slice Pie



(c) 7-slice Pie



(d) 11-slice Pie

Figure 7: Probability of choosing RS over time by experiment

similar stimuli that share a common feature X, for example AX, BX, the distinctive features A and B become more prominent when the stimuli are presented in an intermixed fashion – $AX, BX, AX, BX, \ldots$ – than when they are presented in blocks – $AX, AX \ldots BX, BX \ldots$. In BSE, the pie can be seen as the X element of the sequence and the payoffs as the As and Bs stimuli (although we have more than two). Although our experiments are not designed to test for the intermixed-block effect, it is possible that, for any given game, the payoffs in BSE, that implements an intermixed sequence, stand out more than in WSE, that does not implement such a sequence. As a result, in BSE less attention is paid to RS as a solution to the coordination problem, and this makes RS less salient in BSE than in WSE.

If the salience of RS is greater in WSE than in BSE, then we should expect the same pattern of choices as in BSE but with an upward shift in the proportion of RS choices. If in addition to the 'variation' effect, there are also spillover effects, the salience of RS in the 11-slice pie should bring about an increase in salience of RS in the pies with fewer slices.

If both effects are strong enough, the pattern in WSE should be the one we observe in the data. The combination of the variation and spillover effects can also explain why, relative to the 3- and 7-slice pies, the proportion in RS choices are significantly greater in WSE than in BSE (Mann Whitney test, $p < 0.004$, $p < 0.069$ for 3- and 7- slice pies, respectively). Due to spillover effects, in WSE, the proportion of RS choices is increased in all pies to a level similar to that observed in the 11-slice pie. However, in this pie, due to the variation effect, RS is more salient than in BSE, as reflected in the greater proportion of RS choices in WSE compared to that observed in BSE (although differences are not statistically significant). This greater salience, when transferred to the 3- and 7-slice pies, is enough to lead, in these pies, to significantly greater proportions of RS choices in WSE than in BSE.

6 Conclusions

Schelling (1960) showed that individuals are capable of successfully coordinating their expectations using payoff-irrelevant features of a strategic situation. Recent experimental evidence, however, has shown that Schelling's results were too optimistic. An ever so small conflict of interest between parties can destroy the coordinating effect of focal points. We have advanced the hypothesis that, increasing the salience of the focal point increases its relevance as a solution concept. This in turn leads to a greater coordination success not only when the degree of conflict is small but also when is large.

In a between-subject experiment, we find support for this hypothesis in games with a constant degree of conflict. Consistent with the literature, when the salience of the focal point is low, our results confirm the negative effect of conflict on both label salient choices and coordination (e.g., Crawford et al., 2008). When the focal point is more salient, our results are more in line with Schelling's theory. While the effect of label salience on choices is not always significant, the effect on coordination mostly is. We notice though that the negative effect of conflict on coordination is still present.

This experiment also explores how other payoff configurations, involving payoff inequality, efficiency, and payoff dominance, interact with label salience. Results in these games are mixed. In games in which the label salient equilibrium features less unequal or more efficient payoffs than other equilibria, our salience manipulation does not work. In games in which players are already successfully coordinating on an equilibrium (e.g. the payoff-dominant one), increasing salience does increase the frequency of label salient choices, but this is not desirable as it damages coordination success.

Finally, when label salience is varied within-subject, we find no support for our hypothesis. However the proportion of label salient choices is significantly greater than when subjects only face one pie type, as in the between-subject experiment. We propose as an explanation for these results a combination of two effects: spillovers of salience from a salient focal point to a less salient one and an increase in salience of the focal point due to the variation label salience within subjects.

As a first attempt to understand how increasing label salience affects coordination in game with focal points, we employed games in which the coordinated outcome payoffs were either (a,b) or (c,d). Given our design, this decision was crucial for games like the battle of the sexes, as it allowed us to cleanly study the effect of a change in salience on label salient choices, while keeping everything else constant. However, in games in which outcomes vary in several respects, such as for example, the degrees of payoff inequality between players, interactions between payoff salience and label salience must be considered. To better understand these interactions, more research is needed. Investigations that include games with more than two distinct coordinated outcomes, in which payoffs potentially differ in more than one aspect, can complement our findings and advance further our knowledge on the role of label salience in coordination games with focal points.

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Appendices

A Experimental Instructions

The instructions for the within-subject (experiment 1) and the between-subject (experiment 2) are identical. The only change is the pie types shown. Instructions here corresponds to the 3-slice pie treatment in experiment 2.

Experimental Instructions

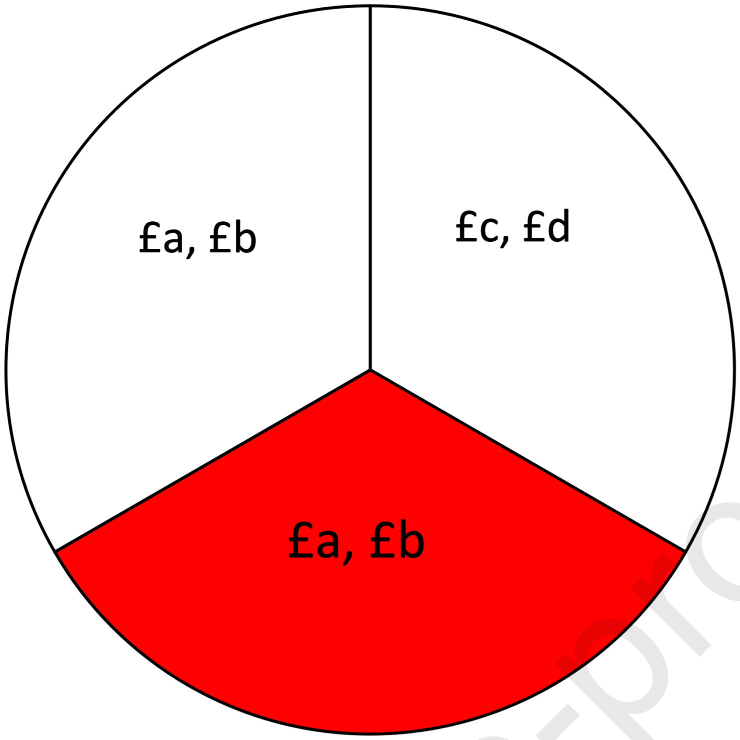
Welcome to this experiment in decision making.

We kindly ask you not to talk for the entire duration of the experiment. If you have any question at any time, please raise your hand and the experimenter will go to your desk.

In this experiment, you will be presented with a series of 40 tasks. In each task you will be matched with another person in the room. You will not be told who this person is. Your earnings will depend both on your decision and the decision of the other person. You will receive feedback only at the end of the experiment.

The Task

In each task, you and the other person will be presented with the same pie, like the one shown below, and asked to choose one slice by clicking on your choice.



In each slice there are two amounts, represented by letters in the pie above. If you and the other person **choose a different slice**, you both earn nothing in that task. If instead you and the other person **choose the same slice**, you will earn the amount on the left of the comma of the chosen slice while the other person will earn the amount on the right. In the actual experiment the letters will be replaced by numbers.

How do you earn money?

You will receive a show-up fee of £2 pounds. In addition, at the end of the experiment the computer will randomly select one of the 40 tasks and the payment will be determined as explained above. Thus, since you do not know which task will be selected at the end of the experiment and who you are matched with in that task, it is in your best interest to treat each task independently. In addition, in the actual experiment, the amounts displayed will vary from task to task. It is therefore in your best interest to inspect carefully the amounts displayed in every slice of the pie before making a choice.

B Additional analysis

	Model 1	Model 2	Model 3	Model 4
# Slice	0.005	0.012**	-0.000	0.001
	(0.005)	(0.005)	(0.002)	(0.002)
Payoff Difference in RS	0.028***	0.005***	0.033***	0.006**
	(0.003)	(0.002)	(0.004)	(0.003)
Period	0.001**	0.001***	0.002**	0.002***
	(0.001)	(0.000)	(0.001)	(0.001)
# Obs.	4,200	8,400	1,960	3,920

Note: The dependent variable is an indicator variable for RS choice. Model 1 only employs the data for HL and $B1-B4$ in BSE, and model 2 all data in BSE. Model 3 only employs the data for HL and $B1-B4$ in WSE, and model 4 all data in WSE. The table reports the marginal effects. Standard errors are clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B.1: Robustness checks without efficiency

	BSE	*WSE*
# Slices	0.468**	-0.0961
	(0.183)	(0.128)
$(\#\ Slices)^2$	-0.028*	0.006
	(0.014)	(0.009)
Payoff Difference in RS	0.096	-0.343*
	(0.126)	(0.187)
$\#\ Slices \times Payoff\ Difference\ in\ RS$	-0.111**	0.023
	(0.051)	(0.071)
$(\#\ Slices)^2 \times Payoff\ Difference\ in\ RS$	0.007*	-0.001
	(0.004)	(0.005)
$(Payoff\ Difference\ in\ RS)^2$	-0.008	0.017
	(0.013)	(0.020)
$\#\ Slices \times (Payoff\ Difference\ in\ RS)^2$	0.008	0.000
	(0.005)	(0.008)
$(\#\ Slices)^2 \times (Payoff\ Difference\ in\ RS)^2$	-0.001	0.000
	(0.000)	(0.001)
Period	0.005*	0.021***
	(0.003)	(0.007)
Constant	-0.376	1.838***
	(0.399)	(0.401)
# Obs.	4,200	1,960

Note: The dependent variable is an indicator variable for *RS* choice only in games $A1 - A4$. These are the estimates underlying figures 3 and 5. Standard errors clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B.2: Estimations figures 3 (*BSE*) and 5 (*WSE*).

	BSE P1	*BSE P2*	*WSE P1*	*WSE P2*	*All P1*	*All P2*
Experiment WSE					0.141***	0.136***
					(0.036)	(0.044)
# Slices	0.014*	0.022***	0.005	0.002	0.011**	0.016***
	(0.007)	(0.007)	(0.004)	(0.004)	(0.005)	(0.005)
Payoff Difference in RS	0.005**	-0.016***	-0.003	-0.014***	0.002	-0.016***
	(0.002)	(0.002)	(0.003)	(0.004)	(0.002)	(0.002)
Period	0.002**	-0.0002	0.003**	0.003**	0.002***	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
# Obs.	1,680	1,680	784	784	2,464	2,464

Note: The dependent variable is an indicator variable for *RS* choice only in games $A1 - A4$ (as in *PC*, there are no asymmetries to distinguish between players). Standard errors clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B.3: Marginal effects in $A1 - A4$ by player

	*BSE P*1	*BSE P*2	*WSE P*1	*WSE P*2	*All P*1	*All P*2
Experiment WSE					0.102***	0.112***
					(0.037)	(0.040)
# Slices	-0.003	0.004	-0.004	-0.001	-0.004	0.002
	(0.006)	(0.007)	(0.004)	(0.004)	(0.004)	(0.005)
Payoff Difference in RS	-0.039***	-0.058***	-0.046***	-0.057***	-0.041***	-0.057***
	(0.005)	(0.005)	(0.010)	(0.012)	(0.005)	(0.005)
Relative Efficiency of RS	0.768***	0.990***	0.847***	1.003***	0.785***	0.990***
	(0.096)	(0.101)	(0.182)	(0.221)	(0.085)	(0.095)
Period	0.002**	0.002*	0.005***	0.000	0.003***	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
# Obs.	1,680	1,680	784	784	2,464	2,464

Note: The dependent variable is an indicator variable for *RS* choice only in games $B1 - B4$ (as in HL, there are no asymmetries to distinguish between players). Standard errors clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B.4: Marginal effects in $B1 - B4$ by player

	BSE HL	*BSE B*1	*BSE B*2	*BSE B*3	*BSE B*4
# Slices	0.021***	0.017**	-0.001	-0.005	-0.010
	(0.006)	(0.007)	(0.007)	(0.008)	(0.007)
Period	-0.002**	0.001	0.001	0.003***	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
# Obs.	840	840	840	840	840

Note: The dependent variable is an indicator variable for *RS* choice. Relative efficiency not included because is the same for each game. Standard errors clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B.5: Marginal effects in HL, $B1 - B4$ separately

	PC	*HL*	*A*1	*A*2	*A*3	*A*4	*B*1	*B*2	*B*3	*B*4
RS (*W*)	(10,10)	(10,10)	(10.1,10)	(11,10)	(13,8)	(15,6)	(12,9)	(11,10)	(20,10)	(18,12)
PS	(10,10)	(11,11)	(10,10.1)	(10,11)	(8,13)	(6,15)	(10,11)	(9,12)	(10,11)	(10,11)
MSNE (2-slice)	0.500	0.501	0.500	0.499	0.472	0.408	0.495	0.495	0.492	0.506
2-slice	0.92	0.72	0.74	0.64	0.62	0.54	0.50	0.77	0.62	0.75
3-slice	0.90	0.70	0.77	0.74	0.65	0.58	0.53	0.70	0.58	0.70
7-slice	0.86	0.62	0.69	0.61	0.64	0.64	0.51	0.65	0.58	0.73
11-slice	0.90	0.60	0.71	0.66	0.66	0.68	0.51	0.69	0.59	0.70
SL 3>2				**						
SL 7>2						**				
SL 11>2						***				
SL 7>3										
SL 11>3						**				
SL 11>7										

Note: Significance in line with a positive effect of *RS* is indicated as follows *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Significance in the opposite direction is indicated as follows ### $p < 0.01$, ## $p < 0.05$, # $p < 0.1$.

Table B.6: Expected coordination rates in WSE

	2-slice pie	3-slice pie	7-slice pie	11-slice pie	All pies
Experiment WSE	0.283	0.366	0.388	0.419	0.374**
	(0.212)	(0.251)	(0.276)	(0.276)	(0.159)
3-slice					0.198
					(0.151)
7-slice					0.320**
					(0.155)
11-slice					0.444***
					(0.166)
HL	-3.863***	-3.592***	-3.592***	-3.651***	-3.477***
	(0.357)	(0.354)	(0.361)	(0.334)	(0.179)
$A1$	-0.714***	-0.711***	-1.135***	-1.311***	-0.877***
	(0.198)	(0.234)	(0.255)	(0.295)	(0.127)
$A2$	-0.868***	-1.155***	-1.575***	-1.545***	-1.189***
	(0.222)	(0.238)	(0.269)	(0.299)	(0.131)
$A3$	-0.814***	-1.076***	-1.616***	-1.559***	-1.167***
	(0.224)	(0.228)	(0.265)	(0.290)	(0.131)
$A4$	-0.955***	-1.380***	-1.664***	-1.521***	-1.294***
	(0.223)	(0.253)	(0.261)	(0.276)	(0.129)
$B1$	-1.687***	-1.948***	-2.355***	-2.513***	-2.017***
	(0.216)	(0.268)	(0.289)	(0.304)	(0.140)
$B2$	0.0689	-0.690***	-1.472***	-1.351***	-0.754***
	(0.255)	(0.242)	(0.239)	(0.269)	(0.138)
$B3$	-0.294	-1.427***	-1.936***	-1.961***	-1.299***
	(0.263)	(0.243)	(0.299)	(0.306)	(0.149)
$B4$	0.526*	-0.944***	-1.595***	-1.484***	-0.797***
	(0.296)	(0.258)	(0.276)	(0.314)	(0.156)
Period	-0.002	0.004	0.009*	0.010**	0.005***
	(0.004)	(0.003)	(0.005)	(0.004)	(0.002)
WSE × *Period*	0.031***	0.018**	0.002	-0.002	0.012**
	(0.008)	(0.007)	(0.009)	(0.008)	(0.005)
Constant	1.056***	1.637***	2.164***	2.291***	1.446***
	(0.234)	(0.298)	(0.317)	(0.337)	(0.151)
# Obs.	3,140	3,220	3,300	2,660	12,320

Note: The dependent variable is an indicator variable for *RS* choice. Standard errors clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table B.7: Estimated coefficients by pie

Declarations of interest: none.