Focal Points in Experimental Bargaining Games

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> *Most situations […] provide some clue for coordinating behavior, some focal point for each person's expectation of what the other expects him to be expected to do*.
> (Schelling, 1960, p. 57)

The experimental literature on bargaining games is vast and growing. The common thread is the investigation of games in which bargainers reach an agreement that results in some allocation of resources between them. Unlike real-world bargaining, in which negotiations are often multi-dimensional and therefore rather complex, in most experiments outcomes are defined in terms of monetary payoffs to the bargainers, providing participants with real incentives to pursue their interests in a way that is intelligible to researchers.

Beyond the major and subtle differences between specific bargaining protocols, most experimental bargaining games have in common the most distinctive feature of bargaining: the multiplicity of alternative agreements (including the possibility of disagreement). The bargainers typically have conflicting preferences over alternative agreements, but a common interest in avoiding costly disagreement. This multiplicity of conflicting alternatives will be the focus of this chapter.

Bargaining problems can be usefully represented as games with multiple pure-strategy Nash equilibria.[1] Such games pose an equilibrium selection problem, which has been approached by imposing axioms that relate the solution to bargainers' utilities (e.g., Nash, 1950). An alternative route – and the one that will be the focus of this chapter – is through some form of *focal-point reasoning*, as first proposed by Schelling (1960).

1. Focal points in bargaining

The Strategy of Conflict (1960) was Schelling's response to the inadequacy of contemporary game theory for the analysis of the 'mixture of mutual dependence and conflict' that characterise 'bargaining' or 'mixed motive' games (p. 89). One of his main contributions is the hypothesis that, in such games, 'rational' players will often be able to reach an agreement,

[1] Because we are interested in coordination, unless otherwise stated, when we talk about 'equilibria' we will mean pure-strategy equilibria.

even without communication, by using their shared knowledge of 'incidental details' of the game.

In a famous example, Schelling considers how two army commanders can decide to stop their advance without engaging in costly warfare. Some 'prominent' features of the surrounding environment (e.g., water courses, ridges) could 'suggest themselves' as obvious points of arrest, their prominence making communication between the commanders unnecessary: the 'power of suggestion' would make them the 'obvious' or 'natural' 'place to compromise' (pp. 68–69). The arbitrariness of such *cues* may result in one army occupying more territory, or securing more valuable resources. Schelling proposes that rational players would recognise that, even if these details discriminate against them, the mutual expectation of the resulting agreement would leave them no choice but to submit to it. He uses the term *focal point* to indicate an equilibrium that is selected through such a process of 'meeting of minds' based on *commonly known* cues that *discriminate* between the available equilibria.

This process is best illustrated by pure coordination games, in which all equilibria give the same payoff to all players. Because any equilibrium is as good as any other, 'finding the key, or rather finding *a* key – any key that is mutually recognised as the key becomes *the* key' (p. 57, emphasis in original). Schelling reports some evidence from informal experiments on very simple coordination games that confirms his belief (pp. 54–57). Starting from Mehta et al. (1994), these early results have been widely replicated and extended, establishing that focal points are easily identified in pure coordination games (see also Bardsley et al., 2010).

In Schelling's analysis, pure coordination games are used to illustrate the principles by which *tacit* (i.e., without communication) bargaining problems may be solved. He hypothesises that the 'power of suggestion' of the incidental details extends to games with communication, which he refers to as *explicit* bargaining games. His argument is based on backward induction, and applies to games with a pre-set deadline. If it is commonly known that a certain agreement would be salient in a tacit game, then it can also be expected to be salient in the explicit game, because this 'necessarily gives way, at some definite penultimate moment, to a *tacit* (noncooperative) bargaining game' (p. 271, emphasis in original).

What counts as a cue in the identification of a focal point? Undoubtedly, some agreements may stand out because of properties of the resulting distribution of payoffs. For instance, when sharing a fixed-size pie, the equal split may be particularly salient. If the sum of payoffs differs between agreements, maximising total payoff may stand out. We will call equilibria selected following principles such as equality or efficiency *payoff-based* focal

points. However, there is no reason for bargainers to limit the search for cues to properties of the payoffs. Many of Schelling' incidental details would be treated by game theory as *labelling* of either the players (e.g., 'who are the parties and what they know about each other'), or the strategies (e.g., 'precedent, accidental agreement, …'). We call equilibria selected using such cues *label-based* focal points.

This distinction is crucial for testing hypotheses about focal-point reasoning. Certain payoff configurations may be attractive for reasons other than equilibrium selection – e.g., players' preference for equality or efficiency. It is much less credible that bargainers pick certain labels because they like them more than others. Because changing labels does not alter the game as viewed by standard theory, most experimental tests of focal points have manipulated labelling cues.

For similar reasons of experimental control, experiments have often used one-shot simultaneous games with limited communication. As recognised by Schelling himself, focal points can be based on precedent – e.g., 'entitlements' based on previous agreements (Gächter and Reidl, 2005, 2006; Karagözoğlu and Reidl, 2015) – and so inducing an equilibrium can have persistent effects (e.g., Roth and Schoumaker, 1983; Binmore et al., 1993). But like payoff-based cues, precedents and entitlements may be related to players' normative judgments.

Our discussion will start with selected examples of payoff-based focal points, in recognition of their real-world relevance (see also Pope et al., 2015), with the proviso that their emergence may be driven by reasons beyond the essential goal of equilibrium selection.

2. Bargaining with payoff-based focal points

Because the players of an experimental bargaining game care about their monetary payoffs, their search for cues may start from the payoffs. We consider selected experiments mostly not intended as tests of hypotheses about focal points in which *equal* or *efficient* allocations emerged particularly frequently. 'Focality' may be a reason for this, but not the only one.

2.1 Equality as focal point

In many bargaining games, the players' objective is to reach an agreement on the division of some surplus or resource. In such games, dividing *equally* may be a strong payoff-based cue.

We will offer two paradigmatic cases: the binary lottery games studied by Roth and colleagues, and the ultimatum game.[2]

In a binary lottery game, two players bargain for a fixed time over the division of 100 points, which represent the probability of winning a subject-specific monetary prize. If no agreement is reached within the allotted time, both players get nothing. The Nash (1950) bargaining solution entails a 50:50 split of the points regardless of the values of the monetary prizes. Roth and Malouf (1979) found that the 50:50 split was particularly common when each player only knew her own prize value, but agreements often equalised the players' expected earnings when both prize values were known. Roth et al. (1981) found that, when the monetary values of the prizes were unknown and payoffs were expressed in terms of an intermediate commodity (chips), players tended to equalise expected earnings in chips. Roth and Murnigham (1982) varied whether one or both players knew both prize values (both always knew their own) and found that agreements tended to the 50:50 split of points whenever the player with the low monetary prize did not know both prizes, otherwise tending towards equal expected earnings. These experiments illustrate that notions of equality are often very attractive, but also that when there are conflicting focal points players compromise between them.

In the ultimatum game (Güth et al., 1982), two players – a *proposer* and a *responder* – bargain over the division of a pie (usually a fixed sum of money). The proposer proposes a division that can be either accepted or rejected by the responder. If the responder accepts, each player receives the share specified by the offer, otherwise both players receive nothing. The game has quickly become one of the most widely studied games in behavioural game theory (e.g., Güth and Kocher, 2013). Although any allowable division of the pie is a potential equilibrium of the game, repeated elimination of weakly dominated strategies entails that the proposer should offer the smallest possible amount and the responder should accept it. Contrary to this prediction, most experiments find that offers are much larger than the minimum, often averaging between 40-50% of the pie. Offers below 20% of the pie are often rejected. More importantly for our purposes, the 50:50 split is often the *modal* offer.

It is likely that the focality of the equal split may be contributing to its prevalence in these sets of experimental results. However, focality is only one of the possible factors. Alternative explanations may be that players derive disutility from unequal payoff

[2] Recent studies in which an equal split has been interpreted as a focal point include Herreiner and Puppe (2010), Bolton and Karagözoğlu (2016) and Camerer et al. (2019).

distributions (e.g., Fehr and Schmidt, 1999), that they have reciprocal tendencies and low offers may be seen as unkind (e.g., Rabin, 1993), that they feel guilty if they let others down (e.g., Battigalli and Dufwenberg, 2007), or that sharing equally is a social norm the violation of which causes disutility (Bicchieri, 2006). This illustrates two important points. First, the appeal of equality may derive from these other factors. Second, if one is interested in identifying pure focality, experiments that use payoff-based cues are not ideal.

2.2 Efficiency as focal point

In games with multiple equilibria, outcomes that give players as a whole a higher total payoff may stand out for this payoff-related reason. Pareto-dominant equilibria are often chosen in coordination games without conflicts of interest (e.g., Bacharach, 2006; Isoni et al., 2019). Pareto dominance has also been found to be a strong cue in bargaining games with mild conflict of interest.

To illustrate, consider a two-player game with two Nash equilibria giving positive payoffs to both players; all other payoffs are zero. For efficiency to be a discriminating cue independent of equality, it must be that (i) the sum of the two players' payoffs is higher in one equilibrium and that (ii), in the efficient equilibrium, one of the payoffs is larger (otherwise there would also be an equality cue). Conflict of interest requires that at least one player has a strict preference for one of the equilibria. For example, in a game in which the two equilibria have payoffs [7, 6] and [6, 6], under standard assumptions Player 1 has a strict preference for the first equilibrium and Player 2 is indifferent. In this case, [7, 6] is (weakly) Pareto dominant. Bett et al. (2016) report that, in games of this kind, 60% of players in both roles chose (simultaneously and without communication) the [7, 6] allocation, while the remaining 40% chose the [6, 6] allocation. With strong Pareto dominance – i.e., when the [7, 6] allocation was pitted against various [X, X] allocations with $X < 6$ – the overwhelming majority of players chose the efficient and Pareto-dominant allocation, but these are hardly bargaining games, as the conflict of interest is absent.[3]

The question of whether efficiency is a strong cue when it does not correspond with Pareto dominance is an interesting one. Suppose the two allocations were [9, 5] and [6, 7], resulting in a more obvious conflict of interest. We are not aware of experiments that investigated games of this kind, but it must be noted that in these games the inefficient

[3] Bett et al. (2016) also considered games with three allocations, e.g., [7, 6], [6, 7], [5, 5]. Such games have conflict of interest, but efficiency is not a discriminating cue. Similar games studied by Faillo et al. (2017) kept the sum of the two payoffs in each equilibrium constant, also excluding efficiency as a cue.

equilibrium is less unequal, creating conflicting cues.[4] For the study of focality, this adds to the complications arising from players deriving utility from certain payoff configurations.

3. Bargaining with label-based focal points

We now turn to experiments that investigated bargaining games with labelling cues. Because labels are generally taken to play no role in standard game-theoretic analyses, finding that they systematically affect bargaining provides more compelling evidence for their use as coordination devices.

The investigation of the effects of labelling is one that benefits from reducing the bargaining problem to its most essential elements. The simplest game with multiple equilibria and conflict of interest is a battle-of-the-sexes (BoS) game played simultaneously with no communication. It can be seen as a stripped-down version of the Nash demand game with just two possible splits, one favouring each player, as in the game below:

		Column	
		S_1	S_2
Row	S_1	*L*, *S*	0,0
	S_2	0,0	*S*, *L*

Two players, Row and Column, choose between two strategies, S_1 and S_2. The payoffs from the strategy combination $\{S_1, S_1\}$ are *L* for Row and *S* for Column, indicated as [*L*, *S*], $\{S_2, S_2\}$ resulting in [*S*, *L*], $0 < S < L$. Any other strategy combination yields payoffs [0, 0]. In this representation, Row and Column are placeholders for player labels. S_1 and S_2 are placeholders for strategy labels. We will only consider cases in which the two strategy labels are the same for the two players and all labels are common knowledge. This makes labels potential discriminating cues.

[4] Some of the games studied by López-Pérez et al. (2015) had this structure, but there were also non-trivial differences between the payoffs in the non-equilibrium cells, making risk dominance considerations relevant. Luhan et al. (2017) considered the focality of *total payoff efficiency* in real-time tacit bargaining games in which payoffs were determined by the time spent on different allocations, but their results do not suggest that maximising efficiency was a priority.

If labels are ignored, the two equilibria are perfectly symmetrical, and so are the player roles. Thus, swapping the players, the strategies, or both, results in essentially the same game. The *isomorphism* of the equilibria poses a coordination problem unsolvable through standard best-response reasoning.

Labels can break the symmetry between the equilibria. One of the players may be salient, suggesting their favourite equilibrium is selected – e.g., if the player labels are *King* and *Duke*, knowing that kings are more important than dukes may suggest the equilibrium that favours *King*. Or one of the labels may be salient – e.g., if the strategies are *Heads* and *Tails*, players may recognise that 'heads and tails' occurs in speech more often than 'tails and head' and choose *Heads*.

In the reminder of this section, we will discuss research on the effects of player or strategy labels in experimental bargaining games.

3.1 Player labels as focal points

Early evidence for the use of player labels in BoS games can be found Cooper et al.'s (1993) study of forward induction in a BoS game with $S = 200$ points and $L = 600$, in which Row had an outside option that would result in a payoff $O = 300$ to both players without the BoS game being played. As long as $O > S$, forward induction predicts that the players will coordinate on Row's favourite equilibrium.

Cooper et al. compared this game (BoS-300) with the same game without outside option (BoS), and the normal-form version of BoS-300 (BoS-300-NF), in which the predicted outcome after iterated elimination of dominated strategies was the same as that of forward induction in BoS-300. Players could not coordinate in BoS, but were much better in BoS-300. In BoS-300-NF, coordination was not as good, questioning the forward induction argument and suggesting the outside option made Row the *focal* player. This possibility was investigated with three variants of the game: one with a dominated outside option $O = 100$ (BoS-100); one in which Row moved first but her choice was not communicated to Column (BoS-Seq); one in which Row could send a non-binding message to Column about her strategy choice (BoS-1W). Row's favourite equilibrium was played 19% of the cases in BoS, 63% in BoS-100, 62% in BoS-Seq and 96% in BoS-1W, suggesting that a great deal of coordination success could be attributed to the focality of Row.

Holm (2000) investigated whether knowing the gender of one's opponent could provide cues for coordination. In a first experiment, conducted in Sweden, gender was communicated by handing questionnaires with the text 'female student' or 'male student' to

participants of the corresponding gender, and using that information prior to the elicitation of choices in the BoS game. The headline result is that both female and male participants played more aggressively (choosing their favourite equilibrium) when matched with females, improving coordination success relative to the mixed-strategy equilibrium. A second study in which gender was communicated using fictitious Swedish names replicated this result. A third study with a US sample found the effect for females but not for males. Holm interpreted his results as an instance of 'gender-based' focal points. However, while this story works for mixed-gender games, in the case of females facing females going for the better equilibrium induces discoordination. Moreover, given that the experiment used the participants' real gender, their behaviour may reflect their attitudes to gender. The identification of the pure labelling effect of gender requires common knowledge that the gender information provided in the experiment is unrelated to the real gender of the players.

3.2 Strategy labels as focal points

One of the first investigations of label-based focal points in bargaining games was reported by Mehta et al. (1992). They studied a version of the Nash demand game in which two players decided how to divide £10. Each player was handed four random cards from a set containing four aces and four twos. The four aces together were worth £10. Any other combination was worthless. Unless a player had the four aces, the two players could bargain about how to divide the £10 deriving from pooling their cards. There was an agreement if the sum of the two players' demands did not exceed £10. So, the number of aces contributed by each player provided a cue for the division of the surplus, a 3:1 split suggesting £7.50-£2:50, a 2:2 split £5-£5 and a 1:3 split £2.50-£7:50. The equal split was expected to be the most salient (see Section 2.1), but its use was systematically affected by the distribution of aces, with 48% of players owning one ace, 95% of players owning two and 52% of players owning three demanding £5. Players owning one ace demanded £2.50 in 33% of the cases, while those owning three demanded £7.50 only in 12% of the cases. In the latter case, 24% demanded £6, the closest round number between the two focal solutions of £5 and £7.50. Overall, the distribution of aces clearly influenced how much players demanded, with the player having three aces playing conservatively.

3.2.1 Tacit bargaining games framed as matching games

Crawford et al. (2008) studied a number of BoS games framed as a choice between options describing different payoff distributions for the two players. Coordination success occurred

when players made the same choice, hence the label *matching* games. Crawford et al. (2008) varied the differences between the equilibrium payoffs and whether one of the strategy labels was salient. In their setup, *S* was always equal to \$5, while *L* could be either \$5.10, \$6 or \$10. In the 'unlabelled' treatments, the options were described in text form (e.g., 'P1 receives \$*b* and P2 receives \$*a*'), while in the 'labelled' versions the text options were also called 'X' and 'Y'. The expectation that X would be salient was confirmed using pure coordination games with the same labels and all payoffs equal to \$5, in which X was chosen by 76% of participants, resulting in an expected coordination rate (i.e., the likelihood that two players, chosen at random, coordinate with each other) of 64%. In the BoS games, the salient strategy was chosen by 52%, 48% and 48% of players when *L* was \$5.10, \$6 and \$10 respectively, resulting in expected coordination rates of 38%, 46% and 47%. Interestingly, when *L* was \$5.10, X was chosen *less* often by the players favoured by the labelling cue, whereas when *L* was \$6 or \$10, the majority of both players chose the strategy with a higher own payoff. But both patterns induced discoordination.

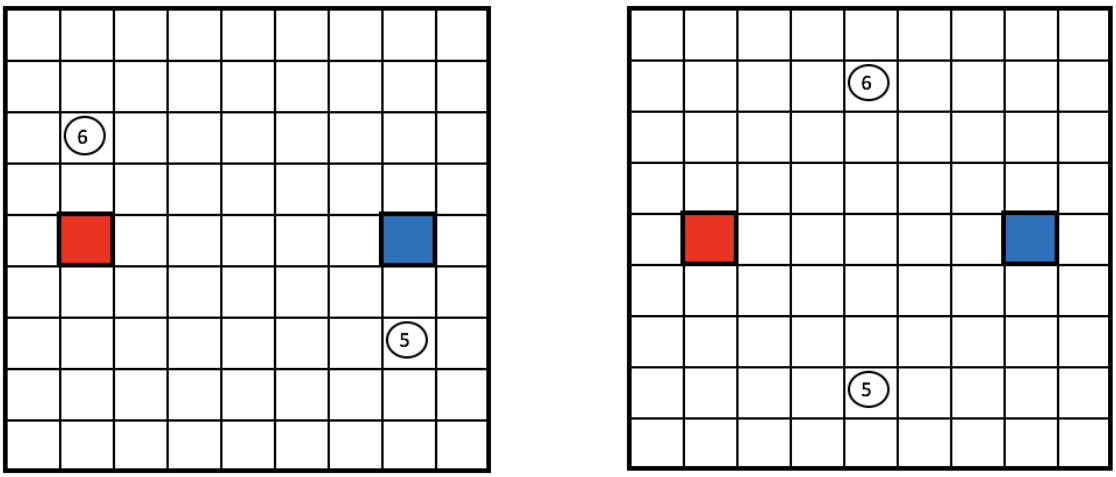
These results were broadly replicated by Parravano and Poulsen (2015), who varied the stake size by adding a *small* stake condition (all payoffs divided by ten), and a *large* stake condition (all payoffs tripled). Their hypothesis that larger stakes would encourage focal-point reasoning was not supported for BoS games (although larger stakes increased salient choices in pure coordination games).

Crawford et al. (2008) also reported a series of three-allocation games, which can be seen as extensions of BoS games that add a third equilibrium to the two isomorphic ones ([*L*, *S*] and [*S*, *L*]). The third equilibrium was of the form [*S*, *S*], [*L*, *S*], [*G*, *S*] or [*L*, *M*], with $M < S < L < G$. In some cases, coordination success exceeded the random benchmark because the label-salient option was chosen with high frequencies. But this was particularly the case when the payoffs of the label-salient equilibrium were [*S*, *S*], suggesting that an equality cue might have been at work.

Three-option games with the same broad structure were studied by Jackson and Xing (2014), who used the labels 'Purple', 'Orange' and 'Green' for the three strategies. Coordination on Purple resulted in payoffs [*S*, *L*], Orange in [*L*, *S*], Green in [*M*, *M*], with $S < M < L$. Jackson and Xing manipulated whether or not the two players were from the same country (either US or India) and whether one label was made salient. [*M*, *M*] was the modal choice without label salience. When one of the unequal equilibria was made salient, Indian participants were more likely than Americans to follow the prompt, whereas Americans responded more markedly when the equal equilibrium was made label-salient.

3.2.2 The bargaining table design

Schelling's hypotheses about the role of strategy labels in bargaining were addressed directly by Isoni et al. (2013), who developed the new *bargaining table* design to construct an environment that could be seen as a bargaining situation by both experimenters and participants. Two of their games are shown in Figure 1.



(a) A *closeness* BoS game (b) A *spatially-neutral* BoS game

Figure 1 – Two bargaining table games from Isoni et al. (2013)

The bargaining game is represented by a 9 × 9 grid of squares with a red and a blue 'base' identifying the two players. Valuable objects, represented as 'discs' with a monetary value, are scattered on the table. The players' objective is to 'agree on a division of the discs'. Each player separately records which disc(s) she wants to 'claim', knowing that the other player will be doing the same. It is common knowledge that there is an agreement if, and only if, no disc is claimed by both players. Agreements result in each player earning a payoff equal to the sum of the values of the disc(s) she claimed. If any disc is claimed by both players, there is no agreement, and both receive a payoff of zero.

Claiming no disc is a dominated strategy, as it guarantees a payoff of zero. Then, claiming both discs is dominated. So, after iterated elimination of dominated strategies, both games in Figure 1 reduce to a BoS game.[5] Participants could construe the game in Figure 1(a)

[5] Performing iterated elimination of dominated strategies is not always straightforward for experimental participants (e.g., Cooper et al., 1993). However, in Isoni et al.'s setup, dominated claims occurred extremely rarely.

as a choice between the *close* and the *far* disc. The game in Figure 1(b) could be either a choice between the *top* and the *bottom* disc, or between the disc more to the *left* and the one more to the *right*. That is, the distinction between the two games is only a matter of labelling. The bargaining table design is based on the verifiable premise that the 'closeness' rule applicable to *closeness* games like that in Figure 1(a) is more salient than rules that can be used in *spatially-neutral* games like that in Figure 1(b). Thus, agreements should be more likely in *closeness* games than in *spatially-neutral* games.

Isoni et al. (2013) studied three simple BoS games, with *L*:*S* payoffs 6:5, 8:3 and 10:1. The percentages of left (respectively, right) players claiming the disc closer to their base for different *L*:*S* combinations were 76% (78%) for 6:5, 66% (62%) for 8:3, and 66% (52%), resulting in standardised efficiency (i.e., the ratio of the sum of the players' expected payoffs and the total surplus available) of 64.8%, 51.4% and 36.9%. In the former two cases, these were significant improvements over the corresponding spatially-neutral efficiency levels of 48.6% and 45.7%, but not in the latter (35.0%). Unlike matching games, labelling exerted an important influence on BoS games framed as bargaining problems with claims, but the extent of the conflict of interest hampered the effect of closeness: in the corresponding pure coordination game standardised efficiency was 46.7% in the spatially-neutral and 84.4% in the closeness version.

Isoni et al. (2013) also considered games with four and eight discs. These were either *equality-compatible* games, in which the *least unequal efficient* (LUE) division was 5:5, or *equality-incompatible* games, in which the LUE was 6:5. In the latter, the principles of closeness and *accession* (treating groups of discs as indivisible units when two or more discs were close to each other to form coherent groups – see Mehta et al., 1994) always suggested an LUE split. Although with more discs the number of strategies increases exponentially, the closeness and accession rules do not necessarily become less obvious. Correspondingly, with more discs, efficiency and agreement rates were substantially higher in closeness and accession games than in their spatially-neutral counterparts. With more discs, participants could play more conservatively by claiming less often the discs nearer the middle column.

3.2.3 Other applications of the bargaining table design

The bargaining table design captures important features of real-world bargaining: bargainers make claims on valuable resources; ostensibly payoff-irrelevant 'relational' cues (closeness) assign parts of the surplus to individual players; part of the surplus can be left unclaimed. These features make the design particularly well-suited to test Schelling's hypotheses about

the role of payoff-irrelevant cues in bargaining. A central question has been why such cues are weakened by conflicts of interest.

Isoni et al. (2019) noted that, by establishing common knowledge that agreements favour one player, most experimental designs overemphasise conflicts of interest relative to real-world scenarios in which payoffs are imperfectly known. They extended the bargaining table design to allow each disc to have different values for different players, using two-disc games in which, for each player, one of the discs was worth *L* and the other *S*. Depending on the disc values, with $L > S$ the game could be either a BoS or a Hi-Lo game. There were three conditions. *Full information*: participants knew all disc values, and so knew whether the game was BoS or Hi-Lo. O*wn information*: each player knew *L* and *S* but only her own disc values. *No information*: neither player knew which disc was worth *L* (*S*) to either player (but knew *L* and *S*). The results do not support the hypothesis that focal-point reasoning is more likely when conflicts of interest are merely potential. In the partial information games, the close disc was claimed significantly less often than in the corresponding BoS games, and in the no information game, the close disc was claimed significantly less often than in an equivalent pure coordination game. Uncertainty about payoffs may have additional hindering effects on focal-point reasoning.

Isoni et al. (2020) addressed the difference between BoS and pure coordination games noting that they differ in two important respects: conflict of interest and payoff inequality. Coordinating in BoS requires one of the players to accept her less preferred equilibrium (conflict of interest), but it also means that one player receives a lower material payoff than the other (payoff inequality). To disentangle the effects of these two factors, Isoni et al. (2020) devised the new *pizza night* game, which features payoff inequality but not conflict of interest. The pizza night game is a coordination game with two equilibria – both resulting in the payoffs [*L*, *S*] – in which it is common knowledge that one player is favoured by both equilibria.[6] Though not as likely as in pure coordination games, agreements were more likely in pizza night games than in BoS games, even with extreme payoff inequality (i.e., $L = 17$ and $S = 4$). So, while both payoff inequality and conflict of interest matter for focal-point reasoning, conflict of interest is the main disrupting factor.

[6] The name 'pizza night game' derives from the cover story used by Isoni et al. (2020). This is a variant of the BoS story, in which husband and wife must meet for dinner downtown but cannot communicate. They prefer eating together to eating on their own. In the BoS version, the spouses choose between pizza and curry, the wife preferring pizza, the husband curry. In the pizza night game, the choice is between two pizza places (the spouses are meeting on 'pizza night'), so it is common knowledge that, wherever they meet, she will enjoy the meal more than he does.

Sitzia and Zheng (2019) adopted the bargaining table design to investigate whether, when the players of a BoS game are groups of two people, focal points can be identified more easily. If one thinks about the focal solution as some 'truth' needing to be 'discovered', it seems intuitive to expect that two people may have better chances of finding the solution than individuals. Sitzia and Zheng (2019) used some of Isoni et al.'s (2013) games (and some of Crawford et al.'s (2008) X-Y games) played by individuals or groups. Groups chose the focal strategy more often than individuals, especially for smaller payoff differences. This may be relevant in the context of Schelling's analysis, as many of his real-world examples involve decisions made by teams or committees.

So far, we have focused on 'tacit' bargaining games. However, Schelling suggested that the same cues would work in 'explicit' bargaining. This hypothesis was tested by Isoni et al. (2014), who extended the bargaining table design by allowing the two players to bargain over a period of 90 seconds in which both player's claims were shown on each player's screen, effectively allowing players to make proposals and counter-proposals. The real-time nature of the game changed the expected differences between closeness and spatially-neutral games, and the relationship between payoff-based and label-based cues. Isoni et al. (2014) studied closeness games in which closeness was pitted against a variety of payoff-relevant principles. Their main findings are summarised by the title of their paper: efficiency, equality and labelling. Players were mostly concerned with efficiency, and rarely left discs unclaimed. Subject to efficiency being maximised, they tried to minimise inequality. When efficient and least unequal agreements could be achieved in multiple ways, labelling cues influenced who got the larger share. Contrary to Schelling's hypothesis, labelling cues may have only second-order effects on the outcome of explicit bargaining.

4. Discussion and conclusion

The organising principle of our selected survey has been the distinction between payoff-based and label-based focal points, because we see the essence of Schelling's intuition to be the players' recognition that conflicts of interest should be set aside in the search for a discriminating cue. In this respect, label-based focal points are better suited to identify pure focal-point reasoning. But because of the power of suggestion, even payoff-irrelevant cues may derive their salience from associations with real-world concepts of value. Many conventions involve strategies that are in some sense focal (Sugden, 1986) and may be applied by extension to other situations thanks to the power of suggestion. It is unclear whether focality is the source of conventions or the reverse.

Focal points often appear in the discussion of bargaining as a result of the empirical prevalence of equal splits. Besides the credible possibility that people have a preference for equality, there are bargaining protocols in which equality emerges as a result of rational behaviour (e.g., the 'smoothed Nash demand game' discussed by Binmore, 1987). Isolating the role of focality in the prominence of equal splits is a challenging task for future research. So is the task of identifying the focal attraction of efficiency separately from equality.

The evidence points to a differential effectiveness of player and strategy labels. Beyond the ambiguities in the use of real, as opposed to arbitrary, gender labels to identify the players, player labels seem to be more conducive to focal-point reasoning than strategy labels, whose effects appear to be more fragile in Battle-of-the-Sexes games. The pizza night game suggests this is mostly caused by conflicts of interest. It is an interesting open question whether player labels may solve conflicts of interest more easily because they directly identify who gets more, whereas labelling cues do that indirectly through a strategy that favours one player.

Given that most existing research has focused on illustrating the power of focal points, there is limited evidence about conflicting cues. In binary lottery experiments, whether equality is applied to chips or expected earnings depends on the knowledge of the disadvantaged player (Roth and Murnigham, 1982). In Mehta et al.'s (1992) game, participants sometimes compromise between the equal and the 3:1 splits. In the bargaining table design, payoff cues take precedence over labelling (Isoni et al., 2014), but labelling can interfere with payoffs when the cues are incongruent (Isoni et al., 2019). An intriguing topic for future research is the possibility that sophisticated players may try to strategically and self-servingly (e.g., Babcock and Loewenstein, 1997) steer bargaining towards cues that favour them.

Given our primary focus on experimental evidence, we have deliberately avoided the debate surrounding the theoretical explanations of how and when focal points emerge. The two leading explanations – *team reasoning* (e.g., Sugden, 1993; Bacharach, 2006) and *level-k* reasoning (e.g., Crawford et al., 2008) – do not appear to be mutually exclusive (Faillo et al., 2017), with people liable to use different reasoning in different games (Isoni et al., 2019). But which of the two modes of reasoning is the 'default' is unclear, with some suggesting that 'focality is intuitive' (Poulsen and Sonntag, 2019) and others reaching the opposite conclusion (van Elten and Penczynsky, 2019). Explaining when and how focal-point reasoning works, and understanding its psychological underpinnings remain the greatest challenges lying ahead of us.

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