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ORIGINAL PAPER

An experiment in the role of identity in fostering coordination

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Abstract
Coordination problems arise in many economic, political, and social situations. Many times, authorities and institutions are created to solve these coordination problems. However, the success of these institutions depends on whether people are willing to follow their prescriptions. Using a behavioral experiment on Amazon Mechanical Turk we analyze whether an authority can aid in solving hawk-dove coordination games and whether its success depends on a shared identity by the players. The authority is represented in our experiment by a randomizing device that recommends actions to players to implement a socially efficient correlated equilibrium. In the game, players are better off following the recommendations if they believe others will do as well. We investigate whether people are more likely to follow recommendations when they have a shared identity. We find that the device's success is not driven by group membership, but rather by the content of its recommendations.

Keywords Coordination · Institutions · Identity · Correlated equilibrium · Experiment

JEL Classification C72 · D91

1 Introduction

The role of both formal and informal institutions in promoting (or hindering) development has been widely studied (e.g., Acemoglu and Robinson, 2001; North, 1990; Olson, 1993). This literature has focused on whether certain institutions are growth

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promoting and can sustain cooperation. However, one of the reasons for the existence of governments (Agranov & Schotter, 2013), laws (Almendares & Landa, 2007; Hadfield & Weingast, 2012; McAdams & Nadler, 2005; Postema, 1982), and social norms (Bicchieri, 2006; Cartwright & Wooders, 2014; Gintis, 2010; Morsky & Akçay, 2019) is to solve coordination problems. Coordination problems such as those posed by games such as battle of the sexes, stag hunt, and hawk-dove games are common to human economic, political, and social interaction. The decision whether to run on a bank, show up at a protest, or even what holidays to celebrate can be thought of as coordination problems. When are leaders and institutions successful in solving such coordination problems? This paper adds to this literature by investigating under which circumstances certain institutions can allow people to coordinate their actions in a way that is "socially" beneficial. In particular, we investigate whether the identity of people embedded within these institutions affects their ultimate success in achieving coordination.

The existence of a multiplicity of equilibria in coordination games has long interested game theorists (e.g., Aumann, 1974; Schelling, 1960).[1] Not having unique equilibrium predictions, it is difficult for both players and analysts to predict how the game will develop ex-ante. This is particularly true of games in which there is no payoff dominance among the equilibria and in which traditional equilibrium refinements cannot help reduce the problem (Crawford, 1998). Nonetheless, as noted by Wilson and Rhodes (1997), people usually see coordination problems as simple to solve given that actors have a common interest. Although players may not agree about which is the optimal solution, they do agree that a solution is needed. What players believe about other players' likely action then becomes crucial to obtain a solution (e.g., Cooper et al., 1990, 1993; Cason & Sharma, 2007).[2]

Solving coordination problems implies coming up with a way in which an equilibrium is selected. A rich literature, mainly focusing on whether certain equilibria can be made focal (Schelling, 1960), has shown that coordination problems can be solved in various ways but not in others. We present a brief description of classic and current research on the topic, with an exhaustive review of this literature being beyond the scope of this paper. One way in which the literature has sought to address coordination failures is through communication. Cooper et al. (1989, 1992), Moreno and Wooders (1998), and Charness (2000) show that cheap-talk, payoff irrelevant preplay communication, may, depending on the game and the number of messages sent, allow players to coordinate over a particular equilibrium.[3] Particularly relevant to our study, Morton et al. (2020) find that communication even helps solve coordination problems among players with different ethnically salient identities.

[1] The advent of the global games literature in both economics (e.g., Angeletos et al., 2007; Carlsson & Van Damme, 1993; Morris & Shin, 1998) and political science, (e.g., Aldama et al., 2019; Casper & Tyson, 2014; Malis & Smith, 2019) has been developed partially to come up with unique equilibrium predictions in coordination games.

[2] Importantly, however, some institutions could not only influence players' beliefs about others' actions but also their preferences over them.

[3] For a review of the experimental literature on cheap-talk communication see Crawford (1998).

In a different strand of the literature, both Dickson (2010) and Wilson and Rhodes (1997) find that leaders who act first in experiments involving a coordination game may serve as focal points over which other players may coordinate. Finally, some have explored the role of randomizing devices that induce correlated equilibria in solving coordination problems. On one hand, Cason and Sharma (2007) argue that when players are certain about their opponent's action, they increase the rate at which they coordinate. This allows them to reach average payoffs that are outside of the convex hull of Nash equilibria when being recommended how to play; i.e., the correlated equilibrium renders payoffs that enhance social welfare with respect to the Nash equilibria of the game. On another, Duffy and Feltovich (2010) show that it is easier to experimentally implement correlated equilibria precisely if they are the payoff enhancing relative to the available Nash equilibria.

We study a particular kind of this class of games, a hawk-dove or chicken game and analyze whether a shared identity with other players facilitates the implementation of a correlated equilibrium. Both theoretical and an experimental literature argue that social identity markers may affect people's decisions in strategic settings (Akerlof & Kranton, 2000; Balliet et al., 2014; Bernhard et al., 2006; Chen & Li, 2009; Chen & Chen, 2011; Dickson & Scheve, 2006; Duell & Valasek, 2019; Morton et al., 2020; Shayo, 2009). Sharing an identity with another player may facilitate solving a coordination problem because it may increase the certainty with which someone believes other people will take specific actions (Bar-Tal, 2000). Sharing an identity may also induce altruistic preferences which can help coordinate on more efficient equilibria (Chen & Chen, 2011).[4] In our context, it might be the case that a shared identity increases the confidence with which people believe that someone will follow recommendations from a randomizing device. This might be caused by trusting in-group members more than out-group members, a common finding in the literature (e.g., Tanis & Postmes, 2005). Thus, we analyze whether sharing an identity with another player has the capacity to increase the probability of the successful implementation of a correlated equilibrium that renders payoffs outside of the convex hull of Nash equilibria of the game (Aumann, 1974; Cason & Sharma, 2007).

We take a randomizing device that seeks to induce this kind of correlated equilibrium as a metaphor for a social norm or formal institution that seeks to induce socially desirable outcomes. This is consistent with the literature that argues that one of the reasons for formal institutions, and social norms to exist is to induce coordination by serving as a "choreographer" or correlating device (e.g., Cartwright & Wooders, 2014; Gintis, 2010; McAdams & Nadler, 2005; Morsky & Akçay, 2019). According to this literature, one way to understand the emergence of social norms is that they provide instructions for behavior even if they do not reveal with certainty how others will behave. In our experiment, the randomizing device suggests players to take an action from which the players can infer with some uncertainty what suggestion it gave to the other player. Perhaps, then, our framework is best suited to understand cases in which there are *partial norms* (d'Adda et al., 2020). In these

[4] In contrast to our study, Chen and Chen (2011) focus on equilibrium selection, rather than on the implementation of a correlated equilibrium.

cases, though players might know there is a norm, they might not be exactly certain of its prescriptions for every player involved. For example, in a shared meal, someone might not know whether it is socially acceptable for them to behave *hawkishly* and take the last piece of food or whether they should leave it for their partner. However, a shared background or identity with one's fellow diner may increase the likelihood that one knows how one is supposed to behave in such a situation.

We conducted this study as a behavioral experiment on Amazon Mechanical Turk (MTurk). We were interested in whether participants follow the recommendations of a randomizing device that suggests play in a hawk-dove game in each of the four treatments. Using the minimal group paradigm (Billig & Tajfel, 1973; Chen & Li, 2009), in our experiment, participants were randomly assigned to either play with an in-group member, play with an out-group member, not have information about the other player, or play against a computer that always follow recommendations.

We found that none of the treatments affect participants' willingness to follow recommendations. Participants are equally likely to follow recommendations across all of our four conditions. Playing with a member of the same (a different) group does not make people more (less) likely to follow the device's recommendations than if they do not know the other players' group membership. Even more surprisingly, we find that playing with a computer that always follows the randomizing device's recommendations did not substantially alter participants' decision to follow recommendations themselves. We find that this is not driven by heterogeneous effects caused by differential behavior under different kinds of recommendations in the game. However, we find that, across treatments, participants were about 20% points more willing to follow recommendations to behave *dovishly* than *hawkishly*. We offer some explanations for why this might be the case. This paper contributes, thus, to a better understanding of the drivers of people's behavior when receiving recommendations. By doing so, we contribute to the literature that focuses on the role of identity in decision-making in behavioral games (e.g., Chen & Chen, 2011; Duell & Valasek, 2019; Habyarimana et al., 2007; Landa & Duell, 2015; Morton, 2020), the experimental literature that analyzes the determinants of compliance with authorities (Agranov & Schotter, 2013; Brandts et al., 2007; Dickson, 2010; Dickson et al., 2015; Grossman & Baldassarri, 2012), and the experimental literature analyzing the implementation of correlated equilibria (Cartwright & Wooders, 2014; Cason & Sharma, 2007; Duffy & Feltovich, 2010; Moreno & Wooders, 1998).

2 The game

Consider the coordination game illustrated in Table 1, adapted from the framework in Aumann (1974) and Cason and Sharma (2007) between two players with Von Neumann Morgernstern preferences. Here, both players may choose between two actions: *Hawk* and *Dove*.

The game depicted in Table 1 has three Nash equilibria: two in pure strategies, $\{Hawk, Dove\}$ and $\{Dove, Hawk\}$, and one in mixed strategies, where both players assign a probability of $\frac{1}{2}$ to both of their actions and that yields expected payoffs

Table 1 Hawk–Dove game

		Column	
		Dove	Hawk
Row	Dove	50, 10	0, 0
	Hawk	40, 40	10, 50

of 25 for each player.[5] Consider now a randomizing device that privately suggests play to each player to implement a correlated equilibrium. Correlated equilibria are a generalization of Nash equilibria, in which players do not have independent beliefs, but rather have correlated beliefs through external signals coming from a known distribution (Arifovic et al., 2019).[6] In particular, in this game, it is possible to implement a correlated equilibrium that is outside of the convex hull of the Nash equilibria. This means that it is payoff enhancing with respect to the available Nash equilibria, as recommended by Duffy and Feltovich (2010). The set of correlated equilibrium payoffs is given by assigning a probability distribution to the four possible strategy profiles of the game above such that, given their signals, players are better off following them. Assign probabilities a, b, c, and d such that $a + b + c + d = 1$ to each $\{Hawk, Dove\}$, $\{Hawk, Hawk\}$, $\{Dove, Dove\}$, and $\{Dove, Hawk\}$, respectively. Then, the set of payoffs that are attainable through a correlated equilibrium, which is depicted in Fig. 1, will be fully described by the following four inequalities:

$$\frac{a}{a+b}50 + \frac{b}{a+b}0 \geq \frac{a}{a+b}40 + \frac{b}{a+b}10 \tag{1}$$

$$\frac{c}{c+d}40 + \frac{d}{c+d}10 \geq \frac{c}{c+d}50 + \frac{d}{c+d}0 \tag{2}$$

$$\frac{a}{a+c}10 + \frac{c}{a+c}40 \geq \frac{a}{a+c}0 + \frac{c}{a+c}50 \tag{3}$$

$$\frac{b}{b+d}0 + \frac{d}{b+d}50 \geq \frac{b}{b+d}10 + \frac{d}{b+d}40 \tag{4}$$

Some simple algebra shows that condition (1) may be reduced to $a \geq b$, (2) to $d \geq c$, (3) to $a \geq c$, and (4) to $d \geq b$.

As depicted in Fig. 1, the (40, 40) payoff from $\{Dove, Dove\}$ is both outside of the convex hull of Nash equilibria and of the set of correlated equilibria, making it impossible to be implemented as an equilibrium of the single-shot game. In particular, the highest possible symmetrical expected payoff, $33\frac{1}{3}$ is given by assigning

[5] It is important to note that in this case, neither payoff dominance nor risk dominance make a prediction of which equilibrium should be selected.

[6] For detailed discussions on correlated equilibria see Aumann (1974) and Fudenberg and Tirole (1991: pp. 53–59).

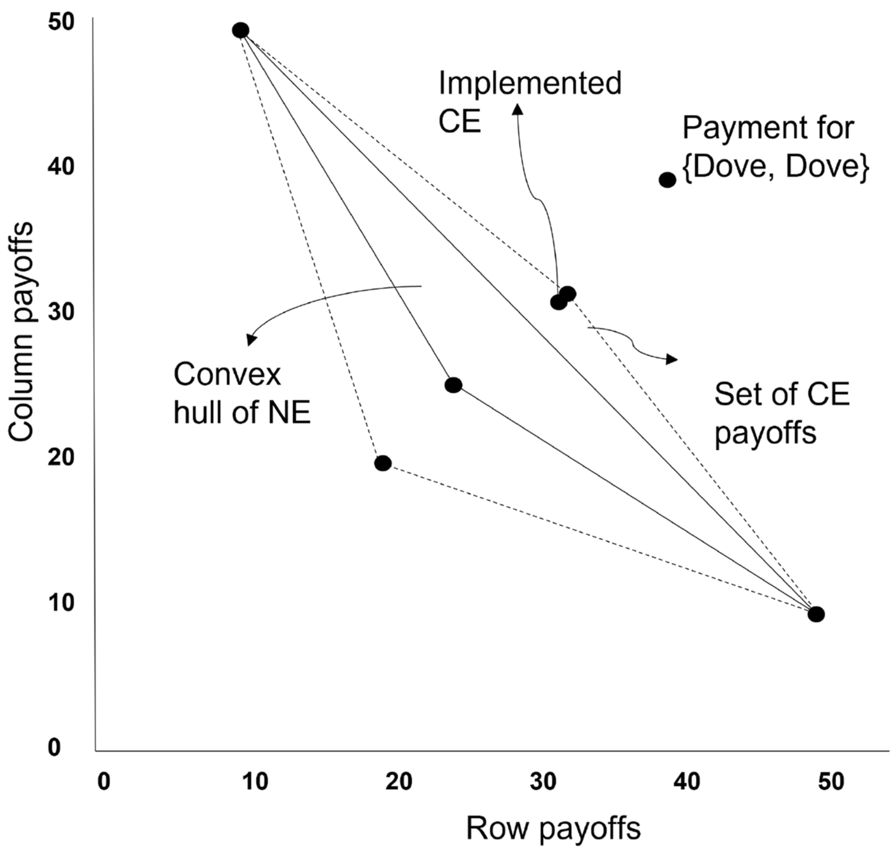

Fig. 1 Equilibrium Payoffs

$a = c = d = \frac{1}{3}$, $b = 0$.[7] Note, however, that since this payoff lies at the boundary of the set of possible correlated equilibrium payoffs, players are indifferent between their actions. For actions to be unique best responses, we choose to implement in the experiment a correlated equilibrium—assuming risk neutrality—such that its payoffs lie strictly in the interior of the set (Cason & Sharma, 2007). Consider the case where $a = d = \frac{7}{20}$ and $c = \frac{3}{10}$. Conditional on the other player following recommendations, the expected payoff of following recommendations is 33 and lies outside of the convex hull of Nash equilibria (the expected payoff for not following recommendations if the other player follows them is 29). This means that the expected total payoff in the game is 66, which is greater than 60, the total payoff in each of the pure strategy Nash equilibria and 50, the expected payoff in the mixed strategy Nash equilibrium. Thus, this proposed correlated equilibrium is socially welfare enhancing. In the Online Appendix we show that for every recommendation, in this game

[7] The lowest possible symmetrical payoff, 20, is given by $a = b = d = \frac{1}{3}$, $c = 0$.

players will maximize their payoffs if they follow recommendations if they believe that the other player will do so as well. Conversely, they will maximize their payoff if they do not follow recommendations if they believe that the other player will not follow the recommendation. In fact, it is straightforward to calculate that if the probability of someone following recommendations, $p > 0.5$ then it is payoff maximizing for players to follow recommendations. Hence, a player seeking to maximize payoffs should follow a decision rule, F, that indicates whether she follows the recommendation, such that $F = 1$ if $p \geq 0.5$ and $F = 0$ otherwise.

Suppose then that a player believes that an in-group member will follow recommendations with some $0 \leq p_{\mathrm{I}} \leq 1$ and an out-group member will follow them with $0 \leq p_{\mathrm{O}} \leq 1$. Then if a player knows that they are matched with an in-group (out-group) member, then $F = 1$ if $p_{\mathrm{I}} \geq 0.5$ ($p_{\mathrm{O}} \geq 0.5$). If the condition is met for in-group members but not for out-group members, then being matched with an in-group member should increase the likelihood of following recommendations vis-à-vis being matched with an out-group member.[8] If a player does not know whether she is matched with an in-group or an out-group member then $p = qp_{\mathrm{I}} + (1 - q)p_{\mathrm{O}}$, where q is the proportion of members of the in-group in the society. Thus, whether a player decides to follow recommendations will depend on her beliefs about p_{I}, p_{O}, and q. So if, for example, $qp \geq 0.5$ and $p_{\mathrm{O}} \approx 0$, then being matched with an in-group member will not increase the rate at which people follow recommendations as compared to the case in which they do not know the other players' identity and being matched with an out-group member will reduce the rate at which people follow recommendations.

3 Experimental design

The experiment was conducted on Amazon Mechanical Turk (MTurk) during the summer of 2020. The main analysis and the power analysis (which is included in the Online Appendix) were pre-registered on OSF. People living in the United States, that had completed more than 100 Human Intelligence Tasks (HITs) and had an approval rate of 95% or more were eligible to participate in the experiment.[9] We recruited 838 unique participants to participate in the experiment. The mean age was 36.8 (s.d. 10.8) and 39.4% of the participants identified as female.[10] The experiment lasted on average about 10 min and participants were paid on average $2.29, including both a completion fee of $1.25 and a bonus payment depending on the results of the game. This payment is above usual pay in MTurk (Hara et al., 2018).

The experiment was programmed in Qualtrics. After providing consent and answering basic demographic questions, participants were given the instructions for

[8] In fact, in equilibrium only probabilities that $p = 0$ or $p = 1$ can be sustained.

[9] This was done to ensure the quality of the responses as suggested in Kennedy et al. (2020).

[10] A full set of demographic characteristics divided by treatment condition is available in the Online Appendix.

the game.[11] To ensure the quality of the responses, throughout the questionnaire, and importantly, before being told their experimental condition, participants had to complete a reCAPTCHA and an attention check.[12] Participants that failed the attention check were terminated. Moreover, to ensure understanding of the instructions, participants had to answer correctly a quiz revealing their comprehension of the game. The instructions clearly stated that it was beneficial for players to follow recommendations if they believed that the player they were matched with would follow the recommendation and that it was beneficial for them to not follow the recommendation if they believed that the other player would not. This was done to ensure participants were primed to think about whether they believed that whoever they were paired with would follow the recommendation.

After the instructions, participants were asked to select their preferred painting between one by Paul Klee and one by Wassily Kandinsky. To affirm their group membership, participants were told they were a *Kleeian*, a member of the Klee group, or a *Kandinskian*, a member of the Kandinsky group and were then shown three more paintings by their preferred painter. Afterwards, participants were told their experimental condition. This implied that they were told they would be matched with someone who liked the same painter that they did (in-group), with someone who liked a different painter (out-group), with someone else without providing information about their group membership (control), or with a computer that would always follow recommendations (computer). The computer condition was implemented to see to what extent the knowledge that the other player would follow a recommendation affects participants' behavior.

Finally, people were told their recommendation of play and asked to choose a single-shot action in a game with material payoffs as those displayed in Table 1.[13] In the experiment, participants were told they were playing with points that were converted to USD at a rate of 30 points per dollar (which were rounded up to the nearest cent). For simplicity, and for players to face the exact same environment, participants were always presented with the game as being a Row player. It must be noted that in the cases in which people interacted with other people matching was done ex-post.[14] Within their treatment condition, people who were recommended to play *Hawk* were matched with the response of someone that had received a *Dove* recommendation with probability 1. People who received a recommendation to play *Dove* were matched with the answer of someone who had been recommended *Dove*

[11] Screenshots of the instructions are included in the Online Appendix.

[12] For a discussion on how this helps ensure quality, see Hauser et al. (2019).

[13] Equal payoffs are presented in the off-diagonal in an effort to try to make them less immediately salient to participants and have them consider the full payoff table.

[14] Though this was not known by participants ex-ante, given our ex-post matching procedure, in the end, the actions of five participants had to be matched with a player for a second time, though they were only paid for the first match.

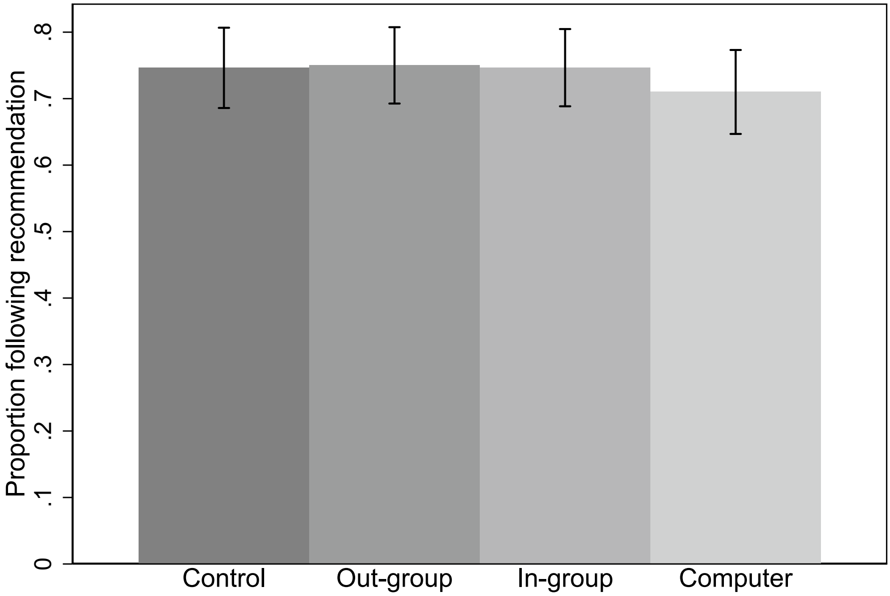

Fig. 2 Decision to follow recommendation by treatment

$\frac{30}{65}$ of the time and with someone recommended *Hawk* with the remaining probability. This circumvented having to have people play the game at the same time on MTurk.[15]

4 Results

The theory predicts that if participants have a utility function that is linearly increasing in the monetary payoff, if they believe that whoever they are paired with is more likely than not to follow recommendations ($p > 0.5$), then they should follow recommendations.[16] This implies that at least in the treatment in which participants play with a computer who will for sure follow instructions, participants should always follow recommendations. As Fig. 2 shows, this is not borne out in the data. Moreover, the experimental results reveal that playing with a computer, an in-group member, an out-group member, or with someone about whom the participant had no information (control) made no difference on the decision whether to follow or not the randomizing device's recommendation. Across treatments, participants followed the device's recommendation about three-fourths of the time. This can also be seen

[15] In a pilot, we used Smartriqs (Molnar, 2019) to enable people to play at the same time but wait times on MTurk made the ex-post matching a more efficient mechanism.

[16] Of course, the more risk averse participants are, the more likely they would be to choose Dove, even when recommended Hawk, unless they are fairly certain that the other player will choose Dove.

Table 2 Effect of treatment on following recommendations

	(1) Main results	(2) Heterogeneous results by recommendation
Out-group	0.004 (0.042)	− 0.003 (0.079)
In-group	0.000 (0.043)	− 0.027 (0.080)
Computer	− 0.036 (0.045)	− 0.099 (0.083)
Dove		0.217*** (0.067)
Out-group × Dove		0.020 (0.092)
In-group × Dove		0.055 (0.092)
Computer × Dove		0.097 (0.096)
Constant	0.746*** (0.031)	0.606*** (0.058)
N	838	838

Robust standard errors in parentheses. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$. Column (1) pools results across recommendations, while Column (2) separates recommendation types, with Hawk recommendations in the Control condition being the baseline

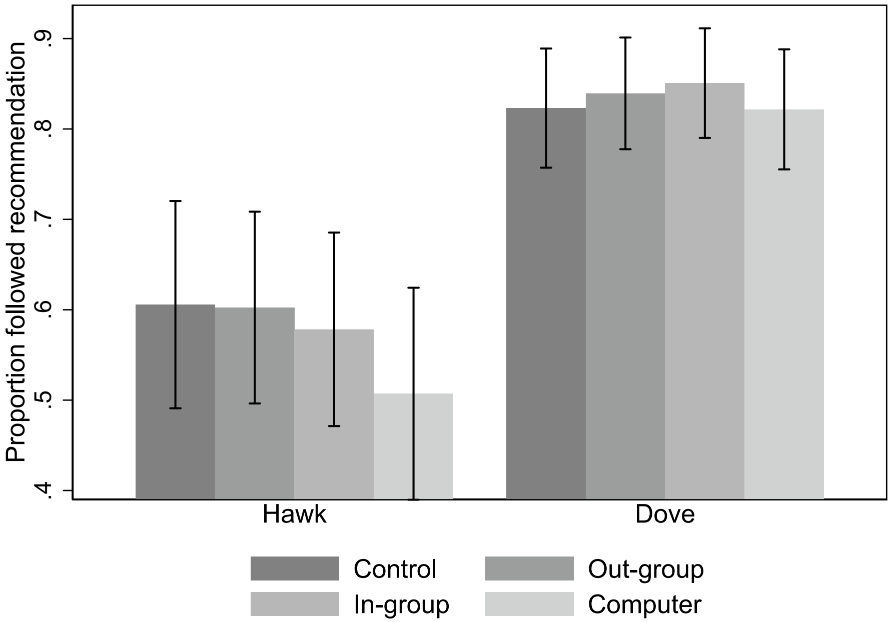

Fig. 3 Decision to follow recommendation by treatment

graphically in Fig. 2, which depicts the proportion of times people follow recommendations in each treatment with 95% confidence intervals. The results of a linear probability model in which the outcome variable is the decision whether to follow the recommendation is the outcome (1 if yes, 0 if no) and the independent variables are dummies for each treatment are presented in Column 1 of Table 2.

Given these results, we investigate whether the null effect is masking heterogeneity in people's response to recommendations depending on whether the recommendation was *Hawk* or *Dove*. In particular, one concern might be that people are less willing to behave *Hawkishly* with members of their in-group, but more willing to behave *Dovishly* with them. In Column 2 of Table 2 we show the results of a linear probability model in which the decision to follow recommendations is the outcome variable and the independent variables include not only treatment conditions but the content of the recommendation (0 if *Hawk*, 1 if *Dove*) interacted with the treatment condition. Both these results and Fig. 3 show that people do not respond differently to the different recommendations in different treatment conditions. If anything, they are a bit less likely to follow *Hawk* recommendations in the Computer treatment, precisely when they would be expected to follow recommendations at a higher rate. The reason for this is that they know with certainty not only that the other player's recommendation will be *Dove* in this scenario, but that their action will follow this recommendation. However, we do find that, across all four treatments, participants respond differently to the recommendations. Generally, people are about 20% points more likely to follow recommendations for *Dove* than they are for *Hawk*. We make sense of our results in the following section.

5 Discussion

In what follows we discuss the potential mechanisms that may be driving our results, assuage some concerns regarding them, and discuss some of the limitations of the design. In particular we consider whether participants understood the experiment, paid attention, were driven by altruistic concerns, were driven by risk aversion, and whether our design suffered from ceiling effects.

One may be concerned that participants were not paying attention and were playing the game at random. The fact that we recruited experienced MTurk workers with above 95% task approval rate and that they passed an attention check assuages this concern. Moreover, previous research has successfully replicated experimental results using an MTurk sample (Coppock & McClellan, 2019), assuaging concerns that this is a very particular sample that may randomly respond to experimental treatments. Finally, if participants were playing the game truly at random, we would expect them to play half the time each *Hawk* and *Dove*. However, they play *Dove* about 68% of the time, and *Hawk* the remaining 32.

However, a remaining concern may be that participants did not understand the experiment. It is important to note that the instructions were presented clearly and that participants were given enough time to read through them. For each page of the instructions, participants were not allowed to advance until an amount of time had elapsed, reducing the probability that participants would not read the instructions. Moreover, to proceed with the experiment, participants had to answer a quiz regarding the content of the instructions for the game. Though these facts may assuage some concerns regarding whether participants understood the game, we cannot fully discard the possibility that participants did not understand the nature of the recommendations. Particularly, some participants may not have understood (or did not believe) that when they played against a computer, the computer would always follow recommendations, leading risk-averse participants to always choose *Dove* even if the matching player would play *Dove* for certain. Relatedly, the minimal-group intervention may have failed to prime identity concerns among our participants. However, minimal-group paradigm experiments have previously been successfully implemented on MTurk (e.g., Connor et al., 2020; Kranton & Sanders, 2017), which might reduce concerns (though does not discard altogether) that this type of design does not work to change behavior in online samples.

It is also possible that people who received a recommendation to play *Hawk* would not want to follow their recommendation even if they believed that the player they are matched with would follow their recommendation. This would lead both players to choose *Dove* and obtain 40 points. In particular, this may occur when people are inequity averse. In this case, players might prefer to end up with 40 points if their counterpart also ends up with 40 points instead of ending up with 50 points and their counterparts ending up with 10. Inequity aversion may certainly be driving our results when participants are paired with another human. However, this mechanism would only make sense as an explanation when another person receives the payments unless people have altruistic preferences towards a computer. Thus, unless people are also averse to inequality when facing a computer, or did not understand that a human would not receive the payoff, this mechanism is unlikely to be driving our results when participants are paired with a computer.

Another possibility is that some participants may anticipate that some other participants may tremble and choose a wrong action with some probability. If they are risk neutral, unless they believe other players will not follow the recommendation with probability $p < 0.5$, the theory would predict that they should still follow recommendations. However, if they are sufficiently risk averse, they may choose to play a minimax strategy. By doing so they will avoid a $\{Hawk, Hawk\}$ result in any possible scenario. Hence, some participants that receive a recommendation to play *Hawk* might decide to play *Dove*, even if they believe that the other player is more likely to follow their own recommendation of playing *Dove*. However, unless players believe that the computer can also tremble, which we acknowledge might have occurred if they did not understand the nature of the recommendations, then this mechanism cannot explain that the results hold across all four treatments.

In any case, the fact that not everyone follows recommendations of play when facing a computer (particularly when suggested to play *Hawk*) shows that for some reason (including, possibly, inattention or lack of understanding of the nature of the recommendation) some participants do not behave as monetary payoff maximizers. This suggests that, given our particular parameters, our design is likely subject to ceiling effects. Ultimately, 74% of our participants followed recommendations. In our design, participants are better off financially if they follow the recommendation if they believe that the other player will follow their recommendation with a probability of at least 0.5, which is a relatively low threshold. Hence, it might not be possible to increase the rate at which people follow recommendations in this particular design. Interestingly, however, the lack of a negative effect on the rate of following recommendations when paired with an out-group member cannot be explained by the presence of a ceiling effect. These facts underscore the limitations of a minimal group design to change behavior when trying to implement a correlated equilbrium. Further research might try to vary the payoffs, or the particular correlated equilibrium being implemented.

Of course, given our design, we cannot dispel that if the game were to be played for multiple rounds, people in different treatments might converge to different probabilities for following recommendations. A second line of inquiry that our research opens is whether identities that people are more strongly attached to than being a *Kleeian* or a *Kandinskian* would matter for changing decisions in this game. Minimal-group identity treatments are generally a hard case for evaluating identity concerns, as they represent a very weak form of identity. Future research should try to prime identity concerns with more salient identities and analyze their effect on following the recommendations of a randomizing device. In doing so, researchers should seek settings in which baseline rates of following recommendations are relatively low, reducing the concerns about ceiling effects.

Coordination problems are ubiquitous in everyday life. For instance, we must coordinate to know who should go first when reaching an intersection while driving (Wilson & Rhodes, 1997; Almendares & Landa, 2007). Previous literature on coordination has highlighted the fact that some mechanisms may help avoid coordination failures while others do not. Though a rich literature has focused on the role of identity in fostering altruism and cooperation, less attention has been given to the role of identity in fostering coordination.[17] This paper thus adds to a very rich literature in political economy that studies the impact of formal and informal institutions by adding the role that identity plays in making these institutions successful. Importantly, the success of these institutions may depend on a number of factors. These include whether people trust that other players will abide by the prescriptions provided by an institution. Our research shows that, at least in our particular parametrization of the hawk-dove game, a shared minimal identity does not affect the rate at which people follow the recommendations of an institution created to foster coordination.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s40881-023-00158-y.

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Data availability The replication material for this study is available at https://doi.org/10.3886/E193903V2.

[17] A notable exception being Chen and Chen (2011).

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