Supplementary Material to the Paper "An Experiment in the Role of Identity in Fostering Coordination"

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Online Appendix 1: Calculations showing why following recommendations is a best response to a player following recommendations

When receiving a recommendation of play, subjects should use Bayes rule to update the probability of each possible state. Suppose the Row player (or she) receives a recommendation to play *Hawk*. The updated probability of $\{Hawk, Dove\}$ being the recommendation is $\frac{a}{a+b} = \frac{\frac{7}{20}}{\frac{7}{20}+0} = 1$. Hence she knows with certainty that the Column player (or he) has been recommended to play *Dove*. If Row thinks that Column will follow his recommendation, she is better off following her recommendation because 50 > 40. Now, suppose the Row player receives a recommendation to play *Dove*. Then she knows that Column has received a recommendation to play *Hawk* with probability $\frac{a}{a+c} = \frac{7}{13}$. If she believes Column follows his recommendations, then if she follows her recommendation, she will have an expected payoff of $\frac{310}{13}$ which is greater than her expected payment for deviating, $\frac{300}{13}$.

Suppose Row receives a recommendation to play *Hawk* and believes that Column will not follow his recommendation. Row knows that with probability 1, Column received a recommendation to play *Dove*. Since she believes that Column will play *Hawk*, she is better off by playing *Dove*, thus not following her recommendation, since 10 > 0. Now suppose *Row* receives a recommendation to play *Dove* and believes Column again will not follow his recommendation. She know that with probability $\frac{a}{a+c} = \frac{7}{13}$, Column received a recommendation to play *Hawk* and with the remaining $\frac{6}{13}$, he received a recommendation to play *Dove*. Row then believes that with probability $\frac{7}{13}$, Column will play *Dove* and with probability $\frac{6}{13}$, he will play *Hawk*. Hence, Row's expected payoff from following the recommendation to play *Dove* is $\frac{340}{13}$. Her expected payoff from not following the recommendation is $\frac{350}{13}$. Thus, Row is better off not following her recommendation.

Online Appendix 2: Screenshots of the Experimental Instructions

Before the decision-making part of this experiment begins, you will be shown a pair of paintings by artists **Paul Klee** and **Wassily Kandinsky**. You will be asked to select which painting you prefer. Depending on your preferences, you will be classified as a member of the **"Klee"** group (referred to as a **"Kleeian"**) or a member of the **"Kandinsky"** group (referred to as a **"Kandinskian"**). You will then be shown three more paintings by the artist you selected.

You will know both your own group and the group of the person that you have been paired with.

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Which painting do you prefer? The first is by **Paul Klee**, the second by **Wassily Kandinsky**.

○

○

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By choosing **Klee's** picture, you are now a *Kleeian* part of the **Klee** group. Here are three more paintings by **Klee**. Which is your favorite?

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The rest of the survey is an experiment about strategic decision-making. It is important that you pay attention to the following instructions. You will be quizzed about their content and only allowed to proceed if you answer correctly. You will be paid for your participation in this research project. During this research you will be asked to play a game and be paired with someone else. You will either be paired with another person or with a bot and know which is the case. However, your identity will always remain anonymous.

Your payment will depend partly on your own decisions, partly on the decisions of the person/bot you are paired with, and partly on chance. During the experiment, all decisions will take place with experimental points. There is a conversion rate of 30 experimental points per dollar.

It is important that you work on your own and do not communicate with anyone during the experiment.

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You will now choose between two actions: "Hawk" and "Dove." You will be playing as a Row player. This means that, in the figure below, your actions are displayed in the rows. The top row is the action "Hawk" and the action in bottom row "Dove." Later you will select an action by clicking on it and then pressing the OK button.

You and the person you are paired with will choose independently and simultaneously. Your earnings will be as depicted in the following figure and explained below. In each box the first number represents the earnings for the Row player and the number after the comma, the earnings for the Column player.

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

(a) If you choose Hawk and the other participant Dove, you earn 50 and they earn 10.
(b) If you choose Hawk and the other participant Hawk, you earn 0 and they earn 0.
(c) If you choose Dove and the other participant Dove, you earn 40 and they earn 40.
(d) If you choose Dove and the other participant Hawk, you earn 10 and they earn 50.

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

Quiz: What is your payoff in points if you choose Hawk and the participant you are paired with chooses Dove?

○ 10

○ 40

○ 50

○ 0

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The computer will give you recommendations as to how to play. It will randomly choose between three options to recommend (the first is the recommendation for the Row player and the second for the Column) Hawk-Dove, Dove-Dove, and Dove-Hawk.

This means that the computer would never recommend the worst outcome, Hawk-Hawk in which both players earn 0 points. It recommends Hawk-Dove (where Row earns 50, and Column earns 10) with a 35 percent probability, Dove-Hawk (where Row earns 10 and Column earns 50) with a 35 percent probability and, Dove-Dove (where both earn 40) with a 30 percent probability. See the diagram for the likelihood of each recommendation:

		Column	
		Dove	Hawk
Row	Hawk	35%	0%
	Dove	30%	35%

After deciding which recommendations to give out, the computer will privately inform each party which is his or her recommended action. These recommendations will be displayed in your decision screen.

The participant you are paired with will receive the corresponding action recommendation. It is completely up to you whether or not to follow the recommendations.

Quiz. What percentage of the time will the computer give the recommendation Hawk-Dove?

- ○ 35%
- ○ 50%
- ○ 15%
- ○ 0%

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

If you receive recommendations, **it is convenient for you to follow them if the participant you are paired with also follows recommendations** because you will receive on average more earnings. Here is why:

a) You will never be recommended to choose your worst outcome Hawk-Hawk, in which both players earn 0 points.

b) If you are a Row player and receive a recommendation to choose Hawk, since you know that Hawk-Hawk is never recommended, you know that the Column player has been recommended to play Dove. If she follows her recommendation you will earn 50 if you follow yours (choosing Hawk) and 40 if you do not (choosing Dove).

c) If you are a Row player and receive the recommendation to play Dove, then you know that this happened with a 65 percent chance (which is the sum of the chances of Dove-Dove and Dove-Hawk). So, with a 30/65 chance, the Column player was recommended to choose Dove and with a chance 35/65, she was recommended to choose Hawk. If Column follows recommendations then your expected earnings from the following recommendations are

$$\left(\frac{30}{65} \times 40\right) + \left(\frac{35}{65} \times 10\right) = \frac{310}{13}$$

If you do not follow recommendations and Column does, your expected payoff will be

$$\left(\frac{30}{65} \times 50\right) + \left(\frac{35}{65} \times 0\right) = \frac{300}{13}$$

e) Since outcomes are symmetric, a similar logic applies for Column players.

However, **if you believe your opponent will not follow recommendations, it is convenient for you to not follow them.**

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You will be playing against another human in this experiment. Your opponent will be randomly matched with you and your decision will play against theirs.

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Now both you and the other participant will have to choose between two actions: Dove or Hawk.

Your and other participant's payoff will depend on your and their decisions. Again:

You both get 40 units if you both choose Dove.
You both get 0 units if you both choose Hawk.
If one of you chooses Dove, while the other chooses Hawk, the person who chooses Dove will get 10 units, while the person who chooses Hawk will get 50 units. You will not know the other participant's decision before you submit your own, and the other participant will not know your decision before they submit theirs.

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

Your opponent is a *Kleeian*, member of the **Klee** group, the same group you are in.

The computer recommends you choose Dove

You are the row player. Please make your decision:

Dove	Hawk
○	○

Online Appendix 3: Power calculations

Based on the results in Cason and Sharma (2007) where about 80 percent of people in the control group and almost 100 percent of people playing against computers follow recommendations, we estimate a sample size that would allow us to detect an effect of 10 percent. This leads us to have at least 198 participants per condition. A graph with effects in the following set $\{0.05, 0.1, 0.15\}$ is shown below in figure A1.

Estimated total sample size for a two-sample means test
Satterthwaite's *t* test assuming unequal variances
$H_0: \mu_2 = \mu_1$ versus $H_a: \mu_2 \neq \mu_1$

Experimental-group standard deviation (σ_2)

— .22   — .3
— .36

Parameters: $\alpha = .05$, $1-\beta = .8$, $\mu_1 = .8$, $\sigma_1 = .4$
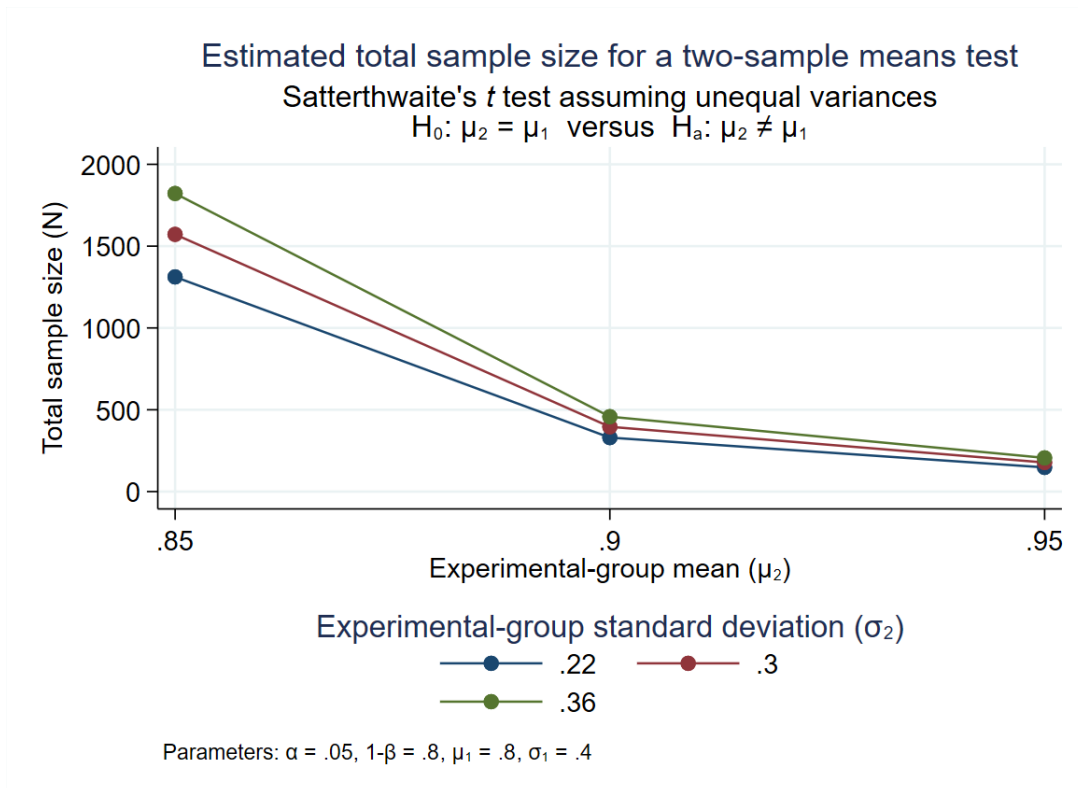
Online Appendix 4: Demographic Characteristics of the Experimental Sample

Table A1. Demographic Characteristics of the Sample by Treatment

	Control	Out-group	In-group	Computer
Age	36.6	36.6	37.3	36.6
(s.d)	(10.6)	(11.2)	(11.0)	(10.4)
% Identify as female	37.3	38.6	42.4	39.0
% Race is only white	73.6	71.6	73.3	71.5
% Ethnicity Hispanic or Latino	22.4	32.3	25.8	35.0
Median Education	Bachelor's	Bachelor's	Bachelor s	Bachelor's
N	201	220	217	200