Supplementary Materials

Instructions

Introduction to AB game

Thank you for your participation in this experiment. Every subject shall be given 600 points as an **initial endowment** only for participation. **Additional points** will be given depending on how you perform in the AB game. In summary, the payoff you will receive from the AB game are as follows:

Your total payoff $=$ **Initial endowment of** 600 **points** $+$ **Your share of the additional points**.

In this AB game, you will go through the following procedures.

1. Group assignment: you are assigned to a group of three people.
2. Group decision: each group is asked to decide between options A and B through majority voting.

Group assignment

You shall be a part of a group which consists of three people. To determine your group, you are asked to pick one chip out of a bag where the chip indicates your group and ID (See example 0.1 below). Based on the information on the chip, experimenters instruct each of you to move to different rooms to conduct experiments.

Example 0.1 *The chip you picked from the bag indicates the following type of information:*

"$A2$-3"

where

- *The "*2*" is your group ID as the* $2nd$ *group of the sequence* A*.*
- *The "*3*" indicates your subject ID number* 3 *within the* $2nd$ *group.*

Group decision

Each member in a group is asked to cast an anonymous vote between options A and B independently of other members in the same group. You must mark your vote in a paper sheet and hand it over to the experimenters. Note that the majority of votes determines the group decision between options A and B. Specifically, the group decision will be "A" (or "B") if 2 or 3 (all) group members vote for option A (or B). By counting the votes of members in each group, experimenters will announce the group decision and the associated "additional points."

After the decision, the "additional points" are given to the group and equally divided among the three members. The division of the additional points by three will be **your share of the "additional points"** from the AB game. Recall that your total payoff in the AB game is the sum of the initial endowment ($= 600$ points) and your share from the group's "additional points" ($= \frac{\text{additional points}}{3}$). This is all about the rules concerning how your total payoff is determined. However, this is not the end of the story.

Table S1: How the decision of the $1st$ group affects the $2nd$ group

the $1st$ group	the $2nd$ group
A: 3600	A: 2700 B: 1800
B: 2700	A: 3600 B: 2700

What your group does would affect other groups

What your group does may affect the additional points for other groups. In this experiment, the $1st$ group starts playing the AB game and is asked to choose between options A and B by majority voting with the following payoff structures:

- By choosing A, the $1st$ group receives 3600 points as the "additional points."
- By choosing B, the $1st$ group receives 2700 points as the "additional points."

Next, the $2nd$ group is asked to choose between options A and B with majority voting, based upon the $1st$ group's decision. Then, the $3rd, 4th, \ldots$ groups ensue sequentially in an ascending order of group IDs. Suppose that the $1st$ group makes the decision between options A and B, and next, the $2nd$ group shall be asked to play the AB game. Then, the subsequent group's payoff structures are affected by the $1st$ group's decision in the following way:

- Suppose that the $1st$ group chooses option A and receives 3600 points. Then, subsequent groups' additional points decline uniformly by 900.
- Suppose that the $1st$ group chooses option B and receives 2700 points. Then, the next group ($= 2nd$ group) can have the same decision environment as the $1st$ group.

This rule could be better explained with numerical examples.

Example 0.2 *Assume as in table S1 that when the* $1st$ *group chooses option* A*, the group receives* 3600 *points. When the* $1st$ *group chooses option* B*, the group receives* 2700 *points.*

- *When the* $1st$ *group chooses option* A*, the additional points the* $2nd$ *group can receive by choosing options* A *and* B *uniformly decline by* 900*, and they are* 2700 *and* 1800*, respectively (Table S1).*
- *When the* $1st$ *group chooses option* B*, the additional points the* $2nd$ *group can receive by choosing options* A *and* B *remain the same, and which are* 3600 *points and* 2700 *points, respectively (Table S1).*

The same rule applies to any pair of other groups as well, say, between the $2nd$ and the $3rd$, the $4th$ and the $5th$ groups, ... etc. To further illustrate the rule of the experiment, another example is provided below.

Table S2: How the decision of the $2nd$ group affects the $3rd$ group

the $2nd$ group	the $3rd$ group
A: 2700	A: 1800 B: 900
B: 1800	A: 2700 B: 1800

Example 0.3 (Between the $2nd$ and the $3rd$ groups) *Suppose the $1st$ group chooses option A. Then, in this case, the $2nd$ group can subsequently receive 2700 points or 1800 points depending on the decision between options A and B (see tables S1 & S2). The same rule as described in table S1 applies to the relation between the $2nd$ and the $3rd$ groups. Table S2 summarizes this example.*

- *When the $2nd$ group chooses option A, the additional points the $3rd$ group can receive by choosing options A and B uniformly decline by 900, and they are 1800 points and 900 points, respectively (Table S2).*
- *When the $2nd$ group chooses option B, the additional points the $3rd$ group can receive by choosing options A and B remain the same, and they are 2700 points and 1800 points, respectively (Table S2).*

Note the possibility that your share of the additional points becomes even negative when you are assigned to be in the $5th, 6th, \ldots$ or the latter groups and when all previous groups choose option A. When the additional points your group receives becomes negative, each member in such a group needs to pay the individual negative share of the additional points from the initial endowment of 600 points.

Summary

You are a part of one group within a sequence consisting of the $1st, 2nd, \ldots$ groups. The group decision between options A and B is made by majority voting, affecting all of other subsequent groups that will play the game. Again, note that the aforementioned rule in the AB game applies to any pair of other groups as well, say, between the $3rd$ and the $4th$ and between the $4th$ and the $5th$ groups, ... etc. Finally, your total payoff in the AB game is the sum of the initial endowment ($= 600$ points) and your share from the group's "additional points" ($= \frac{\text{additional points}}{3}$).

Protocols for AB game

Experimenters let your group know the previous groups' decisions and the associated payoff structures your group faces before voting. If you are part of $2nd, 3rd, 4th \ldots$ groups other than $1st$ group, the payoff structures are affected by how previous groups have made decisions between

options A and B. After voting, your group decision and the associated additional points shall be announced, and your total payoff are determined.

Exchange rate: 1 points you make from the AB game equals to 2 Japanese yen.

Table S3: Summary statistics of independent variables at generational level by treatments.

Variables	Treatments			
	MV (N = 35)	DMV (N = 33)	MVDA (N= 36)	Overall (N = 104)
Prosocial subjects	$31.43\,\%\,(=\frac{33}{105})$	$30.30\,\%\,(=\frac{30}{99})$	$49.07\,\%\,(=\frac{53}{108})$	$37.18\,\%\,(=\frac{116}{312})$
Female subjects	$51.43\,\%\,(=\frac{54}{105})$	$43.43\,\%\,(=\frac{43}{99})$	$44.44\,\%\,(=\frac{48}{108})$	$46.47\,\%\,(=\frac{145}{312})$
# of prosocial members per generation				
Mean (Median)[1]	0.94 (1.00)	0.91 (1.00)	1.47 (1.00)	1.12 (1.00)
SD	0.90	0.80	0.99	0.93
Min	0.00	0.00	0.00	0.00
Max	3.00	3.00	3.00	3.00
Average empathic concern				
Mean (Median)	17.48 (17.33)	18.40 (18.33)	18.39 (18.50)	18.09 (18.17)
SD	2.59	1.92	2.99	2.58
Min	13.00	14.67	11.00	11.00
Max	23.33	22.00	24.67	24.67
Average personal distress				
Mean (Median)	15.92 (16.00)	15.67 (16.00)	15.91 (15.83)	15.84 (16.00)
SD	2.86	2.87	3.09	2.93
Min	10.00	9.33	6.67	6.67
Max	23.00	22.00	20.33	23.00
Average critical thinking disposition				
Mean (Median)	40.03 (40.67)	41.19 (41.00)	41.50 (41.83)	40.91 (41.17)
SD	3.37	3.18	2.91	3.21
Min	31.67	32.33	34.33	31.67
Max	48.33	46.67	47.33	48.33
# of female per generation				
Mean (Median)	1.54 (2.00)	1.30 (1.00)	1.33 (1.00)	1.39 (1.00)
SD	1.11	1.03	0.98	1.04
Min	0.00	0.00	0.00	0.00
Max	3.00	3.00	3.00	3.00

[1] Median values are in parenthesis.

Table S4: The frequencies and percentages of generation choices of option B with respect to the number of prosocial members per generation in treatments.

# of prosocial members	Percentage of option B choice			
	MV (N = 35)	DMV (N= 33)	MVDA (N = 36)	Overall (N= 104)
0	$7.69\,\%\,(=\frac{1}{13})$	$0.00\,\%\,(=\frac{0}{10})$	$0.00\,\%\,(=\frac{0}{6})$	$3.45\,\%\,(=\frac{1}{29})$
1	$0.00\,\%\,(=\frac{0}{13})$	$11.11\,\%\,(=\frac{2}{18})$	$14.29\,\%\,(=\frac{2}{14})$	$8.89\,\%\,(=\frac{4}{45})$
2	$0.00\,\%\,(=\frac{0}{7})$	$0.00\,\%\,(=\frac{0}{3})$	$55.56\,\%\,(=\frac{5}{9})$	$26.32\,\%\,(=\frac{5}{19})$
3	$50.00\,\%\,(=\frac{1}{2})$	$100\,\%\,(=\frac{2}{2})$	$42.86\,\%\,(=\frac{3}{7})$	$54.55\,\%\,(=\frac{6}{11})$
Subtotal	$5.71\,\%\,(=\frac{2}{35})$	$12.12\,\%\,(=\frac{4}{33})$	$27.78\,\%\,(=\frac{10}{36})$	$15.38\,\%\,(=\frac{16}{104})$

Table S5: Marginal effects of independent variables on the probability of option B choice in logit regressions (base group $=$ option A choice).

	Option B choice		
	Model 1	Model 2	Model 3
Independent variables			
Treatment dummies (base group = DMV)			
MVDA	0.159^{***}	0.047	0.050^{***}
	(0.049)	(0.043)	(0.041)
Sociodemographic and psychometric variables			
Prosocial		0.154^{***}	0.152^{***}
		(0.018)	(0.019)
Gender			-0.011
			(0.020)
Empathic concern			0.018^{***}
			(0.007)
Personal distress			-0.020^{*}
			(0.010)
Critical thinking disposition			-0.001
			(0.010)
Observations (generations)	69	69	69

Note: (1) Standard errors clustered at the sequence level are in parenthesis, (2) *** $P < 0.01$, ** $P < 0.05$, * $P < 0.10$ and (3) Marginal effects are calculated at the same means of independent variables.