Confucianism and Preferences: Evidence from Lab Experiments in Taiwan and China

用橫跨兩岸的經濟學實驗來研究儒家文化如何影響人的偏好

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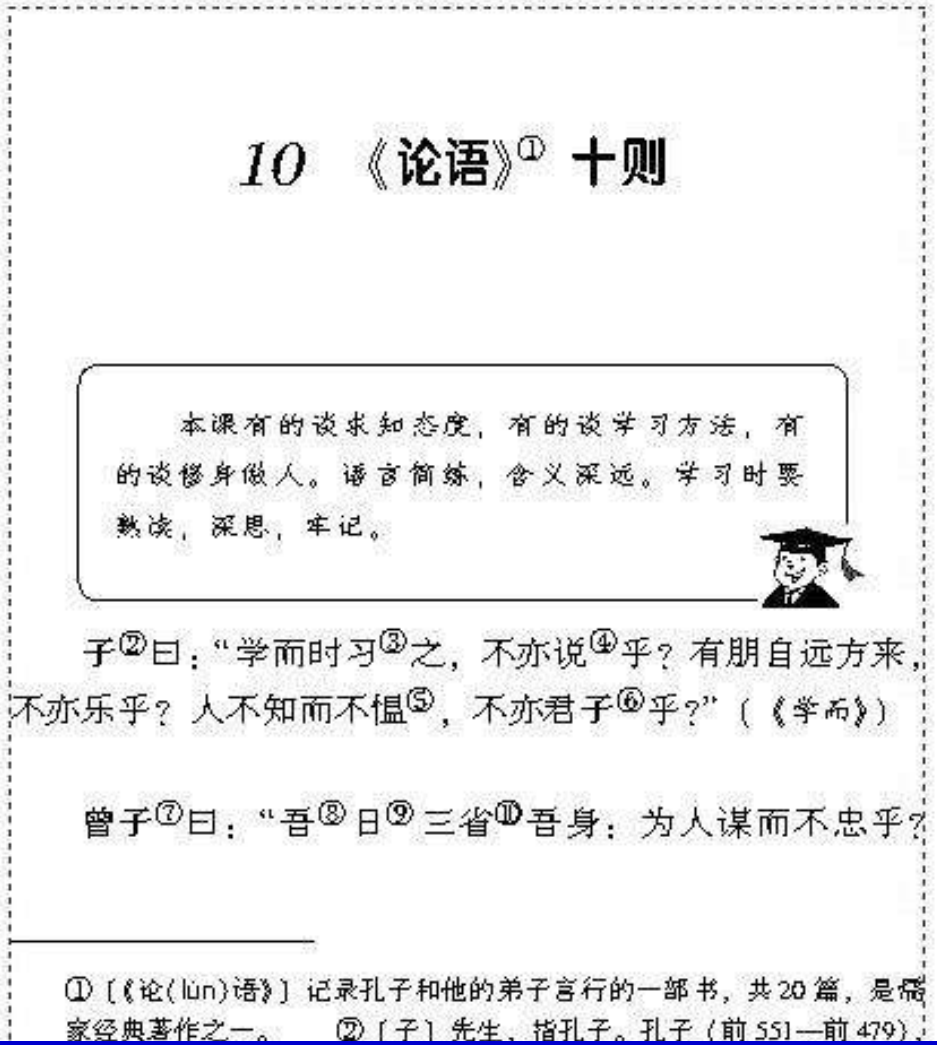
What is Confucianism?

- Philosophy, Culture or Religion?
  - What about Islam?
- Taught in middle school as part of Chinese literature
  - Like "The Republic"
- Need to pass exams on this to become government officials (for 1000+ years)



10 《论语》① 十则

本课有的谈求知态度，有的谈学习方法，有的谈修身做人。语言简练，含义深远。学习时要熟读，深思，牢记。

子②曰："学而时习③之，不亦说④乎？有朋自远方来，不亦乐乎？人不知而不愠⑤，不亦君子⑥乎？"（《学而》）

曾子⑦曰："吾⑧日⑨三省⑩吾身：为人谋而不忠乎？

①〔《论(lún)语》〕记录孔子和他的弟子言行的一部书，共20篇，是儒家经典著作之一。 ②〔子〕先生，指孔子。孔子（前551—前479）

Why Should We Care About This?

- Max Weber: Protestant spirit pro-capitalism
  - Confucianism/Hinduism stalls capitalism
- Liang (AEJ-macro, 2010):
  - Leader-follower model with lower discount rates and imitation cost but higher innovation cost @ East Asia
  - Calibrate to quantify effect on long-term growth
- Factors that affect Macroeconomic Growth:
  - Risk Preferences (risk/loss aversion)
  - Time Preferences (present bias/discount rate)
  - Social Capital (trust/trustworthiness)

Risk Aversion and Loss Aversion

- Induce Risk Aversion and Loss Aversion
  - "One who understands destiny will not stand beneath a tottering wall." (Mencius)

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Which quote is this? “One who understands destiny will not stand beneath a tottering wall.” (Mencius)

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Risk Aversion and Loss Aversion

- Induce Risk Aversion and Loss Aversion
  - "One who understands destiny will not stand beneath a tottering wall." (Mencius)
  - 君子不立危牆之下 (孟子)

➢ Collectivism: Emphasize role within society and relationship to others

➢ Risk-taking challenges group's interest

➢ Incurring loss threatens group's harmony

Time Discounting and Present Bias

- More Patient, less Present Bias
  - "Impatience over trivial things may ruin important pursuits," (*Analects*)

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Which quote is this?
“Impatience over trivial things may ruin important pursuits,” (Analects)

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Time Discounting and Present Bias

- More Patient, less Present Bias
  - "Impatience over trivial things may ruin important pursuits," (*Analects*)
  - 小不忍則亂大謀(論語)
  - "If a man takes no thought about what is distant, he will find sorrow near at hand."

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Which quote is this?
“If a man takes no thought about what is distant, he will find sorrow near at hand.”

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Time Discounting and Present Bias

- More Patient, less Present Bias
  - "Impatience over trivial things may ruin important pursuits," (*Analects*)
  - 小不忍則亂大謀(論語)
  - "If a man takes no thought about what is distant, he will find sorrow near at hand."
  - 人無遠慮，必有近憂。(論語)

Trustworthiness and Trust

- Trustworthiness more important than Trust
  - "I do not know how a man without truthfulness is to get on."

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Which quote is this?
“I do not know how a man without truthfulness is to get on.”

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Trustworthiness and Trust

- Trustworthiness more important than Trust
  - "I do not know how a man without truthfulness is to get on." (人而無信，不知其可也, *Analects*)
  - "I daily examine myself on three points:—whether, in transacting business for others, I may have been not faithful;—whether, in interaction with friends, I may have been not been trustworthy;—whether I may have not mastered and practiced the instructions of my teacher." (吾日三省吾身...)

➢ More trusting if others are more trustworthy

Research Question

- How does Confucianism affect individual decision making?

➢ Risk Preferences (risk/loss aversion)
  ➢ Induce Risk Aversion and Loss Aversion

➢ Time Preferences (present bias/discount rate)
  ➢ More Patient, less Present Bias

➢ Social Preferences (trust/trustworthiness)
  ➢ Trustworthiness more important than Trust

Experimental Procedure

- Recruit students from
  - National Taiwan University (NTU) (top university)
  - Peking University (PKU) (top university)
- Randomly assign into
  - Treatment (Confucius prime)
  - Control (Neutral prime)
- Between-subject design
- 19 sessions

	PKU	NTU	Total
Confucius	95	93	188
Neutral	90	102	192
Total	185	195	380

Experimental Procedure

1. Priming task
   - Correcting errors and re-writing six sentences, either taken from the Analect/Mencius (Confucius prime) or from other texts (neutral)
2. 17 binary lottery tasks (risk/loss aversion)
3. 10 convex time budget (CTB) questions (time discounting and present bias)
4. Trust game (trust/trustworthy)
5. Other error-correcting task and questionnaire

Experimental Procedure

1. Priming task
   - Correcting errors and re-writing six sentences, either taken from the Analect/Mencius (Confucius prime) or from other texts (neutral)

Priming Task: Confucius Prime

Circle the incorrect words and re-write the correct sentence below. (If you think there are no errors, please co

the whole sentence.)

Num.	Content
A	子曰：「學而不思則罔，思而不學則迷。」 (translation)[1] The Master said, 'Learning without thought is labor lost; thought without learning is perilous.'
B	富貴不能移，貧賤不能淫，威武不能屈。 (translation) to be above the power of riches and honours to make dissipated, of poverty and mean condition to make swerve from principle, and of power and force to make bend
C	子曰：「三人行，必有我師焉。擇其善者而從之，其不善者而棄之。」 (translation) The Master said, 'When I walk along with two others, they may serve me as my teachers. I will select their good qualities and follow them, their bad qualities and avoid them.'

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Find the incorrect words in Question A.

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Find the incorrect words in Question B.

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Find the incorrect words in Question C.

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Priming Task: Confucius Prime

Circle the incorrect words and re-write the correct sentence below. (If you think there are no errors, please co

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Priming Task: Neutral

Find the incorrect words and re-write the correct sentence below. (If you think there are no errors, simply re-write the entire sentence.)

Num.	Content
1	人生四大樂事：久旱逢甘霖，他鄉遇故知。洞房花燭夜，金榜提名時。 Translation: *There are four happiest events in life: have a good rain after a long drought season, run into an old friend in a distant land, enjoy the wedding night and succeed in the government examination.*
2	我要寫的是那些傳誦不已的親情故事。 Translation： *I want to write about those family stores that have been in circulation for years*
3	消息傳來，國人無不額首稱慶，歡欣不止。 Translation： *After the news arrived, everyone in the country was overjoy*

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Find the incorrect words in Question 1.

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Find the incorrect words in Question 2.

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Find the incorrect words in Question 3.

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Priming Task: Neutral

Find the incorrect words and re-write the correct sentence below. (If you think there are no errors, simply re-write the entire sentence.)

Num.	Content
1	人生四大樂事：久旱逢甘霖，他鄉遇故知。洞房花燭夜，金榜提名時。 題 Translation: *There are four happiest events in life: have a good rain after a long drought season, run into an old friend in a distant land, enjoy the wedding night and succeed in the government examination.*
2	我要寫的是那些傳誦不已的親情故事。 頌 Translation： *I want to write about those family stores that have been in circulation for years*
3	消息傳來，國人無不額首稱慶，歡欣不止。 手 Translation： *After the news arrived, everyone in the country was overjoy*

Experimental Procedure

1. Priming task
   - Correcting errors and re-writing six sentences, either taken from the Analect/Mencius (Confucius prime) or from other texts (neutral)
2. 17 binary lottery tasks (risk/loss aversion)

Risk Preferences (Holt-Laury Task)

Decision	Lottery A	Lottery B	Your choice (A or B)
Question 1	1: Gain NT$200 2～10: Gain NT$160	1: Gain NT$385 2～10: Gain NT$10	
Question 2	1～2 : Gain NT$200 3～10: Gain NT$160	1～2 : Gain NT$385 3～10: Gain NT$10	
Question 3	1～3 : Gain NT$200 4～10: Gain NT$160	1～3 : Gain NT$385 4～10: Gain NT$10	
Question 4	1～4 : Gain NT$200 5～10: Gain NT$160	1～4 : Gain NT$385 5～10: Gain NT$10	
Question 5	1～5 : Gain NT$200 6～10: Gain NT$160	1～5 : Gain NT$385 6～10: Gain NT$10	
Question 6	1～6 : Gain NT$200 7～10: Gain NT$160	1～6 : Gain NT$385 7～10: Gain NT$10	

Experimental Procedure

1. Priming task
   - Correcting errors and re-writing six sentences, either taken from the Analect/Mencius (Confucius prime) or from other texts (neutral)
2. 17 binary lottery tasks (risk/loss aversion)

Loss Aversion (Similar to Tanaka et al., 2010)

Decision	Lottery A	Lottery B	Your choice (A or B)
Question 11	1～5: Gain $60 6～10: Lose $35	1～5: Gain $75 6～10: Lose $65	
Question 12	1～5: Gain $55 6～10: Lose $35	1～5: Gain $75 6～10: Lose $65	
Question 13	1～5: Gain $50 6～10: Lose $35	1～5: Gain $75 6～10: Lose $65	
Question 14	1～5: Gain $45 6～10: Lose $35	1～5: Gain $75 6～10: Lose $65	
Question 15	1～5: Gain $40 6～10: Lose $35	1～5: Gain $75 6～10: Lose $50	
Question 16	1～5: Gain $40 6～10: Lose $35	1～5: Gain $75 6～10: Lose $45	
Question 17	1～5: Gain $35 6～10: Lose $35	1～5: Gain $75 6～10: Lose $40	

Experimental Procedure

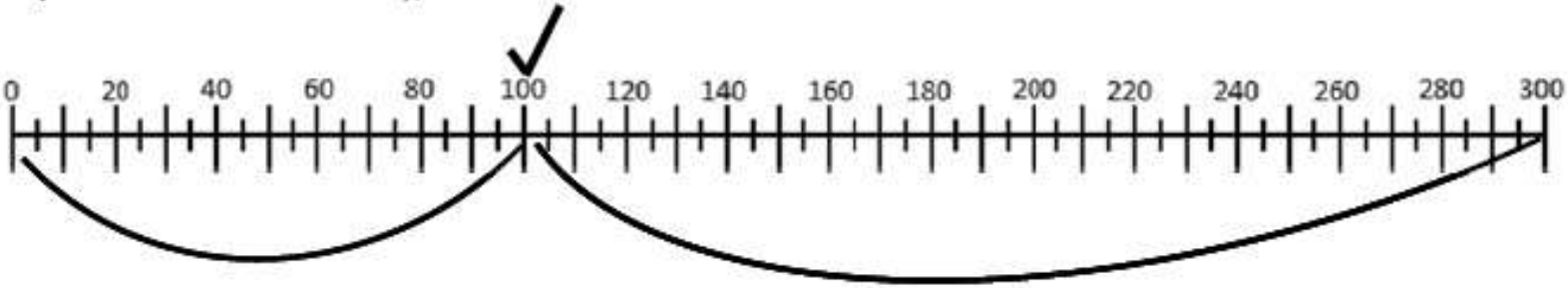
1. Priming task
   - Correcting errors and re-writing six sentences, either taken from the Analect/Mencius (Confucius prime) or from other texts (neutral)
2. 17 binary lottery tasks (risk/loss aversion)
3. 10 convex time budget (CTB) questions (time discounting and present bias)

Time Preferences (CTB)

Please allocate 300 ESC to the following: 11/12 (four weeks from now) and 12/24 (ten weeks from now)

Please indicate your allocation on the line below. Check the amount you want to **allocate to the early date.** Each segment indicates 5 ESC. The amount allocated to 12/24 can earn a bonus of 2.5%. NOTE: **The bonus could differ** across questions.

If your desired allocation is "Earn 100 ESC on 11/12 (four weeks from now) and earn 200 ESC plus a 5 ESC bonus on 12/24 (after another six weeks)," please check 100 on the line as shown below.
On 11/12 (four weeks from now), I want to earn:



Time Preferences (CTB)

Table 3: Choices for Convex Time Budget Task

Game	Interest Rate (r)	Sooner Date (t)	Later Date (t+h)
1	0.50%	today	4 weeks
2	1%	today	4 weeks
3	1.50%	today	4 weeks
4	2%	today	4 weeks
5	2.50%	today	4 weeks
6	0.50%	6 weeks	10 weeks
7	1%	6 weeks	10 weeks
8	1.50%	6 weeks	10 weeks
9	2%	6 weeks	10 weeks
10	2.50%	6 weeks	10 weeks

Bonus = 0.5-2.5%

4 Weeks

6 Weeks

4 Weeks

Note: Subjects decide how much (of the 300 tokens) to receive earlier rather than later for each of the 10 games. The amount allocated at the later date would earn interest at the corresponding interesting rate.

Experimental Procedure

1. Priming task
   - Correcting errors and re-writing six sentences, either taken from the Analect/Mencius (Confucius prime) or from other texts (neutral)
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3. 10 convex time budget (CTB) questions (time discounting and present bias)
4. Trust game (social capital – trust)

Social Preferences (Trust Game - Investor)

You have to decide how much to allocate to the other participant. Each row in the following table indicates possible allocations and what the other participant will receive: Amount You Entrust:

Table 1: You are the first allocator (ESC)	
Amount allocated to the other participant	The other participant Receives
None 0 ESC	0 ESC
25 ESC	75 ESC
50 ESC	150 ESC
75 ESC	225 ESC
100 ESC	300 ESC
125 ESC	375 ESC
All 150 ESC	450 ESC

3X

I decide to allocate _____ESC to the other participant.

(Please choose from 0, 25, 50, 75, 100, 125, and 150)

Experimental Procedure

1. Priming task
   - Correcting errors and re-writing six sentences, either taken from the Analect/Mencius (Confucius prime) or from other texts (neutral)
2. 17 binary lottery tasks (risk/loss aversion)
3. 10 convex time budget (CTB) questions (time discounting and present bias)
4. Trust game (social capital – trustworthy)

Social Preferences (Trust Game - Trustee)

Table 2：You are the second allocator		
Amount the other participant allocated to you (ESC)	Amount you received, tripled (ESC)	**Write down the amount you want to allocate to the other participant**
None 0 ESC	0 ESC	Amount You Repay (if) ___0 ESC _(N/A)_____
25 ESC	75 ESC	_____ ESC
50 ESC	150 ESC	_____ ESC
75 ESC	225 ESC	_____ ESC
100 ESC	300 ESC	_____ ESC

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What is the amount you entrust?

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What is the amount (0-75) you would repay given the other participant invested 25 (second row), so you now have 75?

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What is the amount (0-450) you would repay given the other participant invested 150 (last row), so you now have 450?

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Experimental Procedure

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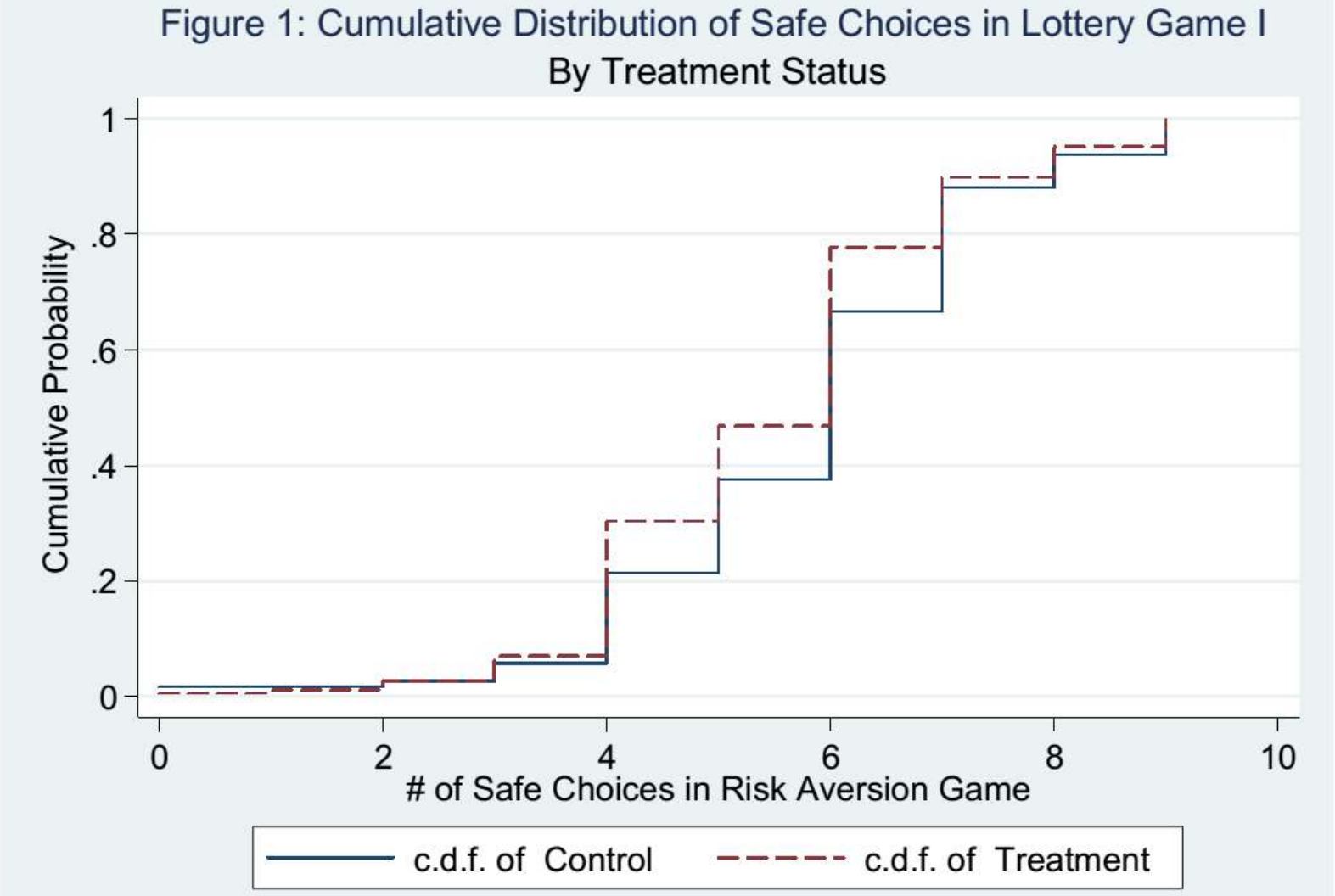
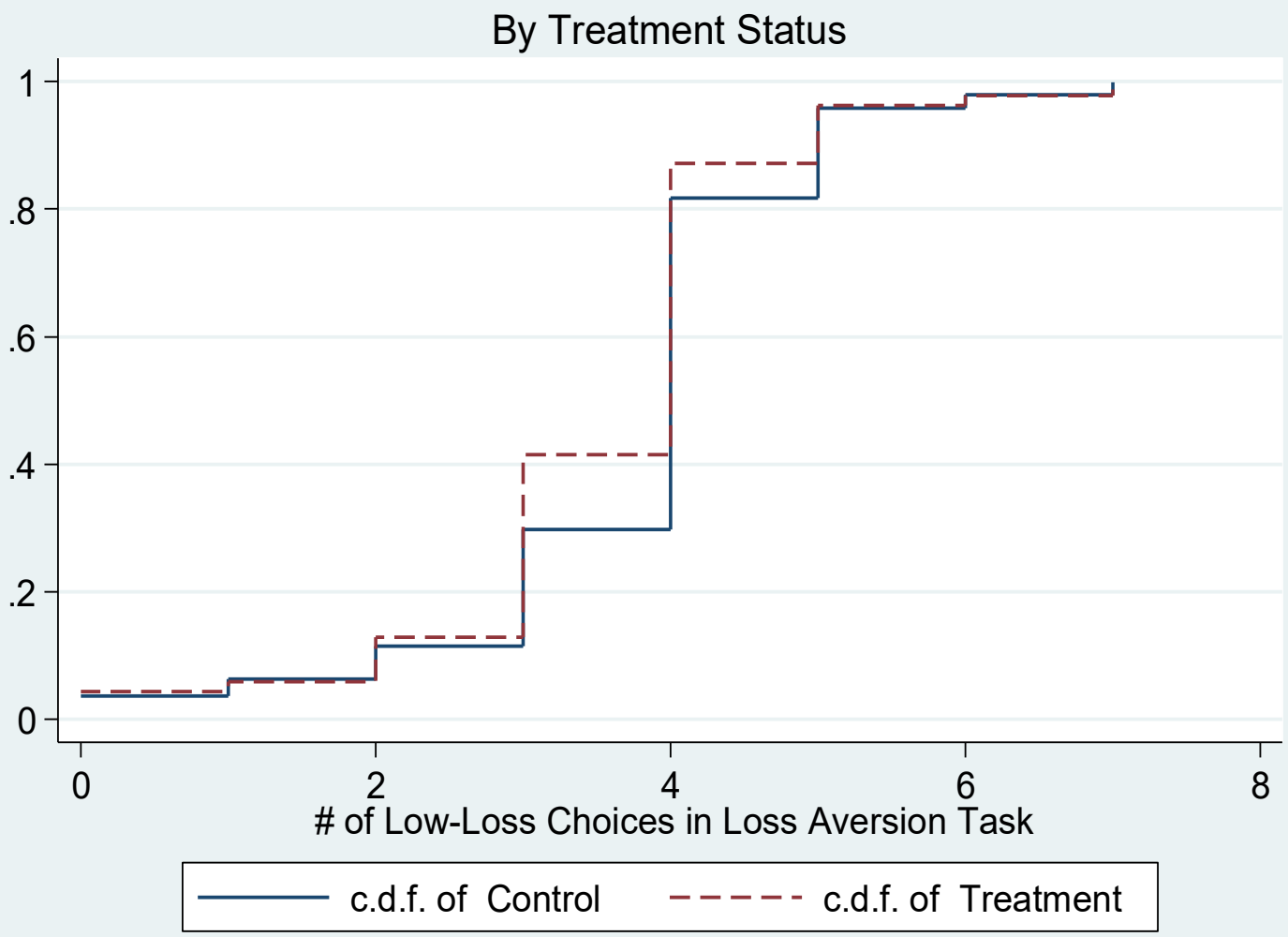
4. Trust game (trust/trustworthy)
5. Other error-correcting task and questionnaire

Risk Preferences: Risk Aversion



Risk Preferences: Loss Aversion

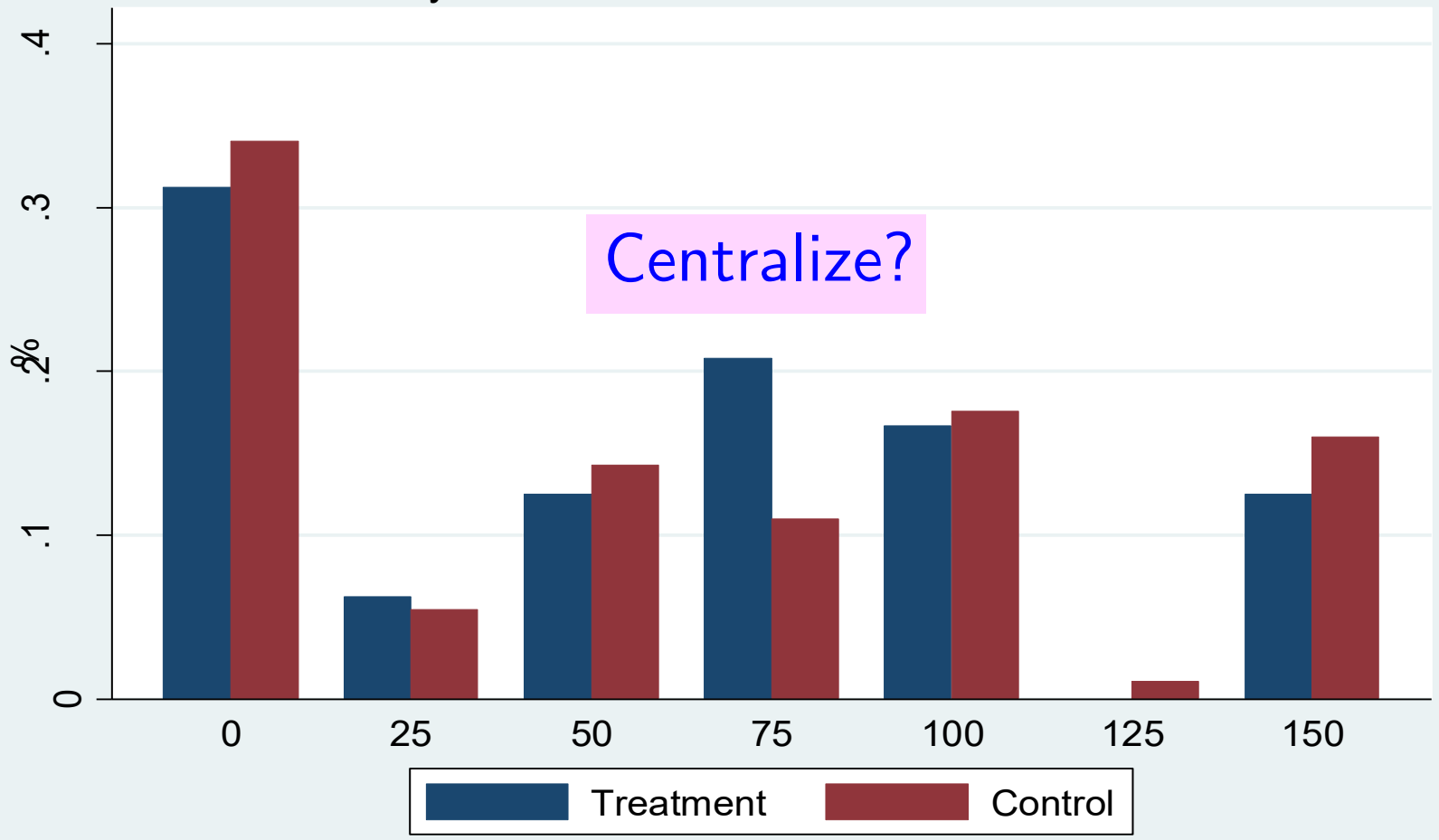
Figure 2: Cumulative Distribution of Low-Loss Choices in Lottery Game II



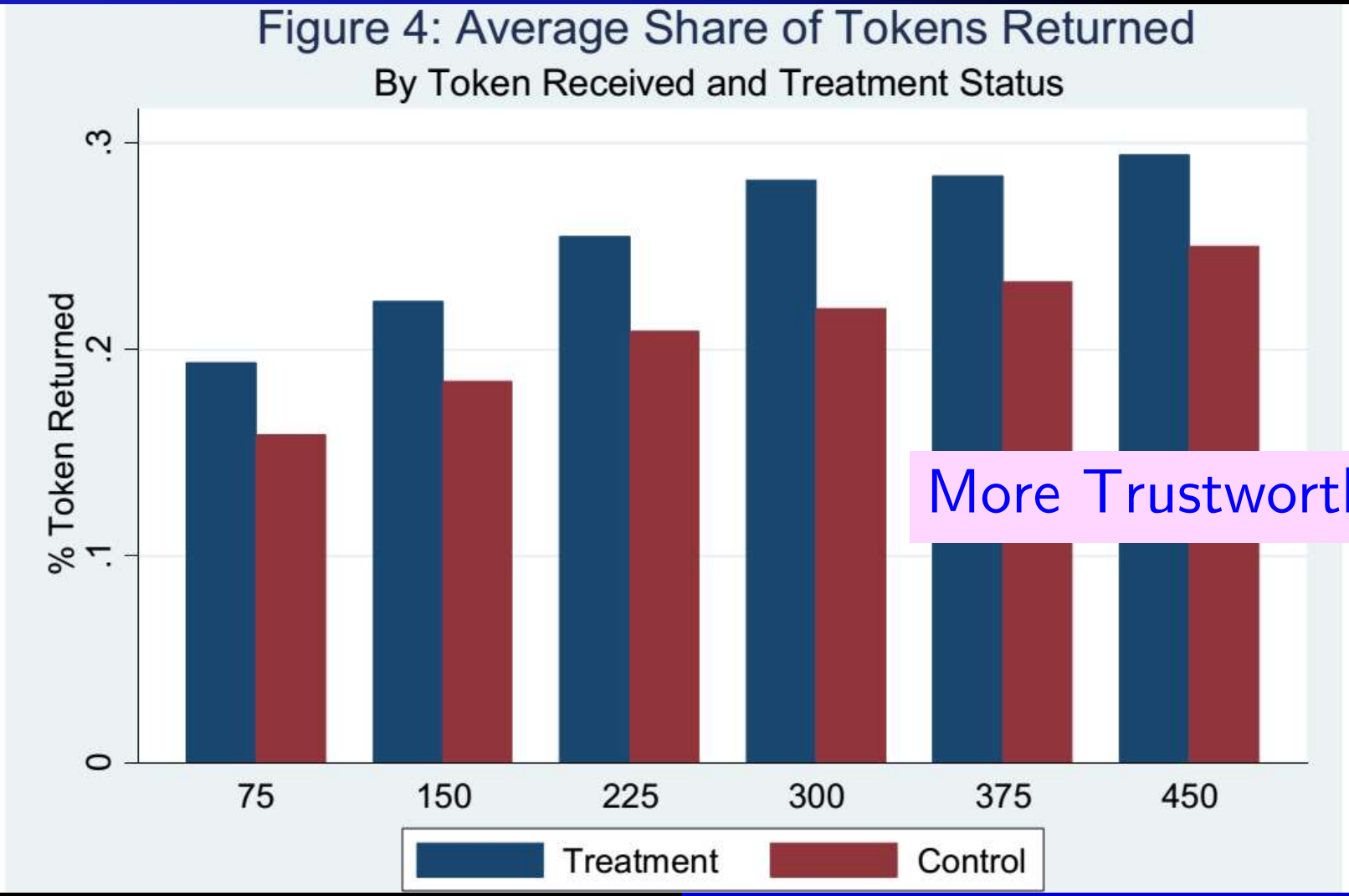
Social Preferences: Trust

Figure 3: Probability Distribution of Tokens Invested

By Tokens Given and Treatment Status



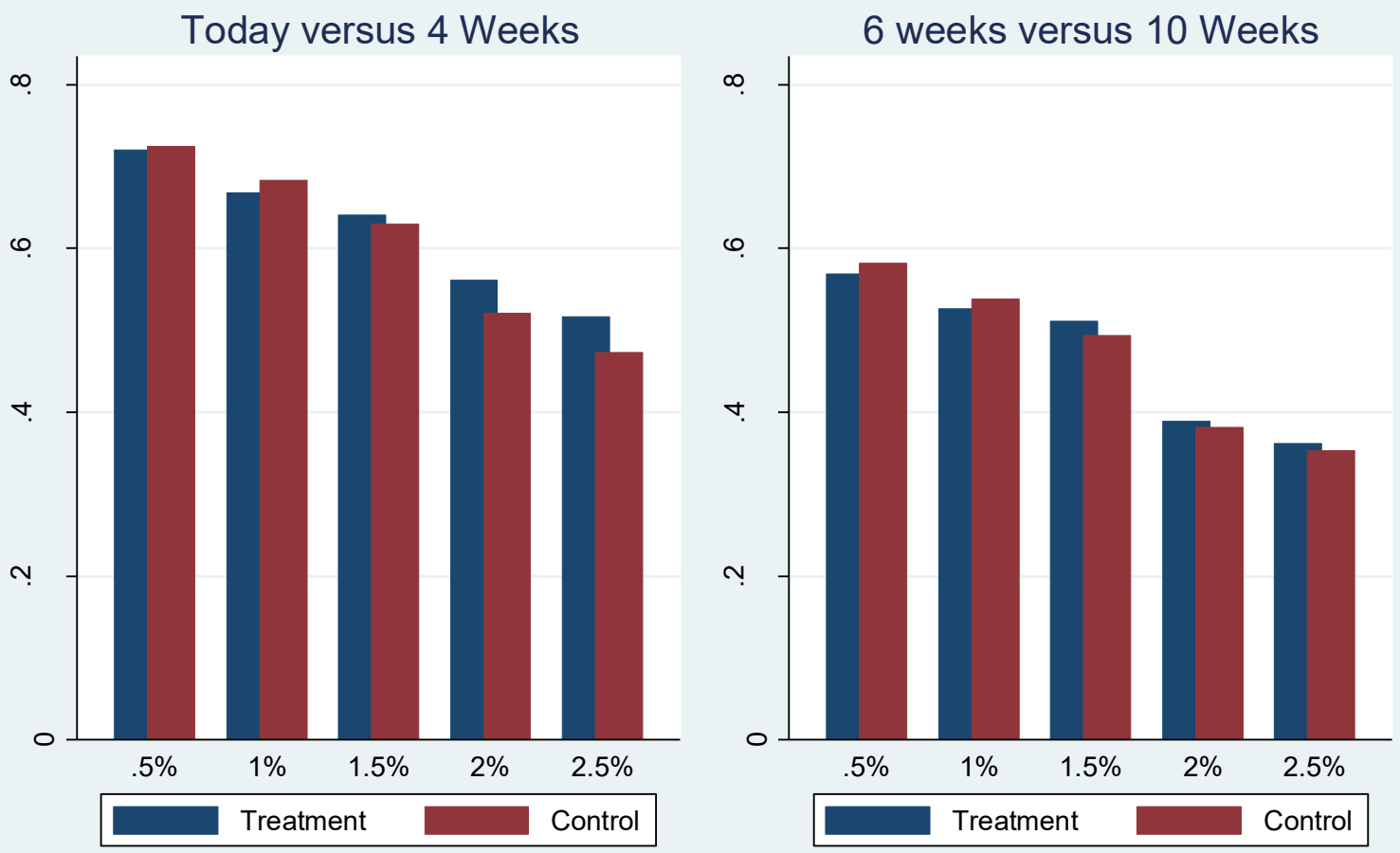
Trustworthiness



Time Preferences

Figure 5: Proportion of Tokens Allocated to Earlier Payment

Stratified by Treatment Status and by Interest Rates



Risk/Loss and Trustworthy/Trust

$$Y_i = \beta_0 + \beta_1(\text{ConfuciusPrime})_i + X_i + \epsilon_i$$

X_i = parental edu, grad student, age, gender, upbringing, science/eng major, PKU student

Table 6: The Priming Effects on Risk Preferences, Trust/Trustworthy and Time Preferences

	(1)	(2)	(3)	(4)
VARIABLES	(RISK AVERSION) Number of Safe Choices in Lottery Task I	(Loss Aversion) Number of Low loss Choices in Task II	(Trust) Share of Tokens Invested in Investment Game	(Trustworthy) Average Share of Tokens Returned in Investment Game
Mean(Dep Variable)	3.64	0.40	0.23	0.61
Standard Dev (Dep Variable)	[1.64]	[1.25]	[0.35]	[0.19]
Confucius Prime	-0.259**	-0.115	0.016	0.049*
	(0.115)	(0.117)	(0.038)	(0.023)
Observations	373	373	185	188
R-squared	0.039	0.061	0.020	0.044

Risk/Loss and Trustworthy/Trust

$$Y_i = \beta_0 + \gamma_0 \text{C-Prime}_i + \gamma_1 (\text{C-Prime})_i * \text{NTU}_i + \gamma_2 NTU_i + X_i$$

Table 8: Confucius Priming Effects by Schools

	(1)	(2)	(3)	(4)
VARIABLES	(RISK AVERSION) Number of Safe Choices in Lottery Task I	(LOSS AVERSION) Number of Low loss Choices in Task II	(TRUST) Share of Tokens Invested in Investment Game	(TRUSTWORTHY) Average Share of Tokens Returned in Investment Game
Mean(Dep Variable)	5.65	3.64	0.40	0.23
Standard Dev(Dep Variable)	[1.64]	[1.25]	[0.35]	[0.19]
Confucius Prime (γ0)	-0.332*	-0.219*	0.039	0.033
	(0.172)	(0.109)	(0.040)	(0.024)
Confucius Prime *NTU (γ1)	0.143	0.203	-0.045	0.031
			5)	(0.050)
NTU			5	-0.017
	(0.200)	(0.134)	(0.051)	(0.040)
P-value from F-test (γ0+γ1=0)	0.189	0.933	0.927	**0.132**
Observations	373	373	185	188
R-squared	0.040	0.062	0.021	0.046

Note: standard errors are clustered at the session level for Columns 1-6 and clustered at the individual level for Columns 7 and 8. Confucius Prime is a dummy for subjects receiving Confucian-salient primes. NTU is a dummy for subjects from National Taiwan University. Variables indicating the father's

Less risk-averse, less loss averse

Discount Rates and Present Bias

$$U(x_t, x_{t+k}) = x_t^{\alpha} + \beta\delta^k x_{t+k} \text{ if } t = 0,$$

$$U(x_t, x_{t+k}) = x_t^{\alpha} + \delta^k x_{t+k} \text{ if } t > 0$$

Table 9: Time Preference Parameters By Treatment Status By Schools

VARIABLES	PKU Delta (Discount Factor) (1)	NTU Delta (Discount Factor) (2)	PKU Beta (Present Bias) (3)	NTU Beta (Present Bias) (4)
Confucius Prime	0.9913		.9450	0.9290
	(0.0003)	(0.0002)	(0.0023)	(0.0019)
Neutral Prime	0.9945	0.9919	0.9420	0.9180
	(0.0001)	(		(0.0025)
P-value of F-Test for Differences in Parameter	0.0000	0.1078	0.3575	0.0005

More impatient

Less present-biased

Experimental Results

- After priming Confucianism...
- Chinese (PKU) subjects became
  - more risk-loving, less loss averse, more impatient
- Taiwanese (NTU) subjects became
  - less present-biased and mildly more trustworthy

- Very different, so we did a validation check surveying a new set of 389 students

Validation Survey

- Rank these four belief systems:
  - (1) most agree ... (4) least agree

1. Rationalism,
2. Confucianism,
3. Eastern Religion (Buddhism, Taoism),
4. Western Religion (Christianity, etc.)

- How much do you agree with each system?
  - (1) least agree ... (10) most agree

Validation Results

Table 10: Validation Test of Priming Method

VARIABLES	(1) Ranking of Confucianism (1=best, 4= worst)	(2) How much do you agree with Confucianism(10 = most agree)	(3) Rank Confuciuanism as most important
Confucius Prime ($\gamma 0$)	0.384*	-0.603*	-0.620**
	(0.223)	(0.331)	(0.278)
Confucius Prime *NTU ($\gamma 1$)	-0.463*	0.753**	0.576*
	(0.257)	(0.381)	(0.323)
NTU	0.460**	-0.832***	-0.502**
	(0.188)	(0.274)	(0.223)
P-value from F-test ($\gamma 0+\gamma 1=0$)	0.52	0.42	0.78

Validation Survey

- When primed Confucianism,
- Chinese (PKU) subjects ranked it significantly lower and disagreed more
- Taiwanese (NTU) subjects mildly improved ranking of Confucianism and agreed more

- Elites in China and Taiwan react differently to Confucianism!

Discussion

- Are students "special"? No—we specifically care about the elite, not the illiterate public...
- Are other characteristics causing this?

Table 5: Randomization Check

Panel A: National Taiwan University

VARIABLES	Female	Age	Graduate Student	Father's Education	Mother's Education	Conservative Upbringing	STEM Major
Confucius Prime	-0.033	0.402	0.109	-0.02	0.02	-0.153	-0.052
	(0.058)	(0.814)	(0.139)	(0.195)	(0.175)	(0.120)	(0.083)
Constant	0.441***	21.04***	0.235***	3.238***	2.882***	2.804***	0.324***
	(0.0397)	(0.450)	(0.0734)	(0.0863)	(0.114)	(0.0737)	(0.0468)
Observations	195	195	195	193	194	195	194
R-squared	0.001	0.008	0.014	0.000	0.000	0.011	0.003

Discussion

Panel A: National Taiwan University

VARIABLES	Female	Age	Graduate Student	Father's Education	Mother's Education	Conservative Upbringing	STEM Major
Confucius Prime	-0.033	0.402	0.109	-0.02	0.02	-0.153	-0.052
	(0.058)	(0.814)	(0.139)	(0.195)	(0.175)	(0.120)	(0.083)
Constant	0.441***	21.04***	0.235***	3.238***	2.882***	2.804***	0.324***
	(0.0397)	(0.450)	(0.0734)	(0.0863)	(0.114)	(0.0737)	(0.0468)
Observations	195	195	195	193	194	195	194
R-squared	0.001	0.008	0.014	0.000	0.000	0.011	0.003

Panel B: Peking University

VARIABLES	Female	Age	Graduate Student	Father's Education	Mother's Education	Conservative Upbringing	STEM Major
Confucius Prime	-0.038	0.115	0.027	-0.011	0.063	-0.230	-0.049
	(0.059)	(0.467)	(0.115)	(0.232)	(0.167)	(0.130)	(0.041)
Constant	0.522***	22.42***	0.489***	2.800***	2.411***	2.900***	0.460***
	(0.0236)	(0.263)	(0.0423)	(0.164)	(0.0714)	(0.0761)	(0.0726)

Conclusion: Persistent Historical Influence?

The End

– Any Question?

slido

Audience Q&A Session

ⓘ Start presenting to display the audience questions on this slide.