行为和实验经济学简介：
Intro to Behavioral and Experimental Economics

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Definition

- Behavioral Economics

" study the effects of social, cognitive, and emotional factors on the economic decisions of individuals and institutions and the consequences for market prices, returns, and the resource allocation"-Wikipedia

- Experimental Economics

Use controlled experiment to directly measure the causal relationship between economic factors. It can be used to test theory, reveal facts and inform policy implementation.

What do they tell us? Bounded Rationality

- People make mistakes in decisions due to their cognitive limitation. Consequently, they can not always fully maximize their utilities.

- Example: Bednar, Chen, Liu and Page, Games and Economic Behavior 74 (1), 12-31, January 2012.

- Summary: We present evidence from laboratory experiments of behavioral spillovers and cognitive load that spread across strategic contexts. In the experiments, subjects play two distinct games simultaneously with different opponents. We find that the *strategies chosen and the efficiency of outcomes in one game depends on the other game that the subject plays*, and that play is altered in predictable directions. We develop a measure of behavioral variation in a normal form game, outcome entropy, and find that prevalent strategies in games with low outcome entropy are more likely to be used in the games with high outcome entropy, but not vice versa. Taken together, these findings suggest that *people do not treat strategic situations in isolation, but may instead develop heuristics that they apply across games.*

		Right(B)
Top(A)		2 9
Bottom(B)		10 10

PD Game	Left (A)	Right (B)
Top (A)	7, 7	2, 10
Bottom (B)	10, 2	4, 4

Your Decision in the left game   ○ A   ○ B

SI Game	Left (A)	Right (B)
Top (A)	7, 7	2, 9
Bottom (B)	9, 2	10, 10

Your Decision in the right game   ○ A   ○ B

Period	Your Left Game Decision	Your Right Game Decision	Your Left Game Match's Decision	Your Right Game Match's Decision
1	A	A	A	A
2	B	B	B	B
3	A	A	A	A
4	B	B	B	B
5	Not yet	Not yet	Not yet	Not yet

OK

When PD is paired with SI, the proportion of SS is weakly significantly higher than PD is played alone (46 vs. 18%, p=0.070, 1-sided permutation tests)

Table 4

Distribution of outcomes in the control and ensembles.

	SI (SS	CC	ALT)	PD (SS	CC	ALT)	SA (SS	CC	ALT)	WA (SS	CC	ALT)
SI paired with	(**100**	0	0)	(99	0	0)	(99	0	0)	(99	0	0)
PD paired with	(46	42	5)	(18	56	15)	(23	41	21)	(39	40	9)
SA paired with	(32	7	48)	(24	15	48)	(15	5	**71**)	(39	10	38)
WA paired with	(28	44	21)	(40	31	18)	(40	11	37)	(23	33	**36**)

Note. The diagonal is the outcome distribution for the control sessions. Boldfaced numbers are the mode of distribution for the control sessions.

What do they tell us? Social Preference

- People consider fairness, reciprocity, and other-regarding preferences in their decisions.
- Example: Chen, Li, Liu and Shih, Forthcoming, Games and Economic Behavior, 2014.
- Summary: As the workforce becomes increasingly diverse, motivating individuals from different backgrounds to work together effectively is a major challenge facing organizations. In an experiment conducted at a large public university in the United States, we manipulate the salience of participants' multidimensional natural identities and *investigate the effects of identity on coordination and cooperation in a series of minimum-effort and prisoner's dilemma games*. By priming a fragmenting (ethnic) identity, we find that, compared to the control, participants are significantly less likely to choose high effort in the minimum-effort games, leading to less efficient coordination. In comparison, priming a common organization (school) identity significantly increases the choice of a rational joint payoff maximizing strategy in a prisoner's dilemma game.

What do they tell us? Time Inconsistency

- Individual decisions are sensitive to timing. Preference at time t may be different from that at time t+1.

- Example: an ongoing **field experiment** conducted at Guangdong province which examines time inconsistency.

22	假设您现在是一家工厂的工人，该工厂经常加班，老板会定期足额发放加班工资。现在您在老板办公室准备领上次加班的工资，老板告诉你"**如果你现在领的话，可以给你 200 块，但如果你再等 1 个月再领的话，就能给你 250 块。**"这时候您会选择哪种？ 【题目中老板会保证发放工资】 •现在拿 200 元　　　【选择①，继续回答问题】 •多等 1 个月给您 250 元　【选择②，结束问卷】	
23	看到您宁愿现在拿 200 块而不是 1 个月后拿 250 块，老板说"那要不 1 个月之后给你 300 块？"这时候你会选择？ 1. 今天就领走 200 块　　　**【选择①，继续回答问题】** 2. 等 1 个月**后**再领 300 块　**【选择②，跳过 16, 回答 17】**	
24	看到您还是选择现在拿 200 块，而不是 1 个月之后拿 300 块，老板说，"那你要多少钱才愿意 1 个月之后领加班费呢？" 请填写任意一个大于 300 的数。　　　**【在右侧答案框中填写】**	

22	假设您现在是一家工厂的工人，该工厂经常加班，老板会定期足额发放加班工资。现在您在老板办公室准备领上次加班的工资，老板告诉你"**如果你 6 个月后领的话，可以给你 200 块，但如果你再等 1 个月，到 7 个月再领的话，就能给你 250 块。**"这时候您会选择哪种？ 【题目中老板会保证发放工资】 •6 个月以后给您 200 元　　　【选择①，继续回答问题】 •多等 1 个月，7 个月后给您 250 元　【选择②，结束问卷】	
23	看到您宁愿 6 个月后拿 200 块而不是 7 个月后拿 250 块，老板说"那要不 7 个月后给你 300 块？"这时候您会选择哪种？ ① 6 个月以后给您 200 元　　　【选择①，继续回答问题】 ② 多等 1 个月，7 个月后给您 300 元【选择②，结束问卷】	
24	看到您还是选择 6 个月后拿 200 块，而不是 7 个月后拿 300 块，老板说，"那你要多少钱才愿意 7 个月后领加班费呢？" 请填写任意一个大于 300 的数。　【在右侧答案框中填写，结束问卷】	

Present bias: People are more impatient now than in the future.

		Indifferent between 200 in 6 months and X in 7 months			
		Patient X<250	Somewhat impatient 250<X<300	Most impatient X>300	Total
Indifferent between 200 now and X in one month	Patient X<250	28 (42.4%)	5 (7.5%)	4 (6.1%)	37 (56.1%)
	Somewhat impatient 250<X<300	5 (7.6%)	6 (9.1%)	1 (1.5%)	12 (18.2%)
	Most Impatient X>300	7(10.6%)	2 (3.0%)	8 (12.1%)	17 (25.8%)
	Total	40 (60.6%)	13 (19.7%)	13 (19.7%)	66 (100%)

Which Hat to Wear?
Impact of Natural Identities on Coordination and Cooperation

Yan Chen

University of Michigan

Sherry Li

University of Texas at Dallas

Tracy Liu

Tsinghua University

Margaret Shih

UCLA

How to make people from different backgrounds work together effectively?

What is Social Identity?

- Social identity: A person's sense of self derived from perceived group membership of social groups
  - "Part of an individual's self-concept which derives from his knowledge of his membership in a social group (or groups) together with the value and emotional significance attached to that membership" (Tajfel, 81, p. 255)
  - Multi-dimensional
    - Race (Fershtman and Gneezy 01)
    - Gender (Croson and Gneezy 09)
    - Organization: e.g., army platoons (Goette et al 06)
    - Religion, nationality, ethnicity, and socioeconomic class …

Social Identity Research

- Social Identity Theory (Tajfel and Turner 79, 86)

  - Minimal Group Paradigm

    - random assignment to groups based on trivial tasks

    - no social interaction

    - anonymous group membership

    - no link between self interest and choices

  - "The trivial, ad hoc intergroup categorization leads to ingroup favoritism and discrimination against the outgroup"

- Some recent studies find no ingroup favoritism with minimal groups (e.g., Yamagishi and Kiyonari 00, Chen and Chen 11)

Social Identity Research – Priming

- Identities: multidimensional
- Priming:
  - making one dimension of natural identities salient
  - experimental technique in psychology that introduces certain stimuli ("primes") to activate individuals' social knowledge structures (Bargh 2006).
- Types of primes: text (e.g., a questionnaire, an article, or a word scrambling game), image, or audio

Social Identity Research – Priming

- Priming social identities affects behavior and attitude outside of one's awareness and control (Bargh and Chartrand 99)
  - Induce behaviors conforming to stereotypes associated w/ identity
    - Walking speed (Bargh, Chen and Burrows 96)
    - Test performance (Steele and Aronson 95; Aronson, Quinn and Spencer 98; Croizet and Claire 98; Spencer, Steele and Quinn 99; Shih, Pittinsky and Ambady 99; Shih, Pittinsky and Trahan 06)
  - Activate intergroup bias (Perdue, Dovidio, Gurtman and Tyler 90)
- Priming in economic studies (Hoff and Pandey 05, 06; Benjamin, Choi and Strickland 10, 10; Dee 10; Farzana, Li and Ren 12)

Why Should Economists Care?

- Identity expands economic analysis in several aspects.
- Identity can explain behavior that appears detrimental or irrational
    - gentlemanly terrorists -- political violence in Bengal in the twentieth century) (Ghosh, in progress)
- Identity reveals a new way that preferences can be changed
- Choice of identity may be the most important "economic" decision people make
    - Education (Akerlof and Kranton 02)
- Identity and mechanism design: limit of monetary incentives (Akerlof and Kranton 05)

Economic Models of Social Identity

- Preferences
  - exogenous norm
    - Akerlof and Kranton (00, 02, 05)
    - "The incorporation of such endogeneity is the next step." (Akerlof 07)
  - group-contingent social preference
    - Basu (06)
    - Chen and Li (09)
    - McLeish and Oxoby (10)
- Beliefs
  - Benabou and Tirole (11)
  - Akerlof (10)

Social Identity Experiments in Economics

- Social identity and preferences
    - Individuals show more charity, less envy, and more SWM concerns towards ingroup; they are more likely to reward ingroup (more positive reciprocity) and less likely to punish ingroup (less negative reciprocity) (Chen and Li 09)
    - McLeish and Oxoby (10); Benjamin, Choi and Strickland (10)
- Social identity and public goods provision
    - Salient group identity increases public goods provision in VCM.
    - Brown-Kruse and Hummels (93); Cadsby and Maynes (98); Solow and Kirkland (02); Eckel and Grossman (05)
- Social identity and equilibrium selection
    - Salient identity improves coordination in Battle of the Sexes games (Charness, Rigotti and Rustichini 07)
    - A common group identity (enhanced through game-irrelevant communication) affects equilibrium selection and improve efficiency in coordination games (Chen and Chen 11)

This Paper

- Managing diverse workgroups
- We investigate the effects of highlighting a common v. fragmenting identity on coordination and cooperation in prisoner' dilemma and minimum-effort games with different incentives for cooperation.
  - Does a fragmenting identity reduce coordination and cooperation among racially diverse groups?
    - Race
 - Does a common identity improve coordination and cooperation?
    - School

An Overview on the Design

- A large public university: University of Michigan

- Participants:
  Caucasians (European surnames) v. Asians (Chinese surnames)

- Surnames revealed to co-players:
  "Your match is Li (or Smith)."

- A treatment-specific prime is introduced through a pre-experiment Questionnaire.

- Incentivized prisoner's dilemma games and minimum-effort coordination games

- zTree (Fischbacher 2007)

- One hour/session

Priming

- Pre-experiment questionnaire (adapted from Shih *et al* 99)
- Questions on age, grade/year
- Ethnic priming
  - What is your ethnicity?
  - "How many generations has your family lived in America?"
  - "From which countries did you family originate?"
  - "What languages do you speak?"

- School priming:
  - "Which school do you attend?"
  - "Did you consider any other schools? If yes, what other schools?"
  - "Why did you decide to choose your specific school?"
- Control: activities in leisure time (identity-neutral)
  - "How often do you watch television?"
  - "How often do you eat out?"
  - "How often do you attend movies?"

Prisoner's Dilemma (PD) Games
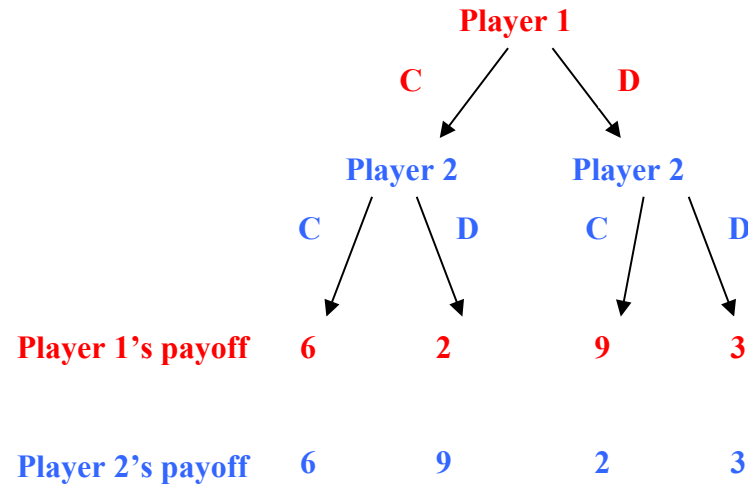
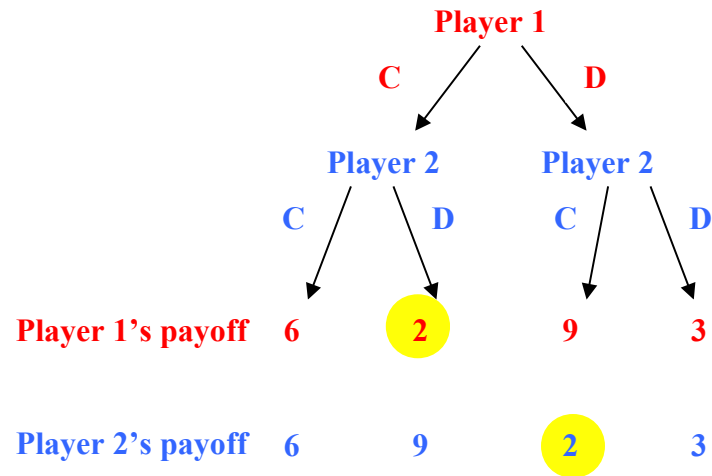
- p: player 1's belief that player 2 is a conditional cooperator

$$p \cdot \pi_1(C,C) + (1-p) \cdot \pi_1(C,D) \geq \pi_1(D,D) \Rightarrow p \geq ¼$$

- Five PD games are chosen such that $p^* = \{0, ¼, ½, 2/3, ¾\}$
- Strategy method for Player 2's decisions
- Player 2's strategies: CC, CD, DC, DD

PD Game 1

p*=1/4

Player 1

C   D

Player 2   Player 2

C   D   C   D

Player 1's payoff   6   2   9   3

Player 2's payoff   6   9   2   3

	CC	DD	CD	DC
C	6,6	2,9	6,6	2,9
D	9,2	3,3	3,3	9,2

PD Game 2

$p^*=1/2$

Player 1

C   D

Player 2   Player 2

C   D   C   D

Player 1's payoff   6   0   9   3

Player 2's payoff   6   9   0   3
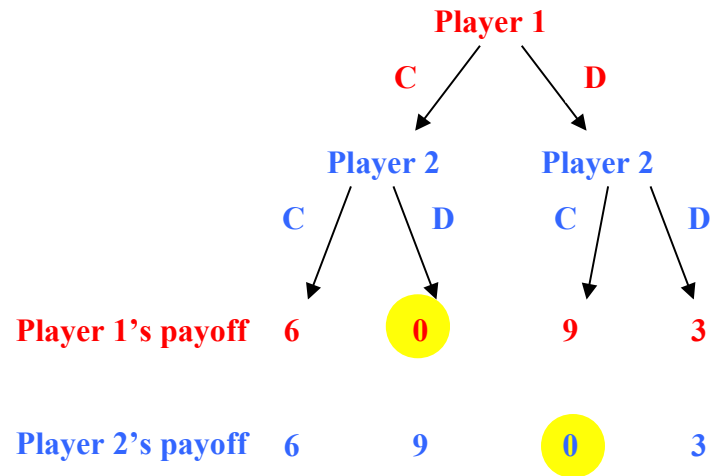
	CC	DD	CD	DC
C	6,6	0,9	6,6	0,9
D	9,0	3,3	3,3	9,0

PD Game 3

p*=2/3
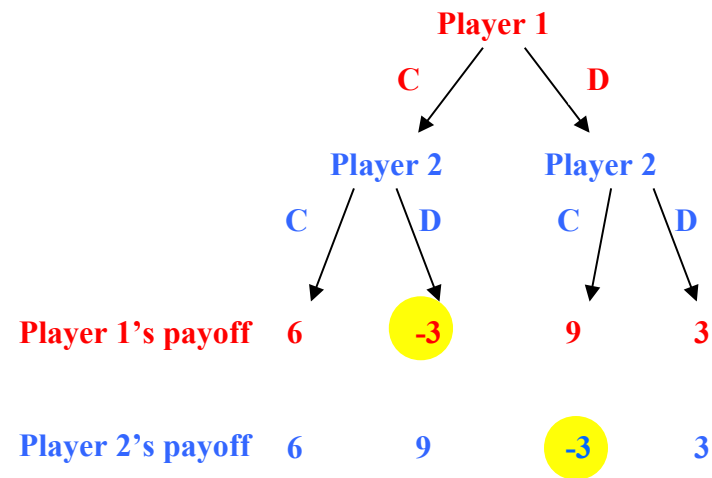
	CC	DD	CD	DC
C	6,6	-3,9	6,6	-3,9
D	9,-3	3,3	3,3	9,-3

Player 1
C   D
Player 2   Player 2
C   D   C   D

Player 1's payoff   6   -3   9   3

Player 2's payoff   6   9   -3   3

PD Game 4

p*=3/4

Player 1

C   D

Player 2   Player 2

C   D   C   D

Player 1's payoff   6   -6   9   3

Player 2's payoff   6   9   -6   3
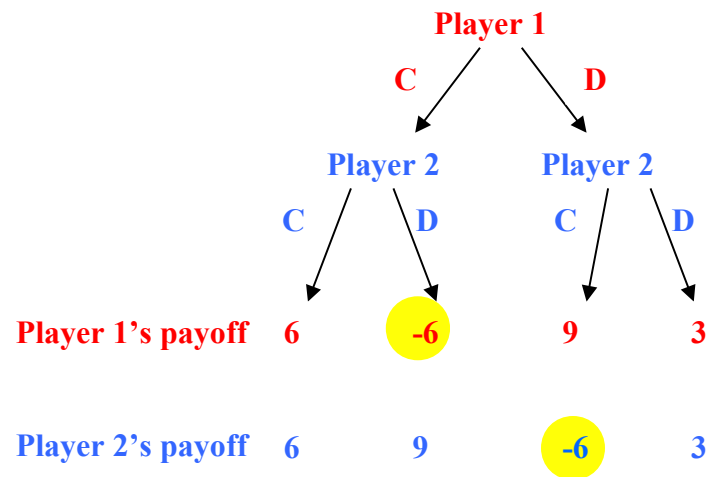
	CC	DD	CD	DC
C	6,6	-6,9	6,6	-6,9
D	9,-6	3,3	3,3	9,-6

PD Game 0

p*=0
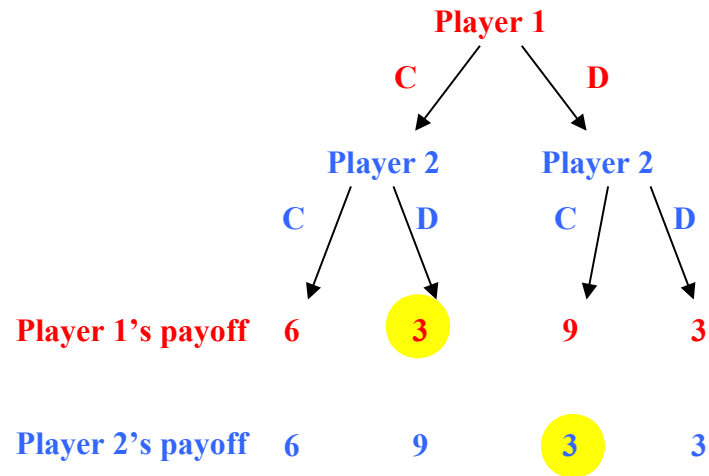
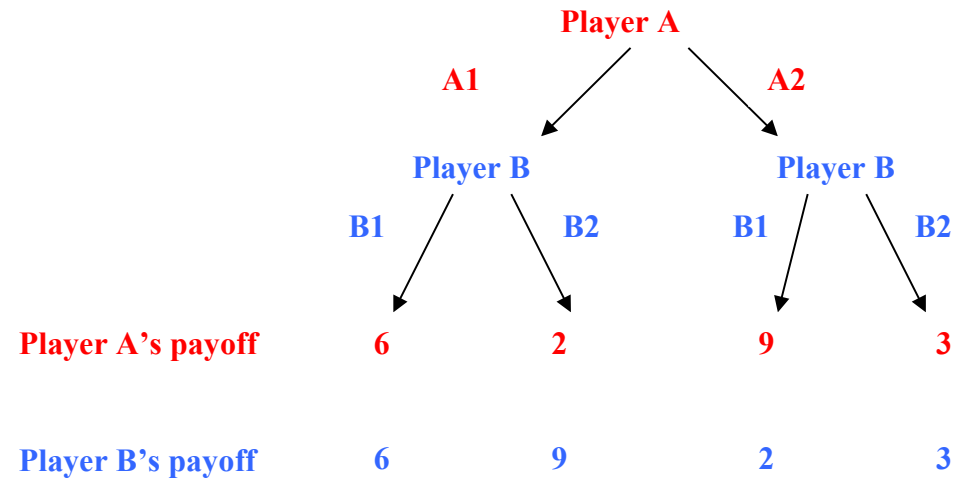|	CC	DD	CD	DC (rJPM)
C	6,6	3,9	6,6	3,9
D	9,3	3,3	3,3	9,3

Coordination game: DC – rational joint-payoff maximizing strategy (rJPM)

Sample Decision Screen (Player 1)

You are Player A in this game
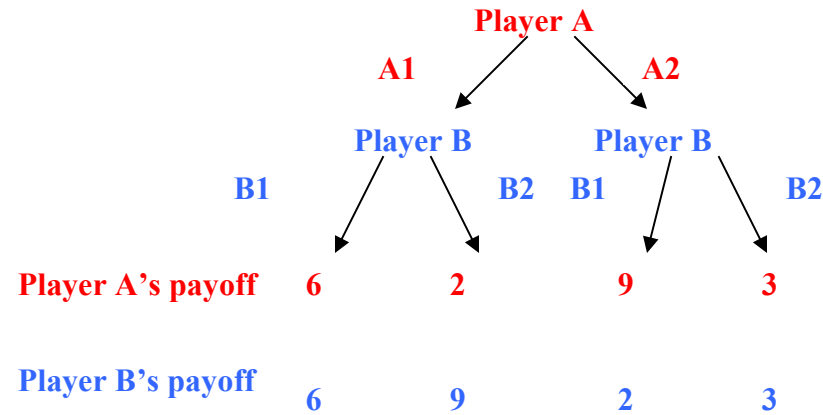**Your match is: Chen**

Co-player's <u>last name</u> is shown.

Player A

A1   A2

Player B   Player B

B1   B2   B1   B2

Player A's payoff   6   2   9   3

Player B's payoff   6   9   2   3

Sample Decision Screen (Player 2)

You are Player B in this game
Your match is: Smith

Co-player's last name is shown.

Player A

A1   A2

Player B   Player B

B1   B2   B1   B2

Player A's payoff   6   2   9   3

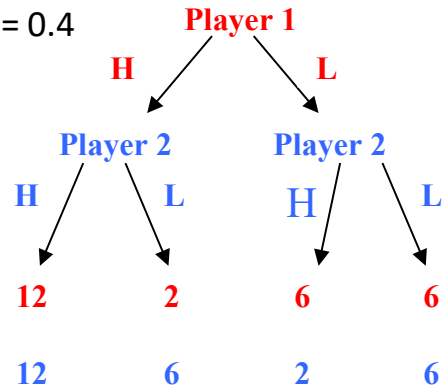Player B's payoff   6   9   2   3

If Smith has chosen A1, what will you choose: B1 or B2
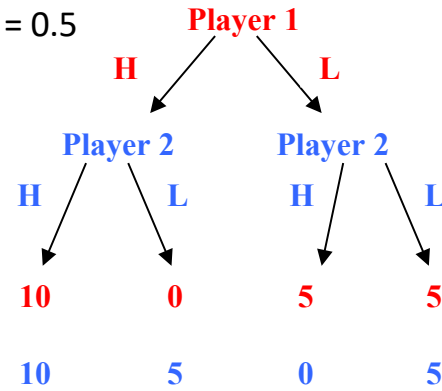
If Smith has chosen A2, what will you choose: B1 or B2

Strategy method
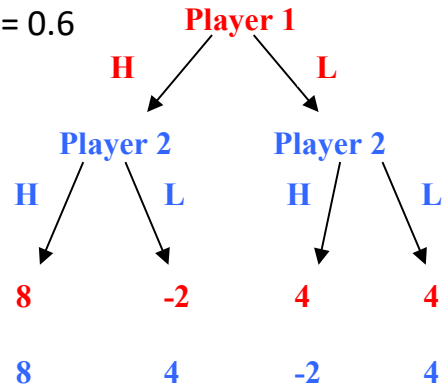
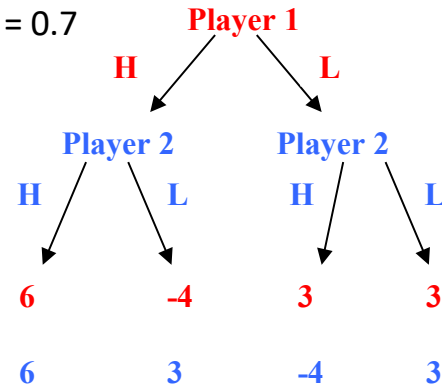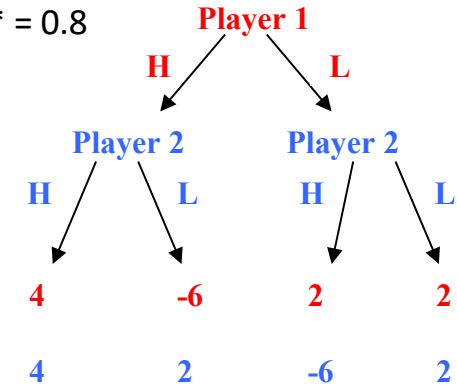# Minimum Effort Games (Goeree and Holt 05)

$c^* = 0.4$

Player 1
H   L

Player 2   Player 2
H   L   H   L

12   2   6   6

12   6   2   6

$c^* = 0.5$

Player 1
H   L

Player 2   Player 2
H   L   H   L

10   0   5   5

10   5   0   5

$c^* = 0.6$

Player 1
H   L

Player 2   Player 2
H   L   H   L

8   -2   4   4

8   4   -2   4

$c^* = 0.7$

Player 1
H   L

Player 2   Player 2
H   L   H   L

6   -4   3   3

6   3   -4   3

$c^* = 0.8$

Player 1
H   L

Player 2   Player 2
H   L   H   L

4   -6   2   2

4   2   -6   2

Pure strategy Nash Equilibria: {(H, HH), (H, HL), (L, LL)}

Experimental Procedure

- 8 subjects/session

- Priming questionnaire

- Prisoner's dilemma games
  - Randomly assigned as player 1 or 2 (fixed roles)
  - 4 rounds
  - Played 5 PD games with a co-player in each round
  - Random matched with a different co-player in each round
  - 5 sessions per treatment
  - Each session has a different game order: Latin Square
  - Match's last name provided
  - Strategy method for player B's decision
  - Feedbacks NOT provided until the end of the experiment
  - Pictures after each round to maintain priming effect

- Post-experiment questionnaire: demographics, strategies used, and evaluation of ethnic stereotypes

Summary on the Protocol

Treatments	PD Games			ME Games		
	Asian	Caucasian	Total	Asian	Caucasian	Total
Control	20	20	8×5	20	20	8×5
Ethnic (fragmenting) Priming	21	19	8×5	21	19	8×5
School (unifying) Priming	21	19	8×5	20	20	8×5

- 15 independent sessions and 120 subjects for each set of games
- Minimal 3 Asians and 3 Caucasians in each session
- $5 participation fee
- Exchange rate 8 lab points = $1
- Average earning: $20 in PD, $28 in ME games

Pictures in the Control (Identity Neutral)

Pictures in Ethnic Priming

Pictures in School Priming (UM)

Summary on Experimental Design

- Compared to studies that induce group identity in the lab, results in this study can be more easily applied to relevant real-life work environments.

- Going beyond documenting the intergroup bias, this study investigates how evoking different dimensions of identities influences intergroup bias.

- First study in economics to empirically evaluate how effectively a common identity can be used as a design tool to influence cooperation and coordination among an ethnically diverse group.
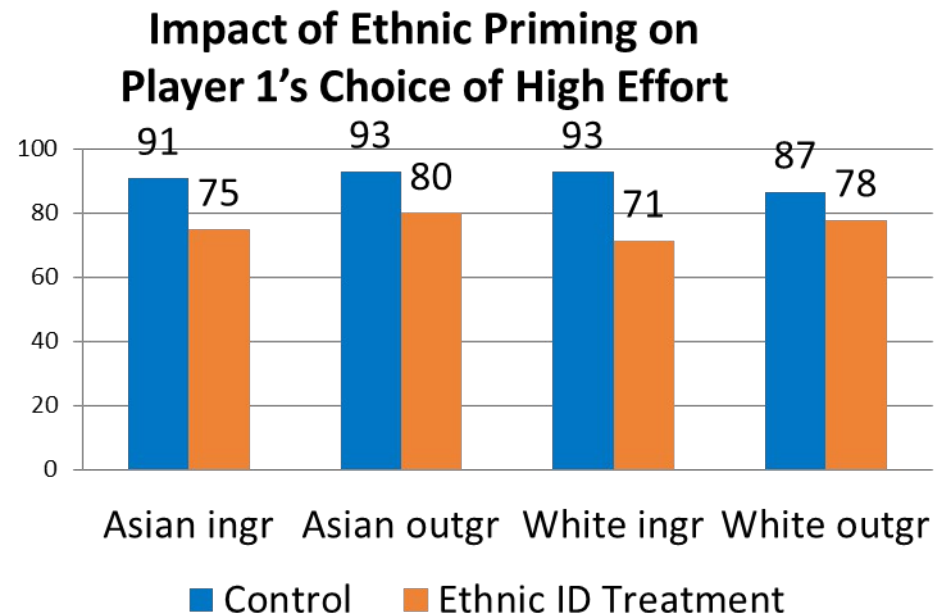
Hypotheses

- **Ethnic Priming:**
  Compared to the control, players will be less cooperative in the ethnic priming treatments.

- School Priming:
  Compared to the control, players will be more cooperative in the school priming treatments.

Ethnic Priming on Minimum-Effort Games: % H

Impact of Ethnic Priming on Player 1's Choice of High Effort

Result 1: Ethnic priming reduces the likelihood that player 1 chooses high effort by 15% compared to the control ($p < 0.05$).

As a result, the probability of coordination on the Pareto efficient Nash equilibrium decreases by 11% in the Ethnic Priming treatment.

Ethnic Priming on Cooperation
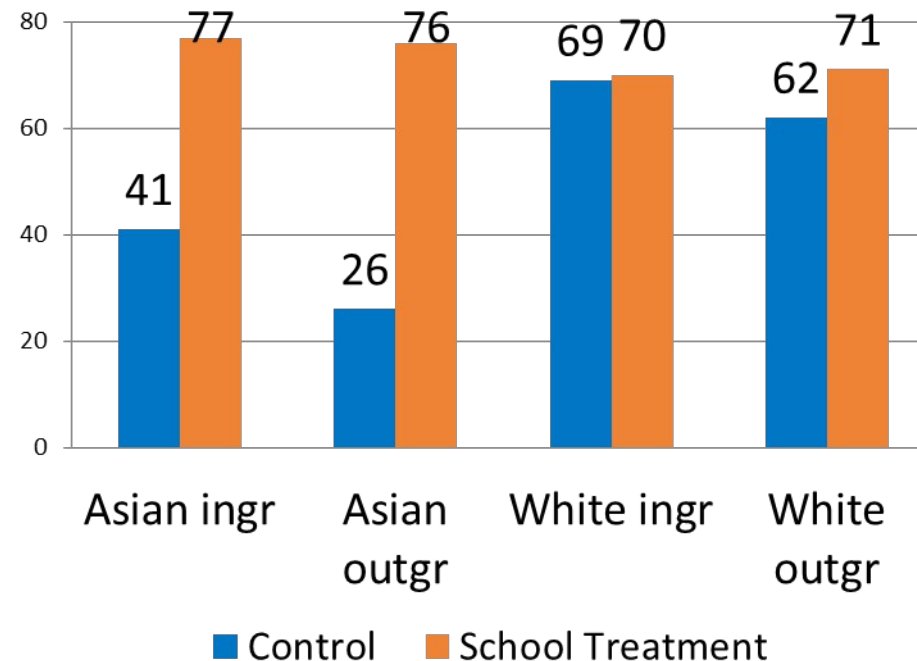## (DD in Games 1-4)
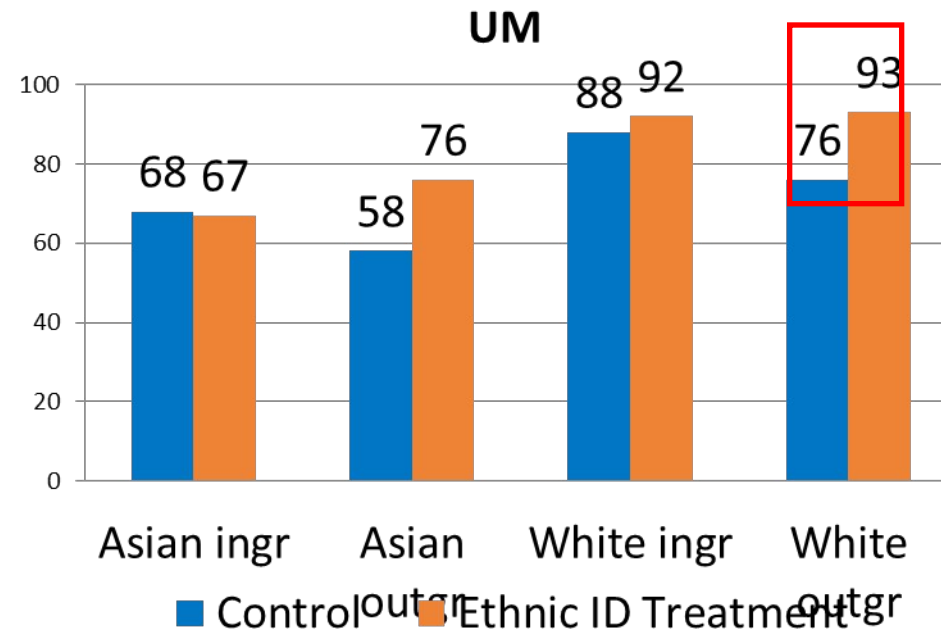
Result 2: In PD 1-4, while ethnic priming has no aggregate effect, Caucasian players are more likely to choose DD when matched with an outgroup member.

Hypotheses

- Ethnic Priming:
  Compared to the control, players will be less cooperative in the ethnic priming treatments.

- School Priming:
  Compared to the control, players will be more cooperative in the school priming treatments.

School Priming on Coordination
(rJPM in Game 0)

Result 3: School priming increases the likelihood that player 2s choose rJPM compared to the control (marginal effect: 25%, p<0.05).
This increase is mainly due to Asians.

School Priming on Cooperation
(DD in Games 1-4)
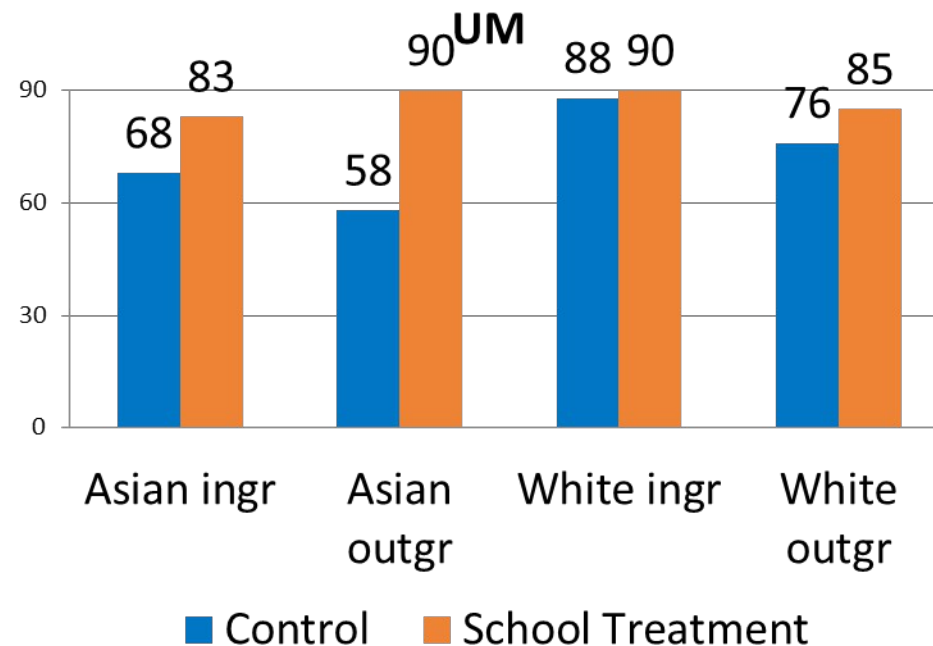
UM: School priming weakly increases the likelihood that player 2s choose DD.

Table 6: Aggregate Treatment Effects of Identity Priming: Probit

Games:	ME 4-8	PD 0			PD 1-4	
Roles:	Player 1	Player 1	Player 2		Player 1	Player 2
Strategies:	High Effort	Cooperation	rJPM	DD	Cooperation	DD
Specification:	(1)	(2)	(3)	(4)	(5)	(6)
Ethnic Priming	-0.652**	-0.072	0.168	-0.211	0.328	0.314
	(0.319)	(0.292)	(0.334)	(0.345)	(0.285)	(0.290)
School Priming	-0.073	-0.072	0.674**	-0.426	0.0451	0.532*
	(0.305)	(0.311)	(0.309)	(0.337)	(0.333)	(0.321)
Constant	1.038***	-0.358	0.012	-0.397*	-0.793***	0.661***
	(0.268)	(0.235)	(0.218)	(0.222)	(0.236)	(0.229)
Observations	1,030	227	227	227	876	908
Log Pseudo L.	-389.6	-143.8	-146.1	-133.4	-515.8	-446.3
Pseudo R^2	0.08	0.01	0.05	0.03	0.014	0.02

Reconciling Effects of School Prime

- School identity prime may introduce school specific cues for behavior
- Asian player 2: 64% chose their univ. for academic reasons, e.g., good programs, reputation, high ranking
- School identity prime may influence the ethnic stereotype of competitiveness

Perceptions of competitiveness for Asians (scale 1-7)

	Control	School Treatment
UM Asians	5.4	6.27

Table 8: Effects of School Priming on Stereotypes (PD 1-4): Probit

	Likelihood of Always Defect (DD)	
	(1)	(2)
	Asian	Caucasian
School Priming	-5.234*	-0.760
	(2.722)	(2.143)
Ingroup	0.138	0.537***
	(0.327)	(0.141)
School×Ingroup	-0.803**	-0.260
	(0.353)	(0.460)
SelfCompetitive	-0.143	0.0890
	(0.219)	(0.320)
School×SelfCompetitive	1.146**	0.200
	(0.499)	(0.399)
Women	0.745	-1.118**
	(0.492)	(0.483)
Age	0.099	-0.015
	(0.065)	(0.069)
Constant	-1.905	1.758
	(1.364)	(2.284)
Observations	284	280
Log Pseudo L.	-121.3	-118.0
Pseudo R^2	0.27	0.08

Result 4: After controlling for the impact of school priming on individual competitiveness stereotype, school priming makes Asian player 2s less likely to choose DD with both an ingroup ($p<0.05$) and outgroup match ($p<0.10$).

Results Summary

- Ethnic priming
  - Coordination: reduces the likelihood of high effort, thus reduces the choice of efficient Nash equilibrium
  - Cooperation: Caucasian player 2s increase DD with outgroup

- School priming
  - Coordination: increases rJPM in PD 0
  - Cooperation: decreases DD after controlling for competitiveness stereotype

Conclusion

- Ethnic priming reduces player 1's high effort risky choice in coordination games
- School priming has potential to increase cooperation in PD games, but its impact interacts with stereotypes and may be sensitive to institution culture
  - Enhances individuals' competitiveness

Implications

- Important to understand the factors that influence immigrant workers' social assimilation, and how it affects their interactions with others at workplace.

- Building employees' common identity in an organization has potential to serve as mechanism to raise cooperation and coordination among employees in strategic environments, but the impact may be contingent on the target groups.