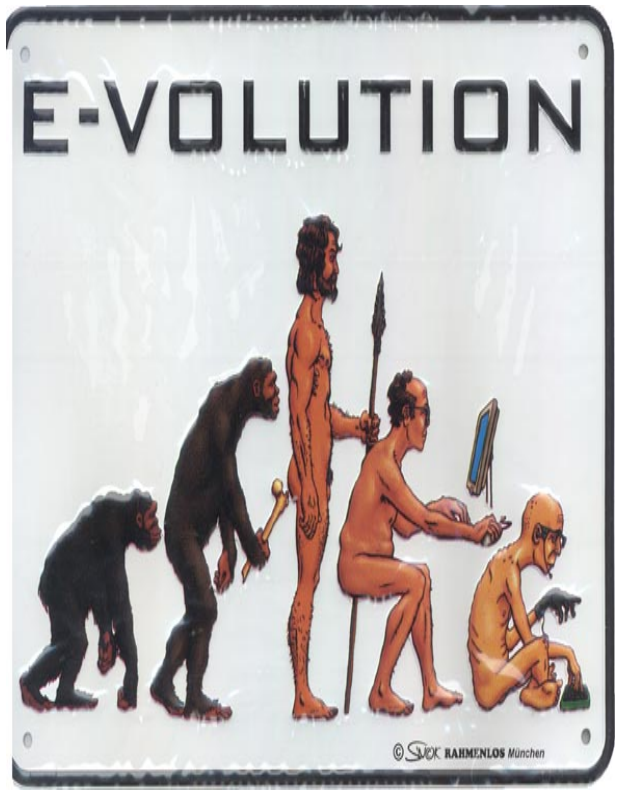
Lecture 4: Cultural Evolutionary Theory: Predictions and Empirical Support

Part I: Culture and Altruism

Part II: Culture (social institutions) and Cooperation

Part III: Cooperation and Conflict



Idea 1: Self-interest

- Biological evolution has led to an innate sense for individuals to satisfy their individual-interests
- Examples: mating opportunities, finding resources, obtaining status.

Idea 2: Control of Self-interests with Institutions

- Humans are social creatures, thus resolve many of their problems cooperatively.
- Free-riders, thieves, and other overly selfish people can inhibit cooperation.
- As a result, all human societies achieve cooperation through the use of social institutions that generate rewards and punishments.

Idea 3: Innate In-group Pre-disposition

- As a result of living in an environment of culture, or living with social institutions, humans have evolved an innate sense of living within cultural “ingroups”
- Most humans, without strong incentives (rewards or punishments) will cooperate and share, AT LEAST WITH INGROUP MEMBERS…

Idea 4: Institutions Define Boundaries of Cooperation

- Humans will cooperate with the people they share an institutional affiliation.
- Thus, we expect cooperation to often be bounded by ingroups.
- Understanding cooperation (and conflict) requires attention to the cultural boundaries that define different human societies and sub-groups within these societies.

Idea 5: Groups will Cooperate to Compete

- In-group cooperation can lead to between group competition.
- Cooperative institutions can scale up competition from individuals and families, on up to tribes, regions, ethnic groups, states, or even civilizations.
- Conflict can be more severe when individuals cooperate to fight each other (war).

Summary: Cooperation and Conflict

- The topics of cooperation and conflict go together. The emergence of cooperative groups can lead to within-group cooperation, but between-group competition and conflict.
- One must look at how both individuals and groups satisfy their goals.
- Sometimes the most cooperative groups (e.g., Mafia organizations) create the most conflict within societies.

Power?

- Evolutionary theory provides a useful framework to understand cooperation and conflict.
- However, an important mechanism for people to get what they want is coercion. Thus, individuals with more POWER can achieve more than individuals with less power. We will be adding these important details as we progress through the course.

Part 1: Culture Influences Altruism

Example 1: Helping behavior

Example 2: Ultimatum Game

Example 3: In-group favoritism (who gets more money?)

What do these examples show?

- In the next few examples, I present data that in my mind supports the general theory presented yesterday, as well as the five ideas we just discussed.
- Do you think these data support this theory?
- Feel free to think about the data in other ways!!!!!

Example 1: Helping Behavior

Helping varies by culture . . .

Helping in twenty-three cultures

In twenty-three cities around the world, researchers observed how many people helped in three situations: helping a person with a leg brace who dropped a pile of magazines, helping someone who did not notice that he or she had dropped a pen, and helping a blind person across a busy intersection. The percentages in the table are averaged across the three situations. The cities in boldface are in countries that have the cultural value of *simpatía*, which prizes friendliness, politeness, and helping others.

CITY	PERCENT HELPING
Rio de Janeiro, Brazil	**93**
San Jose, Costa Rica	**91**
Lilongwe, Malawi	86
Calcutta, India	83
Vienna, Austria	81
Madrid, Spain	**79**
Copenhagen, Denmark	78
Shanghai, China	77
Mexico City, Mexico	**76**
San Salvador, El Salvador	**75**
Prague, Czech Republic	75
Stockholm, Sweden	72
Budapest, Hungary	71
Bucharest, Romania	69
Tel Aviv, Israel	68
Rome, Italy	63
Bangkok, Thailand	61
Taipei, Taiwan	59
Sofia, Bulgaria	57
Amsterdam, Netherlands	54
Singapore	48
New York, United States	45
Kuala Lampur, Malaysia	40

Adapted from Levine, Norenzayan, & Philbrick (2000).

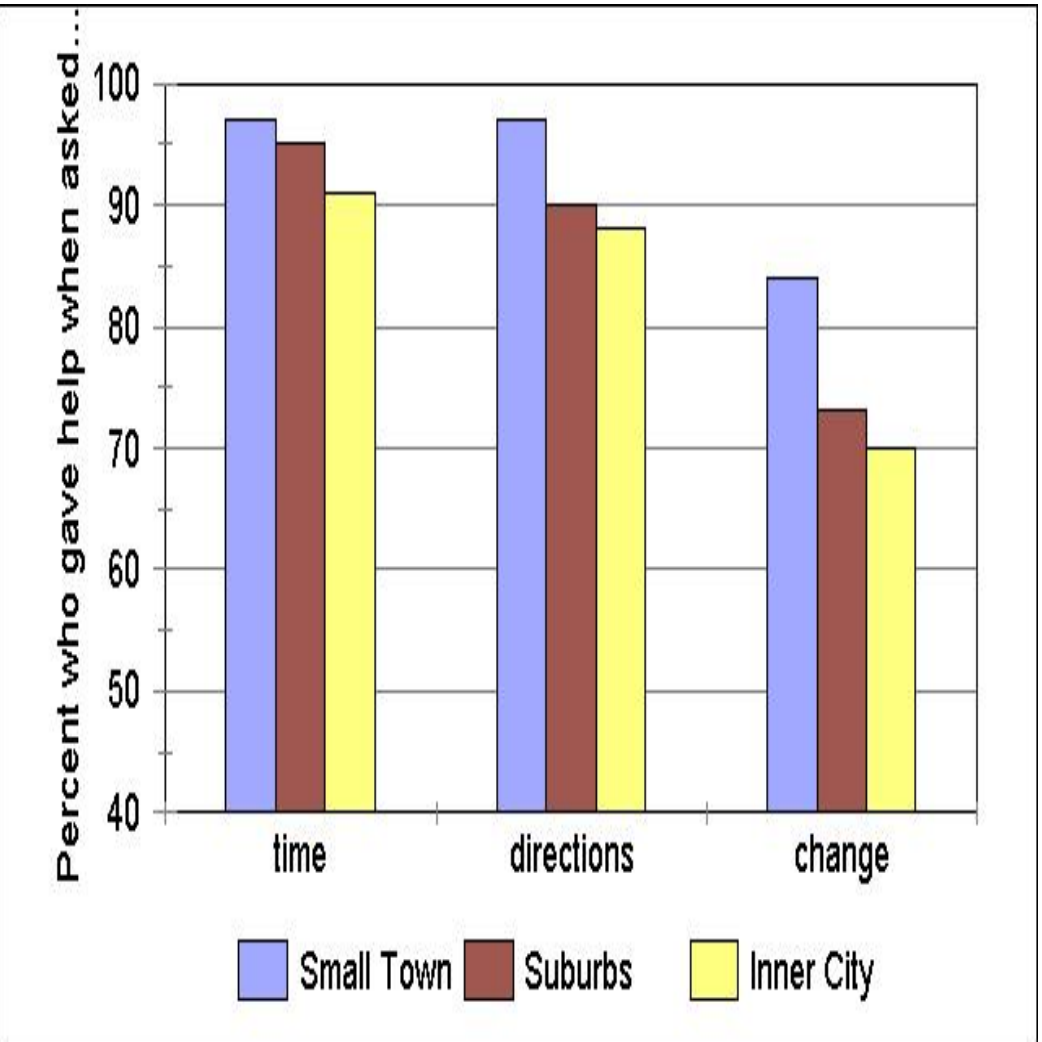
Helping varies by region of the country . . .

TABLE 10.2 Helping in the U.S.A.

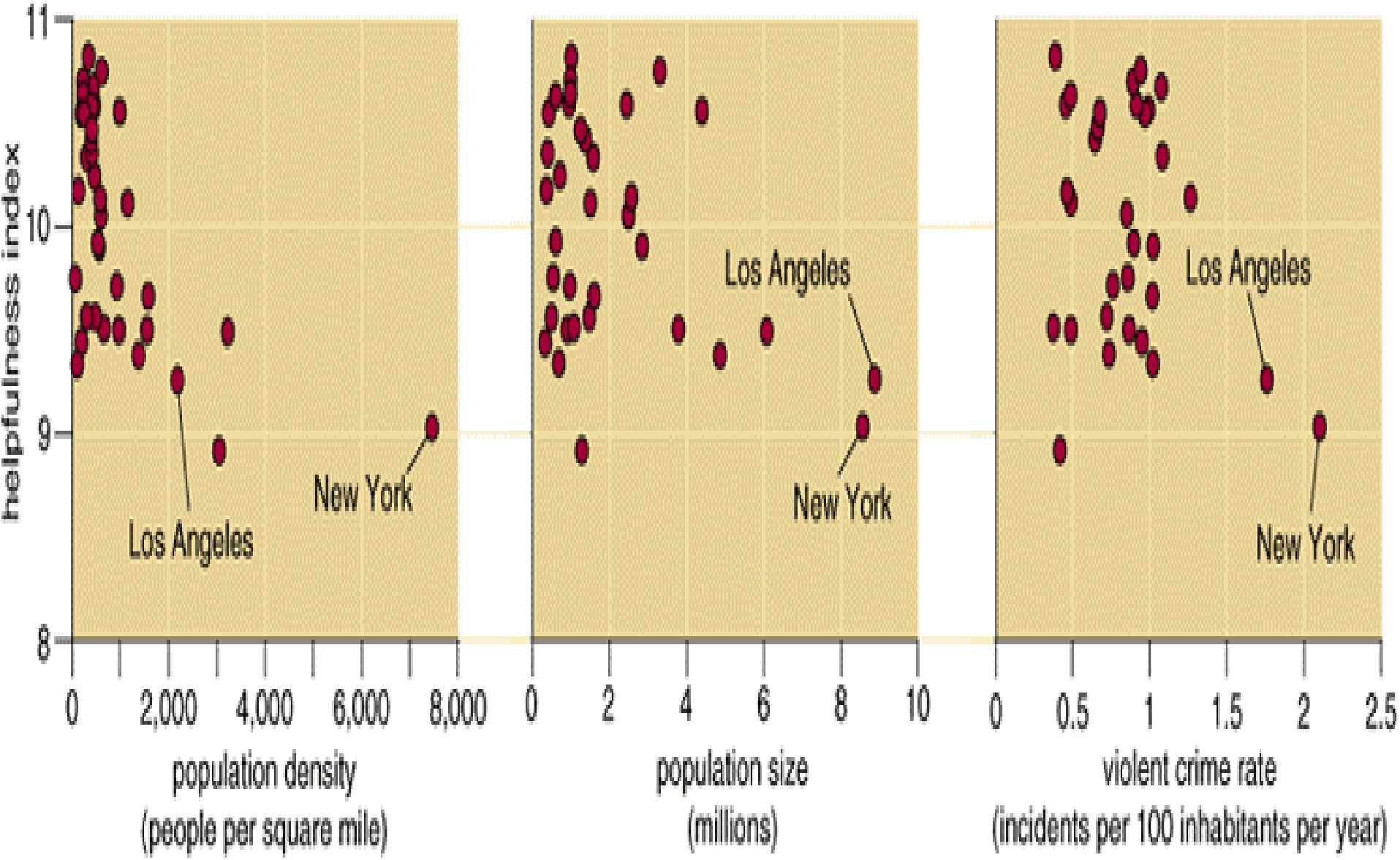
Six types of helping (returning a pen dropped by a researcher who was walking past; helping a researcher with a leg brace pick up dropped magazines; checking for change when asked for change by a researcher; helping a researcher, who was in dark glasses and carrying a white cane, cross the street; mailing a stamped, addressed letter apparently dropped by someone; and average per capita contributions to the United Way in 1990) were studied in 36 U.S. cities. The top ten and bottom ten cities are listed in this table. Although there was a great deal of variability from one helping measure to the next, some overall patterns emerged, including the findings that higher density (population per square mile) and higher cost of living were strongly associated with less helping. *(Based on data from Levine et al., 1994.)*

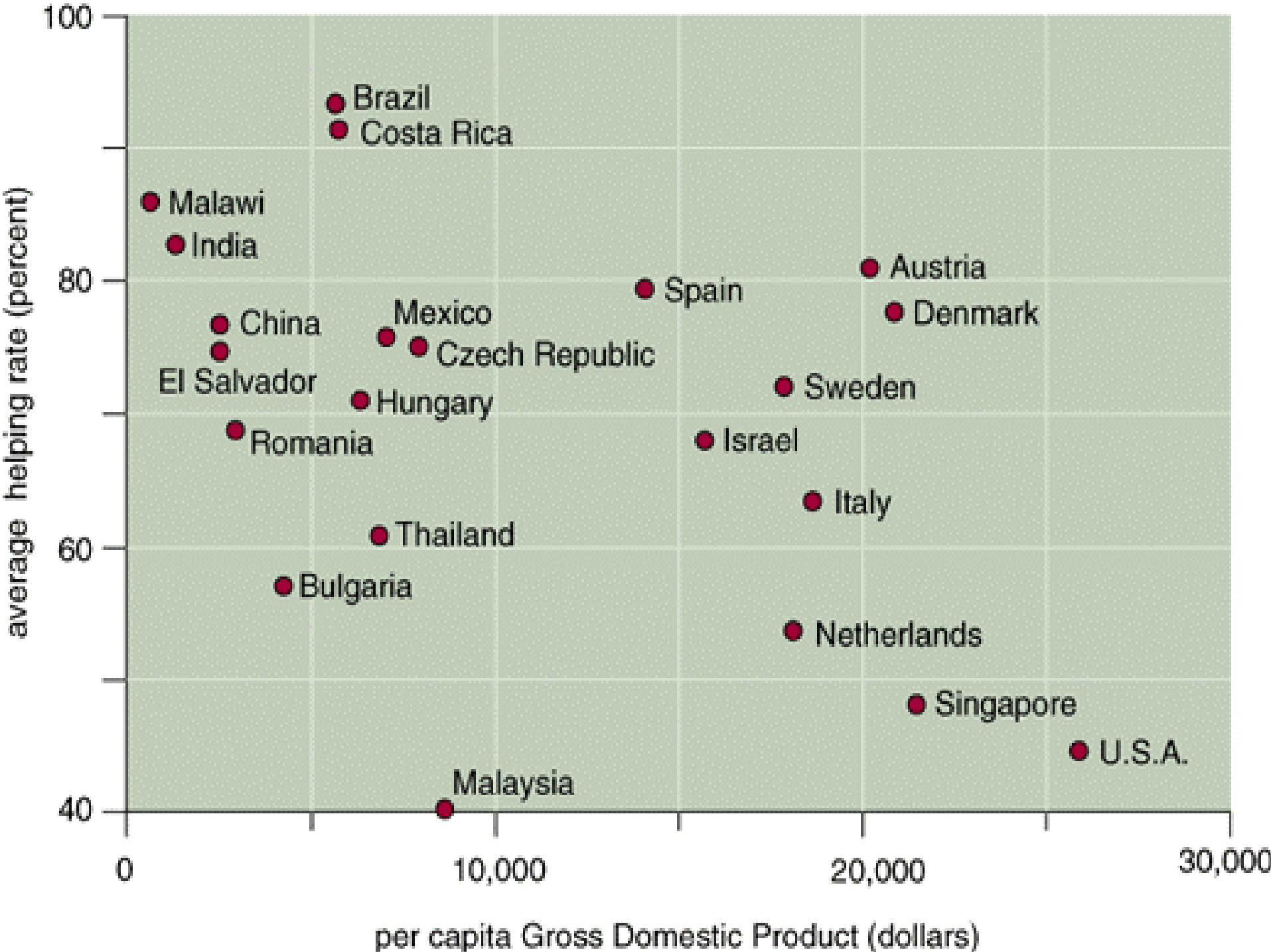
Top Ten Cities for Helping		Bottom Ten Cities for Helping	
Overall Rank	Region	Overall Rank	Region
1. Rochester, NY	Northeast	27. Salt Lake City, UT	West
2. Houston, TX	South	28. Boston, MA	Northeast
3. Nashville, TN	South	29. Providence, RI	Northeast
4. Memphis, TN	South	30. Chicago, IL	North Central
5. Knoxville, TN	South	31. Shreveport, LA	South
6. Louisville, KY	South	32. Philadelphia, PA	Northeast
7. St. Louis, MO	North Central	33. Fresno, CA	West
8. Detroit, MI	North Central	34. Los Angeles, CA	West
9. E. Lansing, MI	North Central	35. New York, NY	Northeast
10. Chattanooga, TN	South	36. Patterson, NJ	Northeast

Where are others more likely to help you; in a small town or a big city?



- Urban Overload Hypothesis: people living in cities are constantly bombarded with stimuli and tune much of it out to avoid over-stimulation
  - Density more correlated with helping than population size is


helpfulness index
11
10
9
8
Los Angeles
New York
0
2,000
4,000
6,000
8,000
population density
(people per square mile)
Los Angeles
New York
0
2
4
6
8
10
population size
(millions)
Los Angeles
New York
0
0.5
1
1.5
2
2.5
violent crime rate
(incidents per 100 inhabitants per year)


100
80
60
40
average helping rate (percent)
Brazil
Costa Rica
Malawi
India
China
El Salvador
Mexico
Czech Republic
Hungary
Romania
Thailand
Bulgaria
Malaysia
Spain
Austria
Denmark
Sweden
Israel
Italy
Netherlands
Singapore
U.S.A.
0
10,000
20,000
30,000
per capita Gross Domestic Product (dollars)

Example 2: The Ultimatum Game

- Two anonymous players divide a sum of *real* money. (**e.g., one day's way**)
- First player (the "Proposer") proposes a division.
- If the offer is accepted by the "Responder," players get proposed shares.
- **If offer rejected, both get nothing.**

The Dictator Game

- Two anonymous players divide a sum of *real* money. (**e.g., one day's way**)
- First player (the "Proposer") proposes a division.
- The "Responder" receives any amount sent to them.
- **Unlike Ultimatum, no possibility to reject offer.**

Cash splits offered by players in ultimatum games

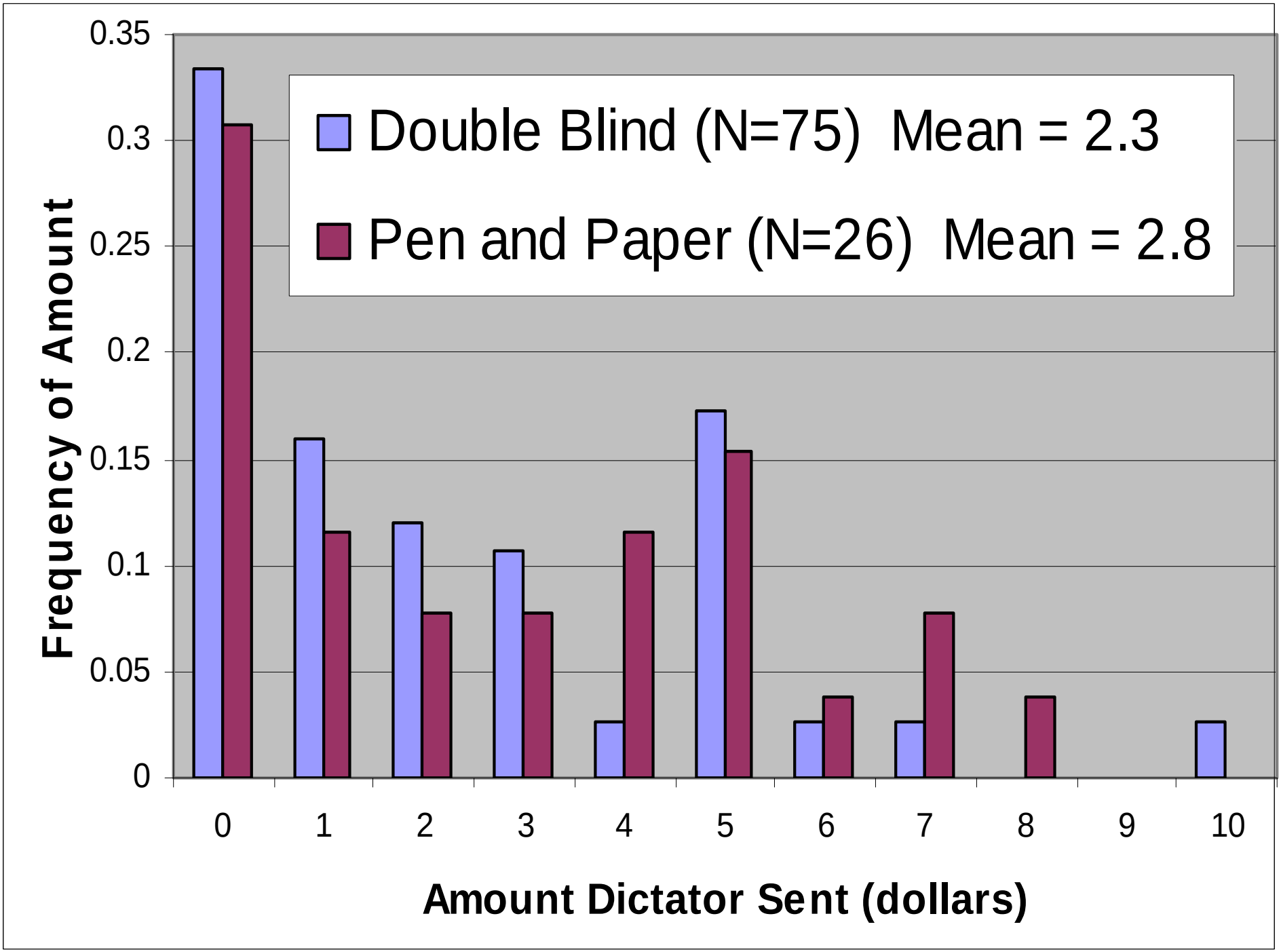
Predictions from Rational Choice Theory

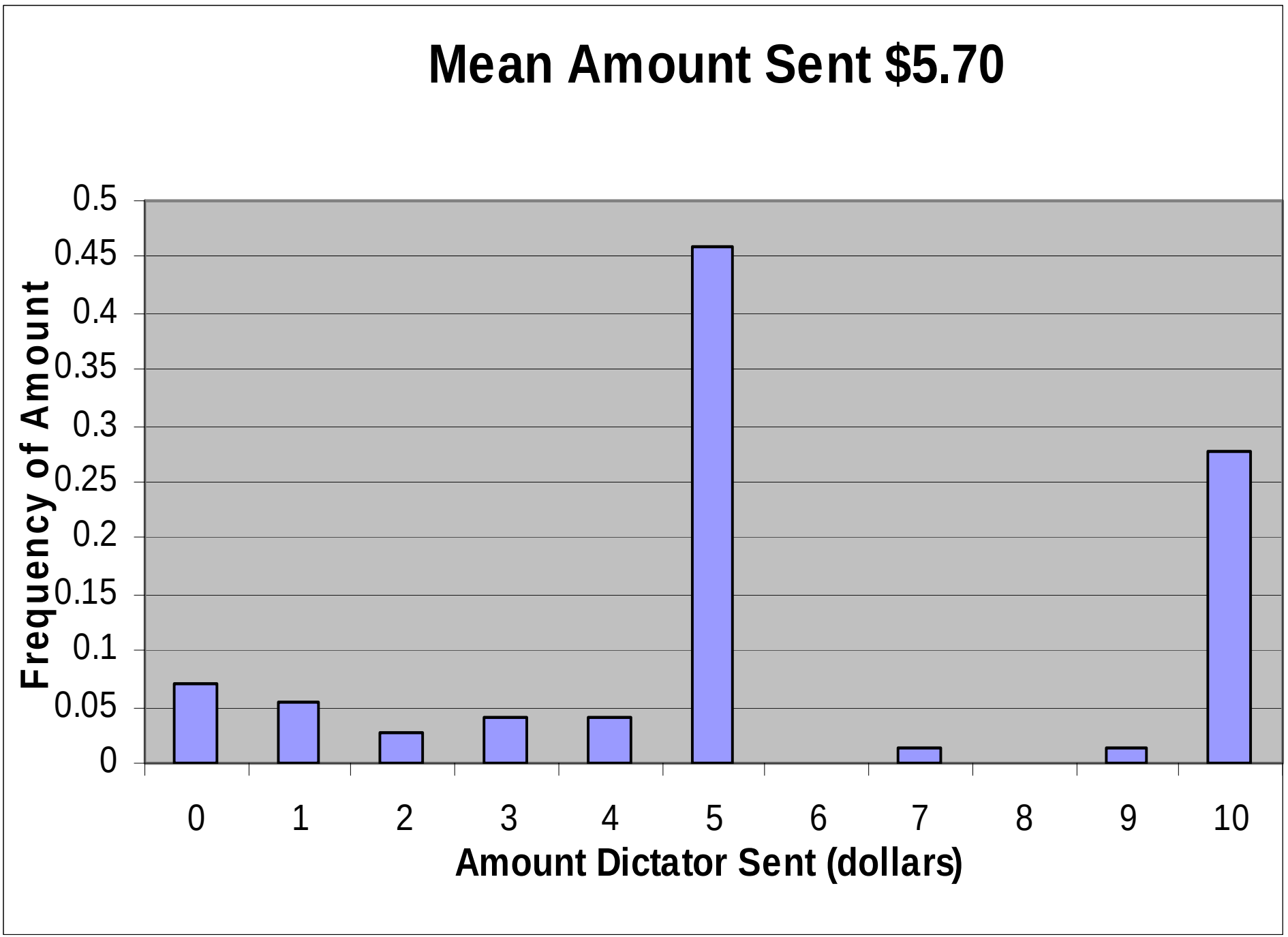
- Player 2 (respondent) should accepts **any** offer since something is better than nothing.
- So, player 1 will make smallest possible offer.

Never happens, anywhere.

Robust results from Western university students (e.g., U.S., Japan, Europe)

- Mean offer = 40% – 50%
- Offers < 20% usually rejected
- **Large stakes** (e.g., 1000$) $\Rightarrow$ 50:50 offers
- What happens in other societies with different cultural rules?


Double Blind (N=75) Mean = 2.3
Pen and Paper (N=26) Mean = 2.8
Frequency of Amount
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
1
2
3
4
5
6
7
8
9
10
Amount Dictator Sent (dollars)


Mean Amount Sent $5.70
Frequency of Amount
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
1
2
3
4
5
6
7
8
9
10
Amount Dictator Sent (dollars)

Cross-cultural Project

- Ultimatum Game
- 12 Researchers
- 1039 subjects in 12 countries
- 7 local or regional comparisons
- 3 hunter-gatherers, 6 horticulturalists, 4 transhumant/nomadic herders, 4 small-scale, sedentary farmers

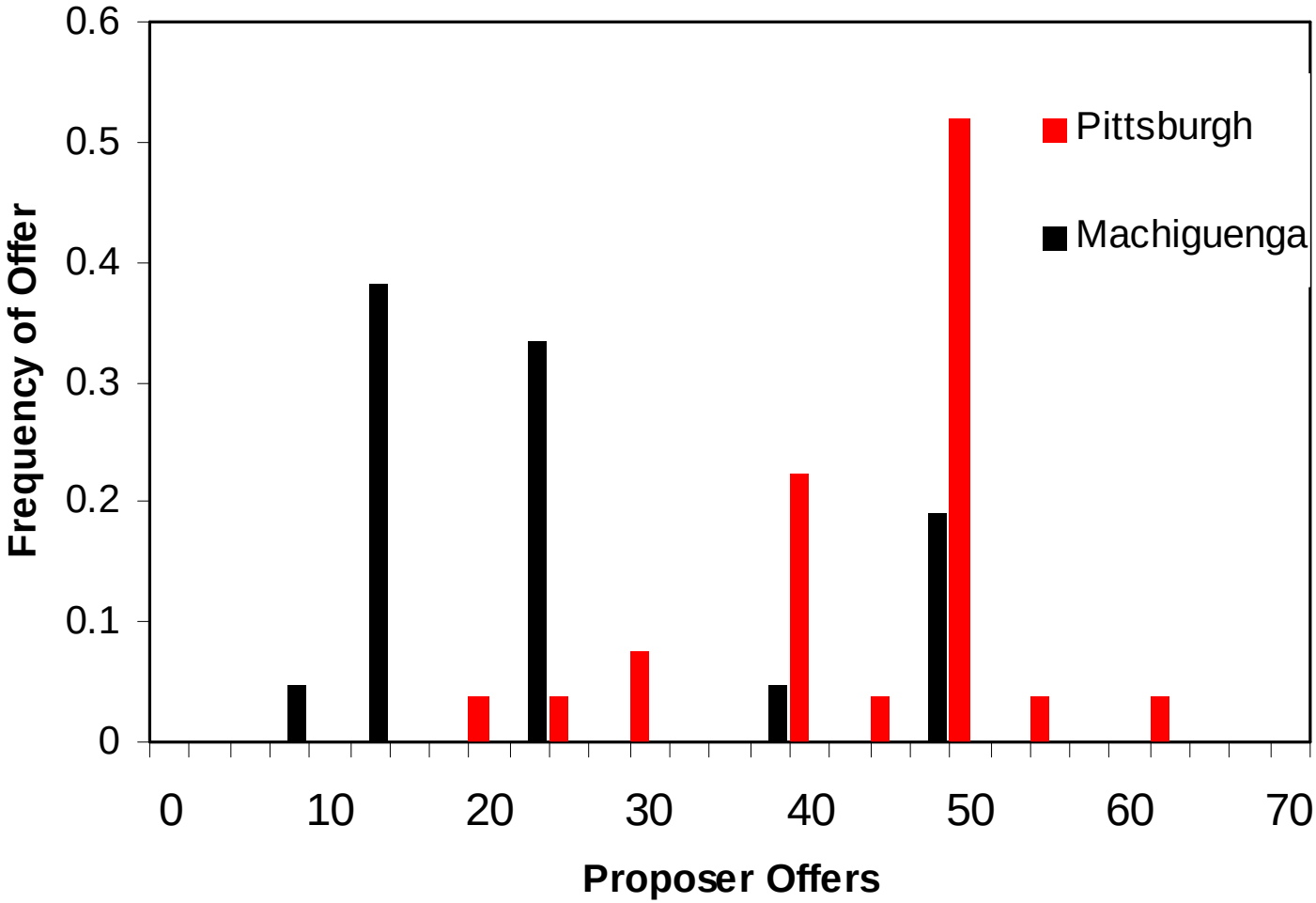
Cross-Cultural Experimental Economics Project

Machiguenga of Peru

- independent families
- cash cropping
- slash & burn
- foraging


Machiguenga
Camisea, southeastern Peru, 1996

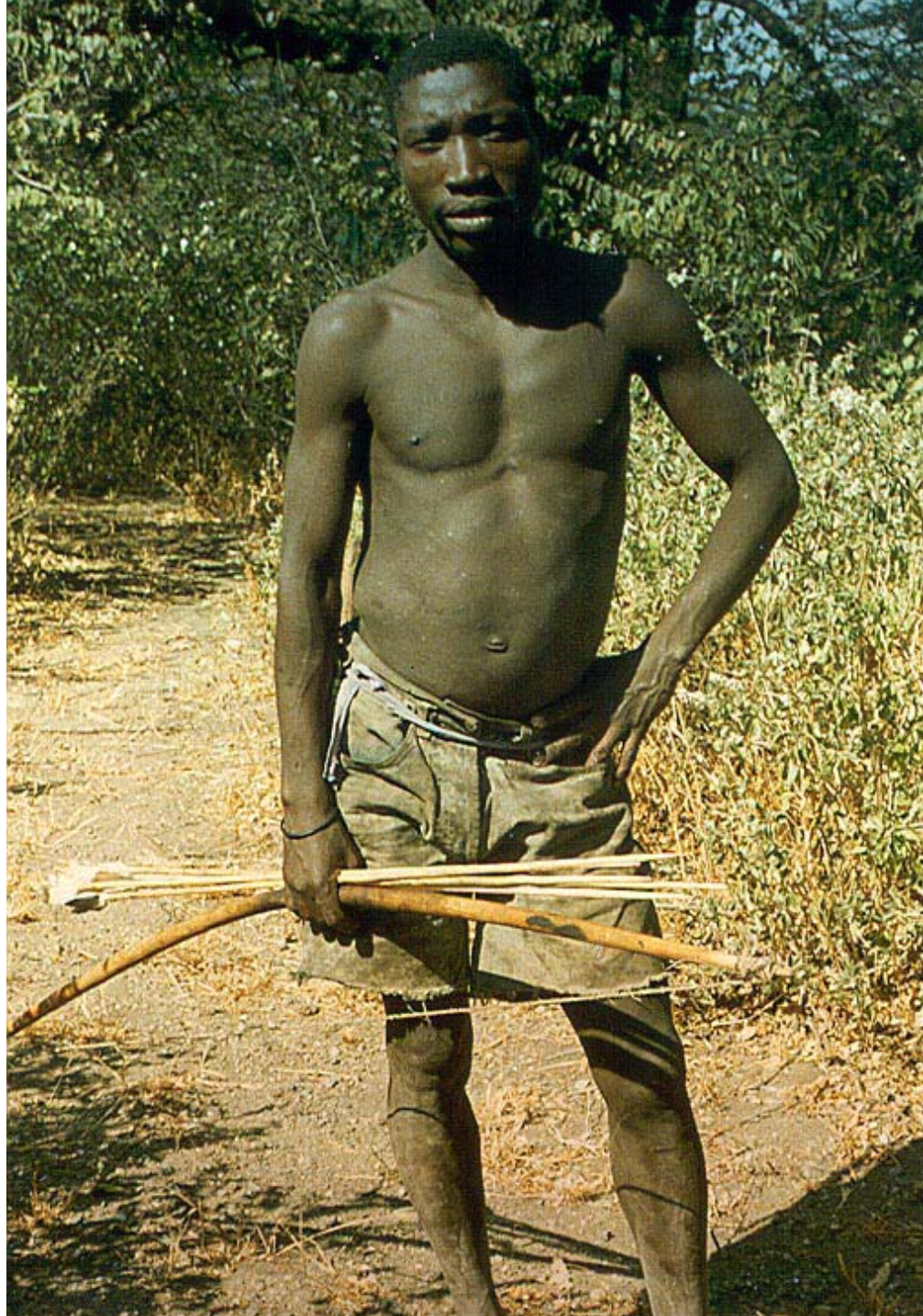
Machiguenga Ultimatum Game Results



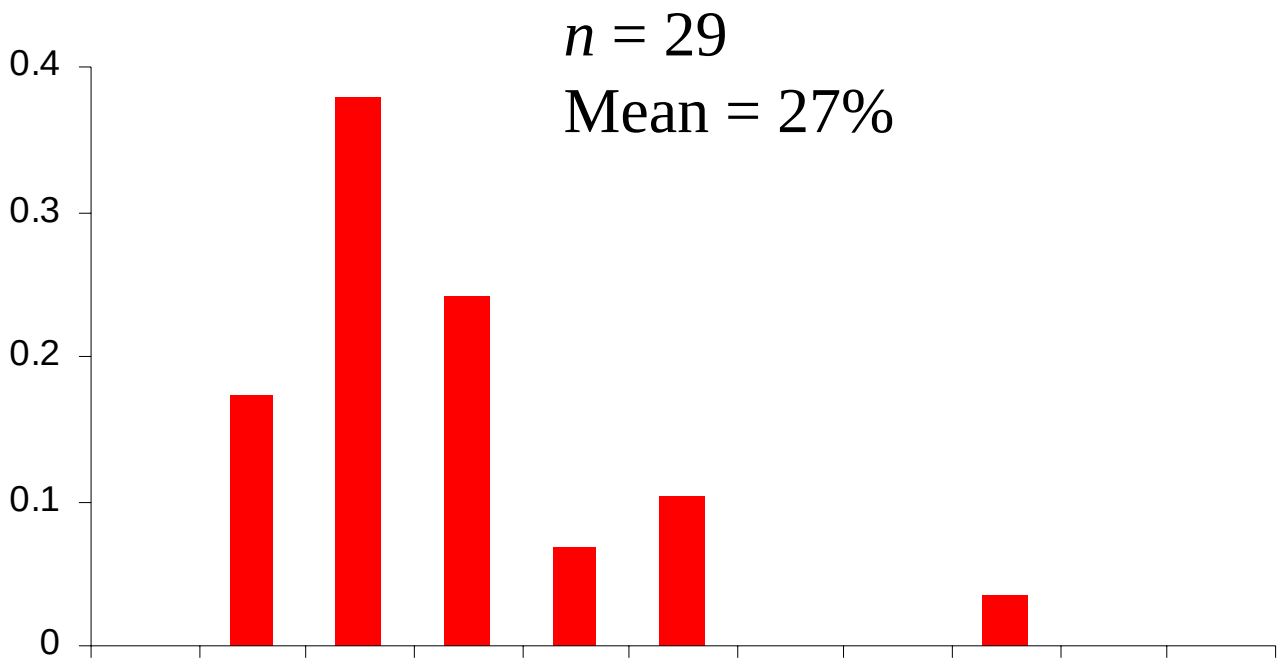
1 rejection among Machiguenga

Hadza

- Hunter-gatherers
- Egalitarian
- No central political system
- Bands: 20–30 people



Hadza Ultimatum Game offers

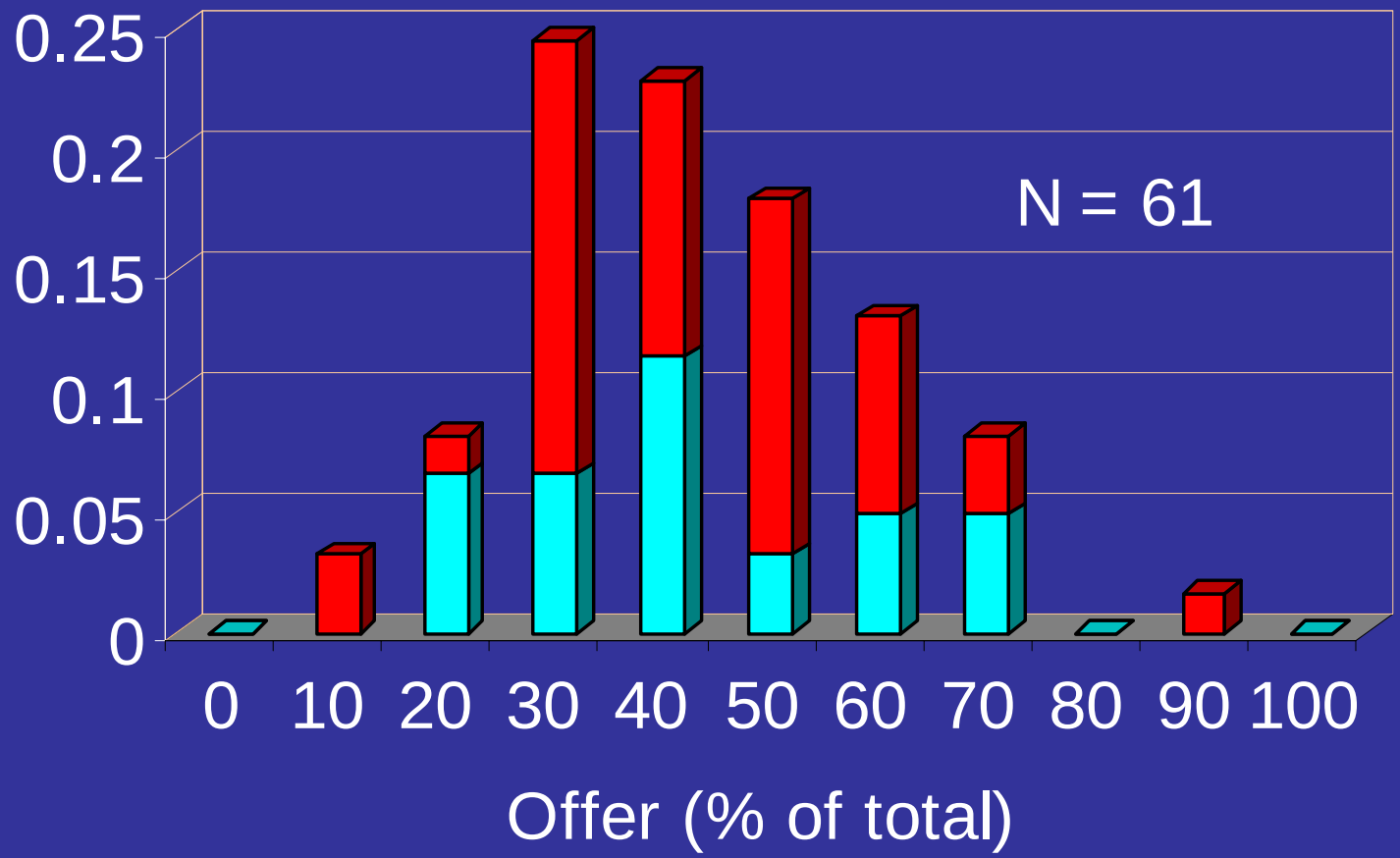


Like the Machiguenga

- Forager-horticulturalists: sago palms, manioc & pigs
- **Culture of gift-giving and obligation**

The Au and Gnau
of Papua New Guinea

Au and Gnau UG Offers and Rejections (PNG)

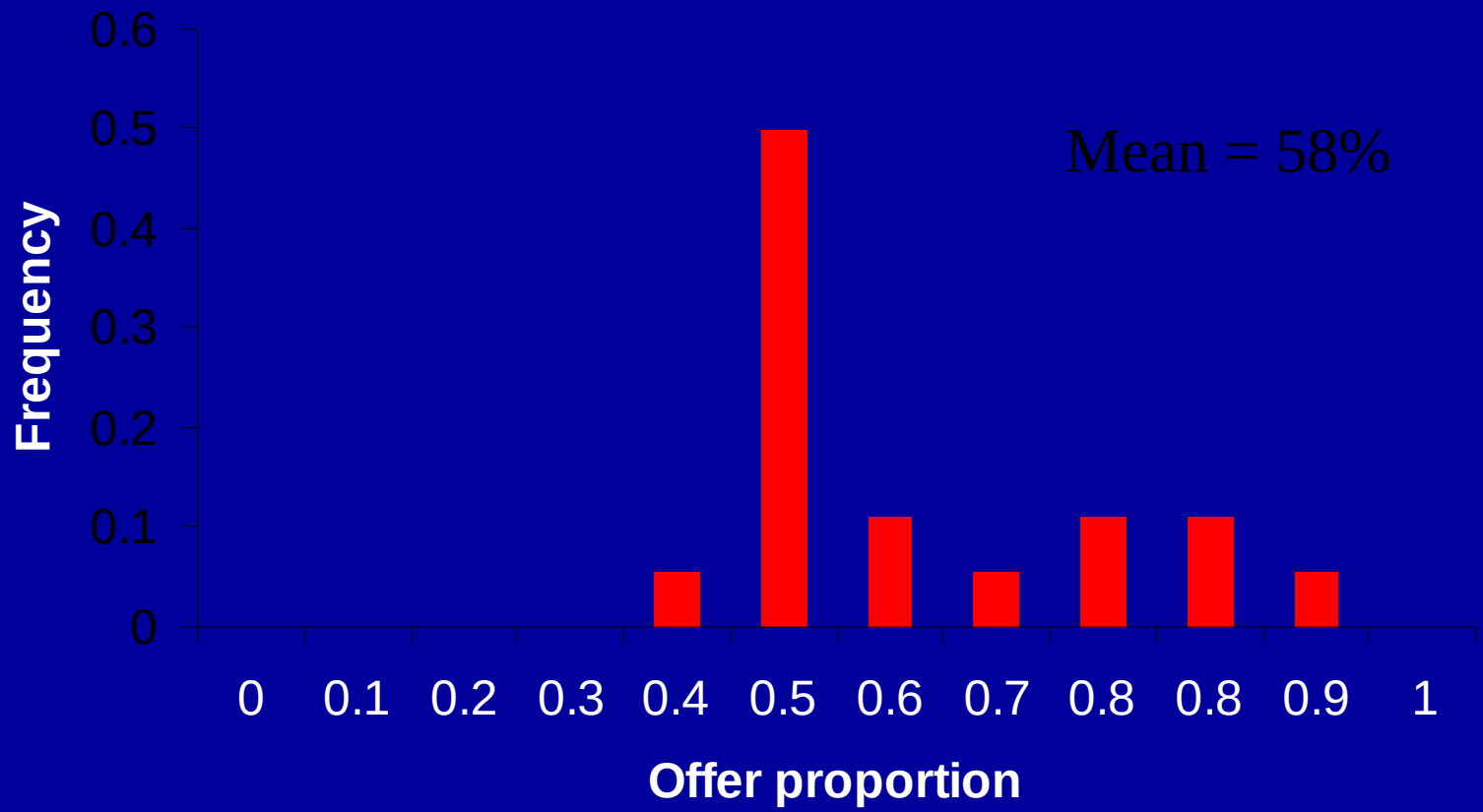


Hyper-fair offers make PNG unique. Makes sense if you ‘know’ New Guinea

Lamalera

- Cooperative whale hunters
- Trade for agricultural goods

Lamalera UG results



]Group	Country	Mean Offer	Modes (% of sample)	Rejection Rate	Rejections 20% of pot
Machiguenga	Peru	0.26	0.15/0.25 (72%)	1/21	1/10
Hadza (Small Camp)	Tanzania	0.27	0.20 (38%)	8/29	5/16
Tsimané	Bolivia	0.37	0.5/0.3/0.25 (65%)	0/70	0/5
Quichua	Ecuador	0.27	0.25 (47%)	2/13	1/2
Hadza (all camps)	Tanzania	0.33	0.20/0.50 (47%)	13/55	9/21
Torguud	Mongolia	0.35	0.25 (30%)	1/20	0/1
Khazax	Mongolia	0.36	0.25		
Mapuche	Chile	0.34	0.50/0.33 (46%)	2/30	2/10
Au	PNG	0.43	0.3 (33%)	8/30	1/1
Gnau	PNG	0.38	0.4 (32%)	10/25	3/6
Hadza (Big Camp)	Tanzania	0.40	0.50 (28%)	5/26	4/5
Sangu (farmers)	Tanzania	0.41	0.50 (35%)	5/20	1/1
Unresettled	Zimbabwe	0.41	0.50 (56%)	3/31	2/5
Achuar	Ecuador	0.42	0.50 (36%)	0/16	0/1
Sangu (herders)	Tanzania	0.42	0.50 (40%)	1/20	1/1
Orma	Kenya	0.44	0.50 (54%)	2/56	0/0
Resettled	Zimbabwe	0.45	0.50 (70%)	12/86	4/7
Ache	Paraguay	0.51	0.50/0.40 (75%)	0/5	0/8
Lamelara	Indonesia	0.58	0.50 (63%)	0/2	0.37

Do individual-level Variables Explain the Variation?

- **Age, Sex and Relative Wealth <u>do not</u> explain any of the variation in proposers or responder behavior (few exceptions).**

In-group Favoritism: Do Sukuma and Pimbwe play UG in the same way?

Two Tanzanian Ethnic Groups

Pimbwe

Sukuma

Characteristics of Social Institutions

	Pimbwe	**Sukuma**
Scope of social institutions	*Smaller* (village, clans, families)	*Wider* (cross-cutting ethnic-level institutions; *Sungusungu*
Importance of sharing	Stereotyped as being stingy (institutions, economic hardship ?)	Stereotyped as being exceptional generous

Scope of Social Activity in Study Area

Pimbwe wedding

Sukuma Dance Competition

1.) Institutional Scope Hypothesis

Sukuma will make similar offers to Sukuma players living both *within* and *outside* of their local village.

Pimbwe will offer lower amounts when playing with Pimbwe individuals *outside* of their local village (their social institutions encourage sharing within villages rather than between).

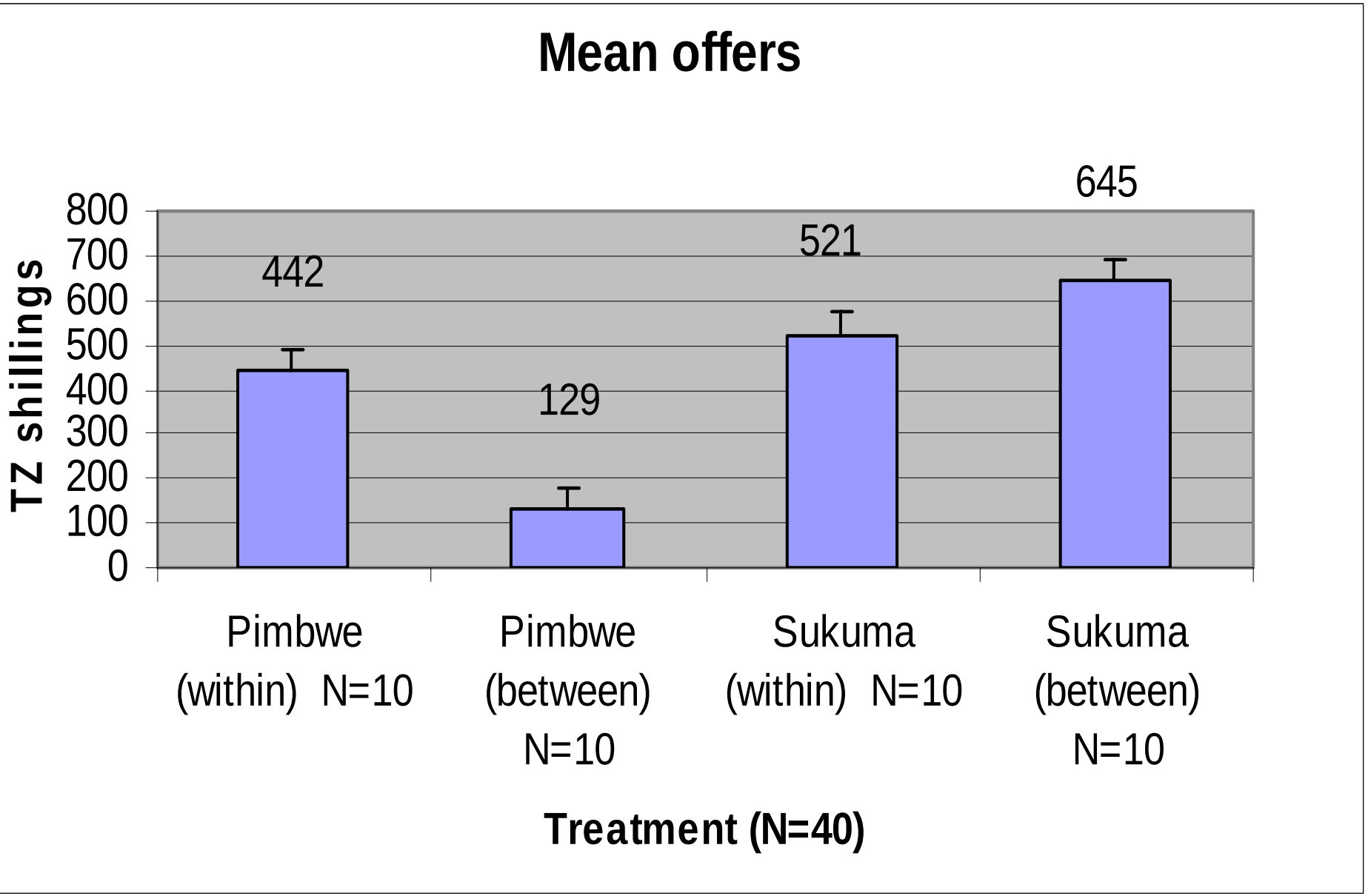
Treatments

"…you must divide the money with one anonymous (**Pimbwe/Sukuma**) player (**within this village / from Kahama**

- **Pimbwe** within this village
- **Pimbwe** from Kahama
- **Sukuma** within this village.
- **Sukuma** from Kahama

NOTE: Kahama is 10 km away

Results: Institutional Scope



2.) Magnitude Hypothesis

Sukuma will share *larger* portions of money with their ethnic members than the Pimbwe.

Results: Magnitude Hypothesis

Sukuma offered *more* than half of the money to another Sukuma, and the Pimbwe substantially less

	Pimbwe	**Sukuma**
Mean offer for *within-group* treatments	430 shillings	620 shillings

3.) Micro/Macro Hypothesis

Individuals' ethnic affiliation, used as a proxy for institutional rules, will have a larger effect on UG offers than will individual economic and demographic characteristics

Results: Micro/Macro Hypothesis

	F value	**Prob. > F**	
Ethnicity/treatment	12.38	>0.0001	**
Education	4.76	0.034	**
Bags of Maize	5.85	0.019	**
Age	.28	0.5978	

How much is offer size reduced by each variable?

Seventy kilo bag of maize (**4** shilling decrease)

Any education (**143** shilling decrease)

Being Pimbwe (**263** shilling decrease)

Part II: Culture (social institutions) influence Cooperation

- As we discussed earlier, cultural group selection of social institutions can lead to cooperative outcomes.
- We will focus on the mechanics of social institutions later in the course, but for now, think of institutions as sets of cultural rules that define how people should behave. Failing to behave in this way can lead to punishment (or rewards).

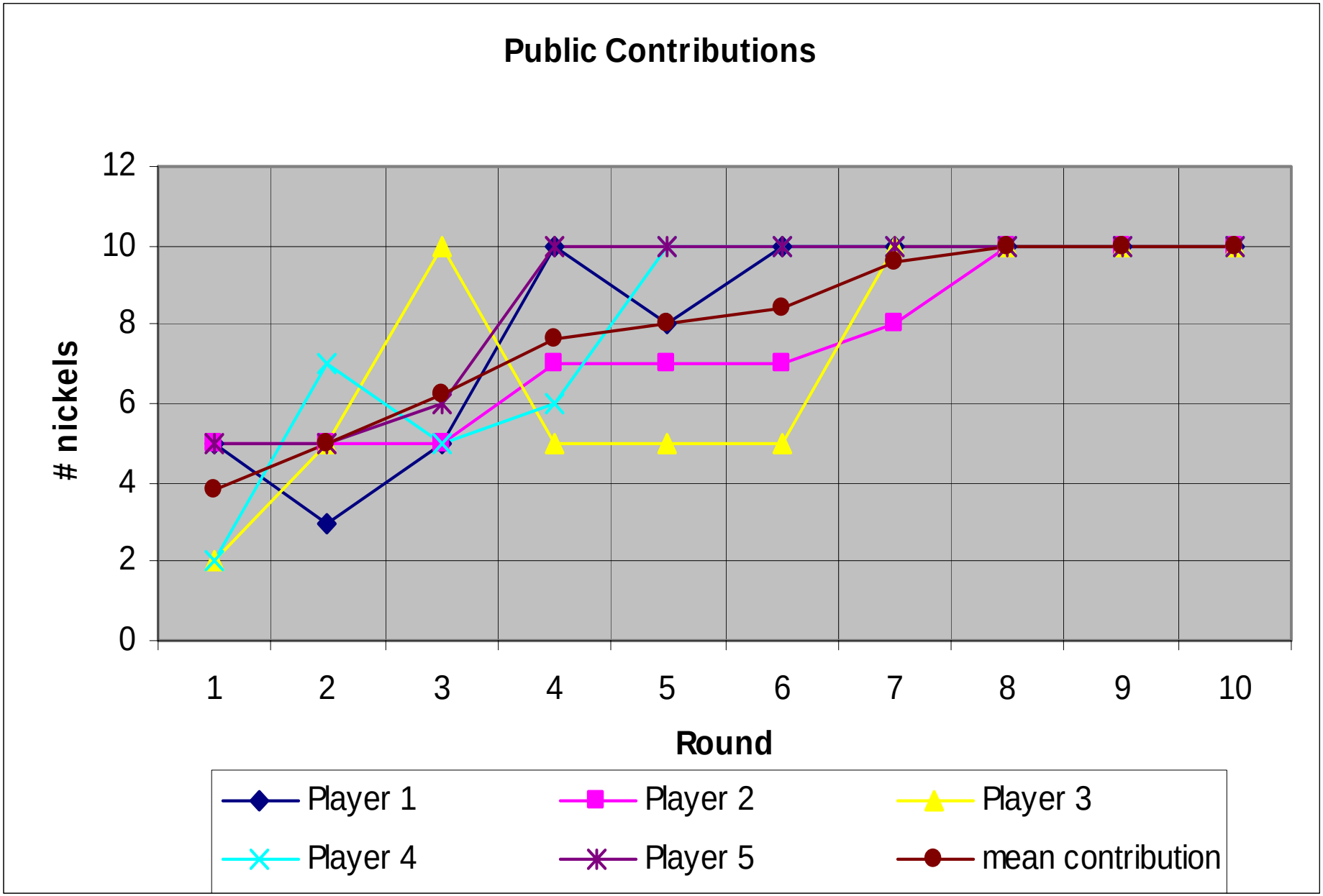
Public Goods Game Experiment

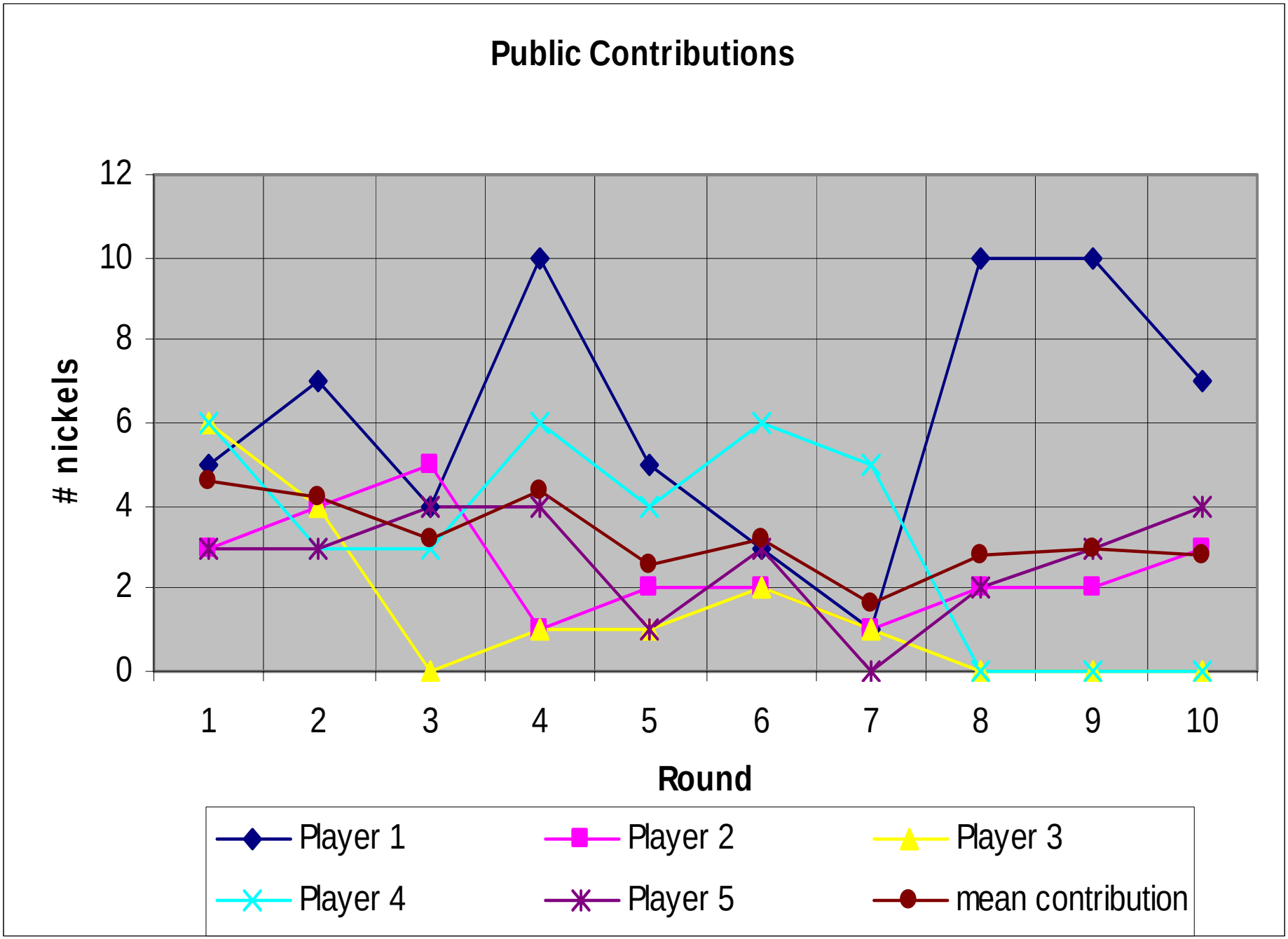
1.) Five players sit in face-to-face situation.

2.) Each player is given $5

3.) Each round (there are 10 in total), each player can contribute between 0 and 10 nickels (50 cents) to "public account"

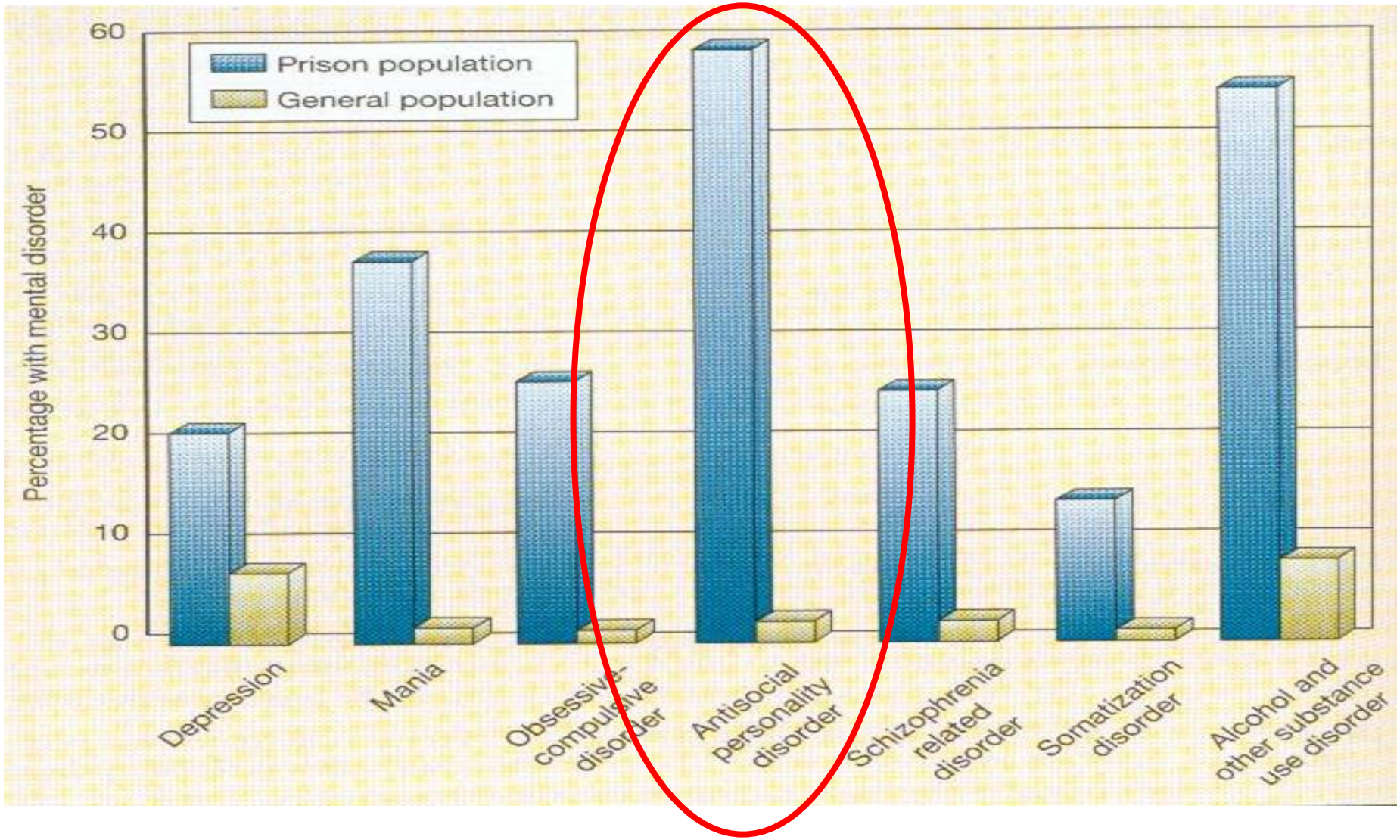
4.) Money put in public account is DOUBLED, and distributed EQUALLY to each player regardless of that they contributed.


Public Contributions
nickels
0
2
4
6
8
10
12
1
2
3
4
5
6
7
8
9
10
Round
Player 1
Player 2
Player 3
Player 4
Player 5
mean contribution


Public Contributions
nickels
12
10
8
6
4
2
0
1
2
3
4
5
6
7
8
9
10
Round
Player 1
Player 2
Player 3
Player 4
Player 5
mean contribution

Player Types

- In many replications of PG experiments, researchers find different types of players. In the most general categorization there are:
- 1.) **Prosocial's** (mother Teresa) they give all their money no matter what (20% or so)
- 2.) **Conditional cooperators** (they cooperate when others cooperate (50% of so)
- 3.) **Competitors/selfish** (they are "stingy" (20% or so)
- 4.) **Manipulators** (they are outright mean) 2-3%



- majority of criminals (~40-75%) meet criteria for Antisocial Personality Disorder
- APD found more commonly in prisons than psychiatric facilities

What happens when the conditions are varied in the PG game?

- Allowing participants to talk increases contributions to public accounts.
- Allowing participants to reward and punish each other increases contributions to public accounts

Example: Tragedy of the commons

- Garret Hardin *(1968)* noticed that pastures in New England were always overgrazed
- These were common pastures, but each herder had a dilemma:
  - Add a sheep = increase profits
  - Everyone adds sheep = pasture ruined

Tragedy of the commons

- *Replenishing resource management dilemma* → sharing of a resource that will renew if members do not over harvest
- But, individuals profit from harvesting as much as possible
- Examples?
  - Alaskan king crab fishermen
  - Oyster harvesting in Chesapeake Bay
  - Clear cutting in Amazon rain forest
  - Clean air in Phoenix, AZ

There are countless examples in which humans do cooperate.

What mechanisms resolve the collection action or free-rider problem?

Resolving the Collective Action Problem: **Size**

- The free-rider problem becomes more severe as the group size gets larger.
- Smaller groups (e.g., a dozen) can resolve collective action problems.
- Why do you think this is?

Resolving the Collective Action Problem: **Symbolic Boundaries**

Group membership seems to help resolve collective action problems.

Membership ensures that individuals are known by their groups, and they can receive a good or bad reputation for their behavior.

Resolving the Collective Action Problem: **Repeated Interaction**

- People worry about their reputation, and the possibility of being rewarded or punished if they will interact with people in the future
- What do you think often happens in the last round of a public goods game experiment?

Resolving the Collective Action Problem: **Institutions**

- It is often not enough simply to know which individuals are “free-riders”
- Rewards and punishments, as defined by cultural rules, put a “bite” into people’s lives.
- Are you influenced by institutions in your daily lives?

Part III: Cooperation and Conflict

- Evolutionary theory illustrates the complexities of both cooperation and conflict. We can see why individuals find themselves in conflict with other individuals.
- Cultural evolutionary theory helps explain cooperation and conflict at different levels.
- I hope that this theory provides a general theoretical foundation for the rest of the course. Of course, you will see that we need additional theories, and other ideas, to make sense out of “social conflict”.

Levels of Conflict

Types of conflict	Levels of conflict	Units
Personal	Interpersonal	Individuals
Family	Intra-group	Individuals/Groups
Identity (ethnic, racial, religious)	Inter-group	Groups, societies
International	Inter-group	States
“Civilizations”	States	Civilizations