

# Experimental Methods in Social Sciences (in particular economics)

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**Subject Pool Differences**

# Cultural Differences

- A number of studies compare subjects from different countries
- But often they are all students
- Variation too small in order to address how much culture can impact behavior and e.g.,
  - whether deviations from rational selfish model are universal
  - whether there are cultures where behavior approximates self-interested rational model
  - whether the social and economic conditions affect behavior
  - whether individual attributes matter more than group attributes
- Henrich et al. (AER 2001) therefore study UG, PG, DG in small-scale traditional societies
  - substantial difference in economic activities and cultural conditions
    - activities include foraging, nomadic herding, small-scale agriculturalist

# Henrich et al. (2001) Results

- Ultimatum Game
  - key results survive
    - many offers equal  $1/2$
    - offers are almost always above the minimum amount
    - low offers are frequently rejected
  - but there is much more variation than in Roth et al. (1991) and other student samples
    - mean offers range from 0.26 to 0.58
    - modes sometimes lower than in student samples (down to 0.15)
    - rejection rates vary between 0 and 0.4 and often lower than in previous studies
    - also low offers are often not rejected (but there are few observations with low offers)
    - offers are often higher than expected payoff maximizing
    - offers above 0.5 occur and are sometimes rejected

# Henrich et al. (2001) Results

- Public Good Game
  - student samples typically have modes at 0 and full contribution
  - investigated societies show different patterns, e.g.,
    - mode at 0 with no one contributing full
    - concentration at intermediate offers
- Dictator game
  - student samples have modes at 0 and 0.5
  - investigated societies show different patterns, e.g.,
    - modes at 0.5 and 0.2
    - mode at 0.25 and no offers of 0

## Henrich et al. (2001) Interpretation

- Results in UG well captured by economic conditions
  - payoffs to cooperation positively correlated with UG offers
  - market integration (i.e., how much people rely on market exchange) positively correlated with UG offers
    - higher payoffs to cooperation (e.g., for whalers) require rules for sharing
    - market integration implies experience with abstract sharing principles
  - individual variables (wealth, sex, village population size . . . ) have no significant impact on offers
- Participants might solve novel problem (UG) by referring to something related from their daily life
- Similar emotional reactions are then triggered
- Deviations from rational selfish predictions almost universal
- But economic and social conditions shape behavior and possibly preferences

# Cultural Differences in the Minimum-effort Game

- Minimum-effort (or weakest-link) game (Van Huyck, Battalio, Beil, AER 1990)
  - coordination game with Pareto-ranked equilibria
  - Pareto-superior equilibria imply higher risk

Figure: Typical Payoff Matrix

Own Number	Smallest number in the group						
	7	6	5	4	3	2	1
7	130	110	90	70	50	30	10
6	–	120	100	80	60	40	20
5	–	–	110	90	70	50	30
4	–	–	–	100	80	60	40
3	–	–	–	–	90	70	50
2	–	–	–	–	–	80	60
1	–	–	–	–	–	–	70

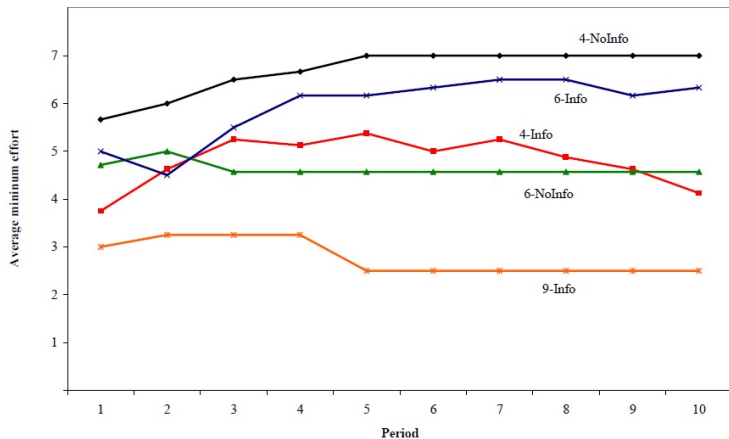
# Cultural Differences in the Minimum-effort Game

- Classical results find reasonably frequent efficient coordination in groups of 2-3
- But reliable convergence to worst equilibrium in groups  $\geq 4$
- A number of measures make efficient coordination easier
  - communication (Blume and Ortmann, JET 2007)
  - growing from small groups (Weber, AER 2006)
  - high frequency interaction (Berninghaus and Ehrhart, JEBO 1998)
- Most experiments were run in the US
- Engelmann and Normann (ExpEcon 2010) run minimum-effort games in Denmark
  - groups of size 4, 6, 9
  - information either on minimum effort in group or all choices
  - 10 periods with fixed matching

# Engelmann-Normann (2010) Results

- Overall, no trend towards worst equilibrium, even in groups of 6

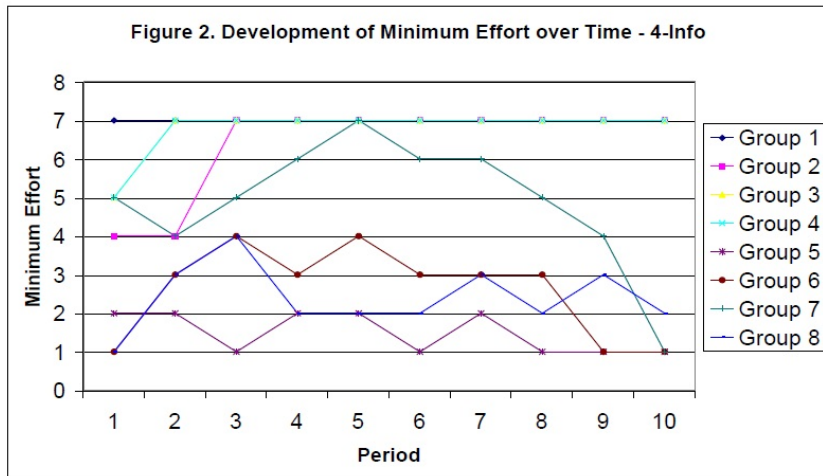
Figure: Average Minimum Effort across Groups over Time





# Engelmann-Normann (2010) Results

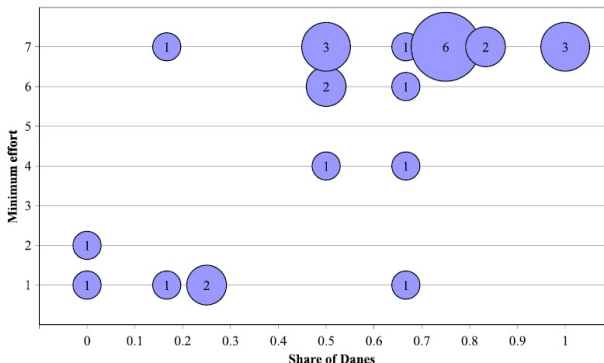
- Substantial heterogeneity, example:



# Engelmann-Normann (2010) Results

- What explains this heterogeneity?
  - interestingly, the share of Danes in the group
  - experiments run in Copenhagen, many Danish subjects, but also many exchange students

Figure: Minimum Effort in Final Period by Share of Danes in the Group



# Engelmann-Normann (2010) Results

- Other variables have almost no impact
  - no difference between group size 4 and 6
  - no impact of detailed feedback or other demographic variables

Figure: OLS Regression of Final Period Minimum Effort, Obs=Group

	OLS		
	Coefficient	<i>t</i>	<i>p</i>
<i>n</i> = 6	-0.131	-0.15	0.884
<i>n</i> = 9	-3.997	-2.88	0.008
DaneShare	5.598	3.32	0.003
MaleShare	-0.023	-0.01	0.990
EconShare	0.355	0.19	0.854
Info	0.080	0.09	0.927
Constant	2.045	1.43	0.166
# Observations	31		
	$R^2$ (adj.): 0.492 (0.365)		

# Engelmann-Normann (2010) Interpretation

- What drives the results?
  - putting in high effort involves some form of trust
  - small differences in first period suggest Danes may have slightly more positive expectations about other participants
    - regression of first period effort shows coefficient of 0.8 for Dane dummy
  - crucial difference, however, appears to be different reaction to not being the weakest link
    - probit for lowering effort from first to second period if own effort not minimum shows Danes are significantly less likely to do so
  - so Danes are more likely to give others a second chance
  - consistent with survey results (e.g., world values survey), finding Danes near top for trust, happiness, etc.
  - other Nordic countries score similarly, would be interesting to compare their behavior in minimum effort game
  - Danes also typically more cooperative than average in other experiments

# Challenges for Cross-cultural and Cross-country Studies

- Frequently, studies that compare countries look at one sample in one country and the same experiment done with one sample in the other country
- This is problematic, because we do not know whether, e.g., a difference between Harvard and Berlin students is driven by one being in the US and the other one in Germany
- In order to really learn something about country differences, we need several observations from each country
  - this allows us to compare within-country variation with across-country variation
  - then we can conclude whether the latter is important
- The same holds for comparisons across cultures (or any other groups)
  - for other groups this argument is sometimes more obvious
    - we would not compare 40-year old women with 20-year old men to study gender effects

# Students vs. Representative Populations

- Cappelen, Nygaard, Sørensen, Tungodden (ScanJE 2015) compare (economics and non-economics) students to representative sample of Norwegians
  - lab experiment
  - trust game and dictator game
  - results:
    - representative sample more pro-social than students
    - different motives (efficiency, equality, reciprocity) play similar roles for representative sample and students
    - gender differences larger in representative sample than in student sample with respect to relative importance of motives but other way around for degree of pro-sociality
    - non-economists slightly less selfish than economists but no difference with respect to relative weight on different motives

# Gender Differences

- Gender differences are probably the most frequently studied subject pool differences
- There are good reasons for that
  - substantial evidence for outcome differences and discrimination based on gender
  - interest in understanding origin of these
- There are also bad reasons
  - gender is easily elicited or observed
  - it often just happens to be significant

# How (not) to Study Gender Differences

- Studying gender differences makes sense if you have an ex-ante hypothesis how and why gender matters
- But routinely including gender is problematic
  - in particular if it is then only reported if it turns out to be significant
  - this leads to overestimating relevance of gender effects
- Sometimes one is not interested in gender but worried that it might matter
  - then gender should be included as a confound in regressions, but made clear that this is only studied as confound
- Same arguments apply to other variables such as being an economist or a psychologist



# Literature

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