Students Subjects. Deception

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MW24.2 Experimental Economics (SS2023)

Lecture Plan

- Student subjects
- Deception

@ Fréchette, Guillaume R. (2011). Laboratory experiments: Professionals versus students. SSRN Electronic Journal.

@ Ralph Hertwig and Andreas Ortmann (2001). Experimental practices in economics: A methodological challenge for psychologists? Behavioral and Brain Sciences 24(3): 383-403

Students as Subjects of Experiments

Reasons for using student subjects:
- ▶ easy to recruit
- ▶ cheap

Reason(s) against using students subjects:
- ▶ potential problems with external validity

Compared to the general population, students:
- ▶ have quantitative skills
- ▶ do not have specific professional skills but are good at learning
- ▶ are young, single, without kids etc.

Students as Subjects of Experiments

$\Rightarrow$ Students are a rather narrow and special segment of the general population

$\Rightarrow$ Ultimately, the choice of the subject population boils down to how generalizable the set of economic principles under study is

Students versus career professionals

▶ Would you reach similar conclusions about the observed behavior if you used the usual experimental subjects rather than subjects who are career professionals at the task?

▶ Caveats:
* situation of interest may not allow for professionals
* there may be no obvious professionals
* professionals need not be the only group of interest
* presence of confounding factors (i.e., socio-economic characteristics)

Students versus career professionals

▶ Review of experimental laboratory studies that test theoretical predictions using samples of both students and career professionals

	Other-Reg.	Market	Signaling	Other	Total
Pros closer				PHV	1
	SH		CKLG	DKL	
Similar	FL	DFU	PvW	AR	9
	(CM)		AHL	Cooper	
Pros further	CS	Burns			2
Different	CM				1
Total	4	2	3	4	13

Table 12: Summary of the distance to the theoretical prediction

Students versus nurses

▶ Threshold public goods game played by either students or nurses

▶ Threshold: 25; players: 10; endowment: 10; repetitions: 25

▶ Payoff: 10 – contribution or 15 – contribution
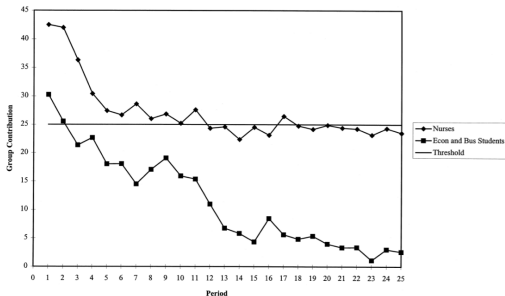
⇒ Neither group is closer to a NE in the final 5 repetitions

⇒ No statistical difference in the frequencies of meeting the threshold

Students versus wool buyers

* Burns (1985)

▶ Second year microeconomics undergraduates versus wool buyers with an average experience of 35 years
▶ Progressive oral auction
▶ 9 buyers incentivized to acquire 2 units each, with the second unit providing a lower return
▶ 5×3 sessions selling 12 units each

⇒ Students are faster at learning the market equilibrium
⇒ Wool buyers pay no attention to the price dynamics within the session
⇒ Wool buyers bid on units they don't need to "keep others honest"

Students versus fishermen

- ▶ University students versus shrimp fishermen
- ▶ Public goods game with a costly social disapproval signal
- ▶ Players: 4; endowment: 10: rounds: $5 + 5$
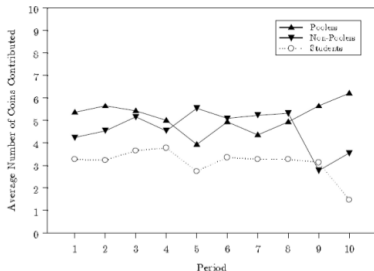
- ⇒ Overall, fishermen cooperate more
- ⇒ Treatment effect is the same for students and non-poolers but not for poolers

Students versus soccer players

▶ Undergraduate students (with and without soccer experience at amateur level) versus professional soccer players (kickers and goalies) with at least two years of experience

▶ 15 practice and 150 or 200 payment rounds

	A	B
A	0.60	0.95
B	0.90	0.70

P-K Game

	1	2	3	J
1	0	1	1	0
2	1	0	1	0
3	1	1	0	0
J	0	0	0	1

The O'Neill Game

Students versus soccer players

SUMMARY STATISTICS IN PENALTY KICK EXPERIMENT

	Choice	Equilibrium	Professional Soccer Players	Students with Soccer Experience	Students with No Soccer Experience
I. Aggregate Data					
Row player frequencies	L	0.363	0.333	0.392	0.401
	R	0.636	0.667	0.608	0.599
Column player frequencies	L	0.454	0.462	0.419	0.397
	R	0.545	0.538	0.581	0.603
Row player win percentage		0.7909	0.7947	0.7927	0.7877
(std. deviation)		(0.0074)			

$\Rightarrow$ Soccer players produce choice frequencies indistinguishable from equilibrium predictions

$\Rightarrow$ Soccer players generate sequences of choices that are serially independent

$\Rightarrow$ In the student sample, there aren't enough differences in the choice frequencies between kickers and goalies

Students versus soccer players

* Wooders (2010)

(!) Data of Palacious-Huerta and Volij are too good to be true:
  * One should expect 6.85 out of 40 soccer players to be very
    close to the equilibrium play in the O'Neill game but 16 were,
    which is quite unlikely ($P \approx \frac{1}{1900}$)

► Split the data in two and check for consistency

⇒ Soccer players tend to switch between under- and overplaying
  strategies in the first and second halves of the experiment

⇒ Students appear better at mixing after all

# Students versus career professionals

* Fréchette (2015)

	Other-Reg.	Market	Signaling	Other	Total
Pros closer				PHV	1
Similar	SH		CKLG	DKL	9
	FL	DFU	PvW	AR	
	(CM)		AHL	Cooper	
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Table 12: Summary of the distance to the theoretical prediction

Students versus general population

▶ University of Copenhagen and Copenhagen Business School versus Danish Civil Registration Office

▶ Individual tasks measuring risk attitudes and time discounting rates
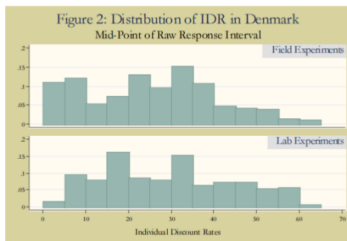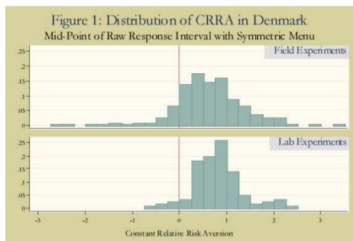
⇒ Mean CRRA [95%]: 0.79 [-0.02, 1.85] versus 0.63 [-0.49, 1.87]

⇒ Mean IDR [95%]: 27.9% [5.0%, 47.7%] versus 25.0% [0.9%, 51.7%]

⇒ General population sample has more heterogeneity that can be explained by variation in socio-economic backgrounds

Selection bias

(?) Are the preferences of *volunteer* participants representative?

▶ Social and risk preferences: Trust game and lottery choice

▶ Surprise classroom experiment in the Introductory Microeconomics course at the University of Melbourne

▶ Over 14 hundred students involved (i.e, *population*)

▶ 160 subjects randomly selected for payment

Figure 1 – Population Attrition
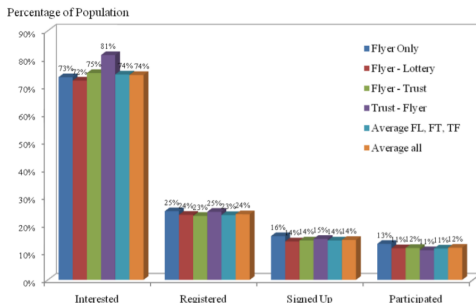
Selection bias

* Cleave et al. (2010)

⇒ No significant selection bias based on observable characteristics
(gender, faculty, domestic/foreign)

Table 5 – Comparison of choices of participants and population

	Percent Returned	Amount Sent	Lottery Choice
Participants	22.8% (2.32%) [67]	$6.13 (0.83) [75]	3.40 (0.22) [58]
Population	25.9% [602]	$8.13 [658]	3.64 [510]
t-test: Participants Average = Population Average	t = -1.33 p-value = 0.19	t = -2.42 p-value = 0.02	t = -1.14 p-value = 0.26

Entries are averages, standard deviation is in parentheses and the number of observations is in squared brackets

⇒ Significant difference in preferences only w.r.t. the amount sent in
the Trust game

Deception in Experiments

▶ The researcher should... be careful to avoid deceiving participants. Most economists are very concerned about developing and maintaining a reputation among the student population for honesty in order to ensure that subject actions are motivated by the induced monetary rewards rather than by psychological reactions to suspected manipulation. Subjects may suspect deception if it is present. Moreover, even if subjects fail to detect deception within a session, it may jeopardize future experiments if the subjects ever find out that they were deceived and report this information to their friends.

Defining deception

► There is a world of difference between not telling the subjects things and telling them the wrong things.
  The latter is deception, the former is not.

► What is deception?
    * Explicit misstatement of a fact
    * Provision of information that can be misleading to the subjects
    * Obfuscation of *important* information

Deception in experimental economics

- ▶ Outright lies are prohibited
- ▶ It is *not* required to disclose absolutely everything to the subjects
- ▶ It *is* required to disclose information that could affect strategic choices
- ▶ It is unacceptable to violate the subjects' default expectations

- ▶ 'Common' forms of deception $\sim$ information about other players:
  - * Computer simulated players instead of human participants
  - * Fewer human participants than declared
  - * Bogus characteristics of other players

Is the following experimental design deceptive?

- ▶ The subjects are endowed with one unit of stock that generates *unknown* dividends over three periods of time
- ▶ In each period, the subjects can either collect the dividend or sell the stock at a certain fixed price

- ▶ The subjects are told that the dividend value is randomly generated from the interval [0, 100] in each period
- ▶ To have more control, the researcher chooses three dividend histories: low (5, 12, 19), medium (37, 61, 42) and high (63, 81, 78)

Deception in experimental psychology

- ▶ Reasons to justify deception:
  - * concealing the true purpose of a study so that the subjects cannot respond strategically
  - * producing situations of special interest that are unlikely to arise naturally

- ▶ Still, the American Psychological Association recommends to use deception as a last-resort strategy

Deception in experimental psychology

* Hertwig and Ortmann (2008)

Percentage (and Number) of Studies Published in the *Journal of Experimental Social Psychology* in 2002 Using a Classification of Methods of Deception Proposed by Sieber et al. (1995)

Method of Deception	How Many of the Deception Studies Use a Given Method
False purpose. Participants are given, or be caused to hold, false information about the main purpose of the study	87% (55)
Bogus device. Participants are given false information concerning stimulus material[a]	62% (39)
Role deception. Participants interact with participants about whose identify they have been given false information	24% (15)
False feedback regarding self. Participants are given false feedback about themselves	30% (19)
False feedback regarding others. Participants are given false feedback about another person	24% (15)
Two related studies. Two related studies are presented as unrelated	9.5% (6)
Unaware of measure. Participants are kept unaware that a study is in progress at the time of manipulation or measurement, or unaware of being measured (e.g., videotaped)	3% (2)
Unaware of participation. Participants are kept unaware of being subjects in research	0%

Note.   There were 117 studies, of which 63 used deception.

Testing deception in the lab

* Jamison et al. (2008)

► Deception consequences in the laboratory

(!) The participants had to be purged from the subject pool

► Two consecutive studies using one subject sample

► Computer simulated players instead of human opponents

► First study: Trust game

► Second study: Holt and Laury (2002) lottery choice, Dictator game, Prisoner's Dilemma

Testing deception in the lab

* Jamison et al. (2008)

$\Rightarrow$ Shares of subjects returning for the second study are not statistically different between the treatment and control groups

$\Rightarrow$ Deceived females are less likely to return

$\Rightarrow$ Deceived males are more likely to return

$\Rightarrow$ "Unlucky" deceived subjects are less likely to return

$\Rightarrow$ Deceived subjects are less consistent in the lottery choice

$\Rightarrow$ Deceived subjects (especially, female and inexperienced) share less in Dictator game

$\Rightarrow$ No difference in Prisoner's Dilemma

Lecture Summary

- ▶ Student subjects
    - * as opposed to career professionals
    - * as opposed to general population
    - * as a self-selected sample
- ▶ Deception
    - * definition
    - * reasons for and against
    - * consequences