

Choosing Subjects

Lecture 8

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EPS Lectures

Students and Validity

How Often are Students Used as Subjects?

- Kam, Wilking, and Zechmeister (2007) find that in the top three journals of political science, *APSR*, *AJPS*, and the *JOP*, from 1990-2006, approximately 25% of articles on experimentation used student samples.

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- However, in two more specialized journals in political psychology, *Political Behavior & Political Psychology*, found that approximately 70% of the studies were conducted with student samples during the same time period.
- Since these figures combine both laboratory and non-laboratory experiments such as field survey experiments which are a greater preponderance of the experimental papers in the top three journals, they understate the dominance of student subject pools in political science laboratories.

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- For example, Danielson and Holm (2007) surveyed 60 laboratory experimental economics papers published in top experimental journals and found only 4 did not use students as subjects.
- Similarly, Henry (2008a) surveyed experimental research articles on prejudice in the top-ranked empirical journals in social psychology and found that approximately 92% of used student samples.

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- **Are often interested and excited about participating in a research endeavor.**

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- Also arguably increases comparability of experiments conducted across researchers.

Internal Validity and Subject Pools

Representativeness and Statistical Validity: Sampling Issues and the Target Population

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- Also concern when political scientists recruit subjects through newspaper advertisements as in Iyengar (1987) or from civic groups & temporary employment agencies as Mutz has.

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- The distinction is not merely how we think of the target population, but also how we think about the solution to the problem.

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- The distinction is not merely how we think of the target population, but also how we think about the solution to the problem.
- If the solution is to seek out a sample that is more representative of the larger population, then clearly this larger population is the target population and we are dealing with the problem through trying to increase the statistical validity of the results.

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- They used the reasoning that the random selection of jurors approached a random sample of the local population with driver's licenses.

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- Recently, Kam, Wilking, and Zechmeister (2007) recruited a random sample of subjects from the university staff (excluding professors, research positions, and faculty who serve as administrators) as well as a random sample from the local community surrounding the university.

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- They found that the university staff who volunteered for the experiment were not significantly different on these dimensions from those that volunteered from the local community except that they were younger (the local community drew also from retired persons) and more female (although this can be largely explained by a sampling disparity that oversampled women among staff compared to the local community).

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- **Ethical Issues, however.**

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- Use results to estimate inequity aversion or the desire for fairness or equity in bargains in the Dutch population.

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- Habyarimana, Humphreys, Posner, & Weinstein's (2007) game theoretic experiments in Kampala, Uganda, drew from a random sample of population in the city using methods similar to that used in survey research in that area in an effort to estimate internally valid estimates of behavior in the target population.

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- Subjects were allowed to punish other subjects but varied cost & impact of punishment.
- The qualitative results—how subjects' choices varied with cost & impact of punishment—similar to undergraduates.

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- Subjects must volunteer for laboratory experiments and in almost all field experiments can refuse the manipulation.
- Furthermore, in field experiments that take place over time or in virtual laboratory experiments, some subjects may choose to drop out of an experiment before the experiment is completed.

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- However, the most recent such study cited by them was conducted in 1975, which gives one pause when extrapolating to experiments of a completely different type conducted 30 years later.

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- Levitt and List also note two studies in economics of the effects of financial incentives on subject recruitment & subject type [see Harrison et al (2005) and Rutstrom (1998)]. Discuss later.

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- The few that do, do not shown a significant bias in experimental results.

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- Porter and Whitcomb (2005) compare the voluntary participation of subjects in four separate student surveys.
- They find that the subjects who participated most were more likely to be female and socially engaged, less likely to be on financial aid, more likely to be an investigative personality type and less likely to be an enterprising personality type.

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- However, Wang and Jentsch found that these did not have a significant effect on the subjects' choices in their particular decision making experiment.
- In a similar study, McCray, Bailly, and King (2005) consider the possible consequences of overrepresentation of psychology majors in psychology experiments.
- They find that in the particular types of decision-making experiments they conducted, nonpsychology majors choices were not significantly different.

Construct Validity and Students

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- She is interested in an existence result; that is, given some sample of humans, does the theoretical predictions about these different voting mechanisms receive support.
- **It does not matter to the research where the sample of humans comes from for such an initial study.**

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- **Blanton and Jaccard state this argument as follows:**

It would be wrong, however, to say that social psychologists have no interest in populations. The fact that they use inferential statistics reveals their own tacit assumption that the individuals they study are a random sample from a population. The question then becomes 'Who is this population?' Stated another way, social psychologists turn the traditional approach of specifying a population and then seeking a random sample on its head. They instead start with a sample and then argue that the sample can be construed as a random sample from some population of individuals. The task then turns into one of figuring out who that population might be. The focus is on generalizability of the results, rather than the representativeness of a sample.

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- But in the meantime it can have a consequential effect as research
- **But these costs must be weighed against benefits – if restrict experimentation to what we can do without student subjects, will accomplish much less research.**

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- A number of results found with student subjects have been investigated to see if they hold with nonstudents.
- Then compare results in one-shot games without repetition with students to those with students.
- Focus on those most relevant to political science & review is not comprehensive.

Game Theoretic Models and Students

Experiments with Repetition: Evidence on Mixed Strategies

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- Used as subjects professional soccer kicker-goalkeeper pairs as well as male undergraduate student pairs excluding economics & mathematics students & those with soccer backgrounds to play the game.
- Found professional soccer players performed much closer to the theoretical predicted equilibria probabilities than undergraduates.

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- Evidence that soccer players choices in first half of experiment were correlated with their choices in second half.
- If players overplayed (underplayed) a card in the first half, the players underplayed (overplayed) the card in the second half.

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- Wooders also examined the distribution of the choices of the players and found that the distribution of the choices were not as predicted if the soccer players had been using a mixed strategy, but the distribution of the choices of the students were closer to that predicted by the mixed strategy.
- Thus, the comparison of the subjects does not give a clear answer as to whether experience with a similar game does lead individuals to be better able to choose as predicted in equilibrium.

Game Theoretic Models and Students

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- Contend results suggest professionals unable to transfer their skills at randomization from the familiar context of the field to the unfamiliar context of the laboratory.

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Experiments with Repetition: Evidence on Backward Induction and Common Knowledge

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- Not rationality alone that implies backward induction solution to the centipede game, but common knowledge of rationality.
- If rational individuals think there is a possibility that others are not rational, then it is optimal to not take on the first round.

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- Furthermore, every chess player converged fully to equilibrium play by 5th time played

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- Students' choices were different when they knew that there was a probability they were playing against chess players, than when the other players were not chess players.
- When students played chess players, by 10th repetition college students choices also extremely close to equilibrium play.
- Results imply that observations in other experiments in which subjects choose contrary to game theoretic predictions may be a consequence of a failure of common knowledge of rationality rather than rationality of the subjects.

Game Theoretic Models and Students

One-Shot Games

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- Also measure the subjects risk preferences by having subjects participate in a series of lotteries, survey basic demographic information, and administer an IQ test.

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- Argue that their results suggest that in these types of models, student choices should be seen as a lower bound for such deviations.

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- To some extent this evidence is not surprising given the results of other experiments on one-shot games and how dependent they can be on presentation etc. as found by Chou et al's experiment on the guessing game.

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- Whether these differences are significant if repetition with randomization is allowed is an open question.

Construct Validity and Students

Models of Political Elite Behavior & Subject Pools

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- **Again, we focus on an existence result & external validity when we turn to other subjects.**

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- In book discuss three recent political science experiments that have compared experimental results testing theories of political elite behavior in the laboratory with undergraduates to similar experiments with subject populations of political experts.
- Two of these three studies seem to suggest that political elites are more likely to make choices that fit the predictions of decision theoretic expected utility theories or game theoretic models than undergraduates. Unclear what the incentives were for subjects in the third experiment.

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- Thus, in only two of the nine studies is there robust evidence that students perform more poorly than professionals.

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- Give subjects experience with game through repetition & randomization.

External Validity and Subject Pools

Experiments Conducted with Multiple Subject Pools

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- However, in the game with punishment choices varied significantly across countries, even with experience.

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- There are some considerable differences in the subject pools and experimental protocols independent of culture that could explain the differences.

Meta-Analysis and Subject Pool Comparisons

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- Second, Oosterbeek, et al. note that in the “usual cross-country/cross-culture studies” the “cross-country differences are attributed to cultural differences without specifying the cultural traits that underlie differences in subjects’ behavior.”

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- Responders behavior did significantly vary by region.

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- A higher score implied a lower offer.
- There was no significant effect of the scale on responder behavior, however, this may suggest that since proposers' behavior was changed there was no effect on responder behavior.

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- The subjects were more likely to choose the nonrisky option in the positive frame and the risky option in the negative frame.

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- Are the results robust to expanding the subject pool?
- Kuhberger (1998) conducted a meta-analysis of the results from 136 empirical papers on framing effects with nearly 30,000 participants.
- Although he found that some of the design choices in the different experiments affected the sizes of the framing effects found, he found that there was little difference between the size of the framing effect found with students compared to that found with nonstudents, suggesting that for this particular experimental result, student subjects make choices similar to those of nonstudent subjects.