Foundations of Experimental Economics

University of Kassel

Winter Term 2025/2026

Lecture 3: Designing (Laboratory) Experiments II

Introduction

Goals for Today

- **Explore** key **institutional settings** and their impact on experimental outcomes.
- **Learn** how to design **treatment variations** to isolate causal effects.
- **Address experimenter demand effects, deception, and ethics** as fundamental concerns in experimental design.

Recommended Readings

- Weimann, J., & Brosig-Koch, J. (2019). *Methods in experimental economics: An introduction*.
  - Chapter 2.3.1, p. 57-60
  - Chapter 2.5.1, p. 83-92
  - Chapter 2.5.3, p. 95-101
  - Chapter 2.6, p. 104-118
  - Chapter 2.7, p. 118-128
  - Chapter 2.8.1, p. 128-133
  - Chapter 4.2, p. 174-175
  - Chapter 4.3, p. 182-188

Institutions

Institutions

- Institutions are the **rules, procedures, and structures** that shape participant interactions. They determine among other things:
  - Who can do what.
  - When, how and how often actions can be taken.
  - What information is available and how it is presented.
  - How outcomes are calculated.

- In experimental economics, institutions are often the main treatment variable—by altering the rules, changes in behavior and outcomes are studied.

- The range of possible institutions is vast. Here, we focus on a few high-impact examples that are often used in experiments.

Elicitation Methods

Direct Elicitation vs. Strategy-Method (1/5)

- In a standard Ultimatum Game with a $10 endowment:
  - **Direct elicitation** captures one offer and one accept/reject decision per proposer–responder pair.

- **Problem:** Most offers may cluster around $4–$5 → Few observations for extreme offers ($0–$2 or $8–$10).

- **Solution:** Continue data collection until **enough extreme cases** are observed. But this is costly and time-consuming.

Direct Elicitation vs. Strategy-Method (2/5)

- The **strategy-method** (Selten, 1967) provides an alternative solution.

- General definition: Participants submit a **complete strategy** in advance—decisions for every possible scenario—before knowing how the game will unfold.

- In the Ultimatum Game this means:
  - The responder indicates whether they would accept or reject for each possible offer before seeing the actual offer.
  - The payoffs are determined based on the actual offer and the receiver's pre-submitted responses.

Direct Elicitation vs. Strategy-Method (3/5)

Offer	Decision
$0	Reject
$1	Reject
$2	Reject
$3	Reject
$4	Reject
$5	Reject
$6	Reject
$7	Reject
$8	Accept
$9	Accept
$10	Accept

Direct Elicitation vs. Strategy-Method (4/5)

- While the **strategy-method** saves time and money, it relies on the assumption that pre-committed decisions are identical to those made via **direct elicitation.**

Key question

- Would participants' decisions change if they were reacting to actual offers rather than committing in advance?

Direct Elicitation vs. Strategy-Method (5/5)

- Brandts and Charness (2011) gather findings on elicitation methods:
  - In many cases, strategy-method and direct elicitation **yield similar results.**
  - However, in games involving **punishment** there is a clear difference between methods.

- When using the strategy-method, participants tend to punish less.

- This is attributed to **“hot”** vs. **“cool”** states:
  - Hot state (direct elicitation): Emotional, immediate reactions.
  - Cool state (strategy-method): More detached, pre-committed decisions.

Communication

Communication (1/3)

- Most lab experiments **exclude communication.**
  - Participants are not allowed to talk or communicate in any other form during the experiment.

- This approach offers high **internal control** but **sacrifices external validity**, as it may not reflect how people interact in real-world settings, where communication is often present.

Communication (2/3)

- There are different forms of communication in economic experiments. Some important distinctions include:
  - Face-to-face vs. Computer-Mediated Communication
  - One-Way vs. Two-Way Communication
  - Structured vs. Free-form communication
  - Pre-Play vs. In-Game Communication
  - Cheap Talk vs. Costly Signaling

Communication (3/3)

Strong effects in coordination games

- Communication helps participants align behavior towards the social optimum.

Mixed results in other games; communication can

- Increase cooperation in social dilemmas.
- Increase trust in the Trust Game.
- Lead to more equitable outcomes in the Dictator Game.

Repetition

One-Shot vs. Repeated Interactions (1/6)

- Another key design choice in an experiment is the number of decisions participants must make in a single game.

- **One-shot interaction**: Participants make a single decision.
  - Behavior reflects immediate preferences without influence from past or future outcomes.

- **Repeated interaction**: Participants make decisions across multiple rounds.
  - Allows for increased understanding, learning from experience and the development reputation.

One-Shot vs. Repeated Interactions (2/6)

- **Understanding**: With repetition, participants often develop a deeper grasp of the game's structure, incentives, equilibria and potential strategies.

- **Learning**: Participants adjust their behavior based on feedback and outcomes from previous rounds.

- **Reputation**: Players may act strategically to influence how others perceive them.

One-Shot vs. Repeated Interactions (3/6)

Types of repetition in experiments

- **Finite repetition**: The number of rounds is known to participants. Behavior may shift toward self-interest as the end approaches (e.g., **end-game effects**). When players expect this, cooperation may unravel entirely (backwards induction).

- **Infinite or indefinite repetition**: Participants don’t know when the game will end (or it's determined by a probability each round). This can encourage more cooperation, as the **"shadow of the future"** affects decision-making. No backwards induction possible.

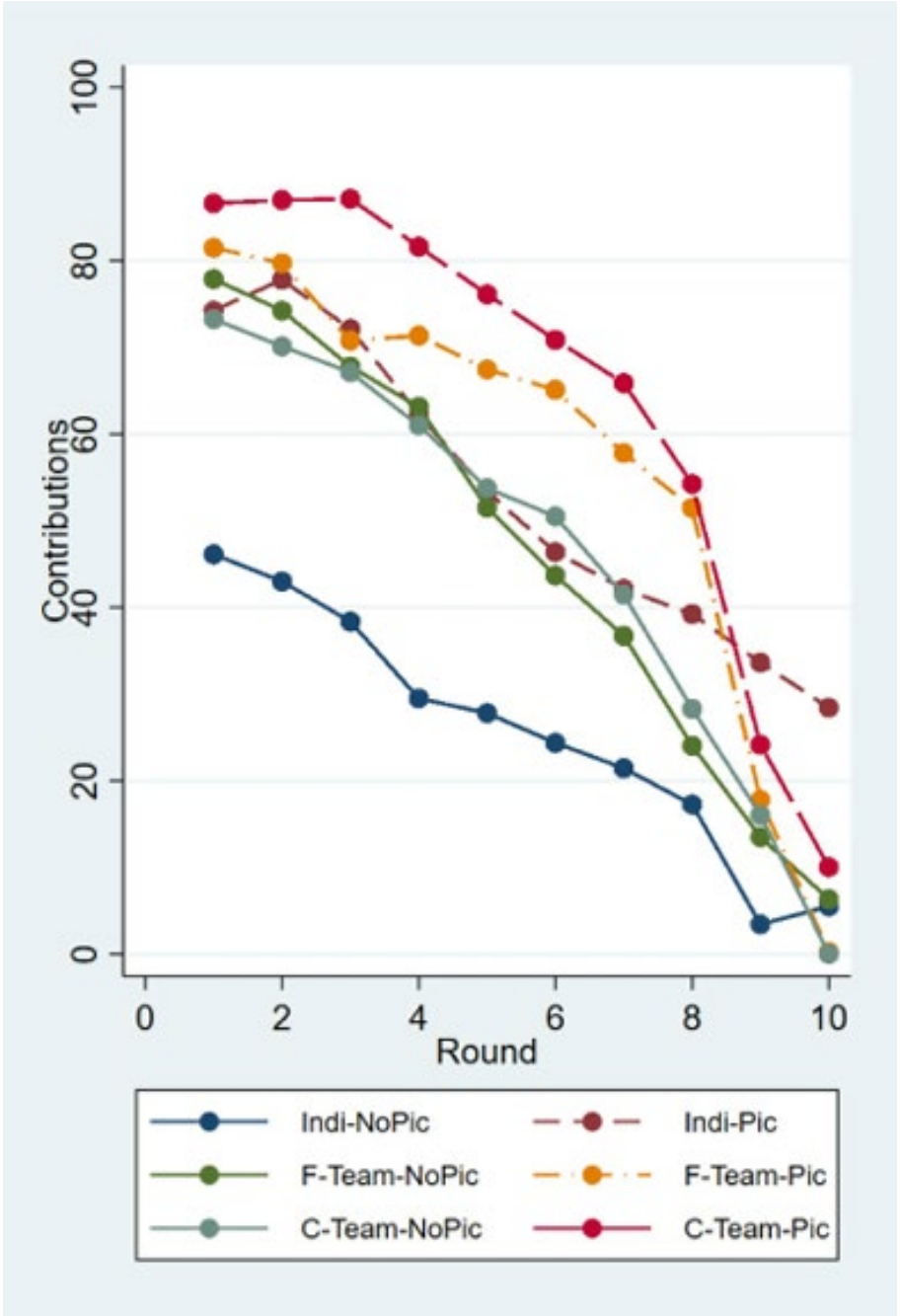
One-Shot vs. Repeated Interactions (4/6)

Types of matching in repeated interactions

- **Fixed Matching**: Participants are paired with the same partner across all rounds. This allows for reputation building and learning through feedback.

- **Random Matching**: Partners are randomly determined each round; chances of meeting the same person depend on number of participants. Reduces the influence of reputation and learning through feedback.

- **Stranger Matching**: Participants never meet the same person twice. No reputation and learning effects. Understanding effects can be isolated.



Source: Christens, Dannenberg & Sachs (2019, p. 101445)

One-Shot vs. Repeated Interactions (6/6)

TABLE 6—PERCENTAGE OF COOPERATION BY ROUND AND TREATMENT*

		Round											
		1	2	3	4	5	6	7	8	9	10	11	12
Dice	$\delta = 0$	9.17											
	$\delta = ½$	30.93	26.10	19.87	12.50	12.96							
	$\delta = ¾$	46.20	40.76	38.76	34.58	33.04	27.27	24.75	26.28	29.17	26.04	32.29	31.25
Finite	$H = 1$	10.34											
	$H = 2$	13.31	6.90										
	$H = 4$	34.58	21.55	18.97	10.63								

** All sessions, matches four through ten.*

Source: Dal Bó (2005, p. 1600)

Framing

Framing (1/6)

- The **frame** of an experiment is the way in which a specific decision problem is presented to the subjects.

- Framing effects are the changes in the subjects' behavior that occur solely because the **presentation of the decision problem** is varied without changing the problem itself.

- Two types of framing effects play a special role:
  - Label frame.
  - Valence frame.

Framing (2/6)

Label frame

- Label framing is involved if subjects are confronted with alternative wordings for a game (or aspects of a game).

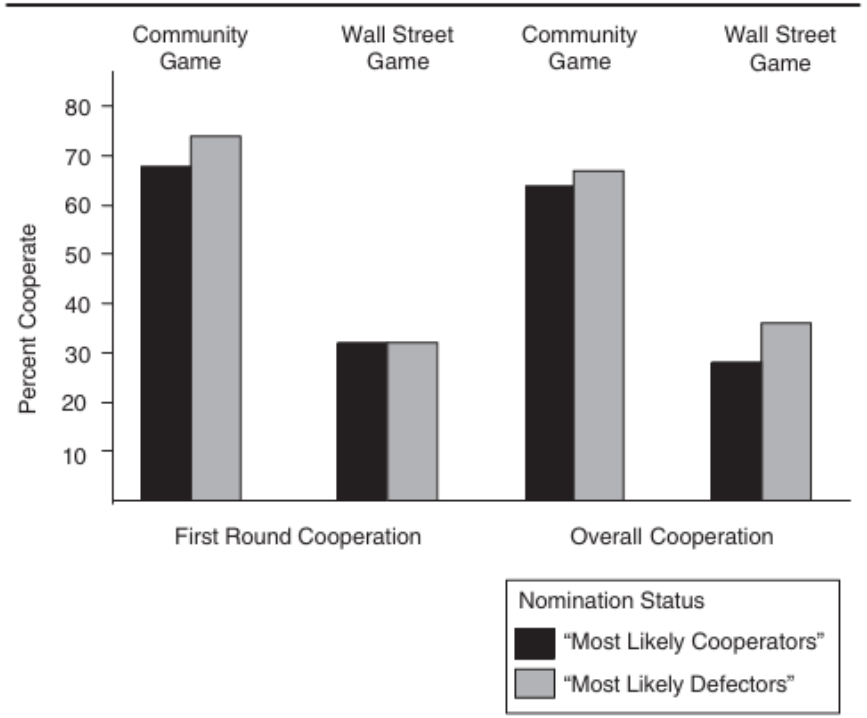


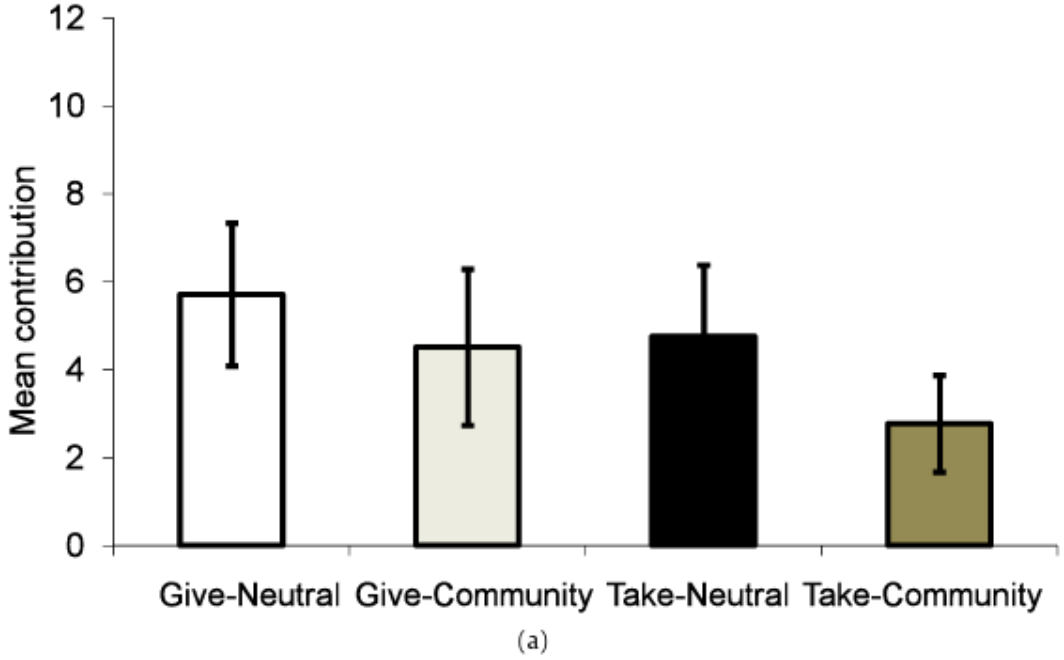
Figure 1 First round and overall cooperation in the Community Game versus Wall Street Game by nominated "most likely cooperators" and "most likely defectors" (Study 1).

Liberman et al. (2004, p. 1177)

Framing (3/6)

Valence frame

- Valence framing concerns whether the same essential information is put in a positive or negative light beyond mere wording.



Dufwenberg et al. (2011, p. 468)

Framing (4/6)

How do framings work?

- A frame can activate social norms.

- Framings can influence the beliefs of the subjects about other subjects' behavior.

- Framings may induce experimenter demand effects.

Framing (5/6)

- Neutral frames are the standard in experimental economics.

- Under a neutral framing, the goal is to present the decision problem in a value-free way—avoiding emotionally or morally loaded terms:
  - Use “Decision Game” instead of “Public Goods Game.”
  - Use “Player A” and “Player B” instead “Dictator” and “Receiver.”
  - Use “Choice 1” and “Choice 2” instead of “Cooperation” and “Defection.”

Framing (6/6)

Things to consider about (neutral) framing

- **Is a truly "frame-free" design possible?** Even the most neutral language may contain information that has framing effects.

- **Can a design be too neutral?** If stripped of all context, participants may struggle to understand the task or form meaningful preferences, leading to confusion or noise in the data.

- **What about external validity?** Real-world decisions are often framed in meaningful ways. Too much neutrality may limit how well experimental results generalize to real-life settings.

Other Institutions

Other Institutions

- Individual Decision-Making vs. Group Decision-Making
- Learning Rounds
- Role Switching
- Belief Elicitation
- Information Availability
- Feedback and Monitoring
- Punishment

Treatment Variation

Designing Treatments

- The central choice in designing treatments is selecting the **number of factor variables** and their **values (levels)**.

- The combination of factors and levels defines the number of possible treatment conditions.

Factorial Designs

Factors and Levels

- A **factor** is the variable that is studied in an experiment, typically the incentives or some institution.
- The **levels** are the specific values a single factor can take.
- For example, researchers may study the impact of communication (factor), with two levels (no communication possible and face-to-face communication possible).
- Experimental designs are often classified by the number of factors and levels.

Factor and Levels: Example I

- Researchers want to study the effect of communication in a Dictator Game.
  - The researchers vary whether the recipient can send a message to the dictator before decision-making or not.

- **Factor:** Communication **Levels:** Not possible/Possible

- One factor with two levels leads to two treatments that can be compared with each other.

Factors and Levels: Example II (1/2)

- Researchers want to study the effect of communication and framing in a Dictator Game.
  - The researchers vary whether the recipient can send a message to the dictator before decision-making or not.
  - The researchers vary whether the frame is neutral, or the game is called “Friendship Game.”

- **Factor 1:** Communication **Levels:** Not Possible/Possible
- **Factor 2:** Framing **Levels:** Neutral/Friendship

- Two factors with two levels each lead to a maximum of four different treatments.

- When all possible combinations are used, this is referred to as a **2 x 2 full factorial design**.

Factors and Levels: Example II (1/2)

Factor/Level	Communication = No	Communication = Yes
Frame = Neutral	Neutral_NoComm	Neutral_Comm
Frame = Friendship	Friend_NoComm	Friend_Comm

Example II: Effects (1/5)

Factor/Level	Communication = No	Communication = Yes
Frame = Neutral	Neutral_NoComm	Neutral_Comm
Frame = Friendship	Friend_NoComm	Friend_Comm

This setup allows researchers to test

1. Main effect of communication – Does allowing communication influence dictator behavior?
2. Main effect of framing – Does calling the game the "Friendship Game" influence dictator behavior?
3. Interaction effect – Does the effect of communication depend on the framing, or vice versa?

Example II: Effects (2/5)

Factor/Level	Communication = No	Communication = Yes
Frame = Neutral	Neutral_NoComm	Neutral_Comm
Frame = Friendship	Friend_NoComm	Friend_Comm

Main Effect of Communication

Compare treatments where only communication differs

Neutral Frame:

- Neutral_NoComm vs. Neutral_Comm

Friendship Frame:

- Friend_NoComm vs. Friend_Comm

Example II: Effects (3/5)

Factor/Level	Communication = No	Communication = Yes
Frame = Neutral	Neutral_NoComm	Neutral_Comm
Frame = Friendship	Friend_NoComm	Friend_Comm

Main Effect of Framing

Compare treatments where only framing differs

No Communication:

- Neutral_NoComm vs. Friend_NoComm

With Communication:

- Neutral_Comm vs. Friend_Comm

Example II: Effects (4/5)

Factor/Level	Communication = No	Communication = Yes
Frame = Neutral	Neutral_NoComm	Neutral_Comm
Frame = Friendship	Friend_NoComm	Friend_Comm

Interaction Effect

Compare the difference in outcomes caused by communication at each framing level

- (Friend_Comm – Friend_NoComm) – (Neutral_Comm – Neutral_NoComm)

- If this is not equal to zero, this indicates an interaction effect, e.g., communication has a stronger effect under framing.

Example II: Effects (5/5)

Factor/Level	Communication = No	Communication = Yes
Frame = Neutral	Neutral_NoComm	Neutral_Comm
Frame = Friendship	Friend_NoComm	Friend_Comm

Unclear Effects

Compare treatments were both factors differ (Should not be done!)

- Neutral_NoComm vs. Friend_Comm
- Friend_NoComm vs. Neutral_Comm

- Differences cannot be clearly identified as two factors change.

Full Factorial Designs

- Adding more factors or levels can quickly make the experiment larger and more complex.
  - For example, adding one more level to a factor in a **2 × 2** design turns it into a **2 × 3** design, increasing the number of treatments from **4** to **6**.
  - Adding one more factor with three levels (e.g., **2 × 3 × 3**) increases the number of treatments further, resulting in **18 treatments**.

- It's important to always consider what is **necessary** for your research question. Adding too many factors or levels can lead to unnecessary complexity.

Fractional Factorial Design

- A **fractional factorial design** can be a solution to reduce the number of treatments.
  - Allowing to test only a subset of the possible combinations while still gaining useful insights.

- Used when a full factorial would be too large or resource-intensive.

- Assumes that **some interactions are negligible**, allowing focus on main effects or selected interactions.

Between- vs. Within-Subjects Design

Between vs. Within-Subject Design

- Another important decision regarding treatments is whether the same or different subjects are used across treatment conditions.

- **Within-subject design**: Same subject experiences all treatments; comparisons are made within individuals.

- **Between-subject design**: Different subjects for each treatment; comparisons are made between individuals.

Advantages: Within-Subject Design

- **More data per subject:** Each participant provides multiple observations across treatments.

- **Higher internal validity**: Less reliance on randomization compared to between-subject designs.

- **Closer to theory**: Reflects real-world decision processes where the same subject responds to different conditions (e.g., prices).

Disadvantages: Within-Subject Design

- **Dependent observations**: Responses across treatments aren't independent. This often requires more complex statistical analysis and can lead to a range of effects biasing results:
  - **Order Effects:** The sequence in which treatments are presented can affect outcomes.
  - **Anchoring Effects:** Participants may compare conditions, leading to biased responses based on prior experiences.

- **Experimenter demand effect**: Subjects may guess the purpose of the experiment, potentially biasing their behavior.

Advantages: Between-Subjects Design

- **Simple and clean structure**: No effects from being exposed to several treatments. Less problematic in terms of experimenter demand effects.

- **Independent observations**: No need to account for within-subject dependencies, simplifying statistical analysis.

Disadvantages: Between-Subjects Design

- **Less observations per subject:** Requires more subjects and resources to detect effects compared to within-subject designs.

- **Less direct external validity:** Harder to connect behavior across conditions within the same subject.

General Issues

General Issues

- Some issues **cut across all designs elements** and must be considered throughout:
  - **Experimenter Demand Effects:** Participants may infer the purpose of the study and adjust behavior.
  - **Deception:** Intentionally misleading participants about some aspect of the study may seem helpful but is not accepted among economists.
  - **Ethical Considerations:** Experiments are conducted with human subjects, which leads to ethical considerations.

Experimenter Demand Effect

Experimenter Demand Effect (1/2)

- Apart from possible interactions between subjects, there are also interactions between the experimenters and the subjects.
- In laboratory experiments, interactions between the experimenters and participants is often unavoidable.
- These interactions can, **consciously or unconsciously**, shaping participants' perceptions of the experiment’s goals and influencing their behavior accordingly.
- To maintain validity, studies must be designed to **minimize bias or distortion** arising from this interaction **(experimenter demand effect)**.

Experimenter Demand Effect (2/2)

- **Experimenter demand effect**: *"Experimenter demand effects refer to changes in behavior that result from study participants wanting to help the experimenter confirm his or her underlying hypothesis."* (de Quidt et al. 2019, p. 384)

- A basic distinction is made between cognitive experimenter demand effects and those caused by social pressure.
  - **Cognitive experimenter demand** effects arise mainly because subjects try to determine what the experiment is about and what the appropriate behavior is from the information they receive.
  - **Social pressure** can arise because there is a natural divide between experimental subjects and experimenters that stems from the fact that experimenters are experts in the experiment and the experimental subjects are laypeople.

Experimenter Demand Effect: Example (1/2)

- Participants receive €10 for completing a task and are given the option to donate any amount of that to a charity focused on combating climate change.

- Before the donation decision, participants are randomly shown one of two messages:
  - Condition A: “You can choose whether to donate a portion of your payment to a charity. Your decision is entirely voluntary.”
  - Condition B: “Climate change is accelerating, with rising temperatures, extreme weather, and irreversible damage to ecosystems. Immediate action is critical to reduce emissions and protect vulnerable communities. Donations support effective, science-based interventions. You can choose whether to donate a portion of your payment to a charity. Your decision is entirely voluntary.”

Experimenter Demand Effect: Example (2/2)

Observed effect

- Participants in Condition B donate significantly more on average than those in Condition A.

Interpretations

- The message increases **issue salience and emotional engagement**, leading to higher donations due to **genuine concern** about climate change.
- The emotionally charged content may act as a **demand cue**, subtly suggesting that higher donations are expected by the researchers.

Reasons for Experimenter Demand Effect

Potential reasons for demand effects

- **Verbal cues**: Leading instructions or hints about desired outcomes.
- **Nonverbal behavior**: Tone, body language, facial expressions of the experimenter.
- **Contextual clues**: Setting of the lab, phrasing of questions, or experimental design.
- **Role perception**: Participants may see themselves as “helpers” and try to act accordingly.

Avoiding Experimenter Demand Effect

- **Minimizing the interactions** between experimenters and subjects.
- Using **between-subjects designs** if possible.
- Introducing cues that **point in different directions.**
- Using **filler questions or filler behavioral tasks.**
- Using **context-free language** (see Framing).

Deception

Deception (1/3)

- Sometimes it may seem helpful to lie to subjects **(deception).**
  - For example, by telling them the study is about something else in order to prevent them from altering their behavior based on the true purpose of the experiment.

- However, the economics research community **widely rejects** the use of deception.

- Journal editors strictly enforce this standard and reject studies involving deception.

- In contrast, disciplines like psychology have a more lenient stance, where deception is more commonly accepted.

Deception (2/3)

- The stance against deception is not based (primarily) on ethics but on maintaining a high-quality subject pool.

- Participants are typically debriefed after deception is used (otherwise it would be clearly unethical), which may lead them to expect it in future experiments.

- If subjects expect deception, their behavior may become untrustworthy, compromising experimental control and making conclusions less reliable.

Deception (3/3)

- The impact of being exposed to deception on behavior in future experiments is debated, with studies providing **ambiguous evidence**.

- Nevertheless, there's no significant movement in economics to change the general stance on deception.

- However, there is ongoing debate about what constitutes deception, particularly regarding the omission of information.

Deception vs. Omitting Information (1/3)

Example deception vs. omitting information

- Researchers want to study behavior in a Prisoner's Dilemma followed by a Dictator Game.

- They assume that knowing about the Dictator Game will influence decisions in the Prisoner's Dilemma but want to observe unbiased behavior in the Prisoner's Dilemma.

Deception vs. Omitting Information (2/3)

Example for clear misinformation

- The researchers tell subjects that only the Prisoner's Dilemma will be played, and the experiment will end afterwards, even though a Dictator Game will follow.

➢ This is **clearly considered deception**, as it involves providing participants with false information.

Example for omission of information

- The researchers do not mention what happens after the Prisoner's Dilemma at all.

➢ This is **typically not considered deception**, since no false information was given, information was merely withheld.

Deception vs. Omitting Information (3/3)

- Cooper (2014, p. 112) states: *"Deception is generally considered a sin of commission rather than omission."*
- Giving false information is viewed as very problematic, while withholding information is considered less serious.
- However, it is not always clear when withholding information is acceptable with some common practices that can be considered "gray-areas."
- Charness et al. (2022) surveyed experimental economists to evaluate whether specific practices were perceived as deceptive.

Charness et al. (2022) (1/4)

Practice “Unexpected data use”

- *“The experimenter uses participant responses in a way that is not revealed to the participant: for example, (1) participants are incentivized to predict behavior of other people, but are not told that these predictions will be shown to others, or (2) participant data from one part of the experiment is used to sort participants into groups in another part of the experiment”*

Practice “Subgroup re-match”

- *“In a multi-period experiment, the experimenter tells the participants that they will be randomly matched every period, but in fact the participants are only re-matched (for statistical purposes) within a subgroup of the participants”*

Charness et al. (2022) (2/4)

Practice „Misinterpretation“

- *“The experimenter relies upon the assumption that participants will misinterpret the instructions [e.g., using the term "random" when the probabilities are actually 75% and 25% and when it is essential that they believe that this was truly random (i.e., 50%)]”*

Practice “Confederates”

- *„The experimenter uses either confederates or computers that do not operate of their own volition, but instead behave as scripted by the experimenter. The experimenter does not tell subjects that confederates or computers are involved in the experiment“*

Charness et al. (2022) (3/4)

- The practices “Unexpected data use” and “Subgroup re-match” were rated as least deceptive by the respondents, with averages of 3.18 and 3.20 rated on a 7-point scale, ranging from 1 (“not at all”) to 7 (“extremely”).

- The practices „Misinterpretation“ and “Confederates” were rated as most deceptive, with averages of 4.78 and 5.33.

Charness et al. (2022) (4/4)

- Practices that don’t involve clear misinformation may still be considered deceptive.

- If unsure, consult with other researchers to avoid problems in publishing before conducting the study.

Ethical Considerations

Ethical Considerations (1/5)

- Ethical consideration in experiments go beyond deception.
- It’s necessary to address any potential issues **before data collection.**
- Some journals require ethics certifications for publishing.
- The GfeW offers an ethical review service to help identify and assess debatable elements in experimental designs.

English

GfeW

German Association for Experimental Economic Research e.V.

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Ethical review

The procedure for evaluating the ethical aspects of research projects (*GfeW review procedure*) is available to experimental economists who work at universities or recognised research institutions and plan economic experiments.

An **ethics certificate** (in English, see example) of the research project will be made available for download after successful completion of the ethics test (see also notes: "Steps to the ethics certificate").

[Example] Institutional Review Board Certificate (English)

Start GfeW ethical review procedure →

Retrieve existing certificate of ethics

Certificates already created can be retrieved at any time. To do this, you need the number of the corresponding certificate. Please click on the following button to call it up.

Fee

The fee for an ethics certificate of GfeW in the expedite review procedure is 30 Euro or 25 Euro for members of GfeW (the voucher code is required).

PayPal VISA

Approving Criteria

The criteria for approving an ethics certificate can be re-trieved here.

Criteria Ethics Certificate

Steps to the ethics certificate

Step 1: Admissibility check

Testing whether the experiment can be evaluated in accordance with the GfeW Ethics Directive.

GfeW ethical review procedure - Admissibility check

The admissibility check has shown that a review of the ethical aspects of the research project by GfeW is possible, further information is required.

1. Preliminary examination: Has the planned experiment already been examined and rejected by another ethics committee?

Yes ○ No ○

2. Physical integrity: Are physiological interventions or the administration of pharmaceutically active substances planned?

Yes ○ No ○

3. Psychological integrity: Are the test subjects specifically transferred into psychologically or emotionally extreme stress situations or can such situations be expected to arise for the test subjects or for others during the course of the experiment?

Yes ○ No ○

4. Deception: Are the test persons deliberately deceived in order to observe their actions under false guidelines or in order not to grant them promised benefits (especially experiment payments) at all or not to the full extent?

Yes ○ No ○

5. Freedom of choice: Are the subjects or other persons exposed to coercive situations (i.e. situations which they can only leave at disproportionately high cost)?

Yes ○ No ○

6. Material losses: Do the subjects face material losses from their own assets (i.e. without taking into account the experiment payments), about whose existence and possible extent they have not been informed beforehand?

Yes ○ No ○

7. Criminal activity: Is it to be expected that illegal or even criminal acts (by the scientist, the test subjects or by third parties) will occur in the course of the experiment?

Yes ○ No ○

8. Protection of personal data: Are the personal data of the subjects made available to the public intentionally or through lack of care, passed on to others or used in any other way without express consent?

Yes ○ No ○

9. Transparent recruitment: Is an intransparent recruitment of subjects implemented that could be distorting or selective? (This also includes selection procedures that are influenced by third parties, e.g. by companies or by superiors.)

Yes ○ No ○

10. Persons in need of protection: Do subjects under special legal or social protection (e.g. children, people with disabilities or other persons in need of protection) participate?

Yes ○ No ○

11. Animal testing: Are live animals used in the experiment?

Yes ○ No ○

12. Misuse of knowledge: Can the results of research be expected to be misused by governmental or other organisations to promote the violation of human rights or the destruction of the environment?

Yes ○ No ○

Questions

Exam Objectives

In the exam, you should be able to:

- **Explain** the difference between direct elicitation and the strategy-method in the context of the Ultimatum Game including the role of “hot” and “cold” states.
- **Explain** how experimental treatments are designed using factors and levels (e.g., 2 x 3 design).
- **Explain** the difference between- and within-subject designs and **discuss** advantages and disadvantages of each.
- **Explain** the experimenter demand effect.
- **Explain** why deception is generally not used in economic experiments and **differentiate** between deception and more accepted practices (omission of information).

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Image Sources

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