# Visual Communication Design Research Methods

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# Quantitative Research

Visual Communication Design Research Methods

QUALITATIVE

QUANTITATIVE

APPLIED

VISUAL

# What is quantitative research?

Quantitative research is a type of objective research

# Aim of quantitative research

…is to simplify and generalize things, describing a certain phenomenon, or identifying "cause-and-effect" relationships

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# Quantitative research

…is used for mainly two things: testing or verifying an existing theory, or gathering statistical data.

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## Quantitative research

…is concerned primarily with measuring **attitudes**, **behaviours**, and **perceptions** based on systematic observation, or by collection of numerical data.

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## Quantitative research

…uses gathered data to **prove or disprove** ideas or assumptions (e.g. hypotheses) based on a **logical process**.

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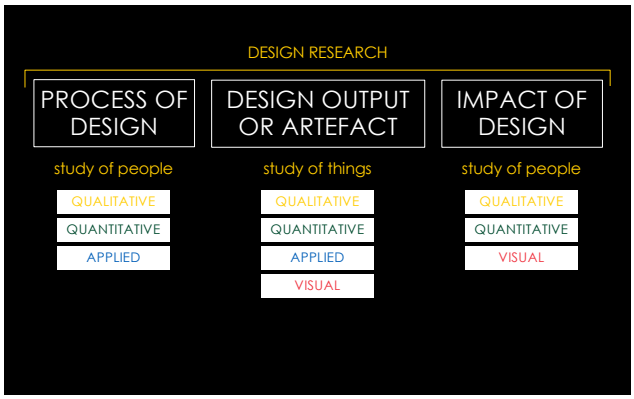
## Quantitative research

The logical process involves **repeated observations** of a certain phenomenon, which then leads to drawing a conclusion based on **predictability of occurrence** of that phenomenon.

Lewis-Beck et al.




## Quantitative research questions

- What are the recycling habits of teenagers?
- What are the effects of package size on food waste?
- What type of advertising affects children's choices most?
- Do exercise serious games improve the health of the elderly?

## Quantitative research process

- usually starts with a specific hypothesis (or assumption) which can be proved or disproved
- numerical (measurable) data is collected about the hypothesis
- statistical methods are used to prove or disprove the hypothesis
- if possible, generalizable conclusions are drawn

## Quantitative research

Two factors are important in quantitative research

- setting: where and how the research is conducted
- sampling: who the research participants are

## Quantitative research : setting

Quantitative research can be conducted in either

- real-world: realistic setting, but difficult to control (measure)
- laboratory: controlled setting, but perhaps not very realistic

## Quantitative research : sampling

Sampling is the random selection of research participants from the population of interest

- the larger the sample, the more likely to be representative
- need to decide if the sample has specific characteristics
- need to decide how the sample is selected (e.g. invited)

## Quantitative methodologies

Most quantitative methodologies relay on measurements made through the use of surveys (questionnaires) or gathered by conducting experiments (studies)

## Surveys

The purpose of a survey is to measure people's opinions, attitudes, characteristics, experiences, etc.

Leedy & Ormrod

## Surveys

- may seem deceptively simple, but they can be difficult to design
- require a lot of knowledge and experience to design them well
- need to be structured and easy to follow
- need to avoid being biased towards particular responses

## Conducting surveys

There are a number of **specific steps** to follow
- designing all the questions
- structuring and ordering the questions
- testing with a small pilot study, to identify any issues
- administering the actual (possibly revised) survey
- analysing the results using statistical methods (and graphs)
- drawing up valid conclusions

## Conducting surveys

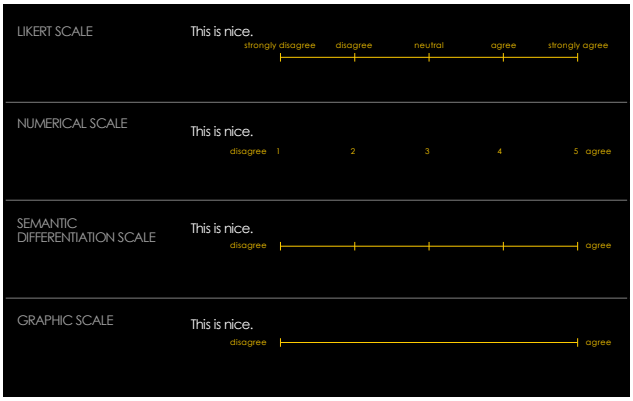
There are a number of ways of administering surveys
- **face-to-face:** easier to establish better rapport
- **telephone:** less time-consuming, but still high response rate
- **printed:** can be distributed more widely and anonymously
- **online:** even wider distribution, and easier to process

## Survey questions

Designing the questions of a survey is the **most challenging** part
- questions need to be clear and concise
- each question should be about one single concept
- answers should be quantifiable (i.e. can be measured)
- may include open-answer questions (qualitative questions)

## Survey questions

Surveys may include different types of questions
- **multiple choices:** answer is only one of many
- **categorical:** answer is in one category only
- **check list:** answer could include more than one of many
- **frequency:** answer is how often, and provides a pattern
- **quantity:** answer is a numerical value (amount of something)
- **ranking:** answer shows the order of things (e.g. preference)
- **scale:** answer is the level of something (e.g. difficulty)




## Analysing surveys

The aim of the analysis is to find **patterns** and **differences**
- the first step is to divide responses into categories
- categories can be based on the settings or participants
- statistical methods are then used to compare responses from one category against the other(s)
- statistical methods basically show whether any observed differences are by chance, or likely to be for real

## Experiments

…an experiment is a study where a systematic effort is made to identify and impose control over all variables except one.

Keith F Punch

## Good quantitative research

Requires not just seeing things, but carefully observing them

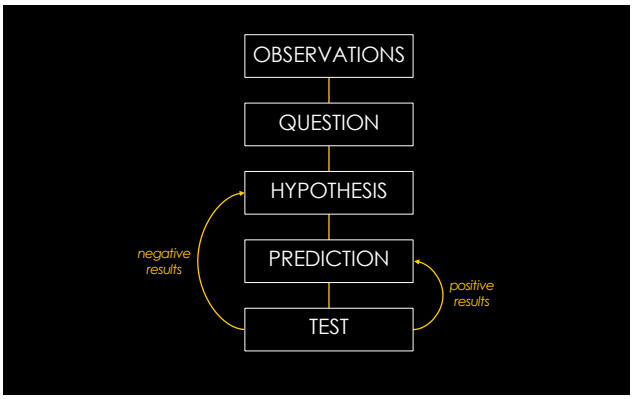
"When I hear you give your reasons," I remarked, "the thing always appears to me to be so ridiculously simple that I could easily do it myself, though at each successive instance of your reasoning, I am baffled until you explain your process. And yet I believe that my eyes are as good as yours."

"Quite so," he answered, lighting a cigarette, and throwing himself down into an armchair. "You see, but you do not observe. The distinction is clear. For example, you have frequently seen the steps which lead up from the hall to this room."

"Frequently."
"How often?"
"Well, some hundreds of times."
"Then how many are there?"
"How many? I don't know."

"Quite so! You have not observed. And yet you have seen. That is just my point. Now, I know that there are seventeen steps, because I have both seen and observed."

Sherlock Holmes, A Scandal in Bohemia

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