INTERNET-BASED RESEARCH: THEORY AND APPLICATION
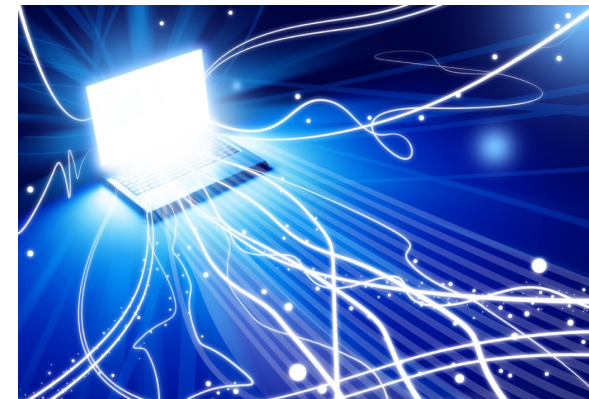
MVZ507

SPRING 2019

Session 5

Maya Hadar

On The Agenda For Today

- **Web Experiments: Advantages & Disadvantages**

  - Why conduct web-experiments?

  - Musch & Reips (2000), Reips (2000), *Krantz & Dalal (2000)*

- **Comparability to Traditional Research**
  - Davis (1999)

- **Serioussness Check in Internet-based Research**

Why Conduct Web Experiments?

A Brief History of Web Experimenting

Musch & Reips (2000)

Jochen Musch
Psychological Institute
University of Bonn
D-53117 Bonn

Ulf-Dietrich Reips
Experimental and Developmental
Psychology
University of Zürich

➢ Sample Size

➢ Statistical Power

➢ High Speed

➢ Ability to reach participants in other countries

➢ High external or ecological validity

➢ Low cost

➢ Ability to replicate a lab experiment with more statistical power

➢ Special populations

Web Experiments: Deficiencies

**However, web experiments are not without issues:** *Reips (2000)*

- ➢ Limited Sample Population

- ➢ Limited External Validity

- ➢ Less than Optimal Voluntariness

- ➢ Motivational Confounding

- ➢ Experimenter Bias

- ➢ Non-transparency

- ➢ Limitations of what is feasible to research

Web Experiments: Deficiencies

Is the Sample Representative? *Krantz & Dalal (2000)*

➤ Important to remember the **base of comparison** (Ideal vs. Lab)

➤ Much **more diverse** that **most lab samples,** especially in age and education range
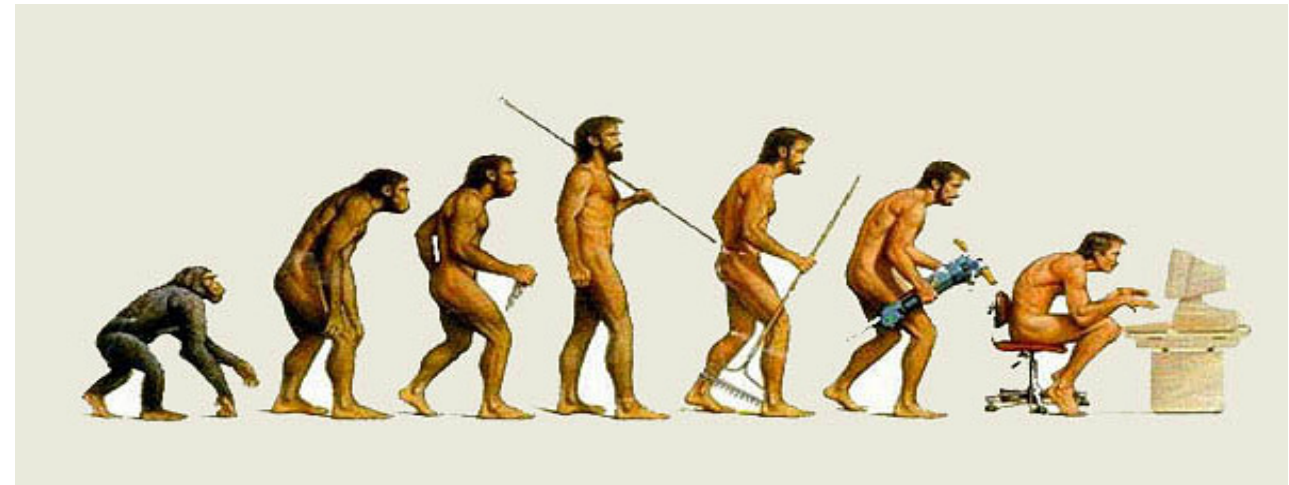
Sample Characteristics: Gender

- Is the sample gender biased?

Krantz & Dalal (2000)	% Females
GVU 1st (1994)	5%
Reips (1996): English German	43% 18%
Krantz, et al. (1997)	44%
Pasveer & Ellard (1998) 3rd Study	71%
Caddell & Utt (2004)	77%

Sample Characteristics: Age

- Is the sample age biased?
- Are we still testing college sophomores?

Papers	Age groups
Krantz, et al. (1997)	43% > 30
Smith & Leigh (1997)	35% > 30
Pasveer & Ellard (1998)	45% > 25
Caddell & Utt (2004)	60% > 30
Pattison & Rouse (2003)	16% > 30

Sample Characteristics: Race

How diverse are the samples?

- Limited diversity in the past

- Depends on the requiting technique

Papers	% white respondents
Krantz, et al. (1997)	89% white
Smith & Leigh (1997)	86% white
O'Neil, Penrod, & Bornstein (2003)	82% white
Meyerson & Tryon (2003)	93% White

- Web experiments can make it possible to access special populations

Sample Characteristics: Nationality

Where do the subjects come from?

Largely North American (US), even in some European studies:

- Krantz, et al. (1997) => 86% North America (study was conducted in the US)

- Senior, et al (1999) => >80% North America (study was conducted in England)

- Ease of reaching American subjects (e.g., Amazons' mechanical Turk)
- Big numbers
- Depends on the requiting technique

Data Quality

- **Is the data, obtained from the web, any good?**
  - ➢ Yes! (proven in replication papers)
  - ➢ Some studies still run both laboratory and web experiments => encouraging results

- **How to ensure the quality of online data?**
  - ■ **Comparisons to off-line data**
  - ➢ Studies comparing data obtained online to previously published data sets (obtained offline), *E.g., Myerson & Tryon; 2003, Watt & Ewing; 1996*
    - ➢ Matched sample characteristics
    - ➢ Found same internal consistency
    - ➢ Form of administration was not a significant factor

Data Quality

- **Direct validity comparison**
  - Should the same techniques (offline data) be used in order to validate results obtained online?
    - Yes
    - Not => Developed new scales (Pasveer & Ellard, 1998)

  - Check for Internal consistency

Recruiting Subjects

General sample =>

➢ Social Psychology: http://www.socialpsychology.org/expts.htm

➢ The Web Experiment List: http://genpsylab-wexlist.unizh.ch/

➢ Wextor: http://wextor.org/wextor/en/

➢ WEBEXP: Edinburgh webexp.info

Special populations =>

➢ Advertising

➢ Email lists

➢ Discussion groups

➢ Social networks

Careful, get permission! Can be perceive as spam

Careful, selection bias!

Important Issues to Bare in Mind

Musch & Reips (2000)

- ➤ No control over participant's behavior

- ➤ No control over motivation

- ➤ Inability of participants to ask questions

- ➤ Non-representative sample

- ➤ Manipulation and fraud

- ➤ Ethical problems

- ➤ Eliminating multiple entries

- ➤ Dropouts

- ➤ Data integrity

Multiple entries

➢ Double clicking, subjects click 'submit' multiple times while waiting for feedback

➢ Subjects re-enter and re-submit, pose as other people (e.g., if rewards are given)

➢ Same IP address

➢ Smartphones/Mac vs. PC comparability issues

Security & Data Integrity

- **Private server/Uni server** => expensive, unavailable, more complicated to work with
- **Public services** are often used for online storage => data is accessible to non authorized persons, can manipulate it/download it
- Persons might fake pages to alter data (unlikely)

- It is recommended to keep the data in non-public directories so only researchers have access
- Check the data repeatedly + save an offline copy

Dropouts

➤ Subjects will **start** the experiment but **won't finish it =>** Incomplete data (unanswered questions)

➤ **Tracking** (dropout rate) is important!

➤ Will occur **no matter what we do**

➤ We can try and **motivate** our subjects with/by:

- Designing **short experiments**

- Explaining why its important to stick around

- Offer financial incentives (if possible), lottery?

- Fast upload/warm up pages to speed up the upload

Ethical Issues

➤ **Think what they may be** (depends on the research topic and design)

➤ Compare to ethics of an offline research (not only)

Conclusions =>

➤ Many benefits to online experiments

➤ Easy to design (technically), faster results, more date, cheap

➤ Not a 100% alternative to traditional methods and research

➤ Not without issues (relatively new tool), however, most issues can be solved or, at least, be accounted for

Internet based Experimental Research

The WWW holds great promise as a mechanism for experimental research:

1. Allows **individuals** to **send data** to the researcher at **their convenience** (time & location) => potentially more eligible research participants

2. **Automatic** transformation of **raw** data into an **analyzable format** (SPSS data file), using procedures such as CGI scripts

3. **Efficient** in terms of **time** and the **resources** it requires

4. Provides a degree of **anonymity** to research participants + **eliminating observer bias**

Web-based administration of a personality questionnaire: Comparison with traditional methods

ROBERT N. DAVIS
University of Michigan, Ann Arbor, Michigan

- The study assessed the **equivalence** of the **Ruminative Responses Scale** (RRS) in a **Web-based format** and in a **paper-and-pencil format**

*** *Rumination* *a tendency to engage in passive thoughts and behaviors that focus one's attention on one's depressed mood and on the implications of these symptoms, rather than taking action*

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of a personality questionnaire:
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Participants =>

✓ Psychology collage students (2 different groups) in the US

✓ Non Psychology students

✓ A web-based student sample

▪ **Measurement technique** => Assessing the **extent** to which people tend to respond to feelings of sadness or depression with **self-focused rumination***** using a 10-items form.

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Findings =>

- ✓ Students who completed a personality questionnaire on the **Web** reported **higher levels** of self focused rumination **than** did **students** who completed the same questionnaire in **P&P format**

- ✓ The **internal Consistency** of the web version was **comparable** with the P&P version

- ✓ **Locations did not affect responses** in any systematic manner

- ✓ **Women** in both P&P and Web samples reported **higher levels** of rumination than did men

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Robustness Checks =>

- ✓ **Was the web sample more motivated to participate in the study? Unlikely,** since all groups were solicited at comparable, although not identical, moments of convenience

- ✓ Did the Web sample reported higher levels of self-focused rumination than did the other groups owing to **computer anxiety**? **Unlikely,** since:
    - Subjects in the Web sample **volunteered**
    - Previous research found **greater levels of education** to be associated with **lower computer anxiety** (participants were college students)

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Conclusions =>

- ✓ By allowing people to have **more control** over their **environment** when they disclose **information** about **sensitive** issues, **Web-based questionnaires** may encourage **increased frankness** of response and self disclosure

- ✓ Some people may gain **greater access** to their **feelings** and personality when completing a **Web-based questionnaire, compared** with a questionnaire in a large lecture class/in a lab

Web-based administration
of a personality questionnaire:
Comparison with traditional methods

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Conclusions =>

✓ The **internal consistency** of the RRS was **similar** across the four groups. This finding indicates that *results from the Web version are **comparable** with those obtained in the other samples*

✓ Important to note => Although permitting access from **multiple locations decreases experimental control,** it does NOT appear to affect questionnaire results adversely

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<u>Conclusions</u> =>

✓ The results of the present study increase **confidence** in the use of the **Web** as a method for **collecting questionnaire data**

✓ <u>Restrictions</u>: Participants were sampled from a **college campus** and were **restricted** in terms of **age** range

Next Session…

- In 2 weeks- paper's presentations

Thank You For Your Attention!

Questions???