

# Network Analysis:

The Hidden Structures behind the Webs We Weave

17-213 / 17-668

## Ethical Issues in Social Networks Research

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2-min Quiz, on Canvas



# Frameworks and principles on research ethics

# Studying humans

Experimental manipulation on **inanimate objects** does not “hurt”, “harm”, “deceive”, or disregard the objects’ free will

Experimental manipulation on **human subjects** raises ethical considerations

# “Human Subjects Research” requires IRB approval

## Human Subjects Research

Research involving a living individual about whom data or biospecimens are obtained/used/studied/analyzed through interaction/intervention, or identifiable, private information is used/studied/analyzed/generated

### Examples of human subjects research include:

- Collecting blood
- Administering medicine
- Collecting data
- Conducting a survey
- Interviewing
- Conducting a focus group
- Changing participants' environment
- Administering a psychological test
- Testing a new educational technique

# “Human Subjects Research”

Not all research on humans is considered “human subjects research”

## Exemptions:

### Exemption 1

Conducted in an educational setting involving normal education practices

### Exemption 2

Use of educational tests, surveys, interviews, or observations of public behavior

### Exemption 3

Use of benign behavioral interventions in adults

### Exemption 4

Collection/study of data or specimens if publicly available or recorded such that subjects cannot be identified\*

\*May be identifiable in limited cases. See §46.104(d)(4)(iii) and (iv)

### Exemption 5

Public service program research or demonstration projects

### Exemption 6

Taste and food quality evaluations

### Exemption 7

Storage of identifiable information or biospecimens for secondary research use. Broad consent and limited IRB review are required.

### Exemption 8

Secondary research use of identifiable information or biospecimens. Broad consent and limited IRB review are required.

Passive observation of people’s behaviors in a public park is not

Passive observation of people’s activities/behaviors in a public online platform is not → public posts on Twitter / Facebook

# Ethical Frameworks: Ends vs. Means

## **Consequentialism**

- Ethical judgement based on consequences

## **Deontology**

- The study of the nature of duty and obligation
- Are the means justified?

# Principles of ethical research

- 1. Respect for Persons**
- 2. Beneficence**
- 3. Justice**
- 4. Respect for Law and Public Interest**



# Principles of ethical research

## 1. **Respect for Persons**

Individual autonomy

- Research should respect free will of subjects
- Informed consent

Standards of consent / deception differ by field

- Psychology: Deceive, then debrief
- Behavioral economics: Deception is regarded unethical

## 2. **Beneficence**

## 3. **Justice**

## 4. **Respect for Law and Public Interest**

# Principles of ethical research

## 1. **Respect for Persons**

## 2. **Beneficence**

Do not harm participants

Weigh the risks and benefits to participant

Weigh the risks and benefits to society at large

- Long-term risks and benefits are difficult to predict

## 3. **Justice**

## 4. **Respect for Law and Public Interest**

# Principles of ethical research

- 1. Respect for Persons**
- 2. Beneficence**
- 3. Justice**

Minority representation

Fair compensation for participation

- 4. Respect for Law and Public Interest**

# Principles of ethical research

1. **Respect for Persons**
2. **Beneficence**
3. **Justice**
4. **Respect for Law and Public Interest**

Compliance with laws, contracts, and ToS

Transparency-based accountability: be clear about the goals, methods, and results at all stages of the research → prevent research done in secret

# Principles of ethical research

1. **Respect for Persons**
2. **Beneficence**
3. **Justice**
4. **Respect for Law and Public Interest**

Compliance with laws, contracts, and ToS

Transparent about decisions to deviate from compliance

# Principles of ethical research

These four principles can conflict

**Q:** What would be a research in which two or more principles conflict? How do you solve it?

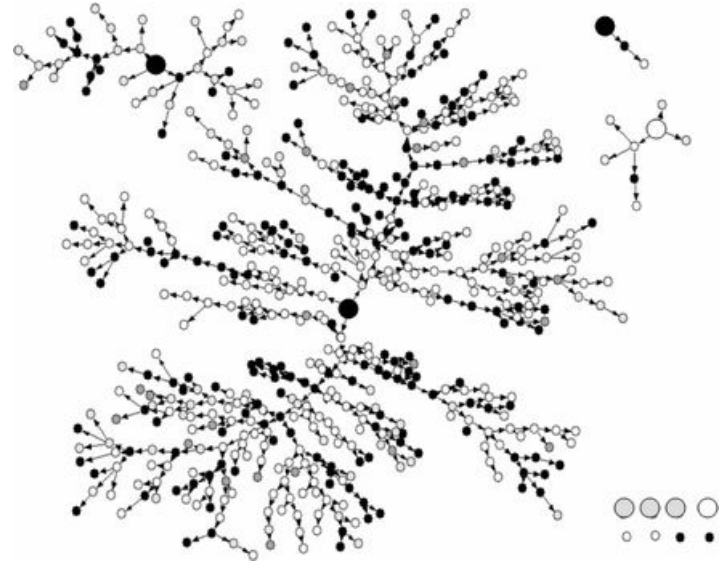
# Principles of ethical research

These four principles can conflict

**Q:** What would be a research in which one or more principles conflict? How do you solve it?

Example: beneficence vs. justice in the study of injection drug users

- Respondent-driven sampling for hidden populations
- Identify initial seed drug users and ask them to recruit their drug user acquaintances to participate in study
- Compensate the drug users for their participation and recruitment
- **Q:** So, why is there an ethical tension between beneficence and justice?
- **Q:** How do you solve it?



# Ethical issues in social science research



# Human subjects research debacles

Genocide, virus studies, forced migration



# Common criticisms

Insufficient informed consent

Questions about the relevance of third-party review

- Inadequate IRB standards
- “Internal review” by companies

Conflicts of interest and bias from privileged access to data

- FB data scientist vs. university researcher

# New challenges to human subjects research in the digital age

Risks of misuse of new technology unknown

Long-term harm unknown

Harm can be amplified in studies of large-scale observations

- breadth of data sources
- depth of information (from ML and AI)

Legal framework not established

- Need for relying on guiding principles

# Ethical issues specific to network research

## **Informed Consent**

- Network neighbors reveal information about me
- Disease, location, relationships, demographics, sexual identity, infidelity
- Impossible to obtain consent for all individuals whose information gets revealed

## **Weaponized use**

- Companies can leverage network information for employee control

# Case Study: Emotional Contagion

# Emotional contagion

“massive-scale”!



## Experimental evidence of massive-scale emotional contagion through social networks

Adam D. I. Kramer<sup>a,1</sup>, Jamie E. Guillory<sup>b,2</sup>, and Jeffrey T. Hancock<sup>b,c</sup>

<sup>a</sup>Core Data Science Team, Facebook, Inc., Menlo Park, CA 94025; and Departments of <sup>b</sup>Communication and <sup>c</sup>Information Science, Cornell University, Ithaca, NY 14853

Edited by Susan T. Fiske, Princeton University, Princeton, NJ, and approved March 25, 2014 (received for review October 23, 2013)

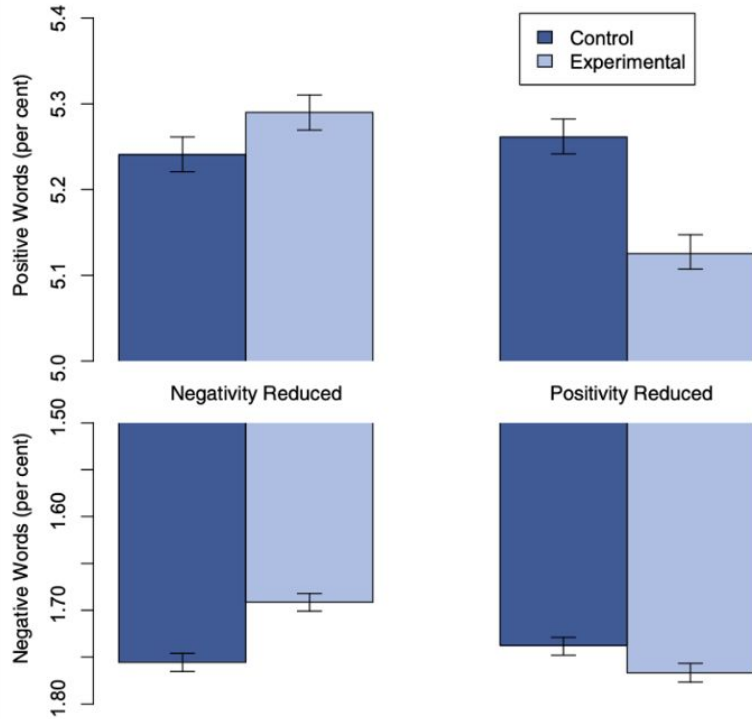
**Emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness. Emotional contagion is well established** demonstrated that (i) emotional contagion occurs via text-based computer-mediated communication (7); (ii) contagion of psychological and physiological variables has been suggested based

# Emotional contagion

## Facebook Emotional Contagion Study

- Does your emotional state affect your network neighbor's emotions?
- Facebook experiment on **689K** users
- Experimental manipulation: **Omit** posts with positive or negative **affect words** from neighbors' newsfeed
- Collaboration between FB data scientist and Cornell University researchers
- FB legal team approved, Cornell IRB approved (legally, no issue)

# Emotional contagion



**Fig. 1.** Mean number of positive (*Upper*) and negative (*Lower*) emotion words (percent) generated people, by condition. Bars represent standard errors.

## Findings of Facebook Emotional Contagion Study

**Miniscule treatments:** 0.3% of negative words and 3.3% of positive words were omitted from a user's newsfeed

## Negligible (yet statistically significant) Effect Sizes:

- Omission of positive post → positive status update decreased by 0.1%, negative update increased by 0.04%
- Omission of negative post → positive status update increased by 0.06%, negative update decreased by 0.07%



# Ethical controversy

## Facebook's flawed emotion experiment: Antisocial research on social network users

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## Abstract

In June 2014, a paper reporting the results of a study into 'emotional contagion' on Facebook was published. This research has already attracted a great deal of criticism for problems surrounding informed consent. While most of this criticism is justified, other relevant consent issues have gone unremarked, and the study has several other ethical flaws which collectively indicate the need for better regulation of health and mood research using social networks.

# Ethical controversy

## Key issues were around respect for persons (informed consent) and harm (beneficence)

- Authors argued: “As such, it was consistent with Facebook’s Data Use Policy, to which all **users agree prior to creating an account** on Facebook, constituting informed consent for this research.”
- Facebook argued: “**We do research to improve our services** and make the content people see on Facebook as relevant and engaging as possible.... We carefully consider what research we do and have a strong **internal review process.**”
- Critics argued: **Users did not know** of this manipulation with potential mental health risks

# Case Study: Joining Data

# Tastes, Ties, and Time study

*Researchers scraped students' data from Facebook, merged it with university records, used these merged data for research, and then shared them with other researchers (Salganik 2018)*

- Facebook friendship ties, photo co-tagging ties
- cultural preferences
- GPA, ethnicity, residential dorm, coursework,...

Privacy concerns: Days after first sharing the anonymized data, other researchers were able to deduce the identity of the students

Informed consent: Students did not provide informed consent

# Case Deliberation: Deleted Tweets

# Deleted tweets?

What are the ethical issues of using tweets that users deleted?

Use of deleted tweet (potentially) violates:

- Respect for law and public interest: violation of Twitter's ToS
- Respect for persons: diminishes individual's autonomy
- Beneficence: Higher probability of sensitive or embarrassing information could be revealed

Use of deleted tweets:

- Study malicious actors' tweet behavior to strengthen enforcement
- Understand self-censorship and mechanisms of polarization → strengthen social cohesion

# Deleted tweets?

What are the ethical issues of using tweets that users deleted?

What are the limits of using deleted tweets?

- **Meta data:** Information on user  $i$  deleting tweet  $j$  at time  $T$
- **User profile** metadata: User's location, language, country, self-description
- **Text:**
  - Automated: Using NLP for categorizing and aggregating deleted tweet text
  - Manual: Human reads a small random sample of deleted tweets

# Pragmatic approach

Initially abide by the common rules established by the ethical frameworks and principles

Identify conflicting principles in your specific project and make informed decision

- Example: Low harm to subjects, but great benefit to society
- Example: Feasibility of obtaining informed consent from million FB users vs. potential harm
- Example: Strictly observing Twitter's terms of service vs. benefit to society

Social construction of research ethics: Standards continue to evolve with societal change



# Summary

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