The “majority illusion” and other paradoxes in social perception

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Social perceptions

People’s attitudes and behavior are often influenced by their peers

- Adopting an innovation
  - Use of new technology, such as an iPhone

- person who bought an iPhone
- person who does not have an iPhone
Social perceptions

People’s attitudes and behavior are often influenced by their peers

- Adopting an innovation
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- person who bought an iPhone

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Most of my peers have an iPhone
Social perceptions

People’s attitudes and behavior are often influenced by their peers

• Adopting an innovation
  • Use of new technology, such as an iPhone

- person who bought an iPhone
- person who does not have an iPhone

DON’T BUY
Fewer of my peers have an iPhone
Social perceptions

People’s attitudes and behavior are often influenced by their peers

- Adopting an innovation
  - Use of new technology, such as an iPhone
- Social norms
  - Customs, such as shaking hands
  - Linguistic norms, such as “story” vs “floor”
- Joining a political movement
  - Participation in mass movements, demonstrations

How accurate are social perceptions?
Social perceptions are often wrong

People systematically misperceive their friends’ opinions and behavior

- College students overestimate their peers’ alcohol use

**Perception of how many alcoholic drinks are consumed when at a party (Fall 2009)**

*Source: Most Students Do PartySafe@Cal*
Social perceptions are often wrong

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- College students overestimate their peers’ alcohol use

Perception of how many alcoholic drinks are consumed when at a party (Fall 2009)

Why?

Source: Most Students Do PartySafe@Cal
Friendship paradox

Friendship paradox: on average, your friends have more friends than you do [Feld, 1991].
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Friendship paradoxes in social networks

• Friendship paradox holds in online social networks
  • On average, your Facebook friends are more popular than you are [Ugander, Backstrom, Marlow 2011]
  • On average, your Twitter followers have more followers than you do [Hodas, Kooti, Lerman 2013]
    • Holds for 98% of Twitter users
Strong friendship paradox

Most of your friends have more friends than you do [Kooti, Hodas and Lerman, 2014].
Strong friendship paradox

Most of your friends have more friends than you do [Kooti, Hodas and Lerman, 2014].
**Strong friendship paradox in online networks**

**Most** of your followers have more followers than you do.

93% of Twitter users are less popular than most of their followers.

Strong friendship paradox in online networks

Most of the people you follow have more followers than you do.

96% of Twitter users follow others (most of whom) are more popular than they are.

Strong friendship paradoxes in online network

Paradox holds for attributes other than popularity

- **Activity**: most of your friends post more messages than you do

For 82% of Twitter users: Most of the people they follow are more active than they are.

Strong network paradoxes in online networks

Paradox holds for attributes other than popularity

- **Diversity**: most of your friends receive more diverse information than you do

For 83% of Twitter users: Most of the people they follow see more diverse content than they do

The “majority” illusion

Due to paradoxes, a small number of highly-connected people can skew the perceptions of many.
The “majority” illusion

Due to paradoxes, a small number of highly-connected people can skew the perceptions of many.

white nodes: “most of my friends are red”

white nodes: “most of my friends are white”
Dynamics of social contagion

Dynamics: person becomes active if most friends are active

Biased perceptions

Unbiased perceptions


Majority illusion

Large fraction of people will see majority active friends even when few people are active overall (e.g., 5%)

- Larger effect for heavy-tailed degree distribution (more hubs)
- Larger effect for stronger correlation (hubs more likely to be active)
- Larger effect in disassortative networks (hubs link to unpopular people)
Support for same-sex marriage in the US

Q: Do you strongly favor, favor, oppose, or strongly oppose allowing gays and lesbians to marry legally?

Source: Pew Research Center

THE WASHINGTON POST
Summary

- Friendship paradoxes can systematically skew social perceptions
  - i.e., perceptions based on local observations of peers
- Structural properties of networks give rise to the paradoxes
  - Heavy-tailed degree distribution
    - Large inequality of popularity
  - Degree disassortativity
    - Popular people linking to unpopular people
  - Degree-activity correlation
    - Popular people more likely to be active
THANK YOU!

Questions?
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