

IN4MATX 153: CSCW

Class 5:
Ties

Professor Daniel Epstein
TA Dennis Wang
Reader Weijie Du

Announcements

- A1 due 11:59pm on Wednesday (April 17)
- Please email the class list with questions, not individual course staff!
 - informatics-153-staff@uci.edu
- A2 is posted, due May 8
- Participation (in-class, online) are all syncing with Canvas
 - Send an email to the class list if you added late, and we'll communicate about how to get credit for the week you missed

Today's goals

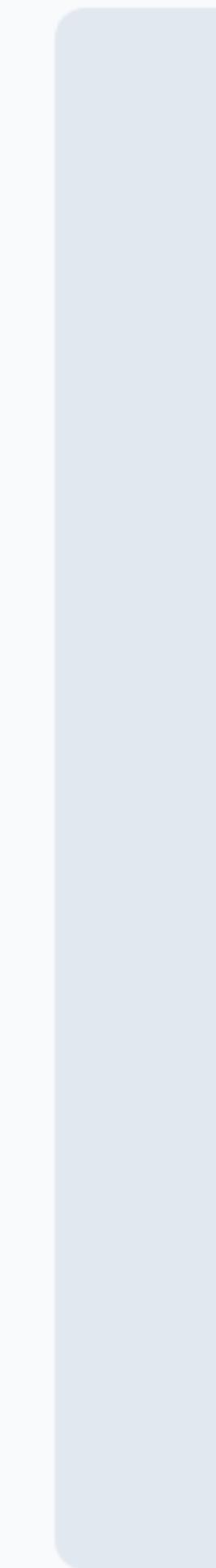
By the end of today, you should be able to...

- Define what a tie is, and what makes one strong, weak, or somewhere in between
- Consider what tie group(s) a design is supporting, and why
- Articulate how ties inform use of social media, both in terms of engagement and in terms of platform use
- Describe how designs should respond to tie strength

Discuss: Does social media make us feel lonely? Why or why not?

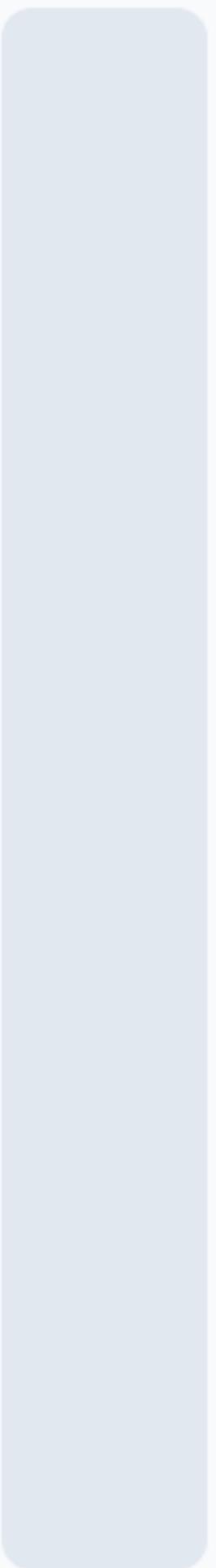
Does Social Media make us feel lonely?

0%



Yes

0%



No

Does social media make us lonely?

- No?
- Yes?
- Kinda? Depends on how and when you use it.



HARVARD HEALTH BLOG

Does social media make you lonely?



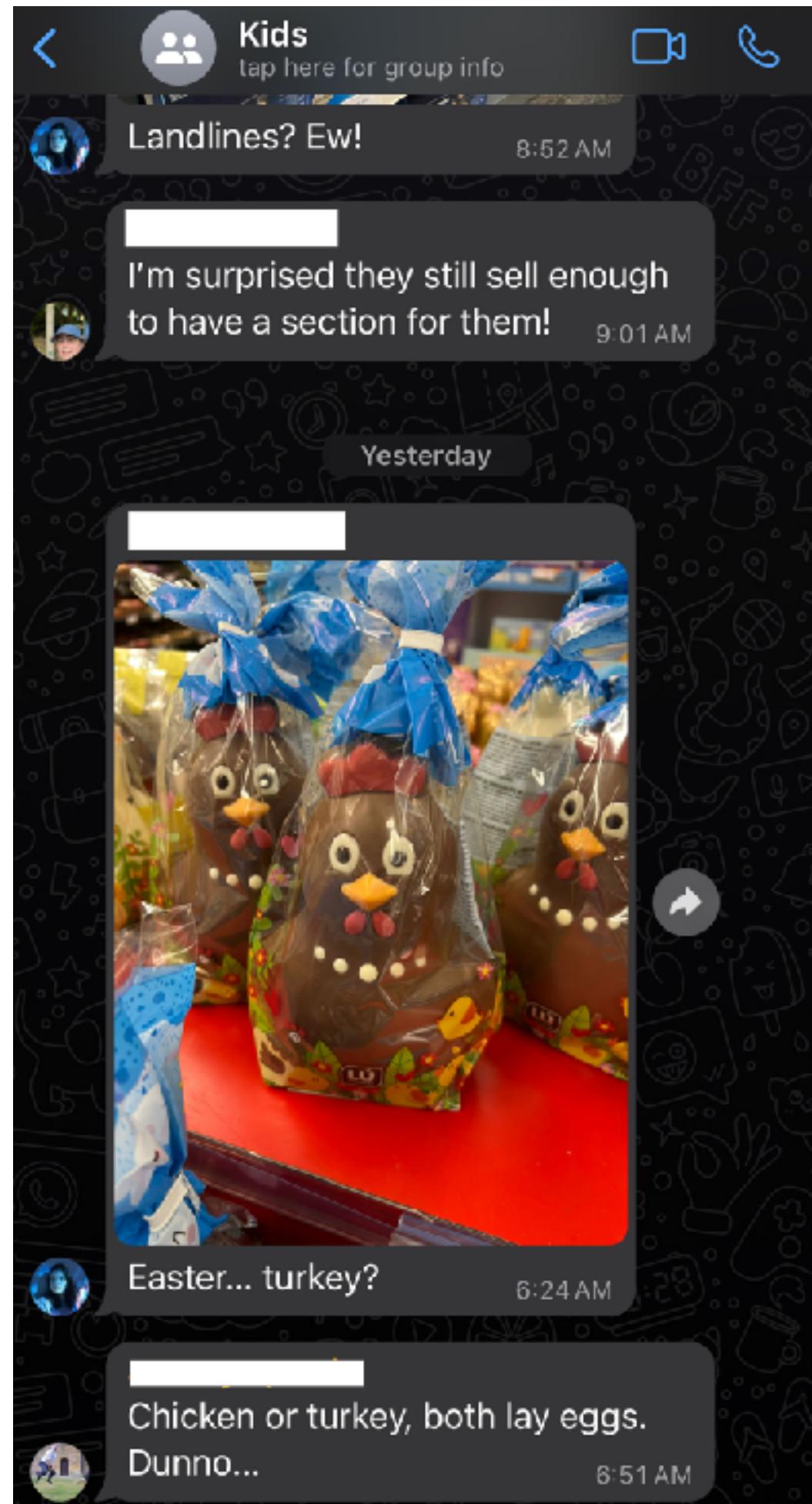
Internet Paradox

*A Social Technology That Reduces Social Involvement
and Psychological Well-Being?*

Robert Kraut, Michael Patterson, Vicki Lundmark, Sara Kiesler, Tridas Mukopadhyay, and William Scherlis
Carnegie Mellon University

To answer, we need to understand why these feel different.

WhatsApp group chat



Dorm email list

- gallon jug? - does anyone have a spare gallon jug or receptacle that can hold a gallon of water that you
- laundry - hey squad, someone paid for my laundry load right before I hit the button in mine or the mach
- Lost ID - Hello, I appear to have misplaced my ID. The only spots I went where it could have been lost to
- Fwd: Pop-up Felting Event!! - YOOOOOOOOOOOOOO go check out this event tomorrow by the su
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- CHALLENGE: Brown College Dryers Actually Dry My Clothes - LEVEL: IMPOSSIBLE
- 4/3 Fire Alarm - Short one ---- sent from iPhone
- EXTINCTION NIGHT Tonight - You (might) already know what time it is: EXTINCTION NIGHT IS UPON U
- Has the AC been turned on?
- Spectrum theatre - a message from Xander (concussed and unable to email)" Hey BC, go see Spectru
- scholarship opportunity - get that \$\$\$
- Charger request - Does anyone have a MAC USBC charger I could borrow for the afternoon? Until 10ish
- MARCH LOOT MARCH LOOT - HI BROWN COLLEGE NATION !!!! I AM EMZ, YOUR PANJANDRUM. I HAVE
- BC Belt Challenge Wrestlemania Predictions Form - The link is finally here now that they've (probably)
- Econ 2020 Practice Problems - Hey! If you have a TA other than Vaughan for Econ 2020 and would like
- Need vinegar (not all batteries are rechargeable) - Hi bestiesssssss, Anyone got some vinegar they

Tie Strength: Granovetter, 1973

- Not all of our relationships are the same
- Some are **strong ties**: trusted friends and family
- Others are **weak ties**: rough acquaintances
- Social computing systems must design for each of these groups differently

Strong ties

What are we designing for when we're designing for strong ties?

- Think:
 - A best friend
 - A roommate
 - A parent
- Strong ties typically have **thick offline context**.
- This means that the social computing system will never see everything about the relationship

Who are our strong ties?

- Strong ties are typically in the social networks that we are already deeply embedded in
- Strong ties provide social and emotional support that improve mental health
- Strong ties communicate with us through multiple channels, rather than through a single widely-available channel (e.g., email)

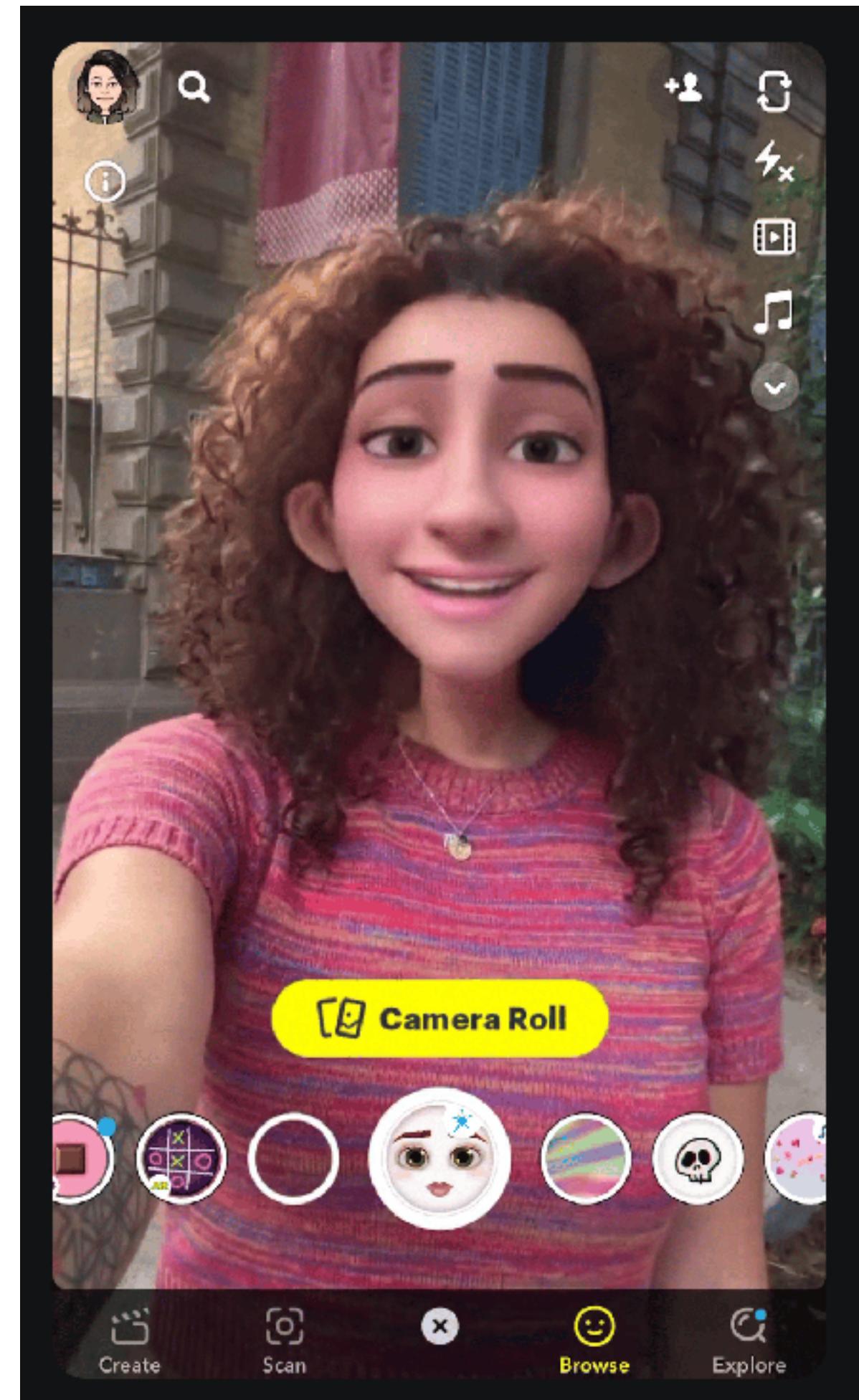
Granovetter, M. S. (1973). The strength of weak ties. *American journal of sociology*, 78(6), 1360-1380.

Thoits, P. A. (2011). Mechanisms linking social ties and support to physical and mental health. *Journal of health and social behavior*, 52(2), 145-161.

Haythornthwaite, C., & Wellman, B. (1998). Work, friendship, and media use for information exchange in a networked organization. *Journal of the American society for information science*, 49(12), 1101-1114.

Designs for strong ties

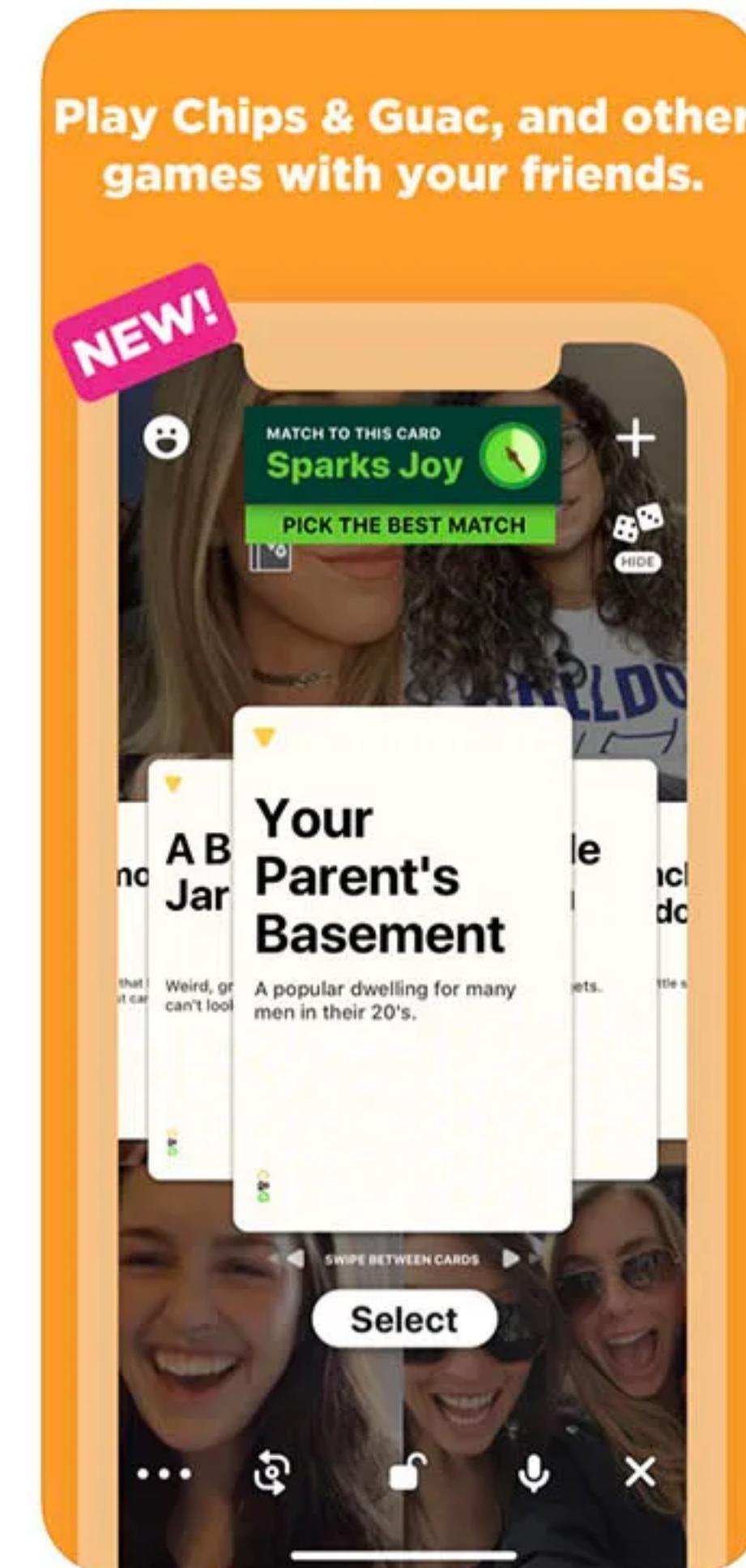
- Often, the design goal is to maintain or deepen the strong tie relationship.



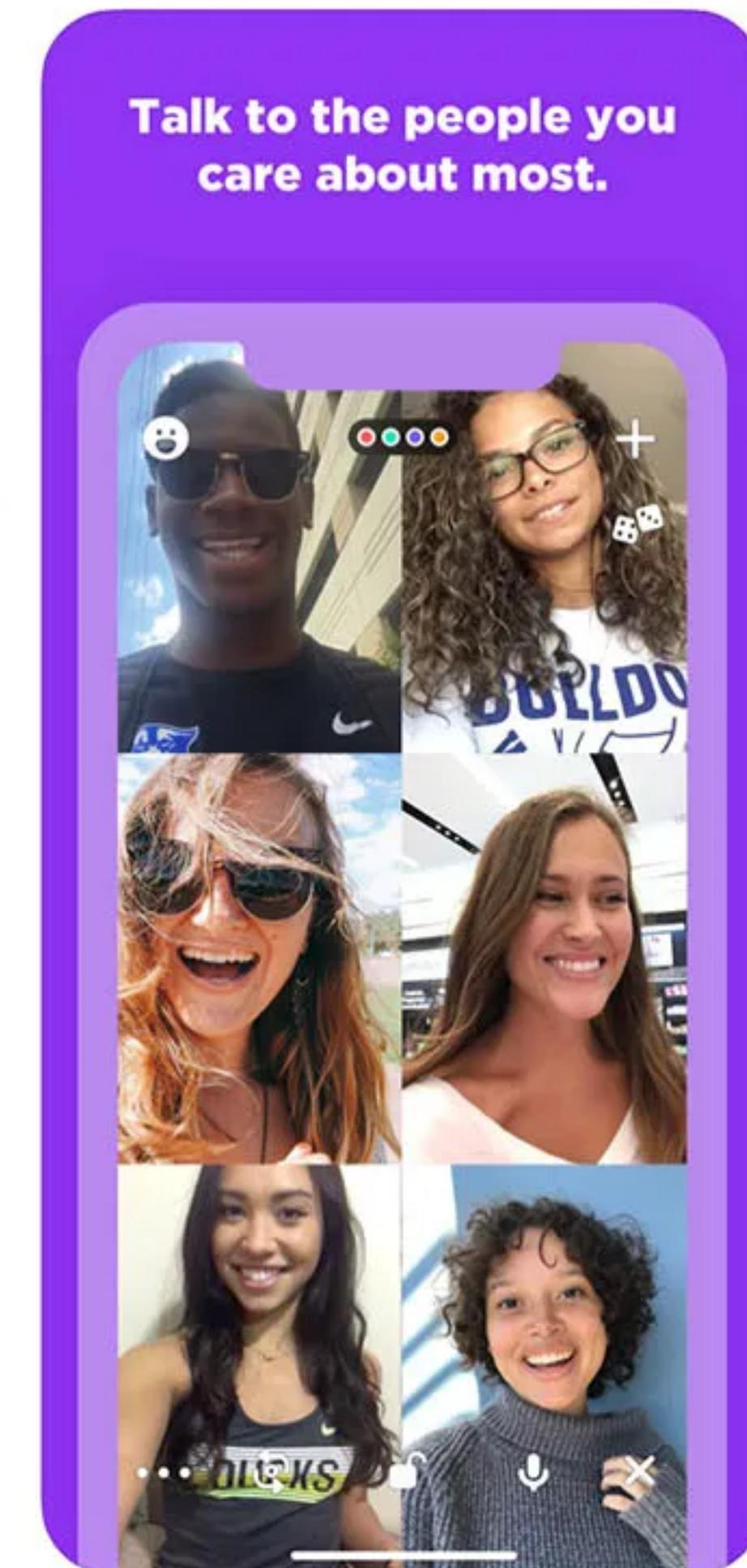
Designs for strong ties



Friend meetups in Animal Crossing



Houseparty (RIP)



Why do social apps for strong ties succeed? And why do other social apps (Instagram) seem not as good at it?

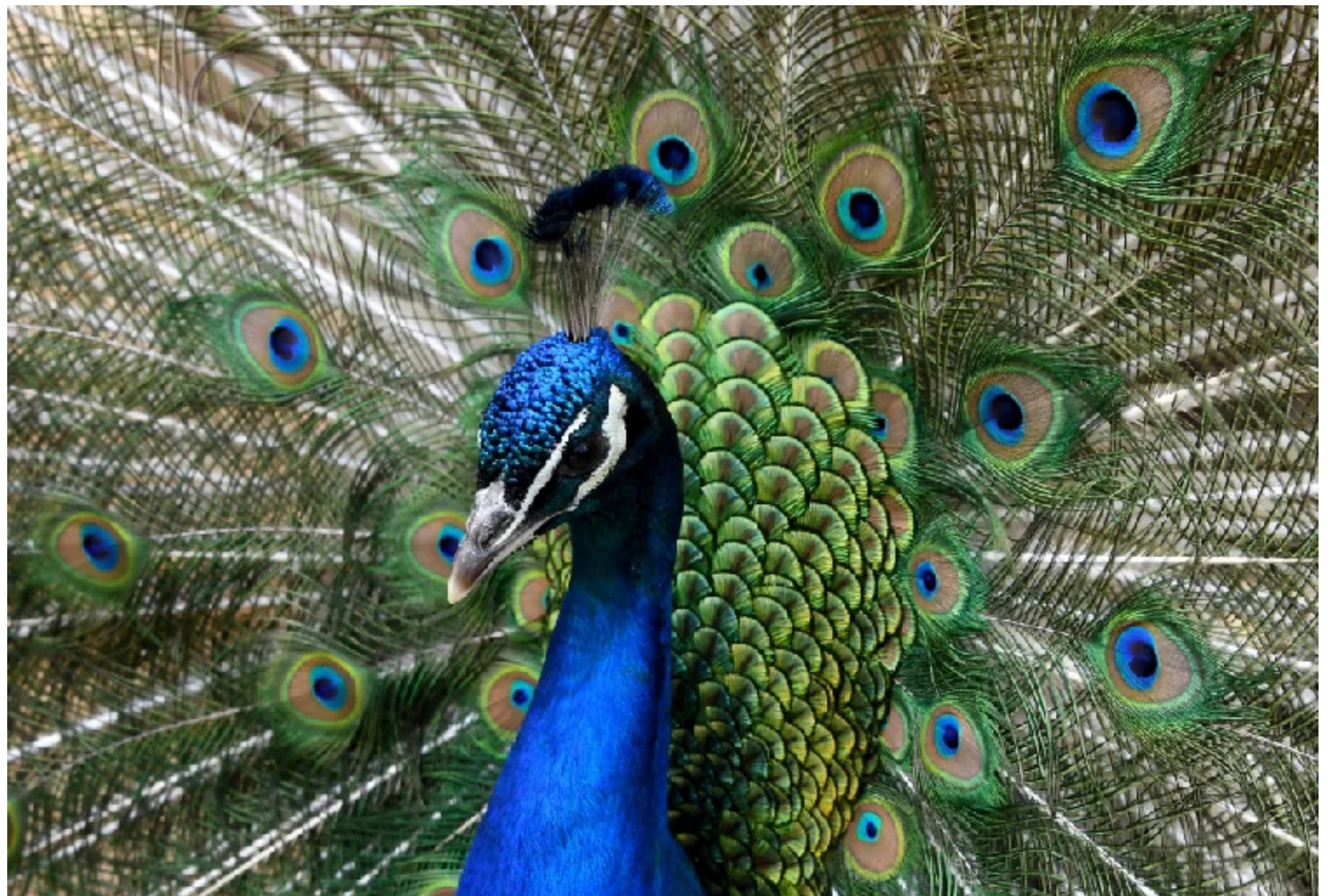
Honest signals

- In social situations, it's easy and quick to throw out perfunctory signals that you care about someone
 - “We should get coffee!” (Says, your flaky friend)
- However, other signals are much more **costly** to produce, and so they are much more **honest**

Donath, J. (2007). Signals in social supernets. *Journal of computer-mediated communication*, 13(1), 231-251.
Pentland, A. (2010). Honest signals: how they shape our world. MIT press.
Smith, J. M., & Harper, D. (2003). Animal signals. Oxford University Press.

Honest signals

- In nature: peacocks use their plumage to attract mates
 - Their plumage is an *honest signal*, because there's no way to fake having the nutritional resources to waste on them
- In social life: spending time on something for someone matters



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Strong tie designs as honest signals

- Designs are effective at maintaining and deepening strong ties when they operate as honest signals
- I can't fake the attention and effort that I'm putting into the interactions
 - I respond to the text... or I don't
 - I FaceTime you... or I don't
 - I send you silly Snaps... or I don't

Discuss: How does tie strength relate to the Nowens (WhatsApp is for family) reading?

Nowens and tie strength

- Core question: people have a lot of apps that do the same thing, particularly around messaging
 - WhatsApp
 - Hangouts
 - Discord
 - Signal...
- Why?

Nouwens, M., Griggio, C. F., & Mackay, W. E. (2017, May). " WhatsApp is for family; Messenger is for friends" Communication Places in App Ecosystems. In Proceedings of the 2017 CHI conference on human factors in computing systems (pp. 727-735).

Nowens and tie strength

- People don't want to contaminate their conversations, even among strong ties
 - E.g., a different app for family than for close friends
 - Enables temporarily muting, ignoring, etc. messages from one group of ties
- So they define *communication places*. They reconfigure apps to do this, it's not inherent in the design of any one app

Nouwens, M., Griggio, C. F., & Mackay, W. E. (2017, May). " WhatsApp is for family; Messenger is for friends" Communication Places in App Ecosystems. In Proceedings of the 2017 CHI conference on human factors in computing systems (pp. 727-735).

Nowens and tie strength

- Communication place: a set of personal rules that people build on top of communication apps
 - Membership rules: who belongs to them
 - Perceived purpose: what are they for
 - Emotional connotations: how they feel to the user

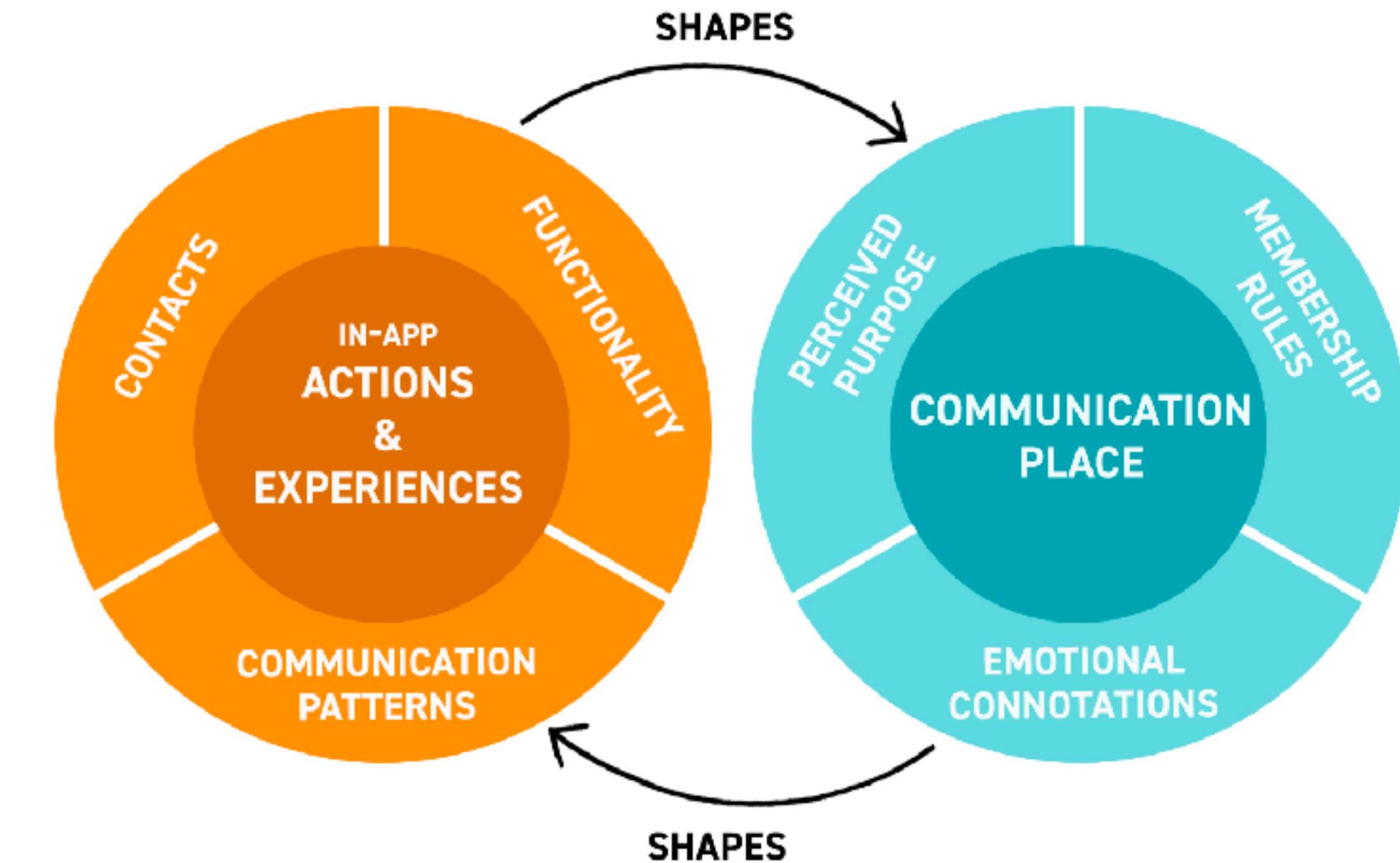


Figure 1. The reciprocal relationship between actions and experiences in the communication app and the communication place that is created on top of it.

Nowens and tie strength

- What if we grouped conversation by tie, rather than by app?
 - Right is a design sketch, but it would be cool!
- Overall takeaway: you can try to design to support certain ties, but people will still reconfigure your app in ways that work for their social connections

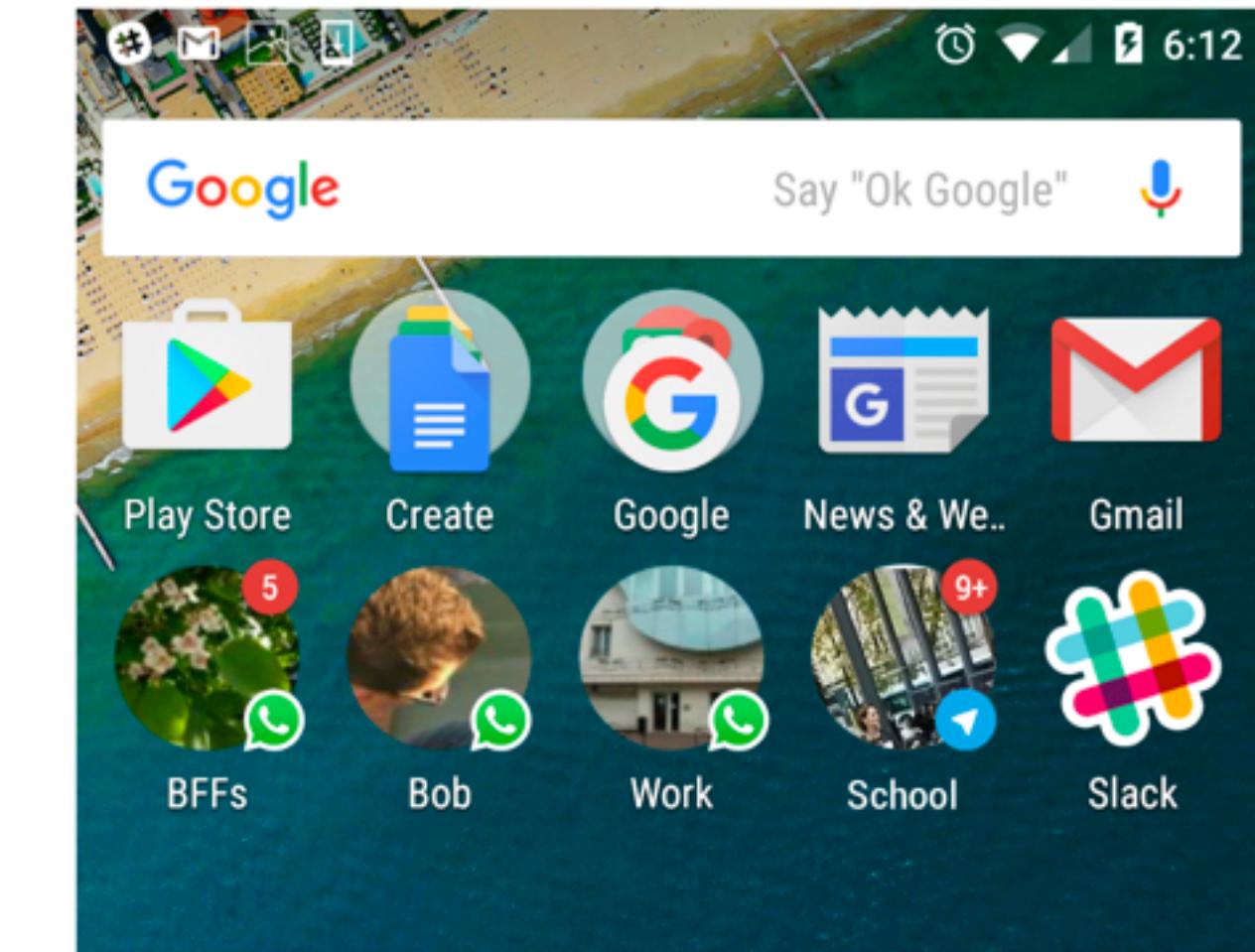


Figure 3. A communication app ecosystem with apps containing multiple communication places. The  icons are instances of WhatsApp. The  icon is an instance of Telegram. Apps could still be used as we do today, as in the case of Slack.

Weak ties

What are we designing for when we design for weak ties?

- Think:
 - That person you kind of remember from your freshman dorm
 - Someone on the team that you interned with last summer but haven't kept in close touch with
 - Acquaintances you see occasionally
- Weak ties typically have **thin context** because they interact more sparsely.

Who are our weak ties?

- Weak ties often represent connections to parts of the social network that we do not inhabit
- People with weak ties to other organizational units in a company tend to have higher performance reviews and generate more creative ideas
- Weak ties often communicate through a single commonly-available channel (e.g., email, Facebook), rather than a multiplicity of channels

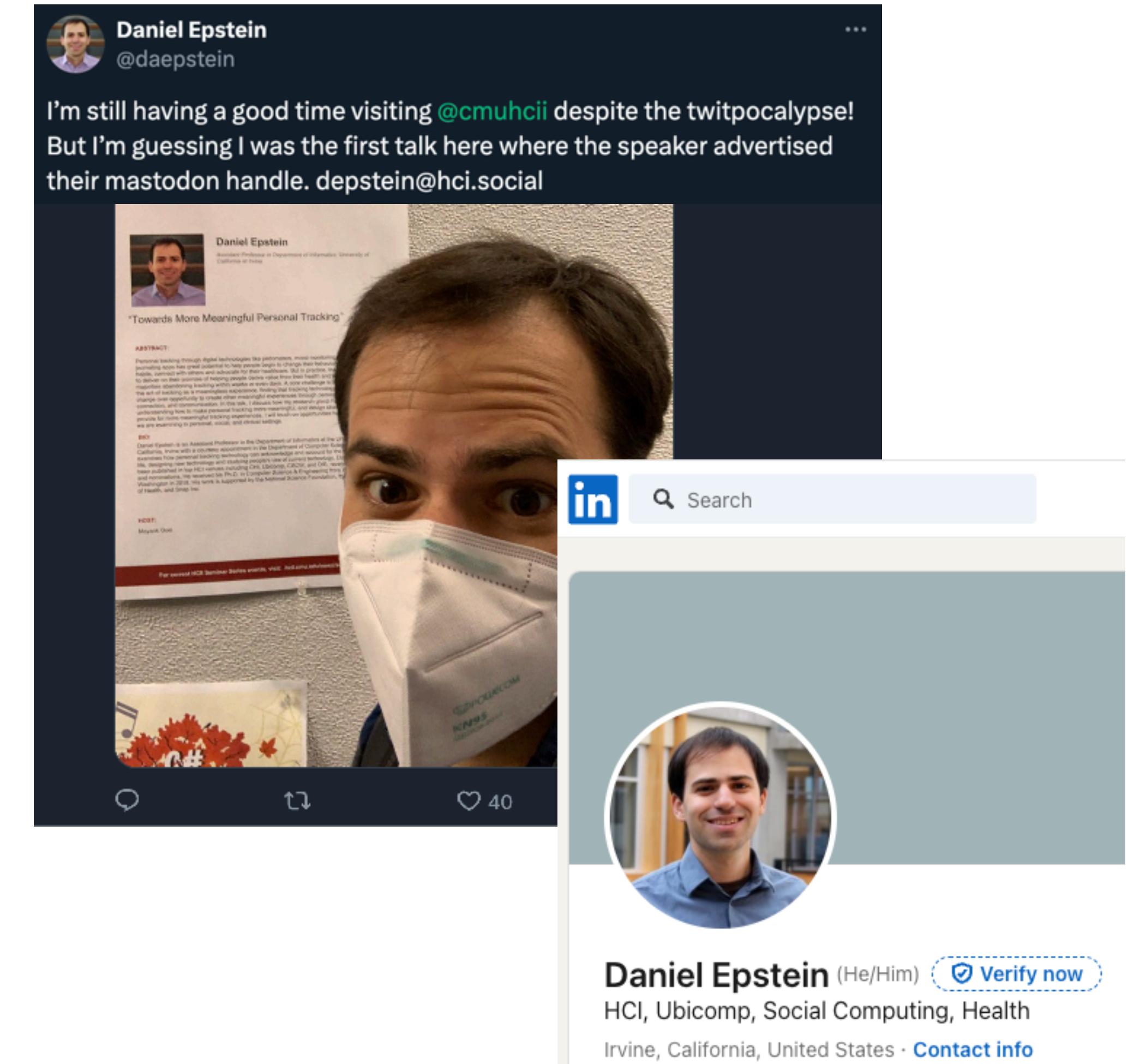
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Burt, R. S. (2007). Brokerage and closure: An introduction to social capital. OUP Oxford.

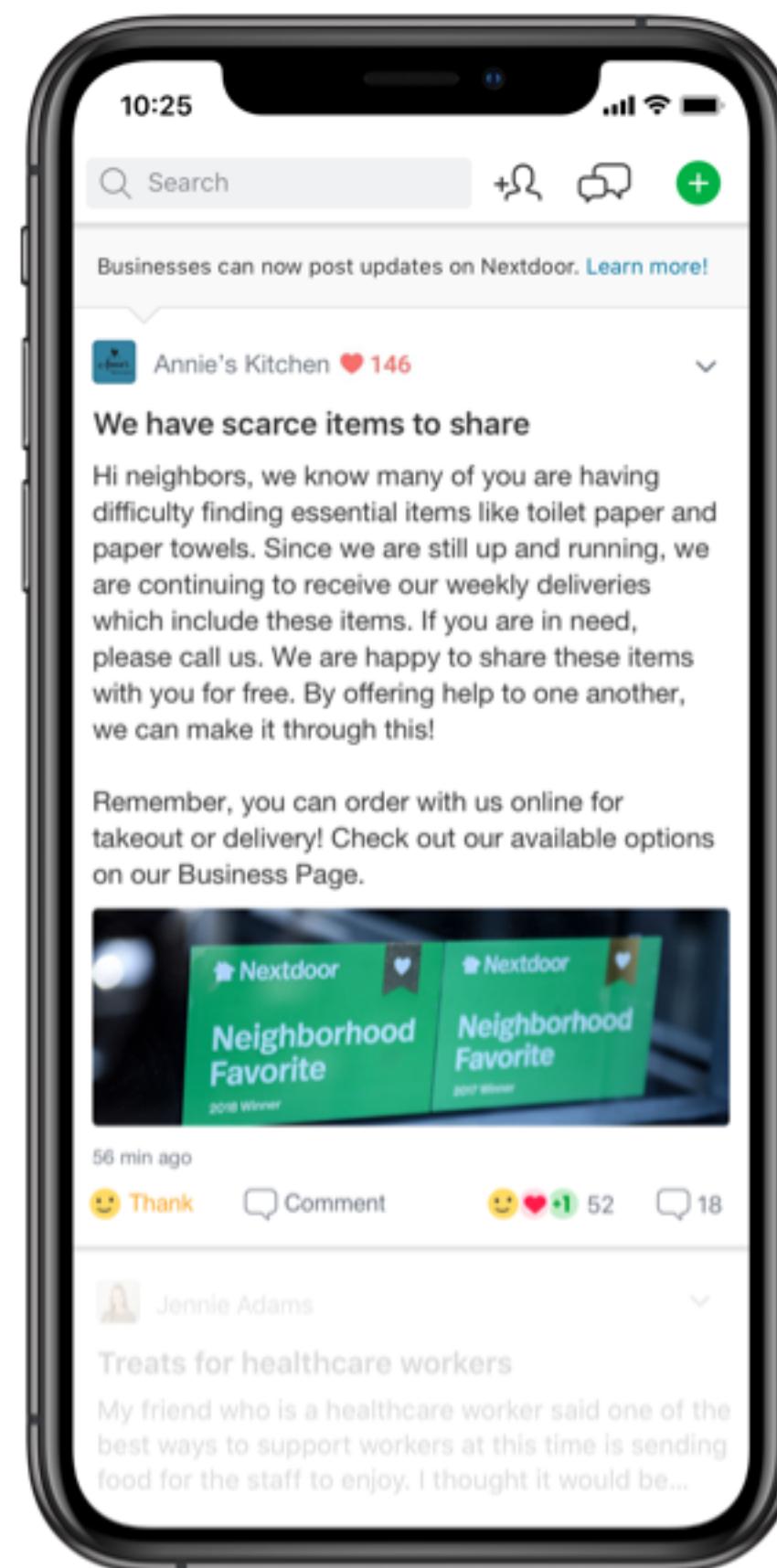
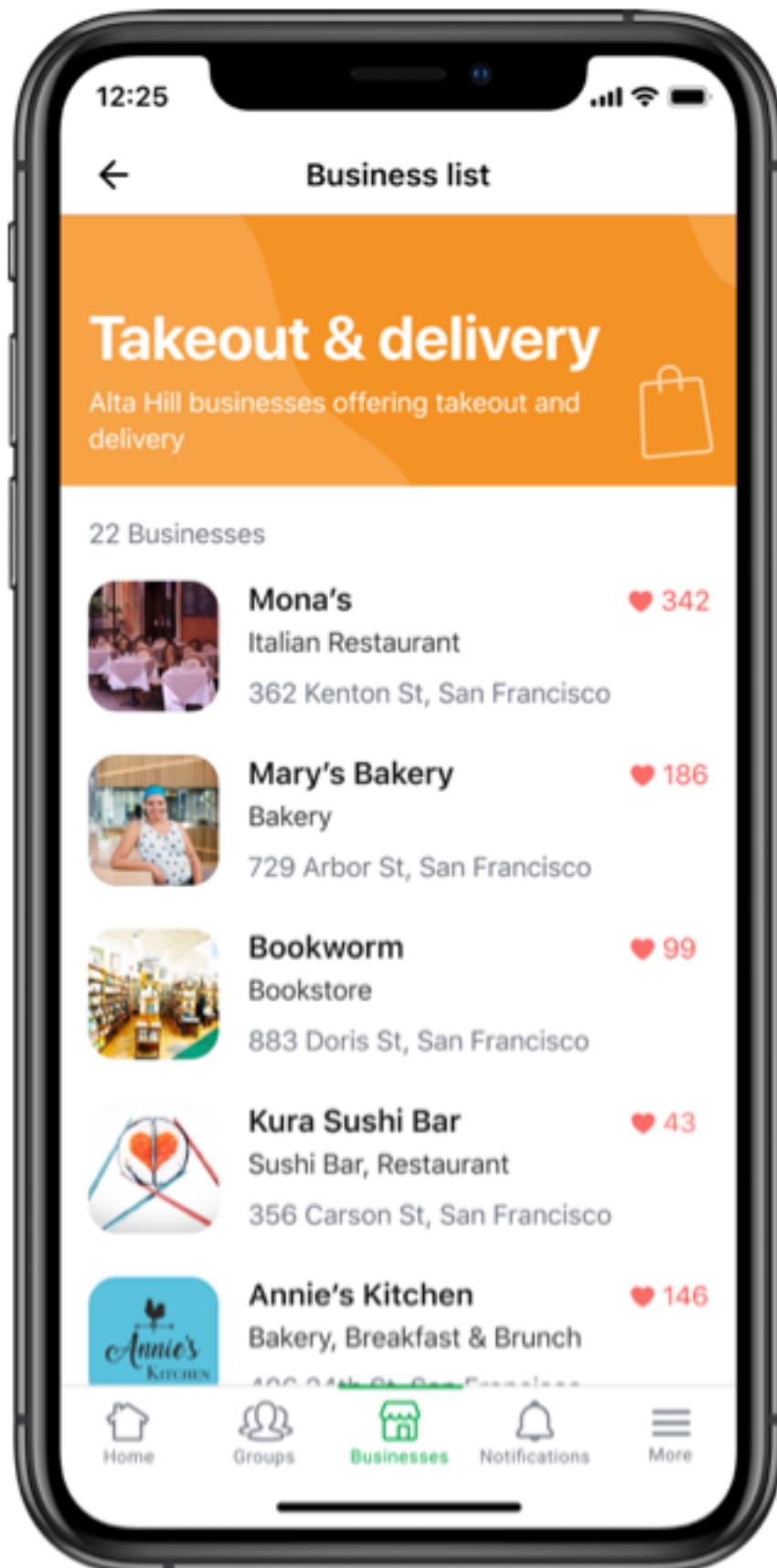
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Design for weak ties

- Design goals with weak ties are often
 - Keeping tabs
 - Celebration
 - Social movements
 - Broadcast



Design for weak ties



gallon jug? - does anyone have a spare gallon jug or receptacle that can hold a gallon of water that you

laundry - hey squad, someone paid for my laundry load right before I hit the button in mine or the mach

Lost ID - Hello, I appear to have misplaced my ID. The only spots I went where it could have been lost to

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Nextdoor

My dorm email list

Design for weak ties

- Email is particularly tricky in this respect
 - It tries to do both strong and weak tie communication
 - That's one of the reasons why email can suck sometimes

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My dorm email list

Discuss: what are other examples of designs for weak ties?

The strength of weak ties

- Because they are connected to parts of the network a bit more distant from us, **weak ties are valuable sources of new perspectives and professional opportunities**
 - People find jobs through weak ties
 - One study of LinkedIn’s “people you may know” algorithm suggest that “medium” ties are the best for job mobility



Granovetter, M. S. (1973). The strength of weak ties. *American journal of sociology*, 78(6), 1360-1380.

Rajkumar, K., Saint-Jacques, G., Bojinov, I., Brynjolfsson, E., & Aral, S. (2022). A causal test of the strength of weak ties. *Science*, 377(6612), 1304-1310.

The strength of weak ties

- People tend to rely on their social networks, particularly their weak ties, to get jobs
 - And, this was even more true of the highest-paying jobs
- This, of course, perpetuates inequality
 - People these highest-paying jobs tend to be more privileged
 - And, by extension, their weak ties tend to be more privileged

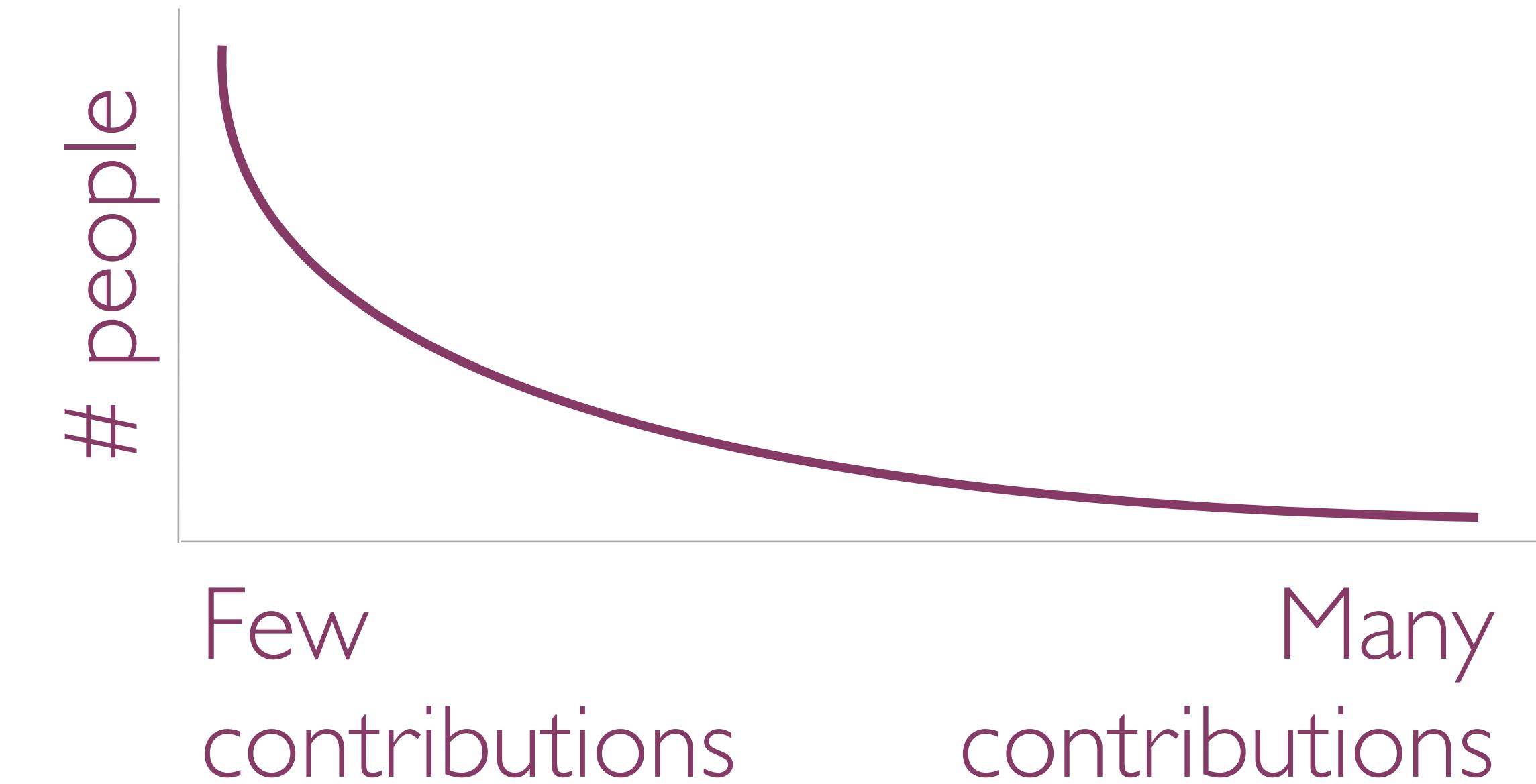
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Weak tie designs as bustling spaces

- We all leverage weak ties occasionally for favors
- But this is not enough of an advantage for most systems for promoting favors to stay active
 - Except maybe LinkedIn. **Why do you think that is?**
- So, weak tie designs instead lean on creating bustling spaces
 - Facebook, Instagram, Twitter: newsfeed
 - And weak tie systems die if they're perceived to be quiet

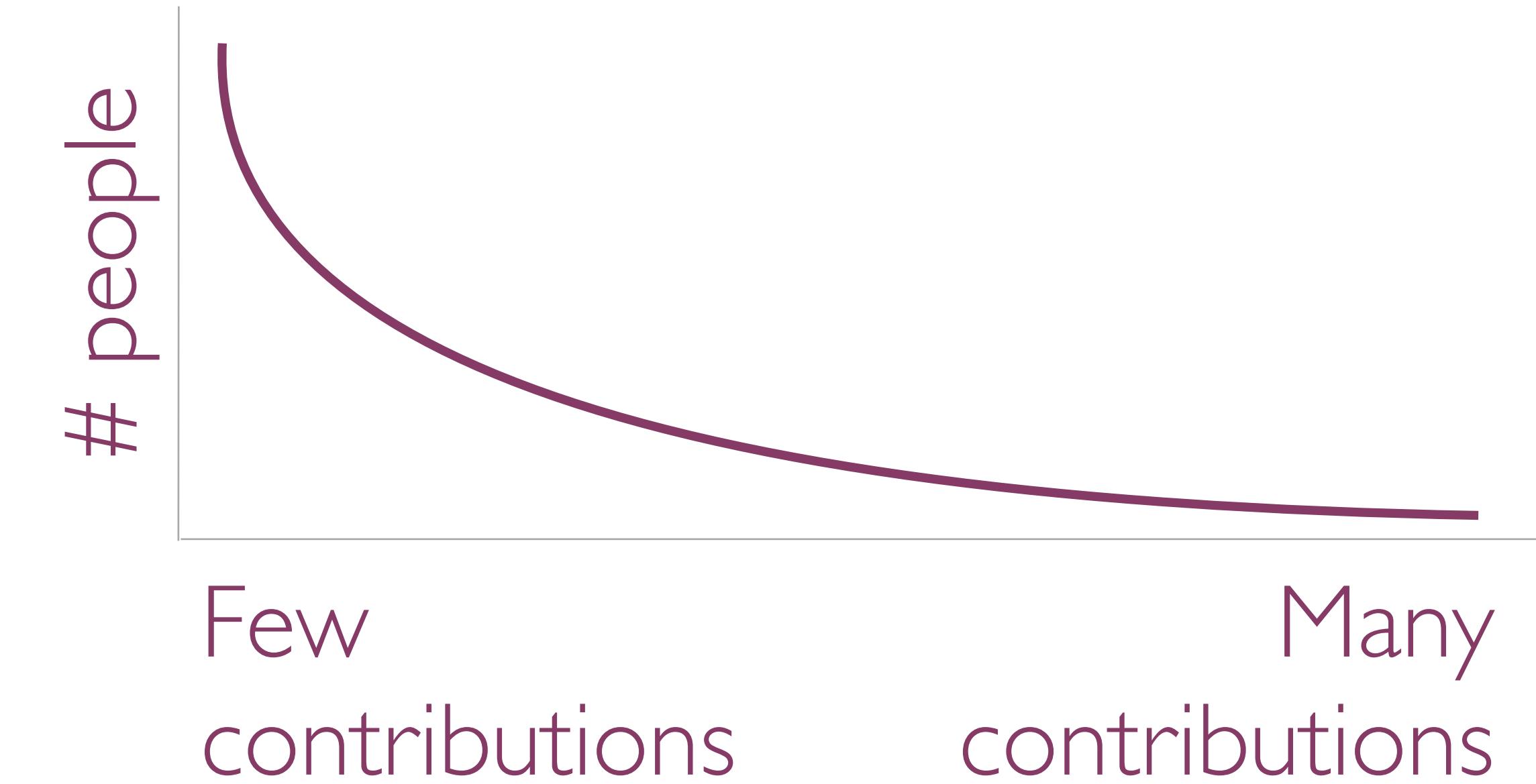
Weak tie designs

- It's inevitably the case that there's extreme inequality in contribution volume
- Most of the content that you see on your Facebook, Twitter, dorm list will be from a small population of the people who are on it



Weak tie designs

- Chances are, most of the content you see on social platforms is from your weak ties
- Design challenge: how do you make content from people you barely know worthwhile?
 - If you're an RA, how do you make the dorm community feel connected even if only a small percentage of people are actively contributing?



Other platforms have no ties. What about them?

No ties



Ravelry search results for patterns:

Jump to a filter: Has photo, Craft, Availability, Category, Attributes

Has photo: Yes (617,021), No (48,667)

Craft: Crochet (229,131), Knitting (432,001), Machine Knitting (1,585), Loom Knitting (2,969)

Availability: Free (190,351), Purchase online (274,061), Purchase in print (150,411), Ravelry download (284,641), In my library (11)

Category: Clothing (156,651), Accessories (321,891), Home (100,881), Toys and Hobbies (68,858), Pet (3,482), Components (24,076)

Attributes: Colorwork (160,401)

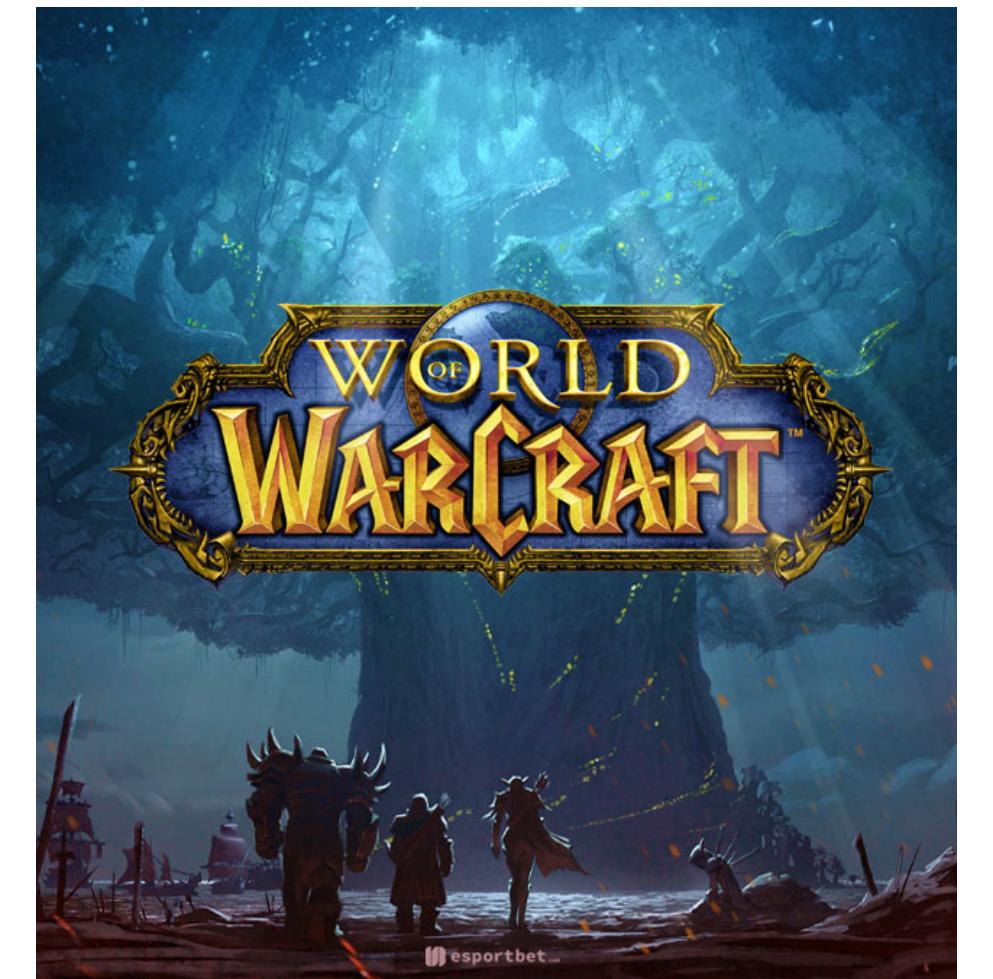
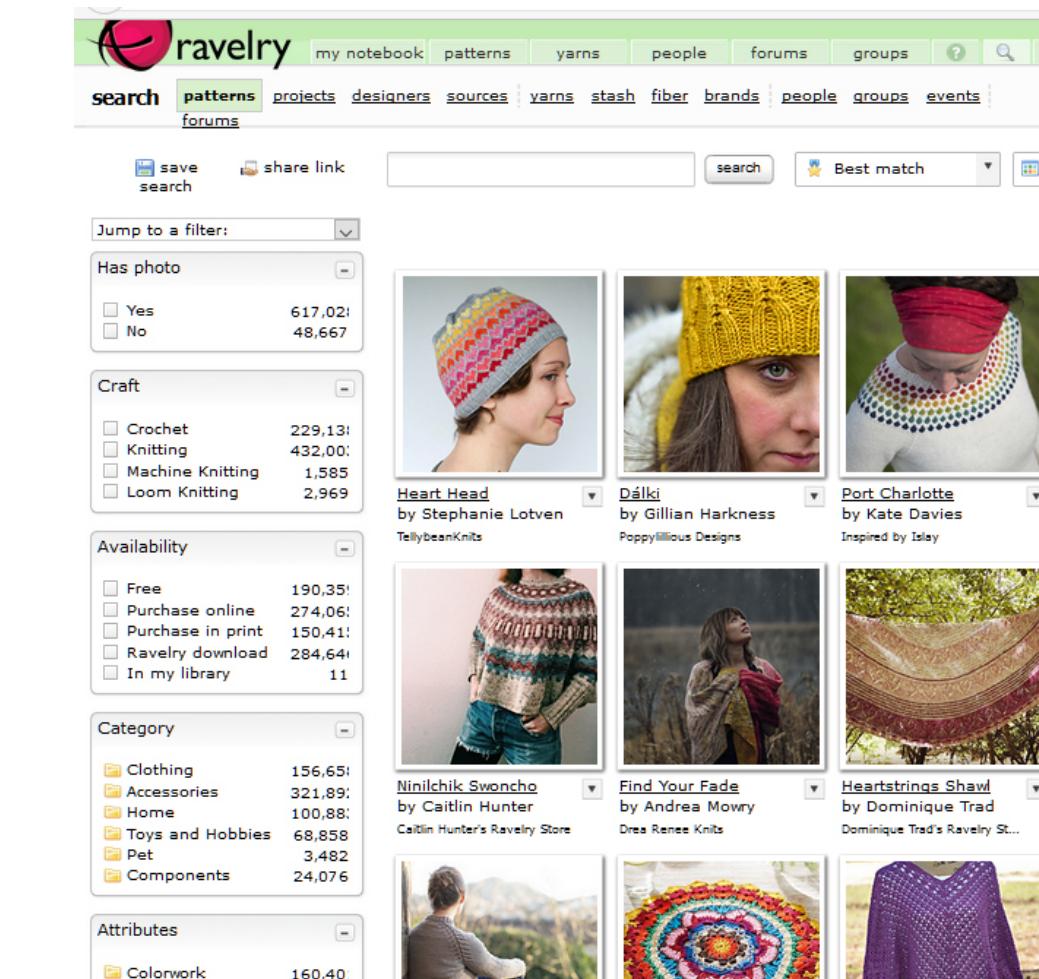
Search results:

- Heart Head by Stephanie Lotven, TellybeanKnits
- Dálki by Gillian Harkness, Poppylilious Designs
- Port Charlotte by Kate Davies, Inspired by Islay
- Ninilchik Swoncho by Caitlin Hunter, Caitlin Hunter's Ravelry Store
- Find Your Fade by Andrea Mowry, Drea Renee Knits
- Heartstrings Shawl by Dominique Trad, Dominique Trad's Ravelry St...



No ties

- At least initially, people on these social platforms may not know each other at all
- Discuss: what sort of social environment are these platforms trying to foster?



Bond- versus identity-based groups

- Many social computing systems are formed around people who (initially) share no ties at all
 - These groups are often bound together by a shared identity, for example Women in computing, or Lakers fans
- In contrast, Facebook is more oriented around bonds, or ties
- Aim to design the social computing system as relevant for the kind of group you are drawing together

More identity-based groups

Facebook groups



Discord (but also used with strong and weak ties)



Poll: what are other examples of designs for identity groups?

Give an example of a social platform for an identity group.

Nobody has responded yet.

Hang tight! Responses are coming in.

Designing for identity-based groups

- Highlighting the group's unique identity increases commitment
- How can you let people express that shared identity?
 - Sharing content, stories, etc.
- Examples: subreddits, mailing lists, forums

Ren, Y., Harper, F. M., Drenner, S., Terveen, L., Kiesler, S., Riedl, J., & Kraut, R. E. (2012). Building member attachment in online communities: Applying theories of group identity and interpersonal bonds. *MIS quarterly*, 841-864.

Other categories exist

- **Influencer-based** groups, which are driven by content from a small number of highly influential individuals
 - TikTok
 - YouTube
 - Twitch
- Some platforms are much more likely to be designed around discovery and *parasocial* relationships, where there's zero formal tie strength but one side expends significant emotional energy

Tie strength in action

Tie strength changes

- Tie strength isn't static over time, and social media use can change it
- Tie strength does go up on Facebook by reading and reacting to broadcast content
 - Looking at photos
 - Reading status updates
 - Performing one-click actions (likes, reactions)

Burke, M., & Kraut, R. E. (2014, April). Growing closer on Facebook: Changes in tie strength through social network site use. In Proceedings of the SIGCHI conference on human factors in computing systems (pp. 4187-4196).

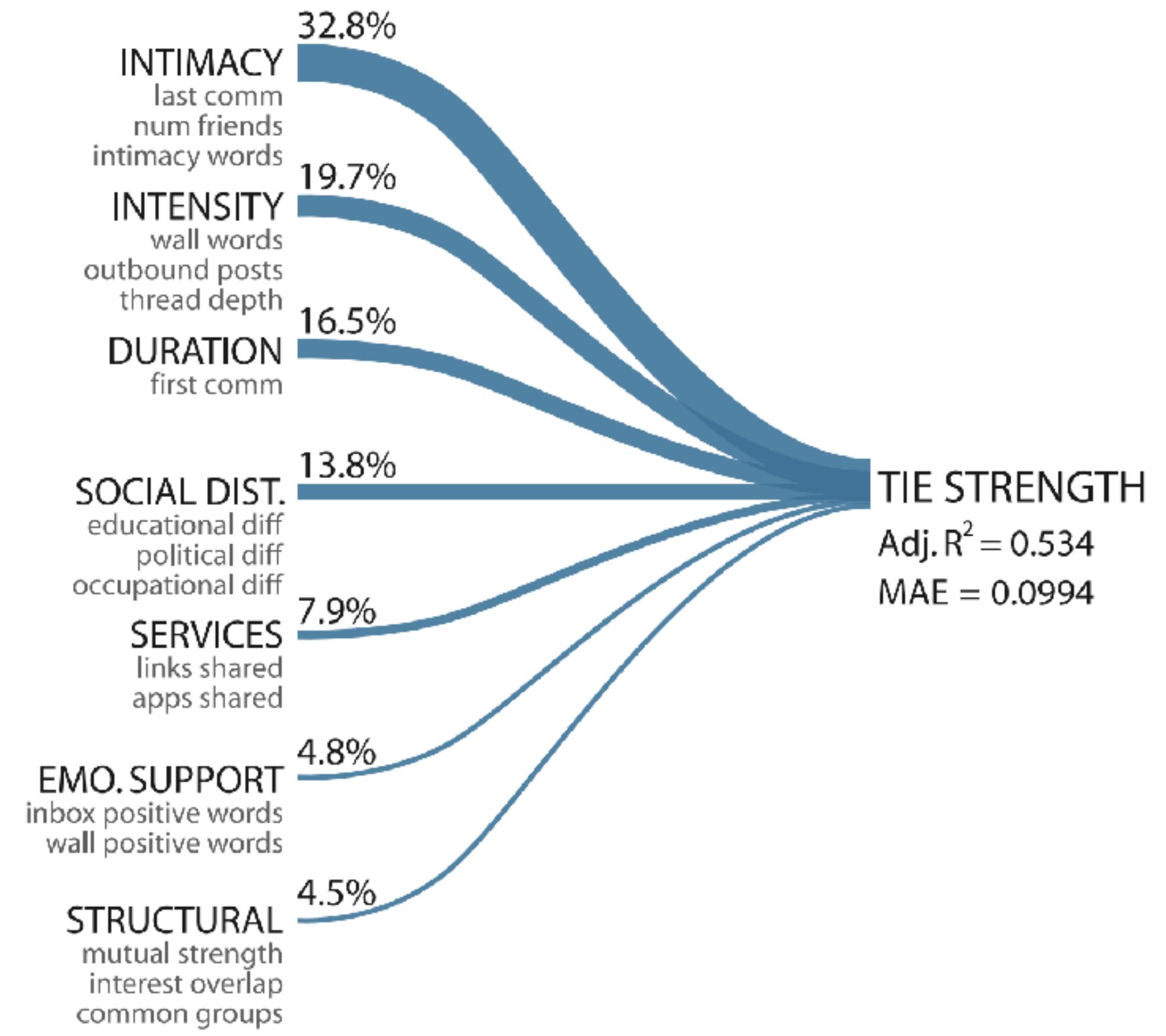
Tie strength changes

- However, tie strength goes up much more with one-on-one communication
 - Posting on people's profiles, or tagging people in posts
 - Commenting on people's posts
 - Messaging them one-on-one

Burke, M., & Kraut, R. E. (2014, April). Growing closer on Facebook: Changes in tie strength through social network site use. In Proceedings of the SIGCHI conference on human factors in computing systems (pp. 4187-4196).

Tie strength can be predicted

- It's feasible to use observable behaviors in social networks to classify the tie strength between two people in the network
- Highly predictive features:
 - How recently have you messaged?
 - How long ago did you first message?
 - Do you talk a lot to each other?



Gilbert, E., & Karahalios, K. (2009, April). Predicting tie strength with social media. In Proceedings of the SIGCHI conference on human factors in computing systems (pp. 211-220).

Resulting designs

- Feed ranking: not just a feature of the content, but also of your predicted tie strength with the other person
- People you may know: friend suggestions
- Dynamically choosing whether to show comment boxes or quick feedback buttons based on the content and your tie strength with the person

**Where we started: Does social media
make us feel lonely? Why or why not?**

It depends on how you use it.

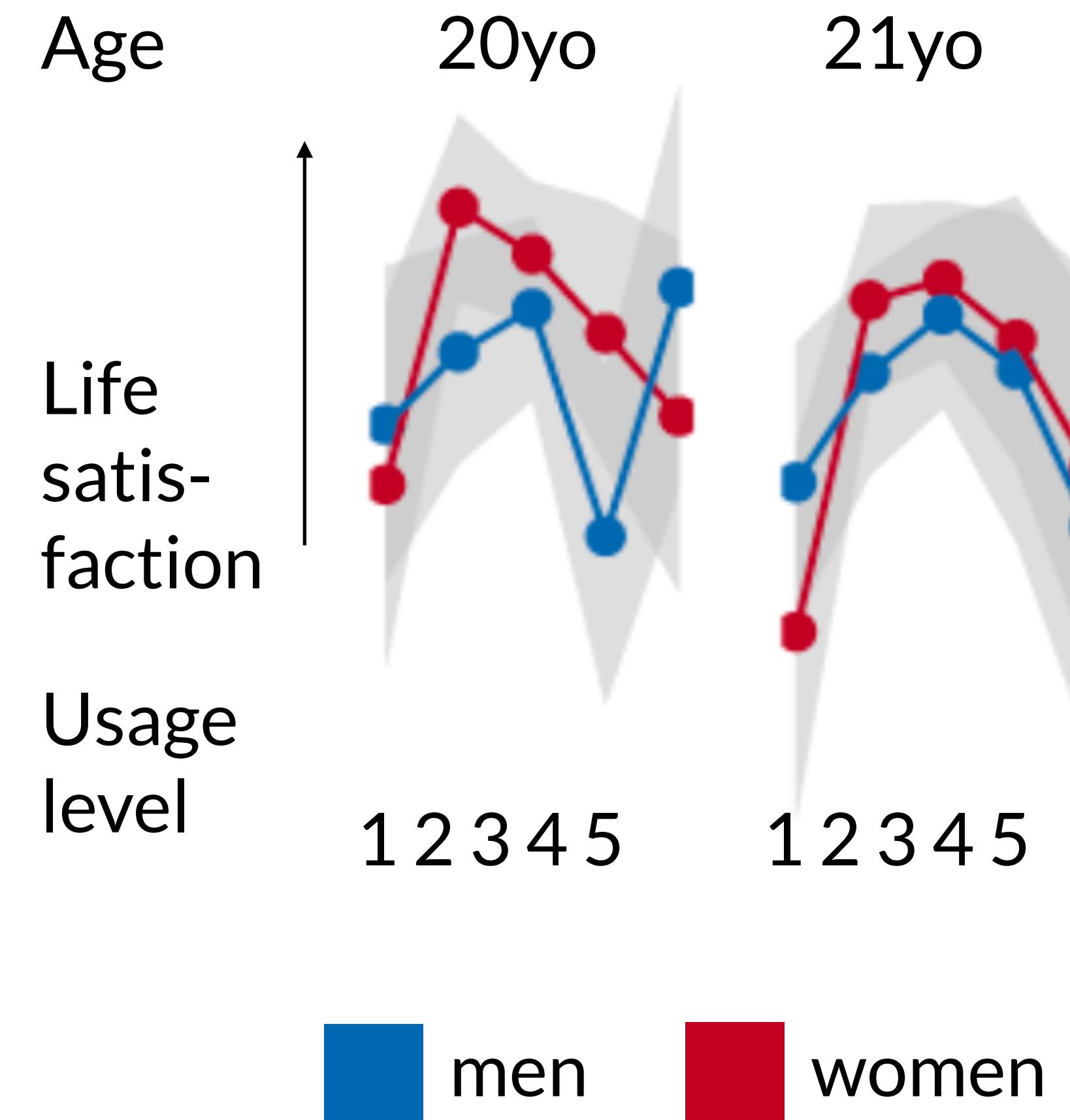
- An opt-in study of ~2000 Facebook users, connected to their internal log data, revealed:
 - Viewing strong or weak ties' status broadcasts, receiving 1-on-1 messages from weak ties, or receiving one-click feedback from strong or weak ties
 - Receiving one-on-one communications from strong ties...
- No improvements in psychological wellbeing.
- Improvements in psychological wellbeing.

Burke, M., & Kraut, R. E. (2016). The relationship between Facebook use and well-being depends on communication type and tie strength. *Journal of computer-mediated communication*, 21(4), 265-281.

It depends on when you use it.

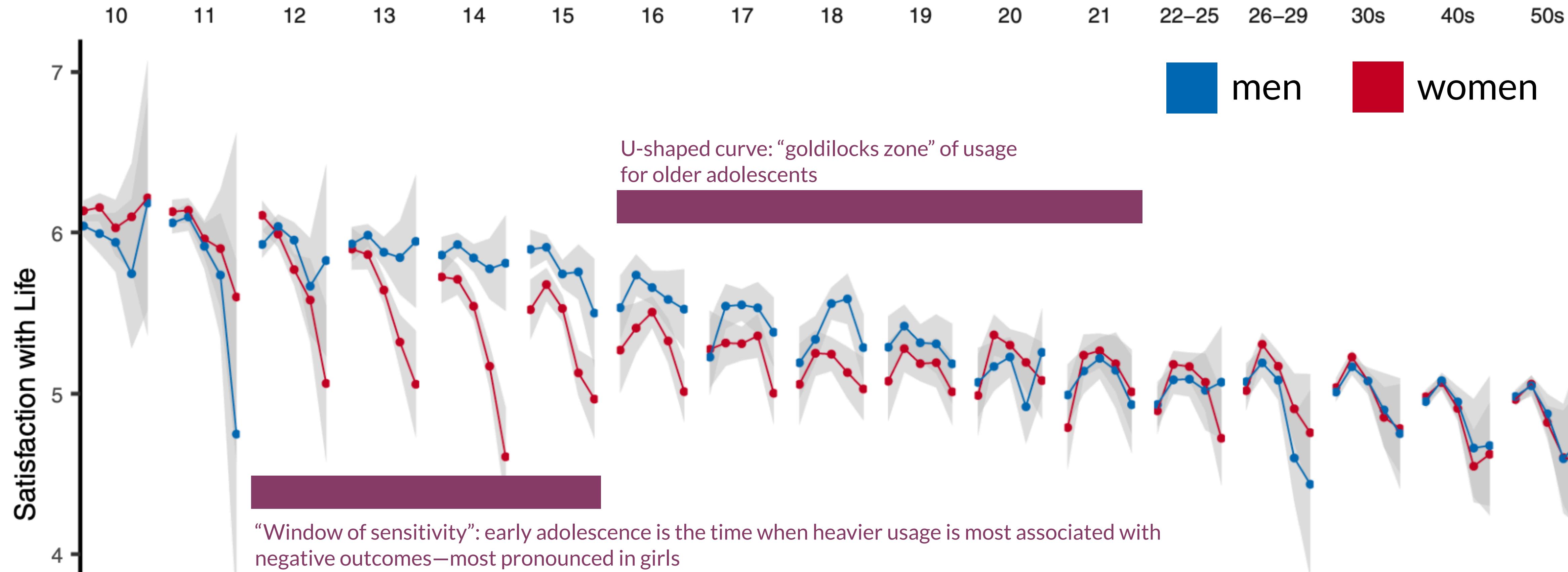
- Longitudinal surveys of UK citizens comparing life satisfaction to social media use
- The graph on the next slide compares satisfaction across age groups, split by level of self-reported social media usage

Example:



Orben, A., Przybylski, A. K., Blakemore, S. J., & Kievit, R. A. (2022). Windows of developmental sensitivity to social media. *Nature Communications*, 13(1), 1649.

It depends on when you use it.



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Summary

- Our relationships are not all the same, and our social technologies should be designed with that in mind
 - For strong ties (the few people we know well): design for honest signals, and don't assume all communication happens through the system
 - For weak ties (the large number of acquaintances): design to support feelings of connectedness, but remember that many social systems will be dominated in volume by weak ties
- The impacts of social media use on our wellbeing are most negative for those passively consuming content (especially from weak ties), and for heavy usage among early adolescent girls

Today's goals

By the end of today, you should be able to...

- Define what a tie is, and what makes one strong, weak, or somewhere in between
- Consider what tie group(s) a design is supporting, and why
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- Describe how designs should respond to tie strength

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