

PRIVACY IN INTERACTION: EXPLORING DISCLOSURE AND SOCIAL CAPITAL IN FACEBOOK

Fred Stutzman, Jessica Vitak,
Nicole B. Ellison, Rebecca Gray, Cliff Lampe

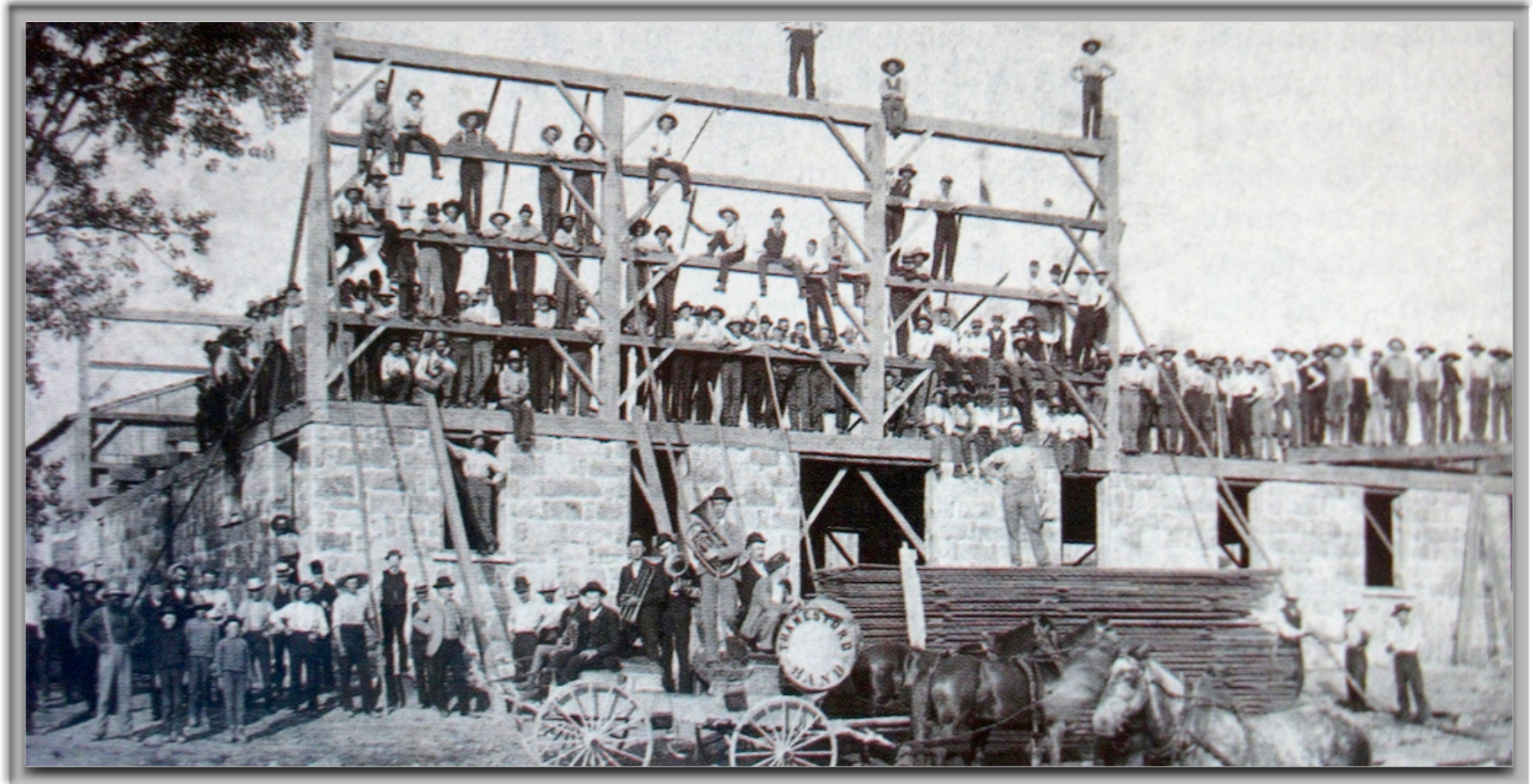
ICWSM 2012
Dublin, IRELAND



facebook

"Many Faces of Facebook" By Bernie Hogan (@blurky).





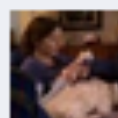
Social Capital



Nicole Ellison

Hey, social network -- What are some good day trips we should do with the kids before leaving Boston?

21 hours ago · Like · Comment



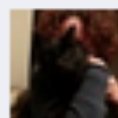
Jessica Vitak Providence is not too far and has a great children's museum!

21 hours ago · Like ·  1 person



Cliff Lampe There's kiddie cage fighting in South Boston I think.

21 hours ago · Like



Rebecca Gray Walk the freedom trail, and make sure to check out Paul Revere's house.

17 hours ago · Like



Brandon Brooks If they like baseball, you could go to a Boston Red Sox game.

7 minutes ago · Like

Write a comment...



Nicole Ellison

May 1 at 2:15pm near Lansing · 🧑

How is it that I, who grew up breathing LA air in the 70s, have no breathing issues but my little boy who grew up in the suburbs of Michigan has asthma so bad he is up half the night coughing? Last night particularly painful as he managed to pee all over his bed and had to "sleep" with us – although very little actual sleep happened. Should be an interesting day!

[Like](#) · [Comment](#) · [Unfollow Post](#)



Katy Pearce oh no!

May 1 at 2:16pm · [Like](#)



Marya Doerfel poor little guy. he'll need some coffee.

May 1 at 2:33pm · [Like](#)



Shelia Cotten Hope you get to nap today at some point!

May 1 at 2:42pm · [Like](#)



Nicole Ellison An informal content analysis reveals that this post, which references themes of children, lack of sleep, and health issues, resonates very highly with the academic moms in my network ;-)

May 1 at 2:47pm · [Like](#) · 👍 1

Facebook & your privacy

Who sees the data you share on the biggest social network?

Consumer Reports magazine: June 2012



Privacy, Please: This Is Only for the Two of Us



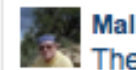
Social Media Goes Antisocial: Jenna Wortham, a technology reporter, introduces new applications that have the potential to offer the private experience missing from Facebook and Twitter.

By JENNA WORTHAM

Latest i



Jos
Oba



Mal
The




Am
Indi

POPULAR
Dreaming



Politwoops

deleted tweets from politicians

 **Tweet** 1.57

Sure, we all tweet things we don't mean to share, but now politicians have no way to hide them. Discover tweets that your politicians shared and then promptly deleted.

US edition produced by:



Original Dutch version:

Politwoops.nl

Original code and concept provided by:



Key Bailey Hutchison (R)

Congrats to Dallas ISD for having 2 of the top 3 public high schools in the nations via [@usnews](#) <http://t.co/TcuTBVwt> #Texas

Deleted 14 minutes ago after 1 minute, originally posted via TweetDeck



reply



retweet



Glenn 'GT' Thompson (R)

RT [@HuffingtonPost](#): How badly do you wish this were a real movie? <http://t.co/TbcUdqud>

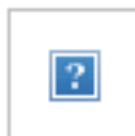
Deleted about 1 hour ago after 4 hours, originally posted via Twitter for BlackBerry®



reply



retweet



Gary Peters (D)

I'm fighting to stop student loan interest rates from doubling in 27 days. #DontDoubleMyRate Read more in [@thesnews](#) <http://t.co/GC6x0wp6>

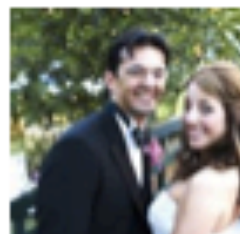
Deleted about 3 hours ago after 3 minutes, originally posted via web



reply



retweet

**James H. Fowler**Works at [Ucsd](#)**Alon Halevy**Senior Research Scientist
at [Google](#)**Holly Willis**Works at [University of Southern California School of Cinematic Arts](#)**Cliff Lampe**Assistant Professor at
[University of Michigan School of Information](#)**Gian Gonzaga**Senior Research Scientist
at [EHarmony.com](#)**John C. Adams**Producer/ VP of
Development at [Vigilante Entertainment](#)**Jim Hosney**

Occidental College

**Josh Ellison**

University of Southern Ca

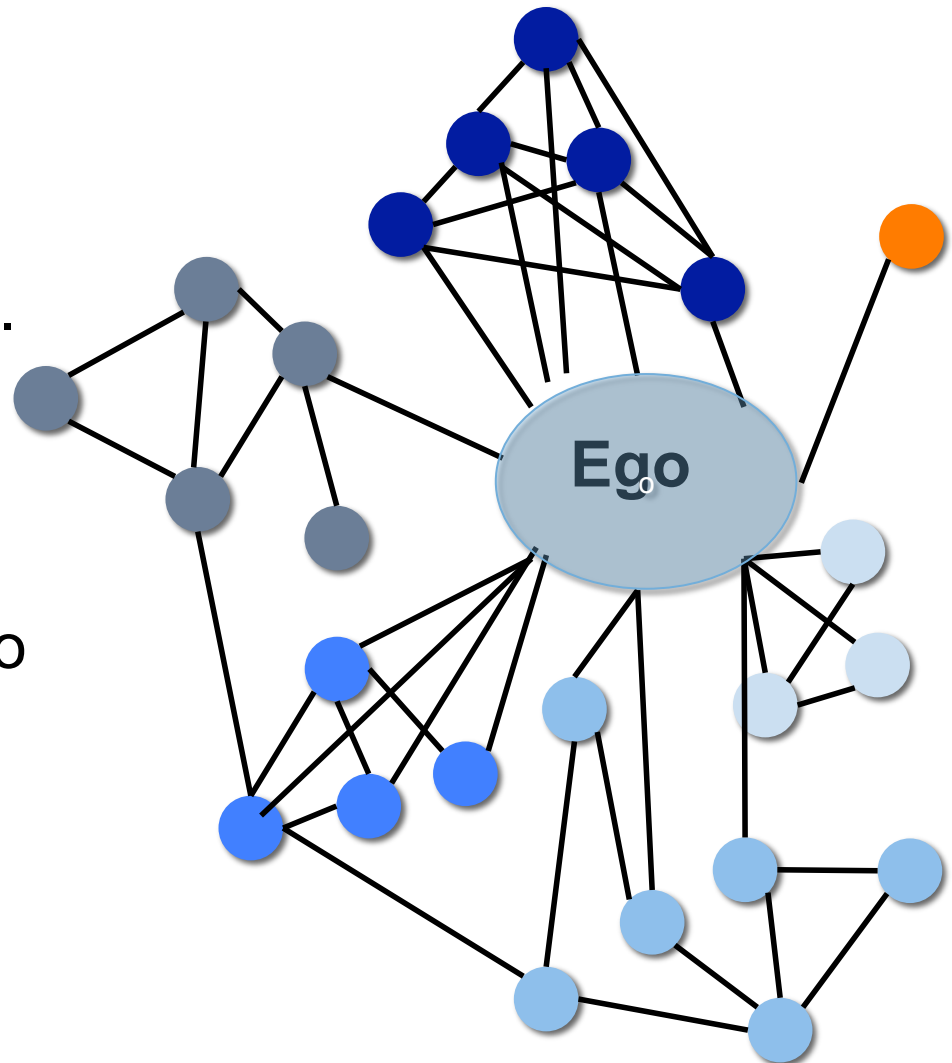
**Delphine Robertson**Works at [Playtone](#)**Fernanda Viegas**Research Scientist at
[Google](#)**Jessica Vitak**[Michigan State University](#)**Karl Gude**Instructor, School of
Journalism at [Michigan State University](#)**Meredith Ringel
Morris**Works at [Microsoft Research](#)**Charlie Breindahl**Part-time Lecturer at
[Copenhagen Business School](#)**Scott Friedman**University of California,
Los Angeles



Presentation of Self in Everyday Life

What is context collapse?

- We present different versions of the self depending on our audience at that moment.
- Context collapse is particularly salient when we have to self-present to different audiences simultaneously
 - Offline example: weddings



Facebook



Search

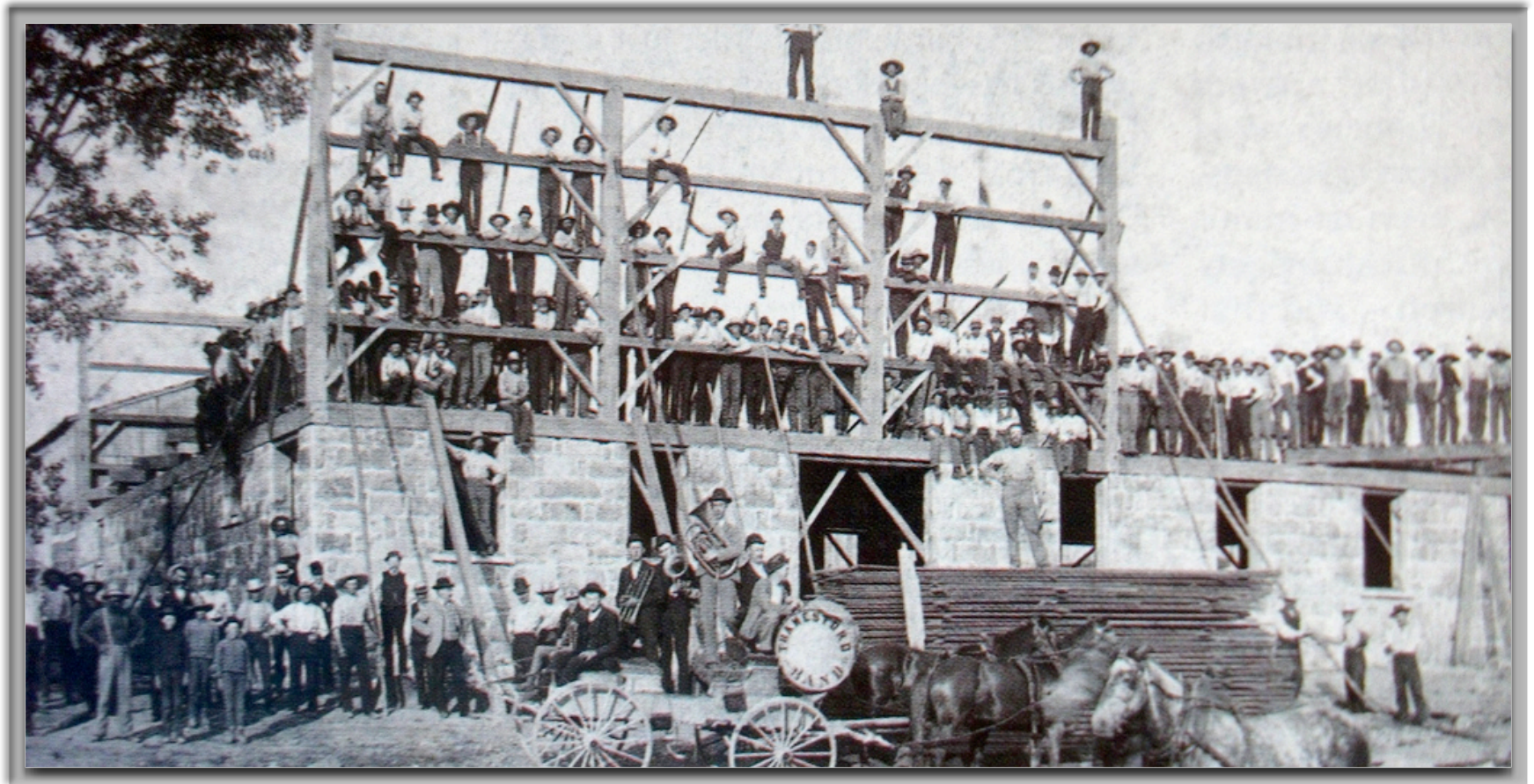


Nicole Ellison

Friends



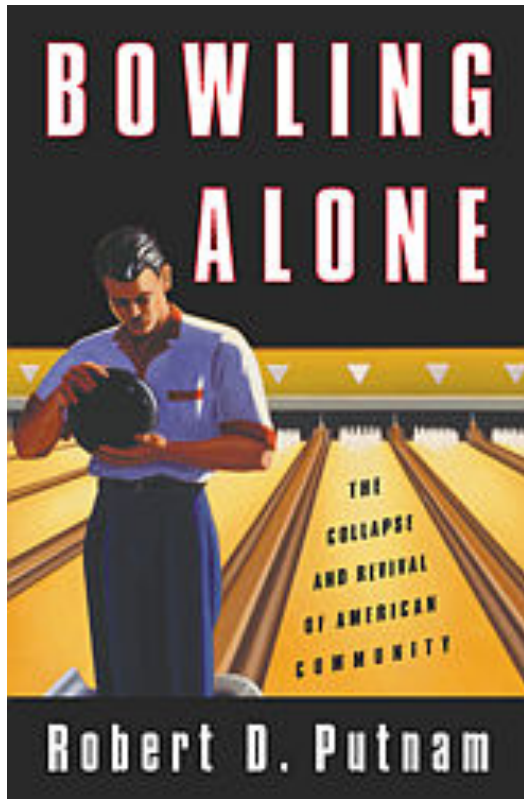
Friends (621)



Social Capital

Facebook contains a set of social and technical affordances that can help people mobilize resources in their social networks.

Social Capital



- Social capital describes the ability of individuals or groups to access resources from their social network
 - “investment in social relations with expected returns in the marketplace” (Lin, 2001)
 - “connections among individuals - social networks and the norms of reciprocity and trustworthiness that arise from them” (Putnam, 2000)

Bridging Social Capital

- Typically associated with “weak ties” (Granovetter, 1982), loose connections who may provide useful, non-redundant information or diverse worldview
- Bridging ties (across two networks) facilitate information diffusion (Burt, 1992)

“... technologies that expand one’s social network will primarily result in an increase in available information and opportunities — the benefits of a large, heterogeneous network” (Donath & boyd, 2004).

Bonding Social Capital

- Typically associated with strong ties, such as close friends or family members
- Bonding social capital is associated with social support and “big favors.”

Linking SNS Use and Social Capital

Numerous studies have identified and replicated (some causally) link between SNS use and social capital

- Ellison, Steinfield & Lampe, 2007; 2010; 2011
- Burke et al., 2010, 2011
- Venezuela, Park, and Kee, 2009
- Stutzman and Yoder, 2011; Stutzman 2011 (social support)

How might SNS use increase social capital?

- Lower barriers to sharing requests for social support or information.
- Access to diversity of viewpoints through newsfeed and “Friends of Friends”
- Ease of engaging in relationship maintenance and social grooming activities
- Identity information in profile helps find common ground

Privacy and Social Capital

How might Facebook privacy use affect social capital?

- Privacy more than limitation of disclosure – it creates defined network boundaries

Three proposed mechanisms

- Focusing: Privacy settings focus interaction with a defined, screened set of ties
- Inclusion: Privacy settings reinforce that a friend relationship is special (vs. “following”)
- Targeting: Privacy settings more effectively deliver content to receptive others – may be more likely to respond

Three areas of scholarship contributing to our study:

- Disclosure patterns
- Social capital
- Privacy attitudes and behaviors

Study Design

Web-based survey

- 2,500 undergraduates at large, Midwestern university randomly solicited via email
- Incentive: Raffle for ten \$15.00 Amazon gift cards
- 230 complete responses, response rate of 9.2%
- Response consistent with other studies of similar populations, males slightly under-represented

Analysis

- Q's about social capital, Facebook use, personality, and privacy attitudes/behaviors
- Evaluated path model identifying disclosure moderates relationship btw privacy and social capital*
- Multiple regression models exploring the relationship between Facebook use, privacy settings, disclosure patterns, and both **bonding** and **bridging** social capital

Social Capital Measures (Williams, 2006)

Bonding Social Capital (Mean = 3.88, $\alpha = .865$)

- Access to emotional and “substantive” support, often from ***strong ties***
 - E.g., emergency loans, job references, help with personal problems
 - 10 item scale; Sample item: “If I needed an emergency loan of \$100, I know someone in my social network I could turn to.”

Bridging Social Capital (Mean = 3.87, $\alpha = .877$)

- Inclusivity within larger groups, broadening of access to resources or opinions, exposure to novel info, associated with ***weak ties***.
 - E.g., feeling like part of a larger community, finding new people, trying new things
 - 10 item scale; Sample item: “Interacting with people in my social network makes me interested in things that happen outside of my town”

Facebook Use Variables

Signals of Relational Investment (SRI)

- Primary independent variable measuring interpersonal and socially supportive activity on Facebook.
- 5 item scale (Mean 3.71, $\alpha=.80$)
 - *When I see a friend or acquaintance sharing good news on Facebook, I try to respond.*
 - *When I see a friend or acquaintance sharing bad news on Facebook, I try to respond.*
 - *When I see someone asking for advice on FB, I try to respond.*
 - *When I see someone asking a question on Facebook that I know the answer to, I try to respond*
 - *When a Facebook friend has a birthday, I try to post something on their wall.*

Cultivating Social Resources via Signals of Relational Investment (SRI)

- Behaviors such as explicitly **responding to Friends' questions** are productive because they:
 - Create an expectation about reciprocal behavior: “expected returns in the marketplace” (Lin, 2001)
 - Perform a social grooming function (Dunbar, 1996; Donath, 2007; Tufekci, 2008) and signal attention
 - Potentially train the News Feed
 - Comments on Friends' updates and Wall posts are seen by the Friends' network, not your own

Total Friends vs. 'actual friends'

Friend Ratio

- Measures proportion of “actual” friends to total FB friends.
 - Mean .36, SD .27
- Survey items:
 - “Approximately how many TOTAL Facebook Friends do you have?”
 - “Approximately how many of your TOTAL Facebook friends do you consider actual friends?”



Facebook Use Variables, Cont'd

Minutes of Facebook Use Per Day (Median 60, Mean 97.25)

Facebook Disclosure Scale (Mean 2.39, $\alpha=.80$)

- Measures informational sharing with Facebook network
- 4 items including
 - “When I receive good news, I post about it on Facebook.”
 - “When I’m having a bad day, I post about it on Facebook.”



Jason Kearney

Kevin Michael Kearney – born at 5:33AM- 8 pounds 2 ounces. Mom and baby are doing well. — with Elizabeth Gaffuri Kearney.



Mobile Uploads

Facebook Privacy Concerns Scale

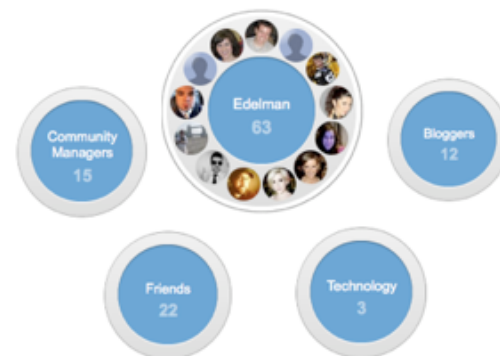
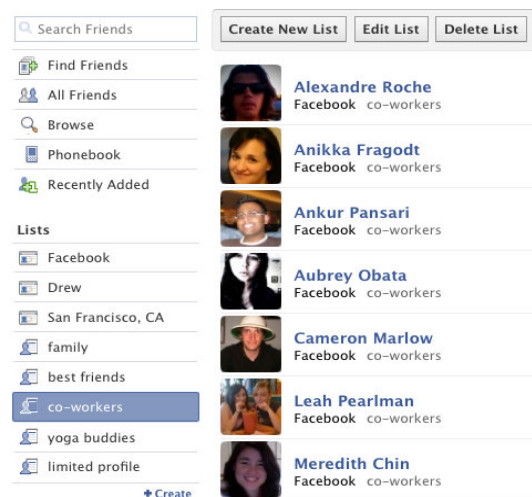
- Measures attitudes toward privacy risks associated with using Facebook (Mean 1.81, $\alpha=.841$):
- *“Indicate your level of concern about the following potential privacy risks that arise when you share your personal information on Facebook:”*
 - 7 Items include:
 - Identity theft
 - Cyberstalking
 - Inappropriate photos posted
 - Employer viewing incriminating content



Facebook Privacy Settings Utilization

Measures privacy behavior at two, non-exclusive levels:

- **Friends-only profile (78.3%)**
 - Only my friends can view my profile
- **Friend control settings (74.5%)**
 - “Have you ever changed the privacy settings so that only some of your Facebook friends can view specific types of content?”



Individual-level Controls (Measures)

Demographic Controls

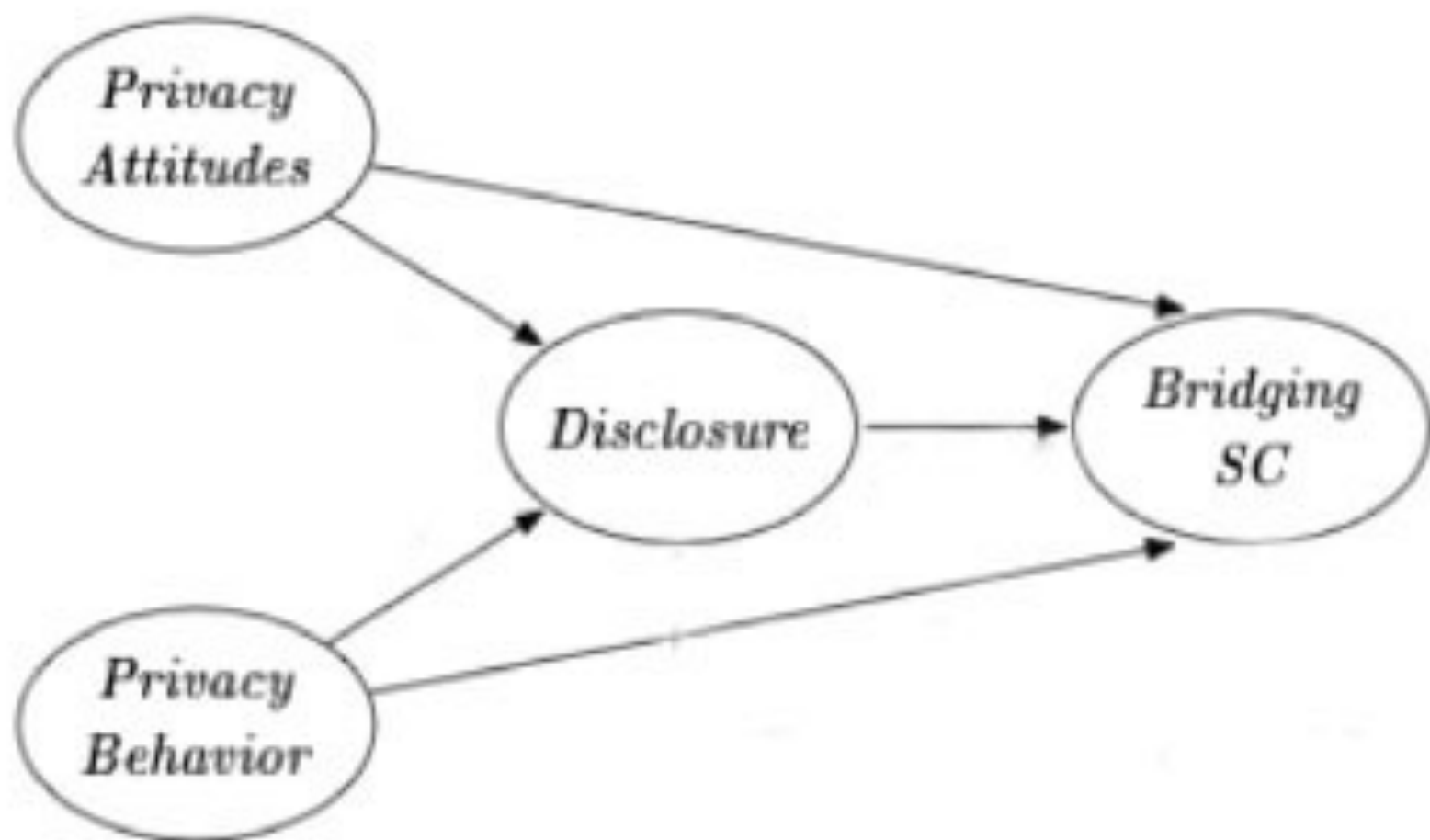
- **Age** Mean 21.16 SD 4.37
- **Sex** 33% Male, 67% Female

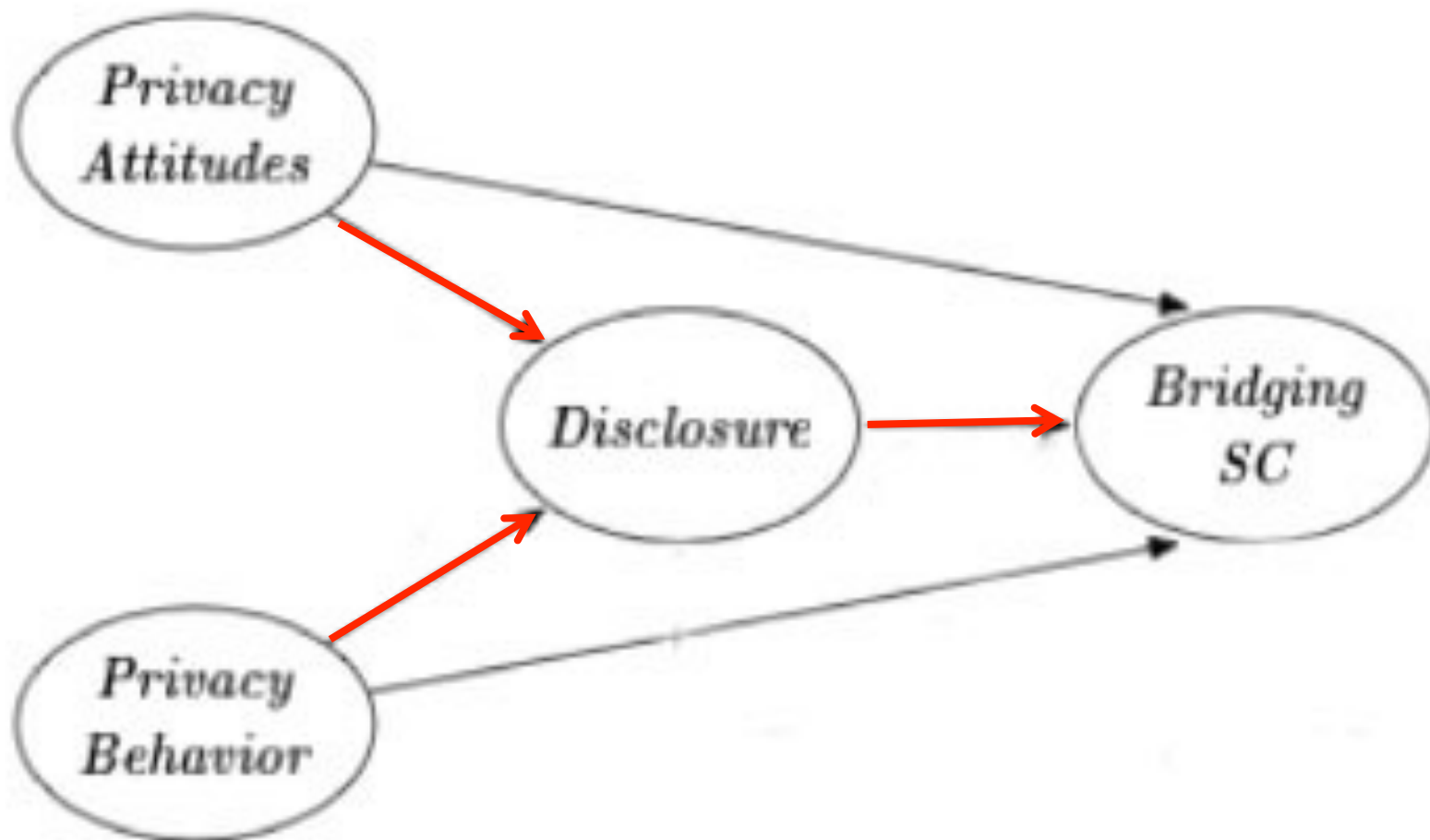
Self Esteem (Rosenberg, 1989)

- Established predictor of perceptions of social capital
- 7 items (Mean 4.16, α = .91)

Network Diversity

- Assesses access to various types of people and resources within personal network
- 25 items (Mean 4.06, α = .90)





Hierarchical Regression Analysis

- **Dependent variables**

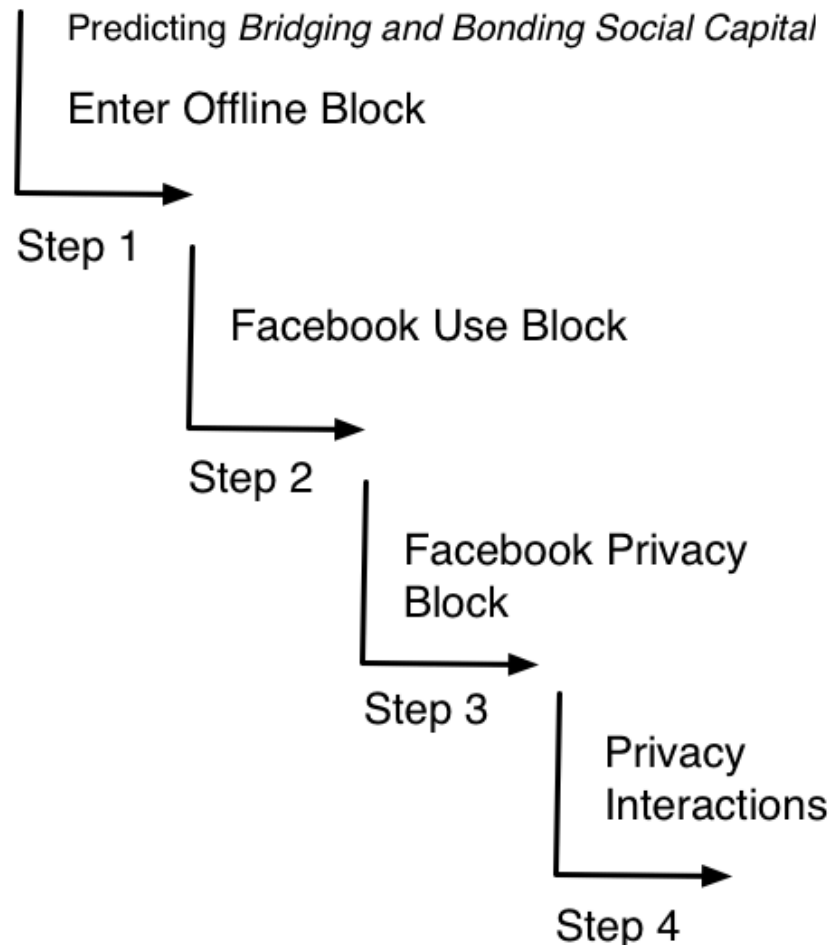
- Bridging social capital
- Bonding social capital

- **Covariates**

- Demographic controls
- Facebook Use
- Facebook Privacy

- **Privacy Interaction**

- Friends-only
- Friend controls



DV: Bonding Social Capital

Variable	Step 1
Sex	0.05
Age	0.00
Self-Esteem	0.51***
Network Diversity	0.35***
Signals of Rel. Investment	
Min Facebook/Day	
FB Disclosure	
Friend Ratio (FR)	
Privacy Concerns	
Friends-Only (FO)	
FOxFR Interaction	
Friend Controls (FC)	
FCxFR Interaction	
R-squared (Obs)	0.32 (208)

} Controls

DV: Bonding Social Capital


Variable	Step 1	Step 2	
Sex	0.05	0.02	Controls
Age	0.00	-0.01	
Self-Esteem	0.51***	0.51***	
Network Diversity	0.35***	0.26***	
Signals of Rel. Investment		0.13**	Facebook Variables
Min Facebook/Day		0.00	
FB Disclosure		0.04	
Friend Ratio (FR)		0.39***	
Privacy Concerns			
Friends-Only (FO)			
FOxFR Interaction			
Friend Controls (FC)			
FCxFR Interaction			
R-squared (Obs)	0.32 (208)	0.43 (193)	

DV: Bonding Social Capital

Variable	Step 1	Step 2	Step 3	
Sex	0.05	0.02	0.00	Controls
Age	0.00	-0.01	-0.01	
Self-Esteem	0.51***	0.51***	0.50***	
Network Diversity	0.35***	0.26***	0.25***	Facebook Variables
Signals of Rel. Investment		0.13**	0.15**	
Min Facebook/Day		0.00	0.00	
FB Disclosure		0.04	0.04	Facebook Privacy
Friend Ratio (FR)		0.39***	-0.19	
Privacy Concerns			-0.05	
Friends-Only (FO)			-0.20	
FOxFR Interaction			0.73**	
Friend Controls (FC)				
FCxFR Interaction				
R-squared (Obs)	0.32 (208)	0.43 (193)	0.45 (191)	



DV: Bonding Social Capital

Variable	Step 1	Step 2	Step 3	Step 4
Sex	0.05	0.02	0.00	0.03
Age	0.00	-0.01	-0.01	-0.01
Self-Esteem	0.51***	0.51***	0.50***	0.51***
Network Diversity	0.35***	0.26***	0.25***	0.25***
Signals of Rel. Investment		0.13**	0.15**	0.13**
Min Facebook/Day		0.00	0.00	0.00
FB Disclosure		0.04	0.04	0.04
Friend Ratio (FR)		0.39***	-0.19	0.39
Privacy Concerns			-0.05	-0.06
Friends-Only (FO)			-0.20	
FOxFR Interaction			 0.73**	
Friend Controls (FC)				0.02
FCxFR Interaction				-0.01
R-squared (Obs)	0.32 (208)	0.43 (193)	0.45 (191)	0.46 (191)

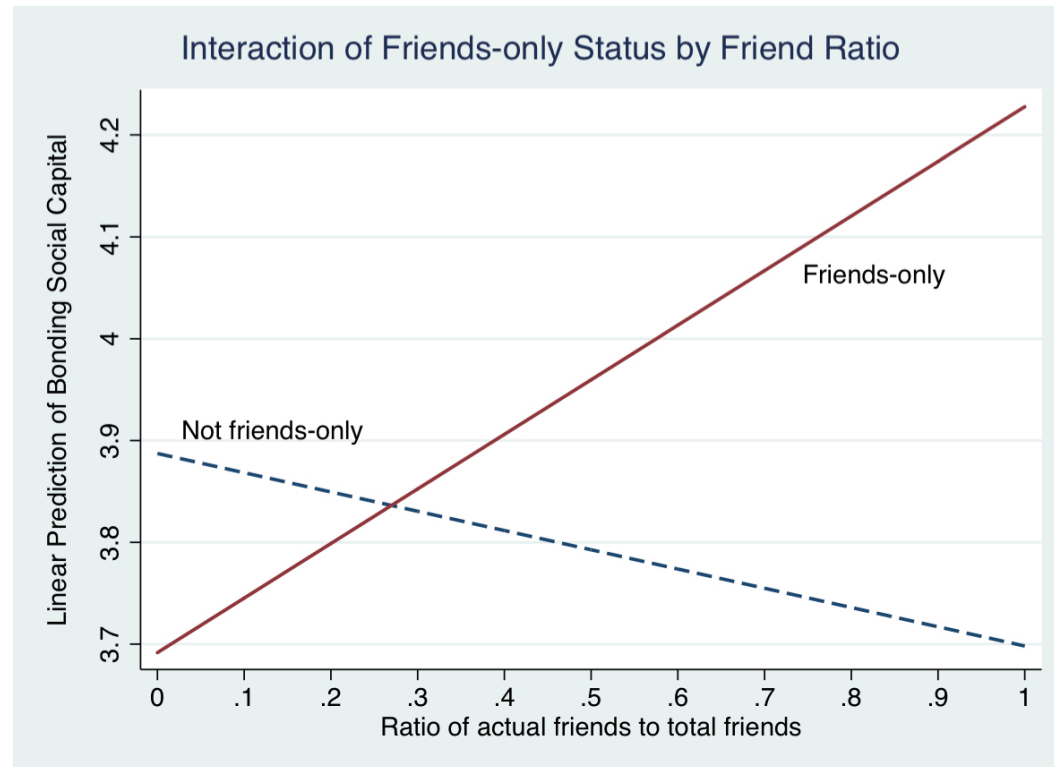
Interaction: Bonding Social Capital

- **Positive interaction:** Friends-only (FO) by friend ratio (FR)
 - Increased bonding SC for FO status, as FR increases

Possible Explanation:

Friends Only setting focuses interaction on Discrete set of ties; Increased ratio reflects Stronger focus on close ties

- *Privacy settings seem to focus interaction inward toward strong ties*



DV: Bridging Social Capital

Variable	Step 1
Sex	0.13*
Age	-0.02*
Self-Esteem	0.29***
Network Diversity	0.46***
Signals of Rel. Investment	
Min Facebook/Day	
FB Disclosure	
Friend Ratio (FR)	
Privacy Concerns	
Friends-Only (FO)	
FOxFR Interaction	
Friend Controls (FC)	
FCxFR Interaction	
R-squared (Obs)	0.32 (208)

} Controls

DV: Bridging Social Capital

Variable	Step 1	Step 2	
Sex	0.13*	0.07	Controls
Age	-0.02*	-0.01	
Self-Esteem	0.29***	0.30***	
Network Diversity	0.46***	0.42***	
Signals of Rel. Investment		0.22***	Facebook Variables
Min Facebook/Day		0.00	
FB Disclosure		-0.01	
Friend Ratio (FR)		-0.02	
Privacy Concerns			
Friends-Only (FO)			
FOxFR Interaction			
Friend Controls (FC)			
FCxFR Interaction			
R-squared (Obs)	0.32 (208)	0.43 (193)	

DV: Bridging Social Capital

Variable	Step 1	Step 2	Step 3	
Sex	0.13*	0.07	0.05	Controls
Age	-0.02*	-0.01	-0.01	
Self-Esteem	0.29***	0.30***	0.31***	
Network Diversity	0.46***	0.42***	0.42***	Facebook Variables
Signals of Rel. Investment		0.22***	0.24***	
Min Facebook/Day		0.00	0.00	
FB Disclosure		-0.01	-0.03	Facebook Privacy
Friend Ratio (FR)		-0.02	-0.39	
Privacy Concerns			0.12*	
Friends-Only (FO)			-0.23	
FOxFR Interaction			0.49	
Friend Controls (FC)				
FCxFR Interaction				
R-squared (Obs)	0.32 (208)	0.43 (193)	0.45 (191)	

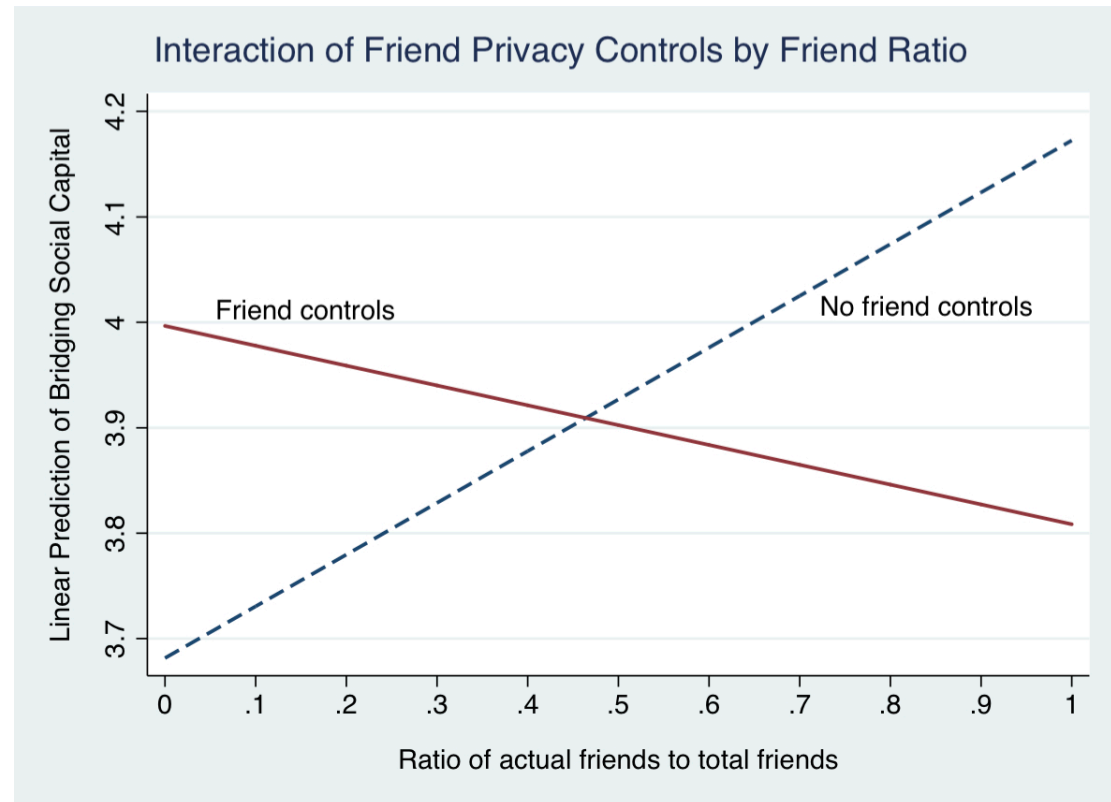
DV: Bridging Social Capital

Variable	Step 1	Step 2	Step 3	Step 4
Sex	0.13*	0.07	0.05	0.06
Age	-0.02*	-0.01	-0.01	-0.01
Self-Esteem	0.29***	0.30***	0.31***	0.32***
Network Diversity	0.46***	0.42***	0.42***	0.39***
Signals of Rel. Investment		0.22***	0.24***	0.22***
Min Facebook/Day		0.00	0.00	0.00
FB Disclosure		-0.01	-0.03	-0.02
Friend Ratio (FR)		-0.02	-0.39	0.49*
Privacy Concerns			0.12*	0.09
Friends-Only (FO)			-0.23	
FOxFR Interaction			0.49	
Friend Controls (FC)				0.32**
FCxFR Interaction				-0.68**
R-squared (Obs)	0.32 (208)	0.43 (193)	0.45 (191)	0.46 (191)



Interaction: Bridging Social Capital

- **Negative interaction:** Friend control (FC) by friend ratio (FR)
 - Decreased bridging SC for FC status, as FR increases
- **Intuition:** FC limits available respondents to need; greater focus on actual friends limits diversity of potential respondents
 - *Increased control may limit available information & support*



Conclusion: Contributions of this work

- SRI is a robust and effective update to previous IV's (e.g., Facebook intensity scale)
 - Individuals need to engage with & give back to their network; composition of the network is not enough.
- Network composition matters – all Friends are not equal.
- Privacy behaviors and attitudes do not directly impact social capital outcomes. Privacy has implications for disclosure behaviors, which then impact social capital.
 - There is an indirect effect of privacy on social capital.

Privacy implications:

- Bonding SC – The **benefits** of focused, inclusive interaction
- Bridging SC – The **costs** of highly targeting disclosures

Thank you!

Nicole B. Ellison

Email: nellison@msu.edu

Papers: [https://www.msu.edu/~nellison/
pubs.html](https://www.msu.edu/~nellison/pubs.html)

Twitter: @nicole_ellison