

Studying Social Network Sites via Computational Methods

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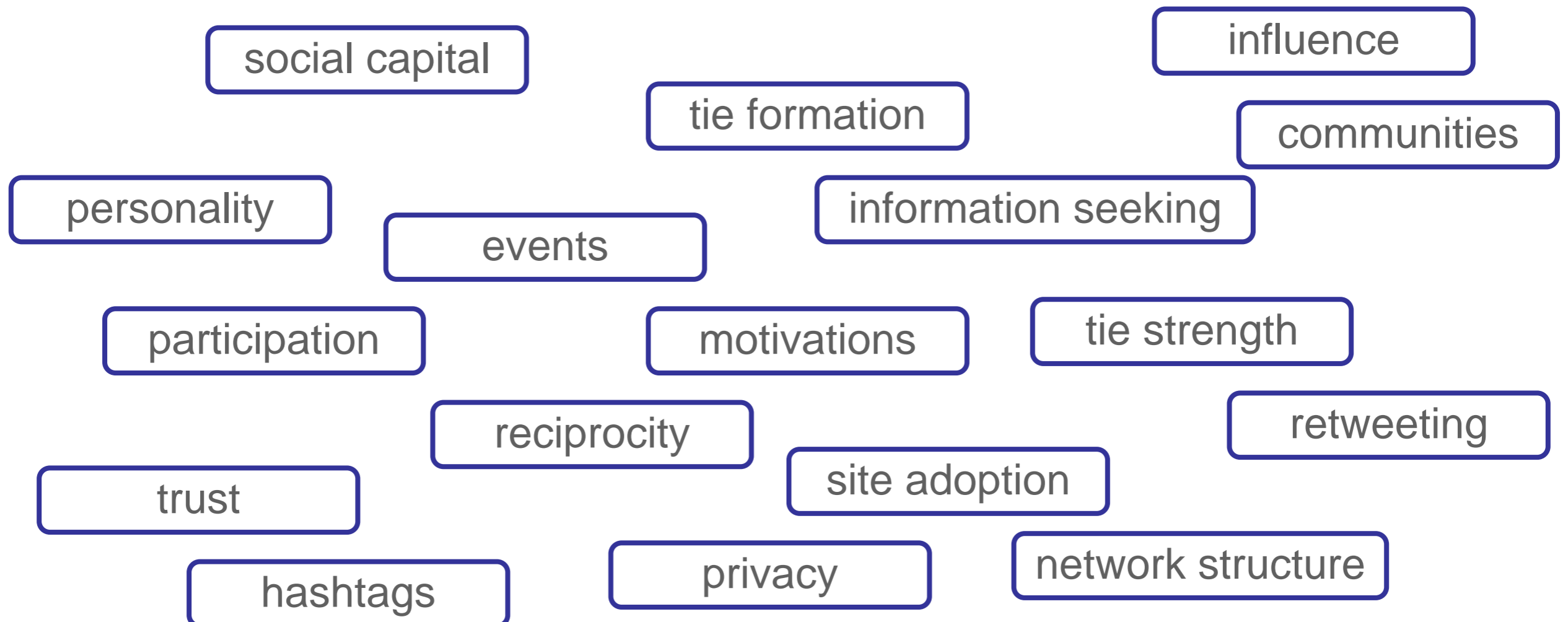


Social Network Sites

Facebook: 890 million daily active users.

Twitter: 288 million monthly active users, 500 million tweets per day.

What do we study?



Approaches to Studying SNSs

Social Science Methods

- limited number of respondents and ties/interactions reported
- not utilizing the full wealth of available data
- problems of recall bias, interviewer effects, and measurement error
- + inquiry-based
- + relies on validated methods and build on existent results

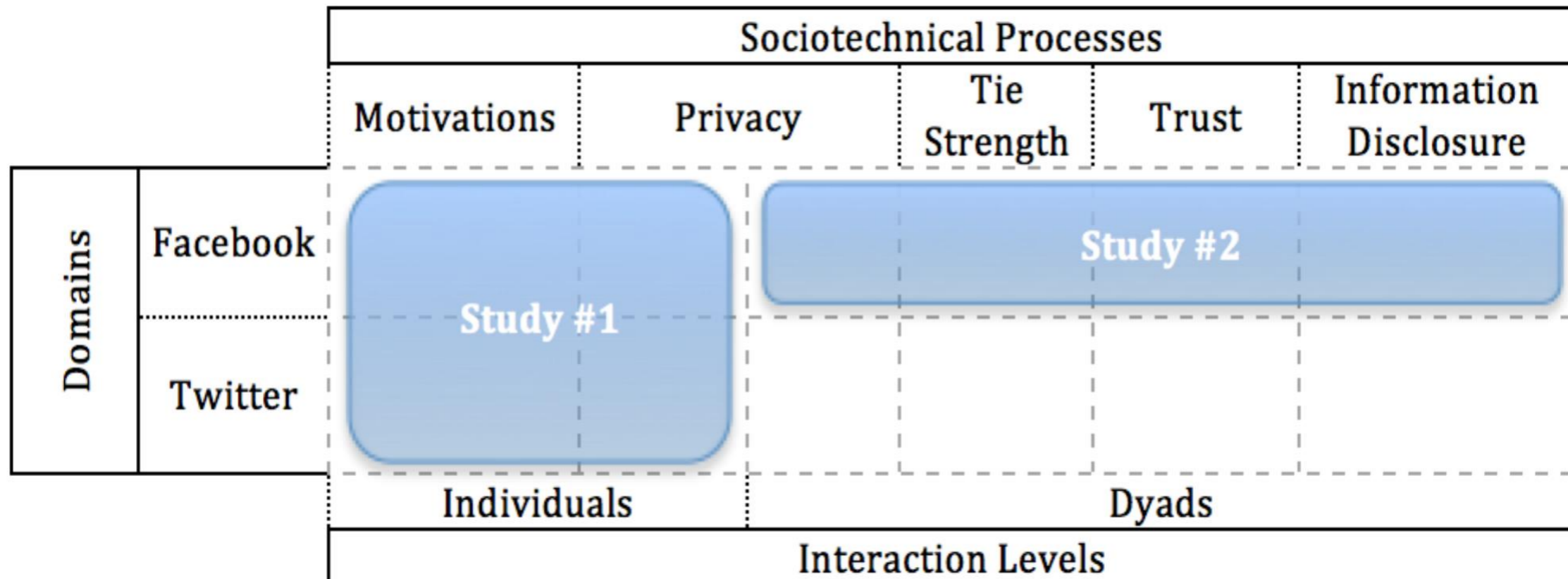
Computational Methods

- + large quantities of data
- + collection of data over time
- + objective, accurate and granular data
- + easier to manage and handle data
- “found” data cannot capture theoretical constructs of interest
- finds correlation, but not causation
- does not easily allow controlled experiments
- subject to algorithm dynamics and changes to user behaviors over time

Thesis statement

The appropriate combination of traditional social science and computational approaches to studying SNSs can provide explanatory value and insights over and above what can be gained through these approaches alone. I examine the practicality and demonstrate the potential and value of combining these two approaches through a series of empirical studies.

Research approach



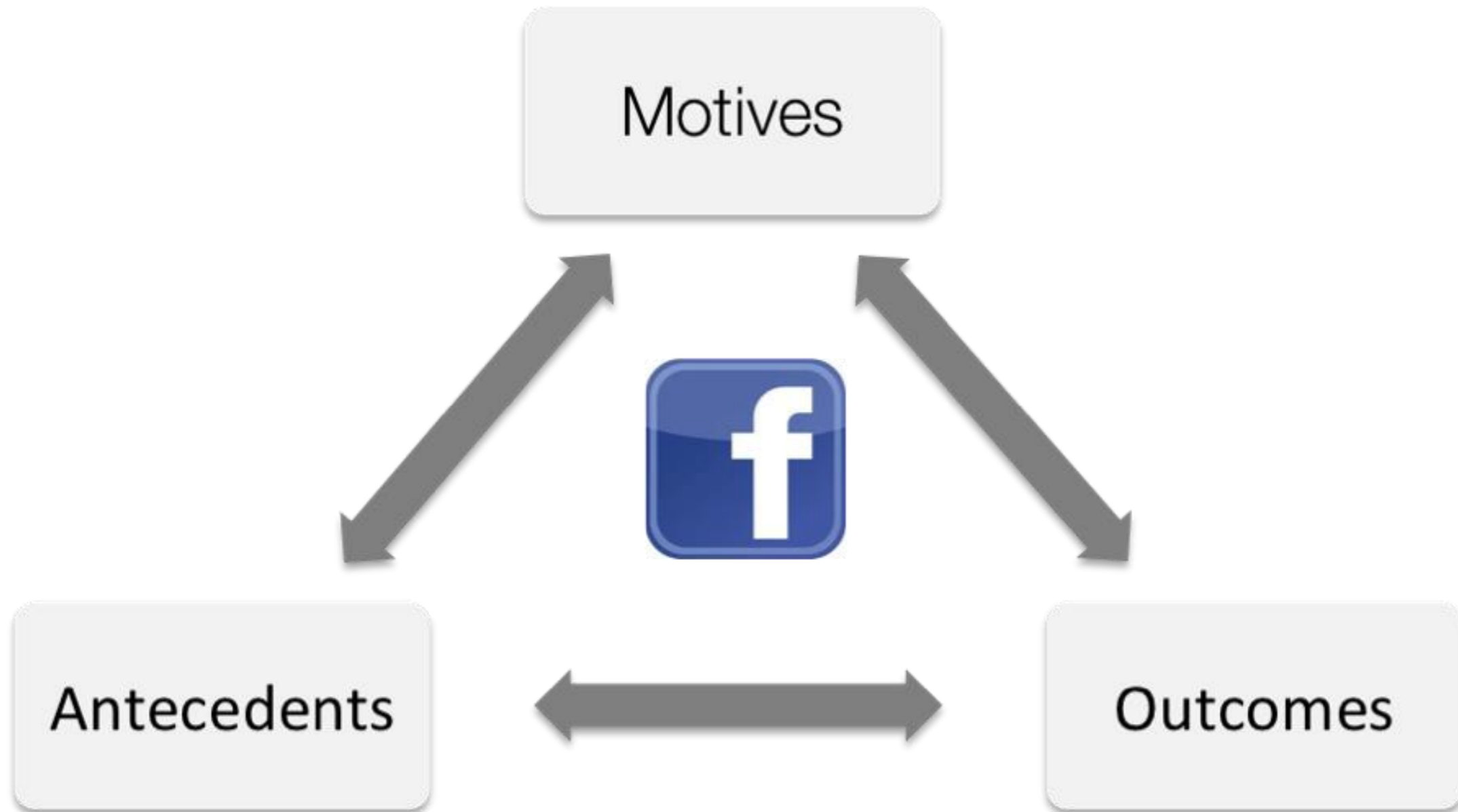
- Study #1: Facebook and Twitter motivations
- Study #2: Facebook interpersonal relationships

Expected contributions

1. Provide guidelines for the scientific community studying SNSs about the using the combination of social science and computational methods.
2. Extend the scholarship of SNSs by providing a better understanding of how and why people use SNSs ?
3. Provide design guidelines for SNSs.

Study #1: Facebook and Twitter motivations

The Uses and Gratifications (U&G) framework:



Study #1: Facebook and Twitter motivations

- 208 Facebook users



University of Madeira Social Networks Survey

University of Madeira Networks Survey

[Go to App](#) [Cancel](#)

8 people use this app

ABOUT THIS APP
You are logging into University of Madeira Social Networks Survey as [Tasos Spiliotopoulos](#).

Who can see posts this app makes for you on your Facebook timeline: [?]

 Only Me ▼

THIS APP WILL RECEIVE:

- Your basic info [?]
- Your profile info: description, activities, birthday, groups, hometown, interests, likes, location, questions, relationship details and religious and political views
- Your stories: checkins, events, photos, status updates and videos
- Friends' profile info: birthdays, hometowns and locations

By proceeding, you will be taken to [tasos-spiliotopoulos.com](#) · [Report App](#)

Study #1: Facebook and Twitter motivations

Motives

- “How important are the following uses of Facebook to you personally?”
- 28 questions representing 7 clusters/motives.
- Social Connection, Shared identities, Photographs, Content, Social investigation, Social network surfing, Newsfeed.

Study #1: Facebook and Twitter motivations

Demographics

Age, gender, nationality, occupation

Antecedent
s

Study #1: Facebook and Twitter motivations

Demographics

Age, gender, nationality, occupation

Network measures

Network size, Average degree, Diameter, Density, Modularity, Connected components, Average clustering coefficient, Average path length.

Antecedent

S

Study #1: Facebook and Twitter motivations

Self-report

Time on site and/or frequency of visits

Outcomes

Study #1: Facebook and Twitter motivations

Self-report

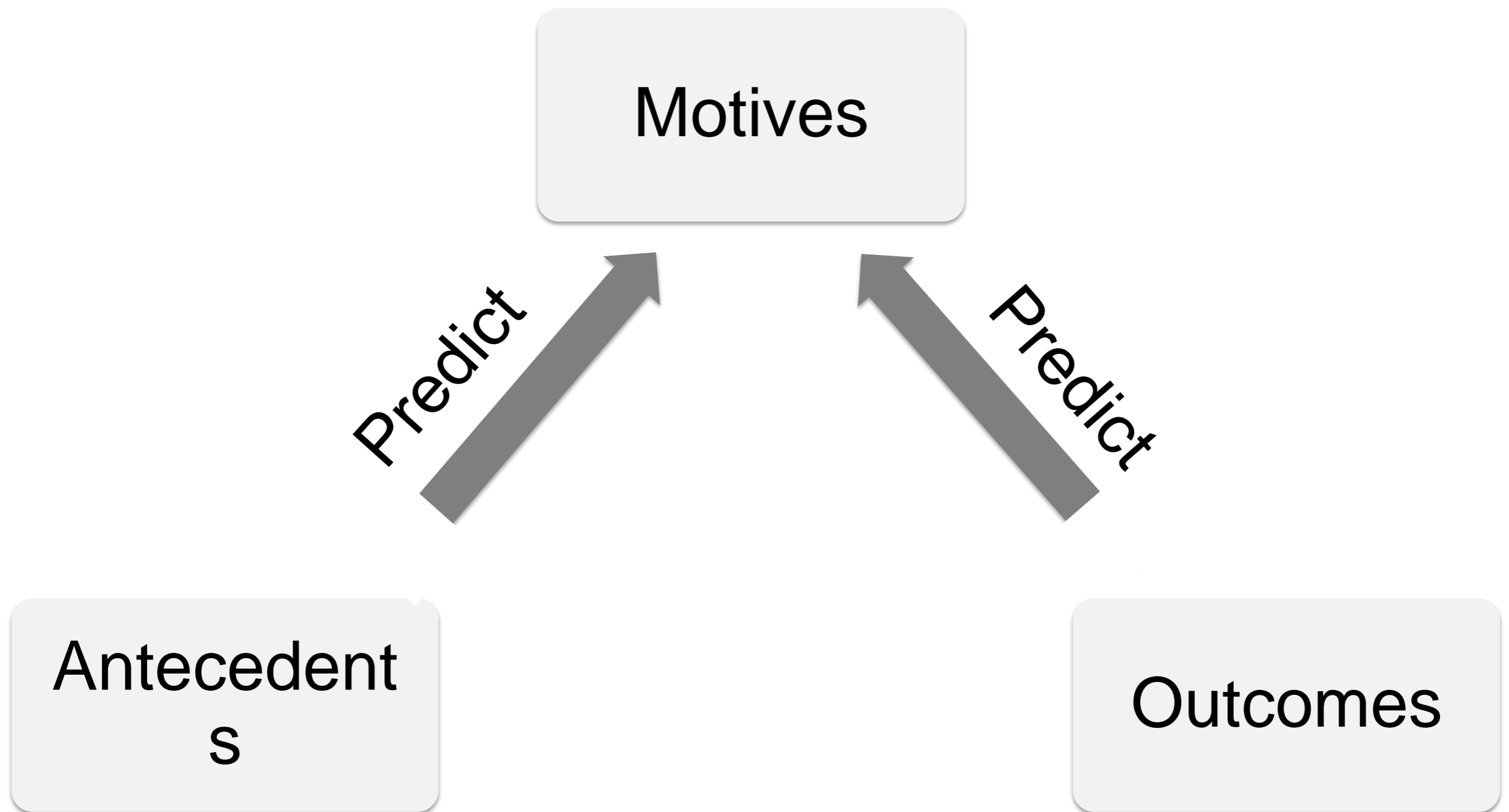
Time on site and/or frequency of visits

Detailed usage statistics

Activities mentioned, "Likes" given, Photo albums uploaded, Photos uploaded, Check-ins posted, Events currently attending, Groups joined, Photos tagged in, Links posted, Questions posted, Status updates posted

Outcomes

Study #1: Facebook and Twitter motivations



- Data gathered from the Facebook API are useful in predicting these motives.
- This range of data allows us to have a deeper understanding of motives for using Facebook.

Study #1: Facebook and Twitter motivations (ongoing work)

Motives

- 82 Twitter users
- “How important are the following uses of Twitter to you personally?”
- 15 questions representing 3 clusters/motives.
- Communication, Personal gratifications, Information.

Study #1: Facebook and Twitter motivations (ongoing work)

Twitter account metrics	Mean	SD
Tweets	1084	2456
Followers	169.1	362.9
Friends	238.4	416.3
Followers' tweets	2604	3136
Followers' followers	11241	36064
Followers' friends	4733	11223
Friends' tweets	5285	4147
Friends' followers	639592	846676
Friends' friends	6668	12497

Study #2: Facebook interpersonal relationships

- 90 participants
- 1728 friendships rated
- 8 questions
- 18 variables collected via the Facebook API

Study #2: Facebook interpersonal relationships



Name:
William Walker

Birthday:
29 of February of 1984

Location:
Funchal, Madeira

How strong is your relationship with this person?

barely know them

we are very close

How much are you looking forward to receiving updates from this person?

not at all

very much

How much do you think this person looks forward to receiving updates from you?

not at all

very much

Imagine this friend went on a trip. How much are you looking forward to seeing, liking, or commenting on their photos?

not at all

very much

Imagine you went on a trip. How much are you looking forward to posting your photos from the trip so that this person can see, like or comment on them?

not at all

very much

How interested are you in knowing exactly where this person is right now?

not at all

very much

How much do you think this person is interested in knowing your location right now?

not at all

very much

How much do you trust this person?

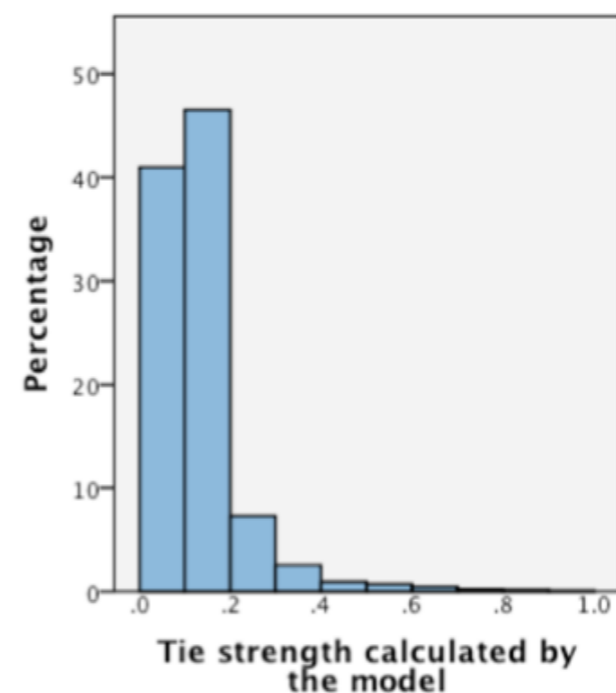
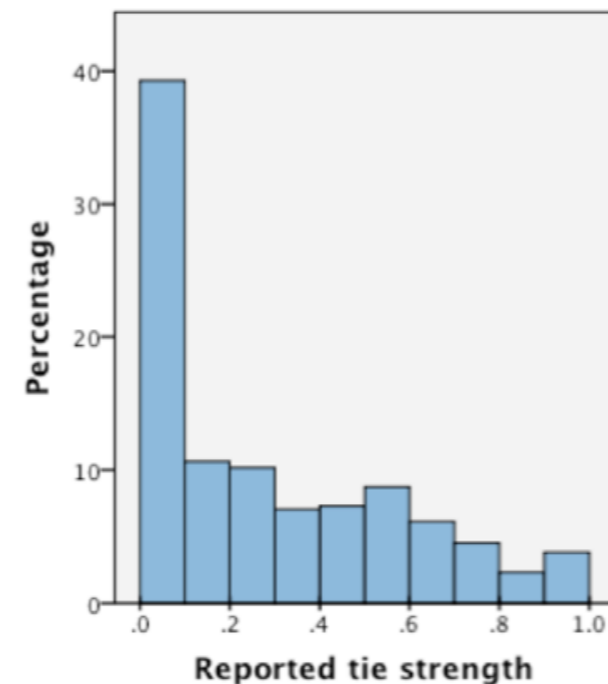
I don't trust this person

I would trust this person with my life

Study #2: Facebook interpersonal relationships

Tie Strength	
Wall posts exchanged	-.003
Comments exchanged on wall posts	.051
Comments on participant's photos	.005
Comments on photos where participant is tagged	.073*
Likes on participant's wall posts	.051*
Likes on photos where participant is tagged	-.023
Likes on participant's photos	.026
Number of mutual friends	-.050*
Number of groups in common	.069**
Mutual confirmed participation in events	-.008
Family	.159***
Number of appearances together on photos	.095**
Number of wall words exchanged	.120***
Days since first communication	.082**
Days since last communication	-.076**
Difference in education level	-.047*
Intimacy words exchanged in wall posts	-.016
Intercept	.288***
R ²	.143

* p < .05, ** p < .01, *** p < .001, all beta coefficients are standardized.



Study #2: Facebook interpersonal relationships

Results:

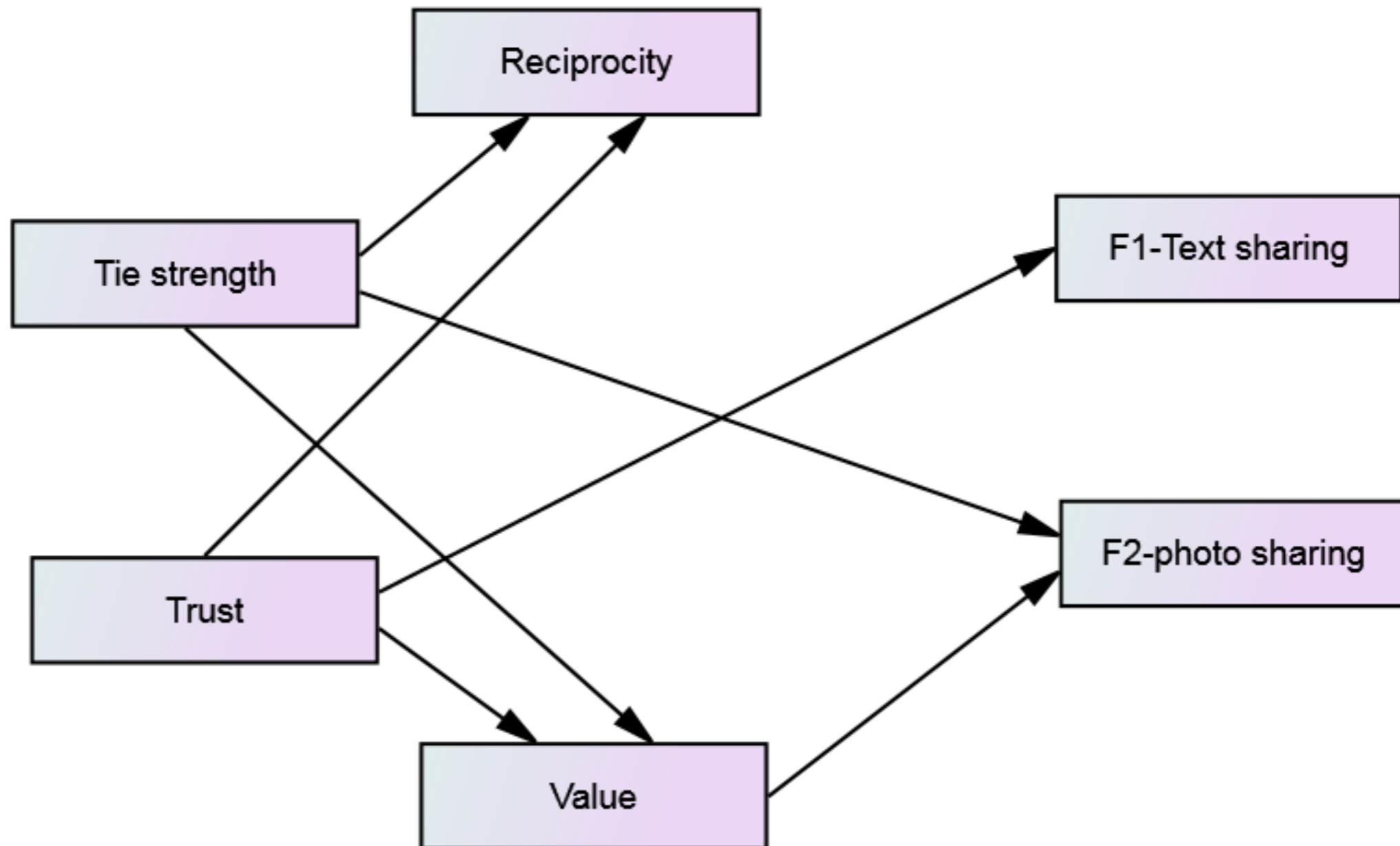
- 66.1% accuracy in differentiating between strong and weak ties
- 86.1% accuracy in differentiating between very strong and weaker ties

Ongoing work:

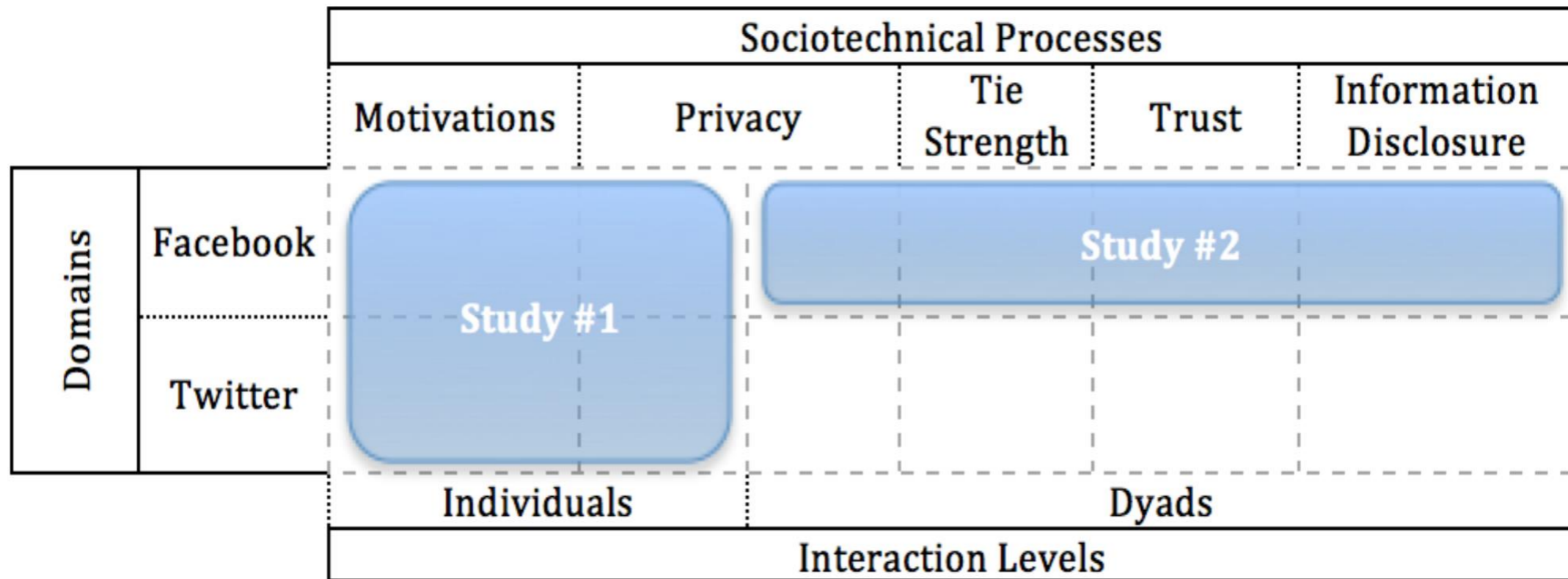
- Analyze the data from the other 7 questions.
- Examine the relationships among the different constructs.

Study #2: Facebook interpersonal relationships (ongoing work)

Exploratory Factor Analysis identified two distinct types of information disclosure: Sharing texts and sharing photographs.



Recap



- Study #1: Facebook and Twitter motivations
- Study #2: Facebook interpersonal relationships

Thank you!