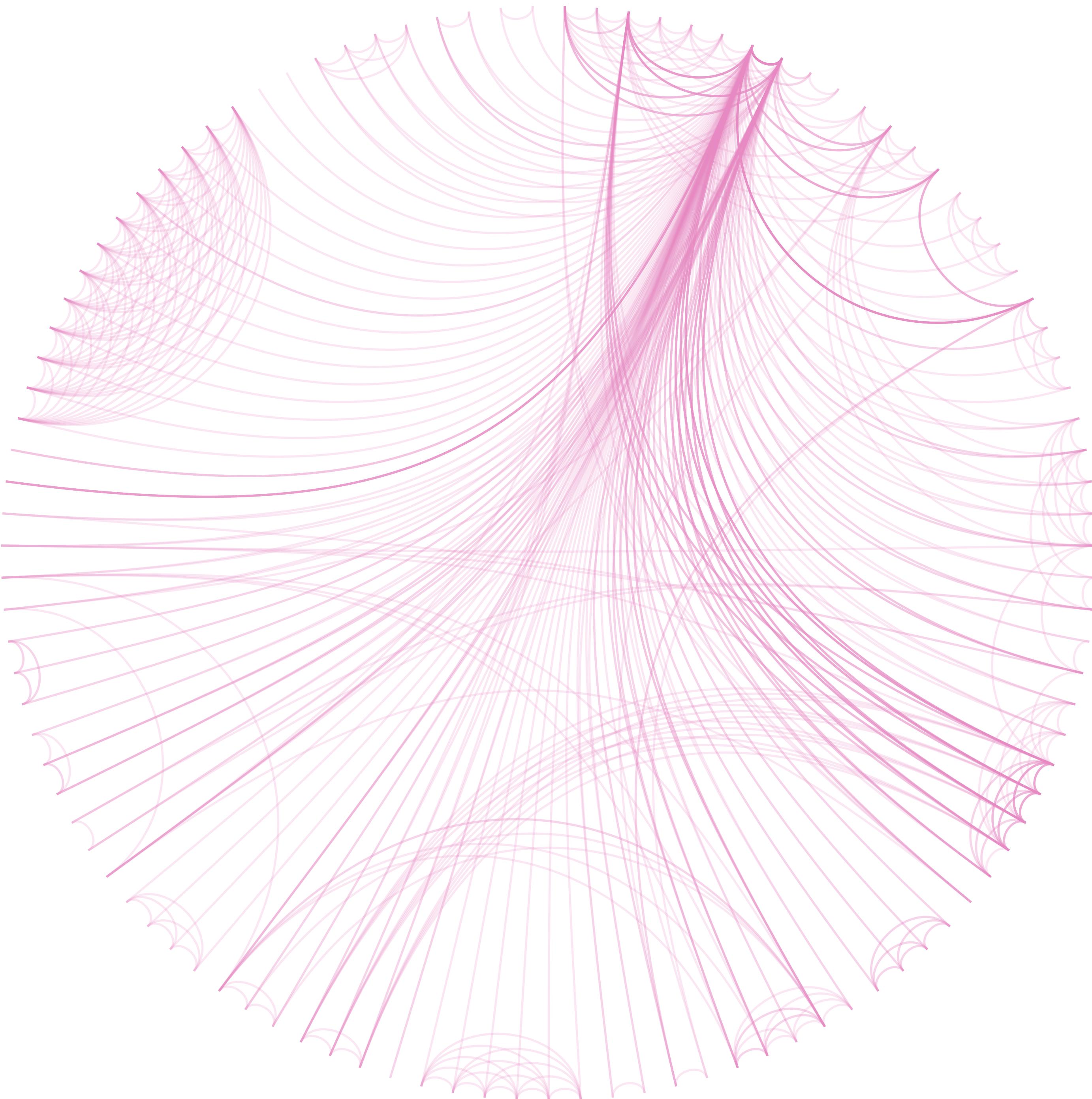


# methodological challenges and theoretical opportunities of collecting large personal networks in large samples



gert stulp  
[gertstulp.com](http://gertstulp.com)

LARGE NETWORKS

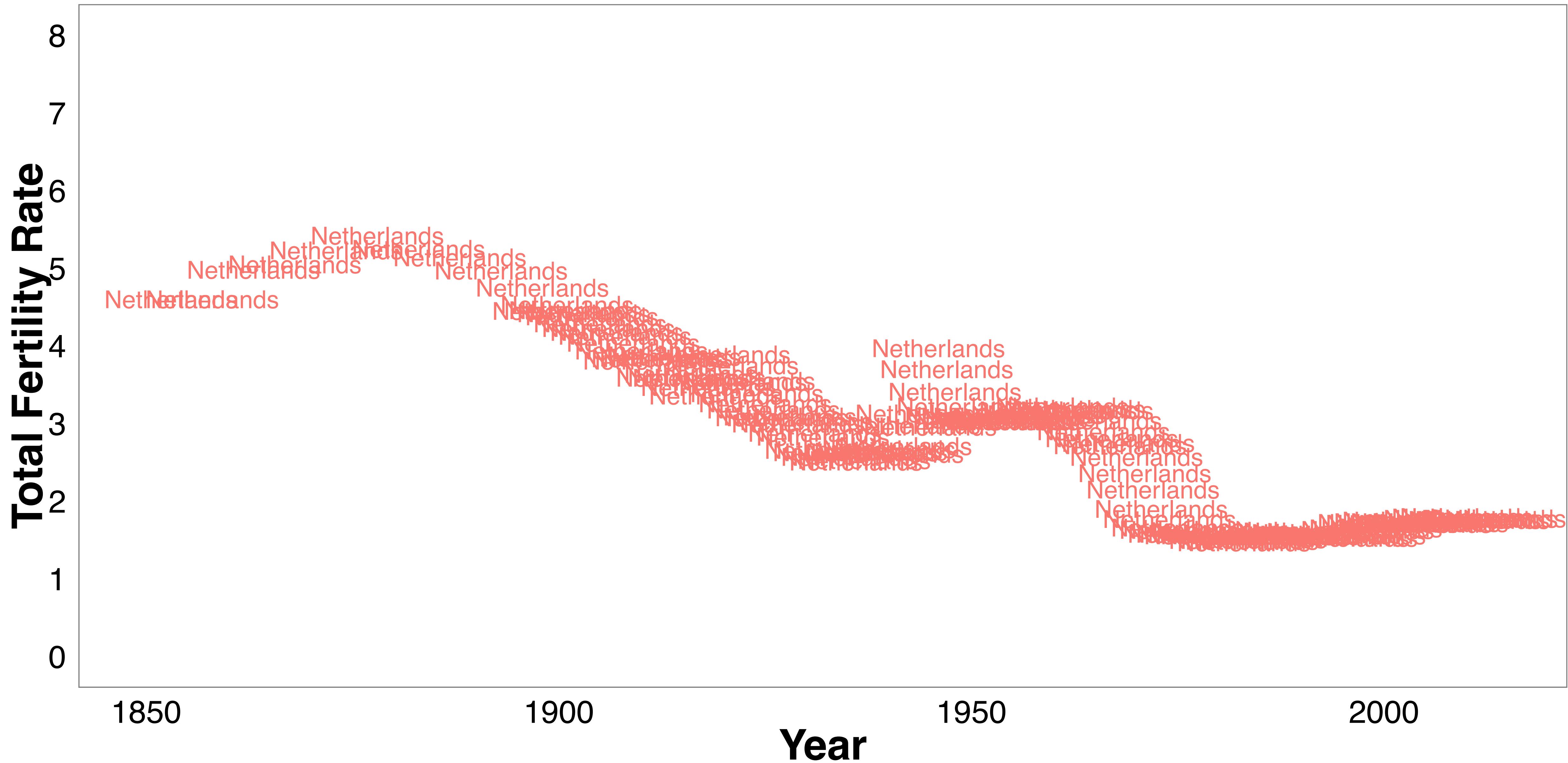


**Disclaimer**

25

LARGE SAMPLES

700



“one kind of social interaction, informal conversations with networks of relatives, friends, and neighbours, was important for historical change in bedroom behavior

WATKINS 1995

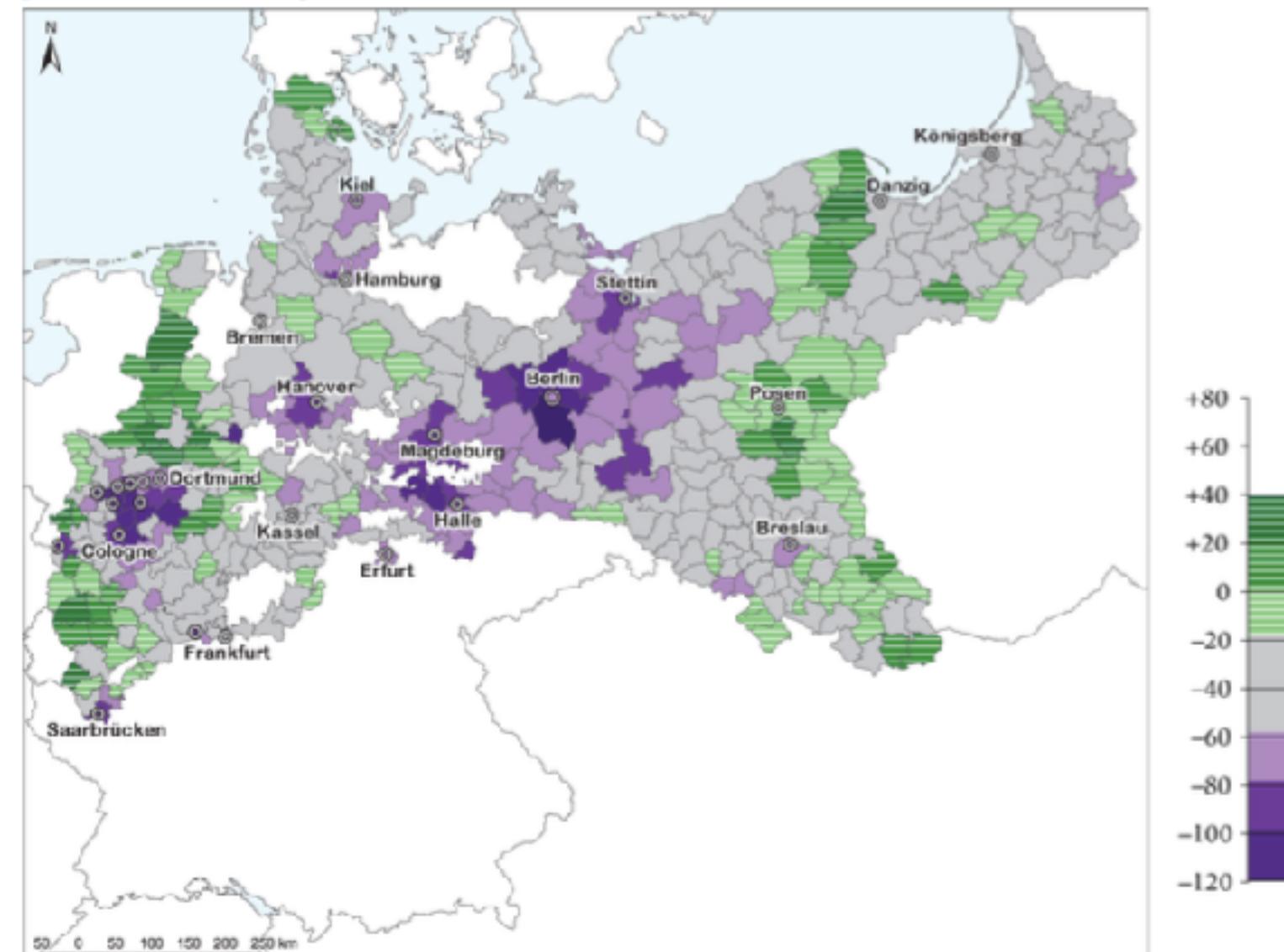
# Social Influence & Fertility

historical evidence

## Spatial Analysis of the Causes of Fertility Decline in Prussia

JOSHUA R. GOLDSTEIN  
SEBASTIAN KLÜSENER

FIGURE 2d Observed change in the dependent variable (modes  $\tau_{ij}$ ) / absolute change in the general marital fertility rate between 1890 and 1910



convenience samples

## Does Fertility Behavior Spread among Friends?

Nicoletta Balbo<sup>a</sup> and Nicola Barban<sup>b</sup>

American Sociological Review  
2014, Vol. 79(3) 412–431  
© American Sociological  
Association 2014  
DOI: 10.1177/0003122414531596  
<http://asr.sagepub.com>

qualitative studies

## Channels of social influence on reproduction

LAURA BERNARDI

*Max Planck Institute for Demographic Research*

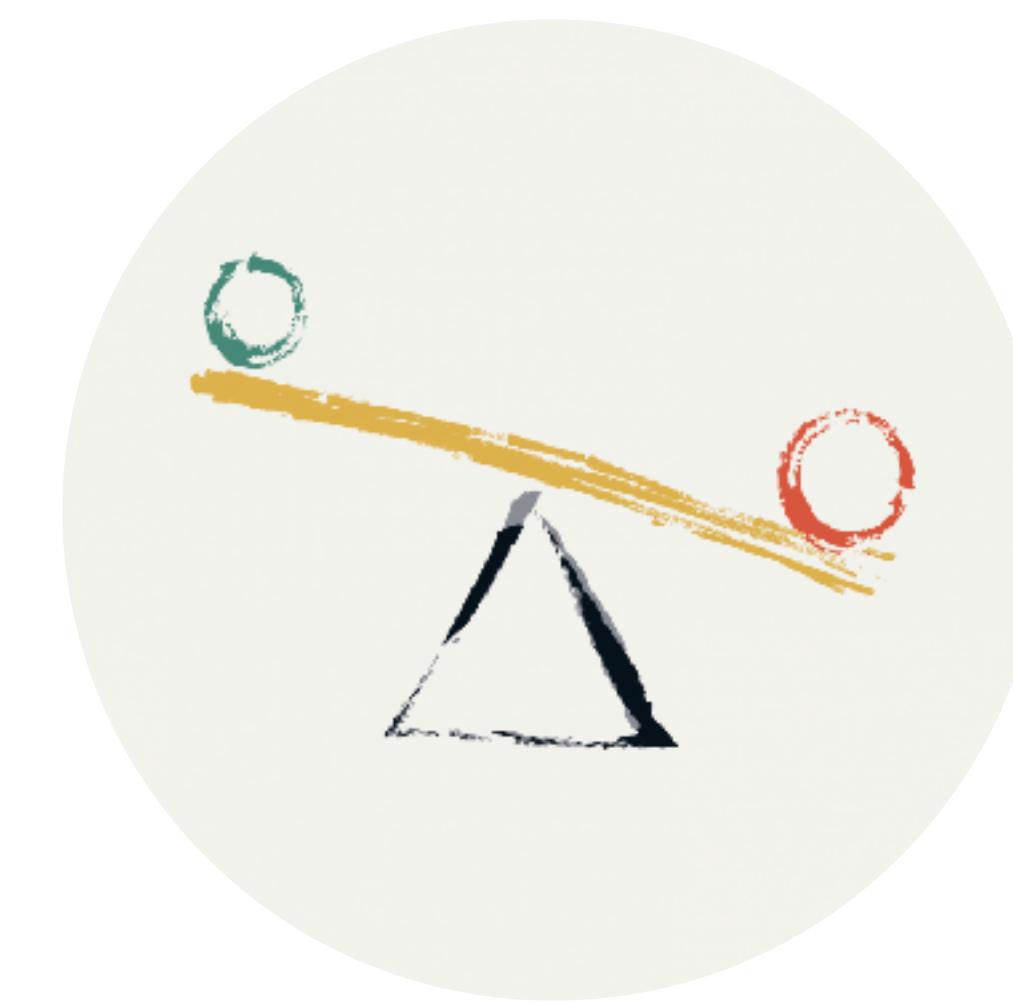
social learning  
social contagion  
social pressure  
social support

quantifying social influences  
on fertility behaviour  
**using personal network data**

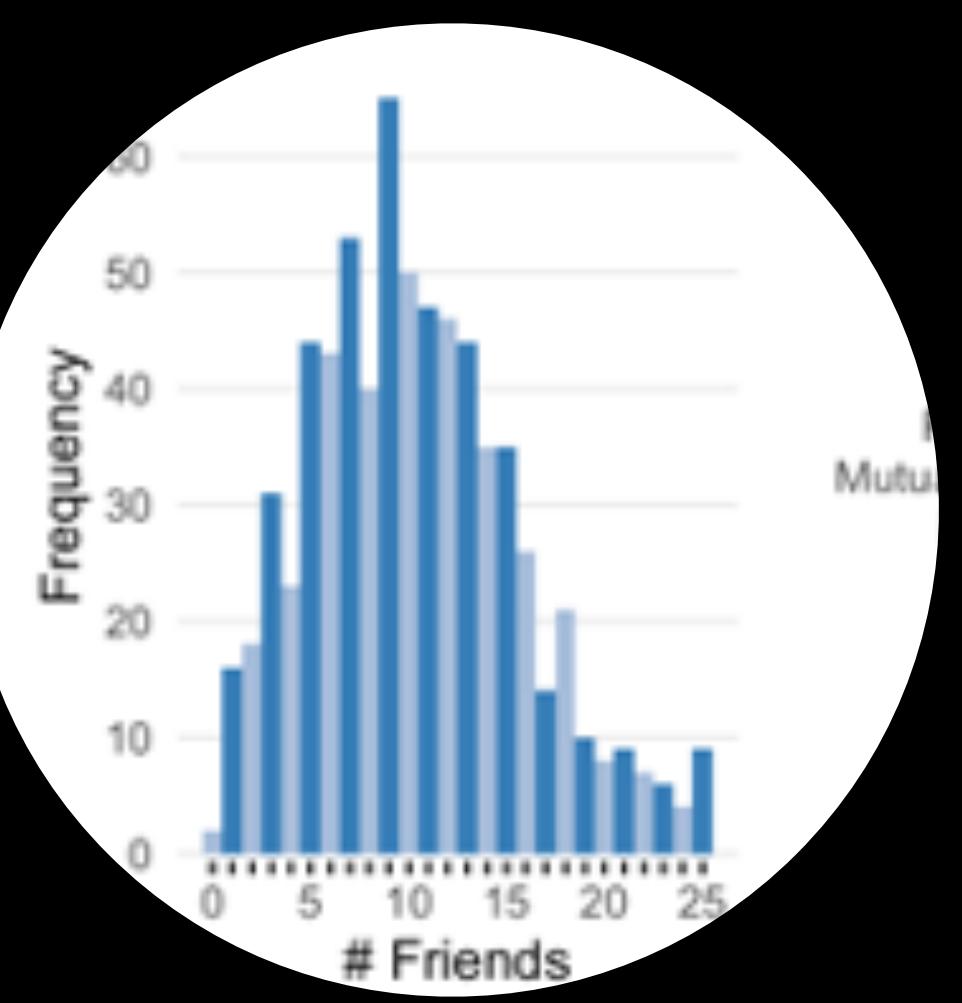
# PART I



# PART II



# PART III



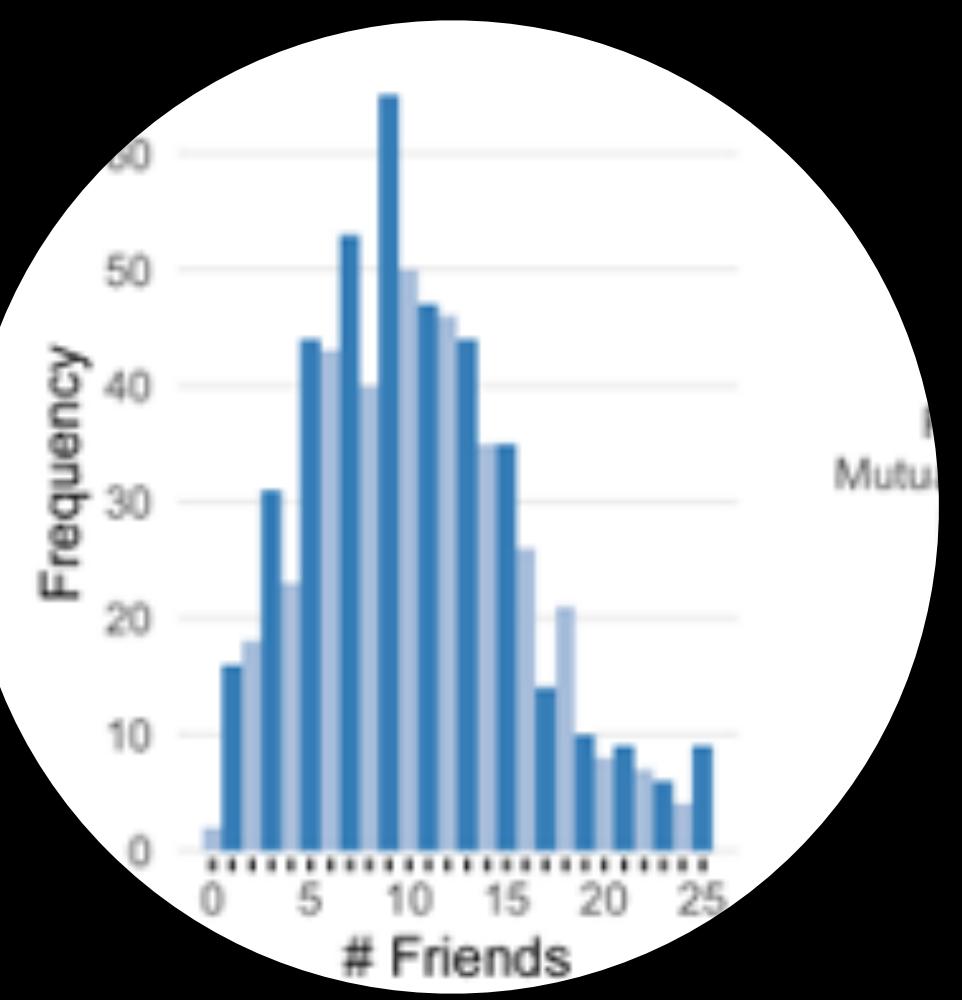
# PART I



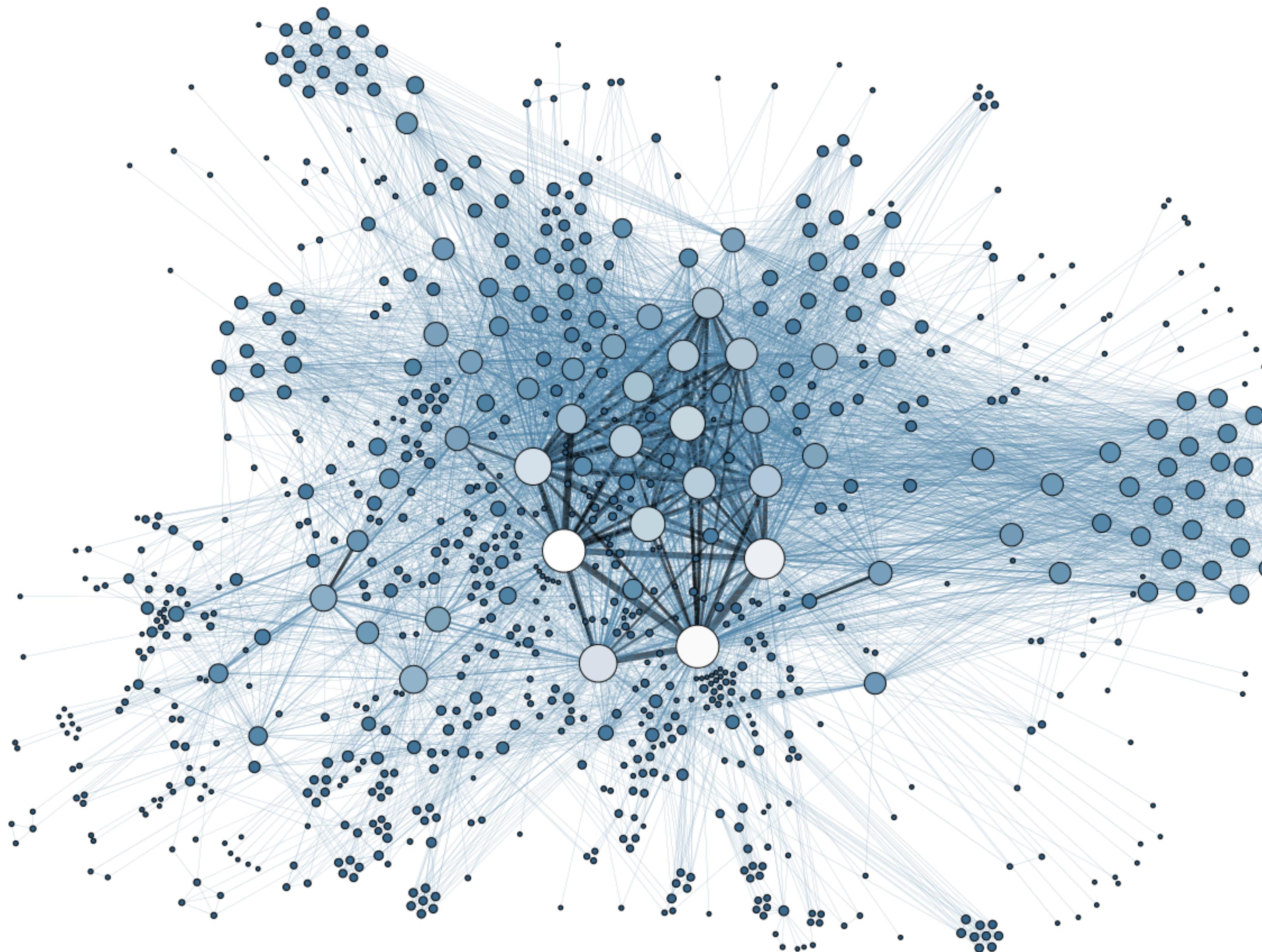
# PART II



# PART III



# Bigger Is Better (?)



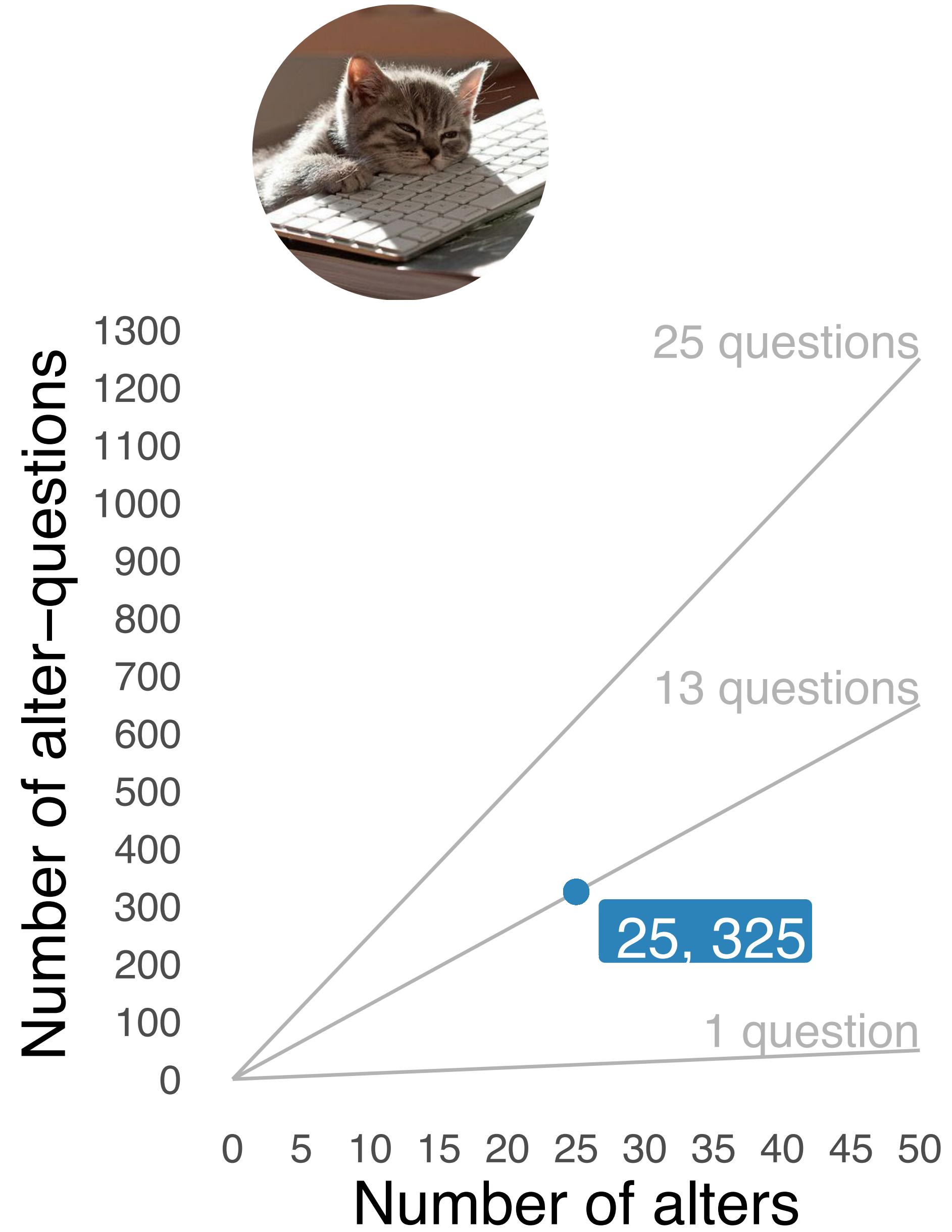
**weak ties**

**structure characteristics**

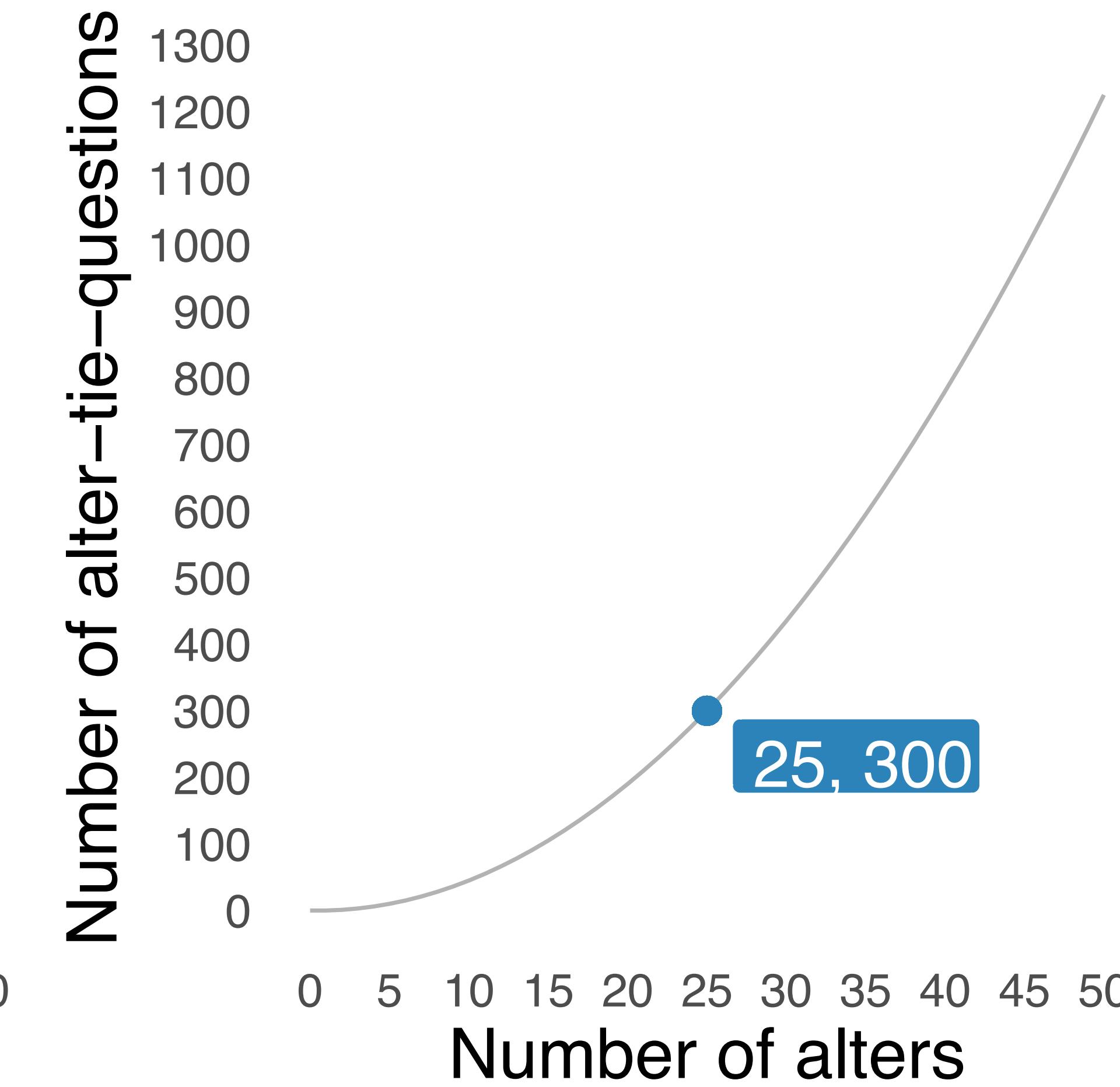
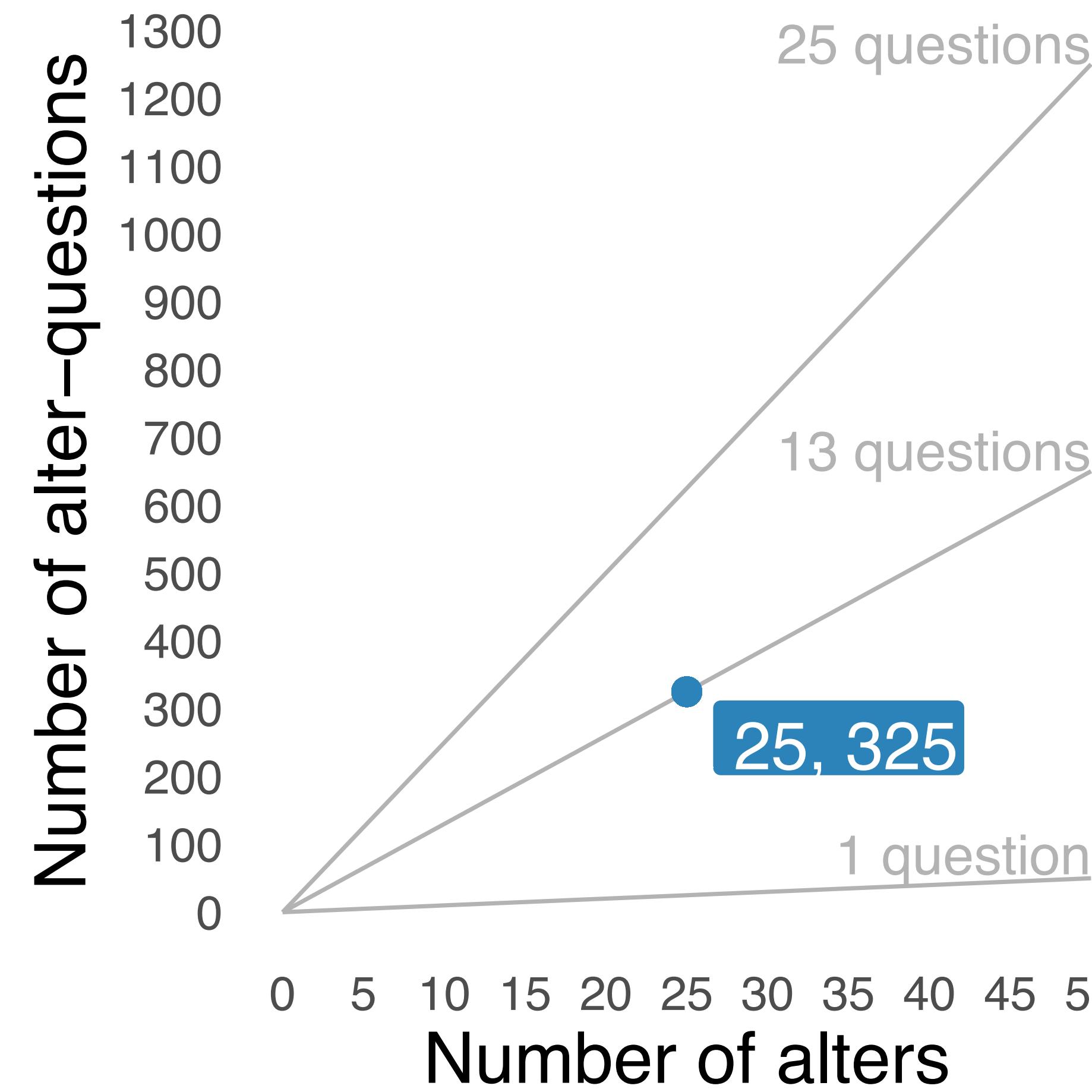
# Data Collection Worries



# Data Collection Worries



# Data Collection Worries



# Data Collection Worries



Social Networks

Volume 32, Issue 2, May 2010, Pages 105-111



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Does the online collection of ego-centered network data reduce data quality? An experimental comparison

Uwe Matzat  , Chris Snijders

YES

## Graphical Ego-centered Network Survey Interface

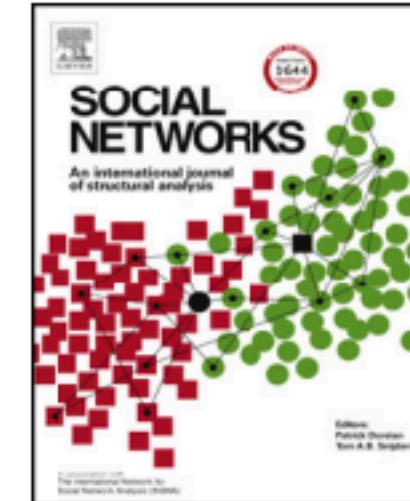
Social Networks 48 (2017) 36–45



Contents lists available at [ScienceDirect](#)

Social Networks

journal homepage: [www.elsevier.com/locate/socnet](http://www.elsevier.com/locate/socnet)



GENSI: A new graphical tool to collect ego-centered network data



Tobias H. Stark<sup>a,\*</sup>, Jon A. Krosnick<sup>b</sup>

<sup>a</sup> Utrecht University/ICS, Padualaan 14, 3584 CH Utrecht, The Netherlands

<sup>b</sup> Stanford University, 450 Serra Mall, Stanford, CA 94305, United States



# GENSI

## Graphical Ego-centered Network Survey Interface

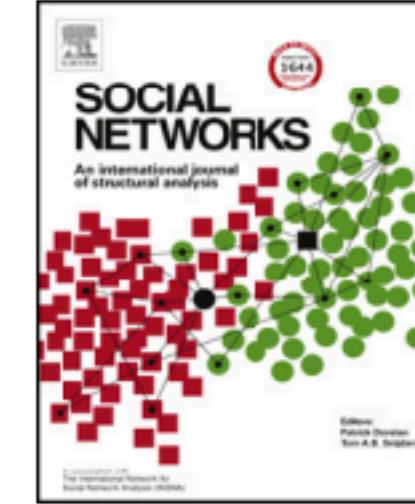
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compared to standard survey-methods,  
people who used GENSI:

- enjoyed the survey more
- thought the survey was more interesting
- said they were more willing to participate in a future survey

## Graphical Ego-centered Network Survey Interface

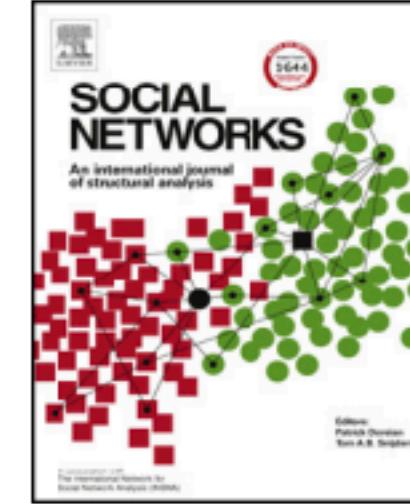
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GENSI: A new graphical tool to collect ego-centered network data



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**“A practical limitation for future research with GENSI is that the tool is only suitable for small ego-centered networks. When the number of alters exceeds seven or eight, it gets visually challenging to see all circles in a network.”**

GENSI

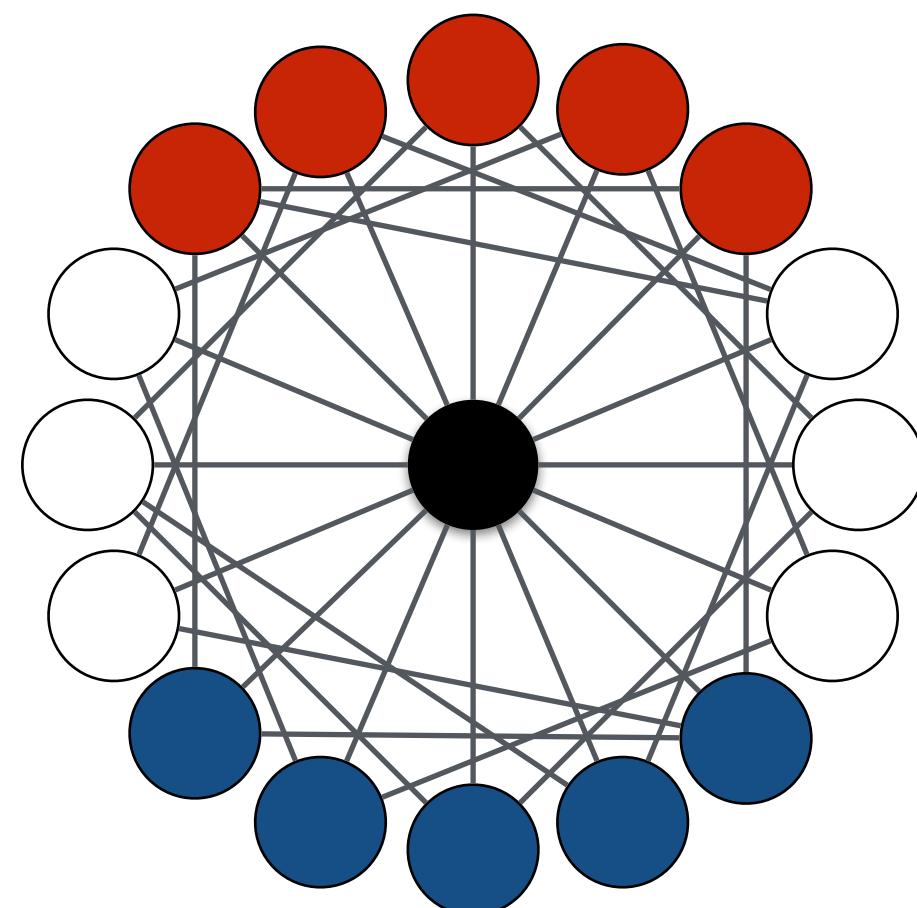
Collecting  
large personal networks  
in a  
representative sample  
of Dutch women, using  
**GENSI**

# Methodology



## Longitudinal Internet Studies for the Social sciences

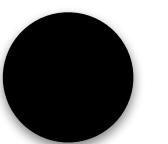
True probability sample of households drawn from the population register.  
Respondents participate in monthly Internet surveys.  
Extensive background information available on respondent  
High retention rates (e.g., 70 %)



All women between 18 - 40 asked ( $N = 1322$ )  
 $N = 758$  responded (57%); age: 29 ( $\pm 6$ )  
Incentive: 12.50 euro  
Period of 1 month (~ march)

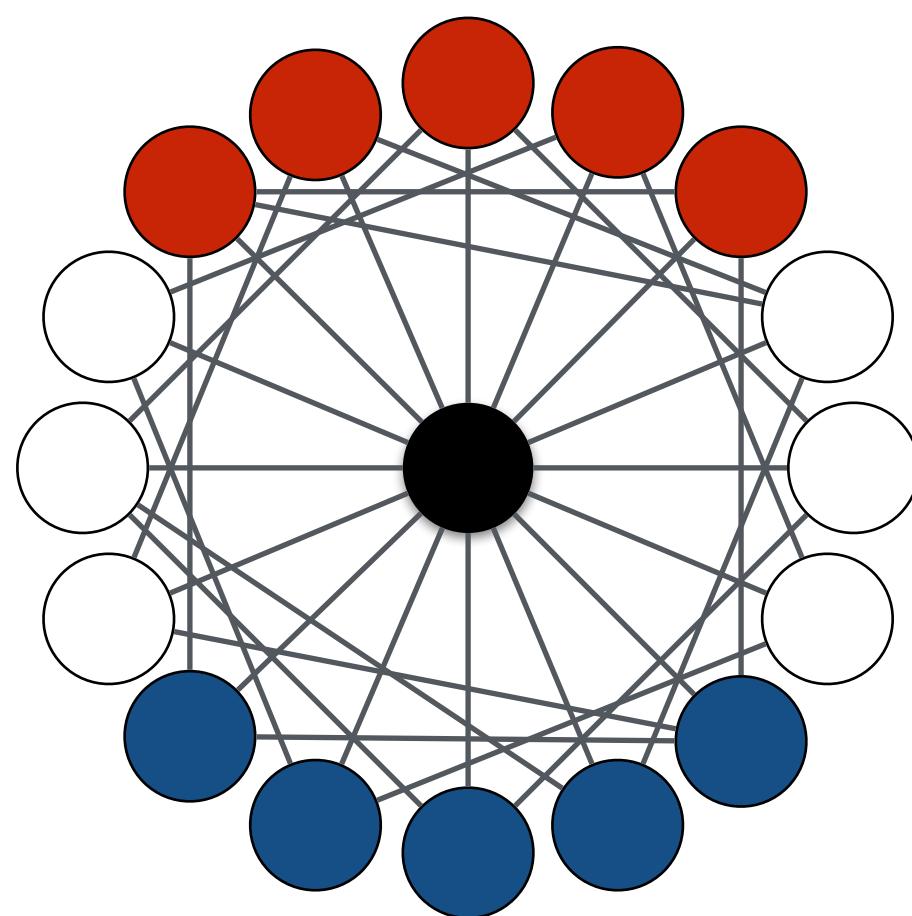
# Methodology

Ego



Detailed fertility intentions

Alters (25)



Sex  
Age  
Education  
Relationship type  
Closeness  
Frequency of contact F2F  
Frequency of other contact

Number and age of children  
Friend  
Wants children  
Does not want children  
Help with children  
Talk about children  
Relationship with other alters

# GENSI: Name Generator

Please list 25 names of individuals 18 years or older with whom you have had contact in the last year. This can be face-to-face contact, but also contact via phone, internet, or email. You know these people and these people also know you from your name or face (think of friends, family, acquaintances, et cetera). You could reach out to these people if you would have to. Please name your partner in case you have one.



The image shows a user interface for generating a list of names. At the top, there are two buttons: 'Naam' (Name) on the left and 'Voeg toe' (Add) on the right. Below these buttons is a grid of 25 light blue circles, each containing a number from 1 to 25. The numbers are arranged in a roughly triangular pattern: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25. At the bottom right of the grid is a large button labeled 'Ga door' (Continue).

# GENSI: 5 response options

How close are you to these people?



# GENSI: Alter-Alter-ties

powered by  
**Screencastify**!

Als het gaat om ANNE

Met wie heeft ANNE contact? Met contact bedoelen we alle vormen van contact, zoals face-to-face contact, contact via (mobiele) telefoon, post, email, sms, en andere manieren van online en offline communicatie.

Selecteer de personen die contact met elkaar hebben door met de muis op het bolletje te klikken. Er zal een **lijn** ontstaan die aangeeft dat de personen contact met elkaar hebben. Druk nogmaals op het bolletje om de **lijn** weer te laten verdwijnen, als de personen geen contact met elkaar hebben.





## THE TASK

coming up with 25 names,  
answering 16 questions about all alters,  
evaluating 300 alter-alter ties

## THE RESULT

50% within 21 minutes

97% hardly any missing values



**Listing first alter took about 30 seconds**

**N = 654**

75

Time (seconds)

50

25

0

1

Alter name #

30

40

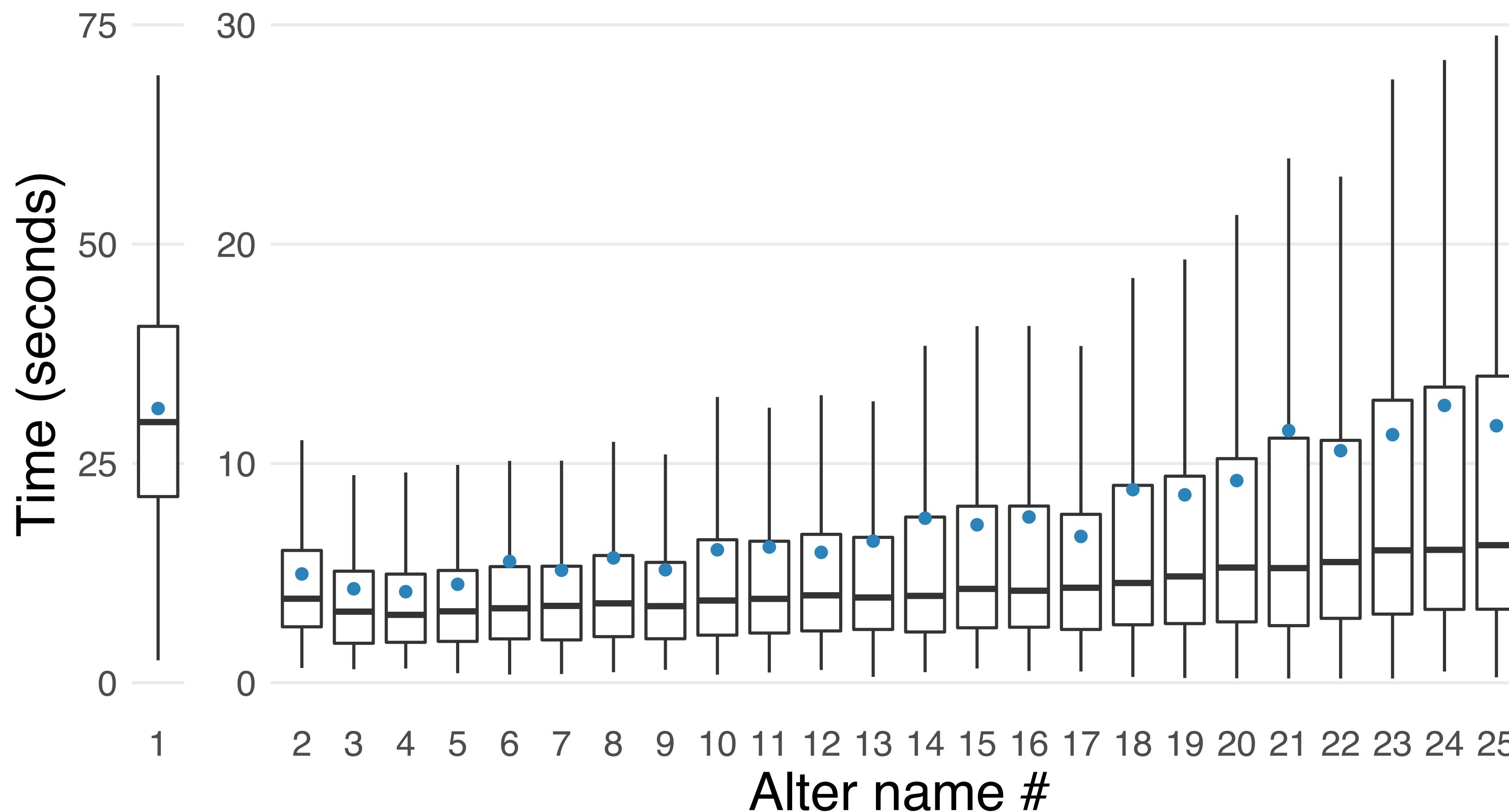
60

70



**Listing the last alters took about twice as long as listing  
the first alters, but still only about 10 seconds**

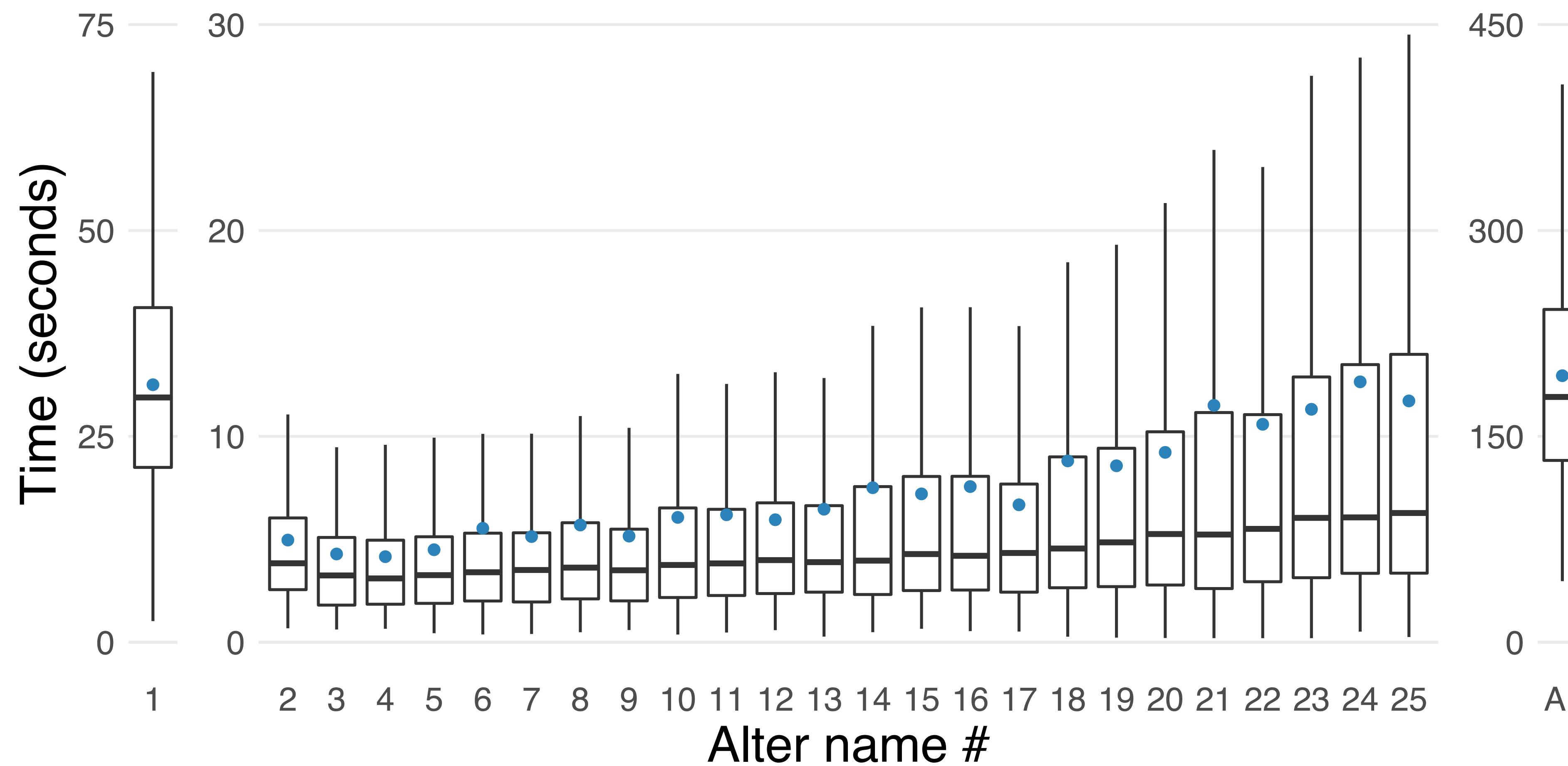
N = 654



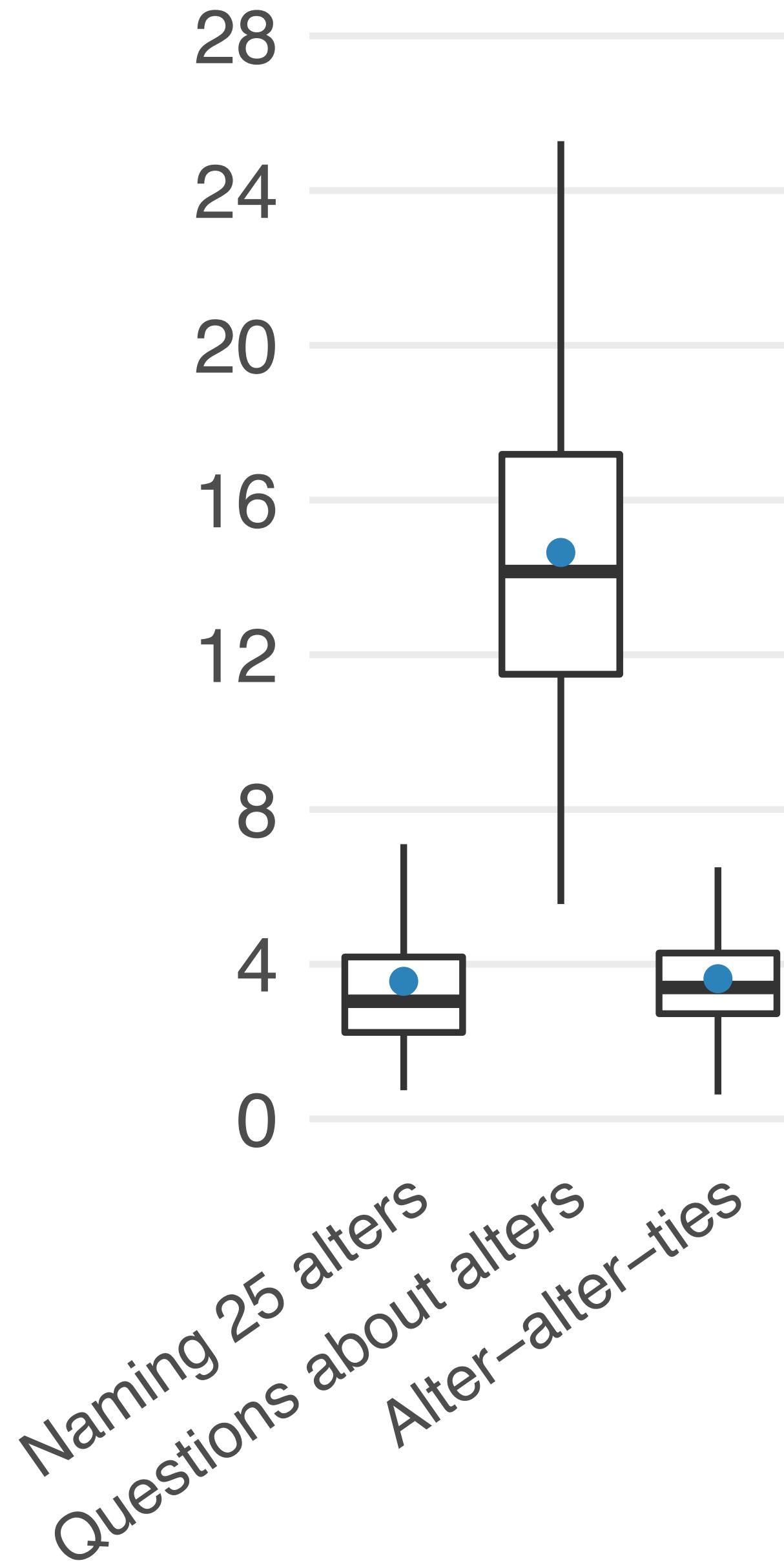


**Listing all 25 alters took around 3.5 minutes**

**N = 654**



N = 654



**Responding to all alter-question took 15 minutes**

**Naming 25 alters took 3.5 minutes**

**Listing all alter-alter-ties took 3.5 minutes**

3

# Conclusion

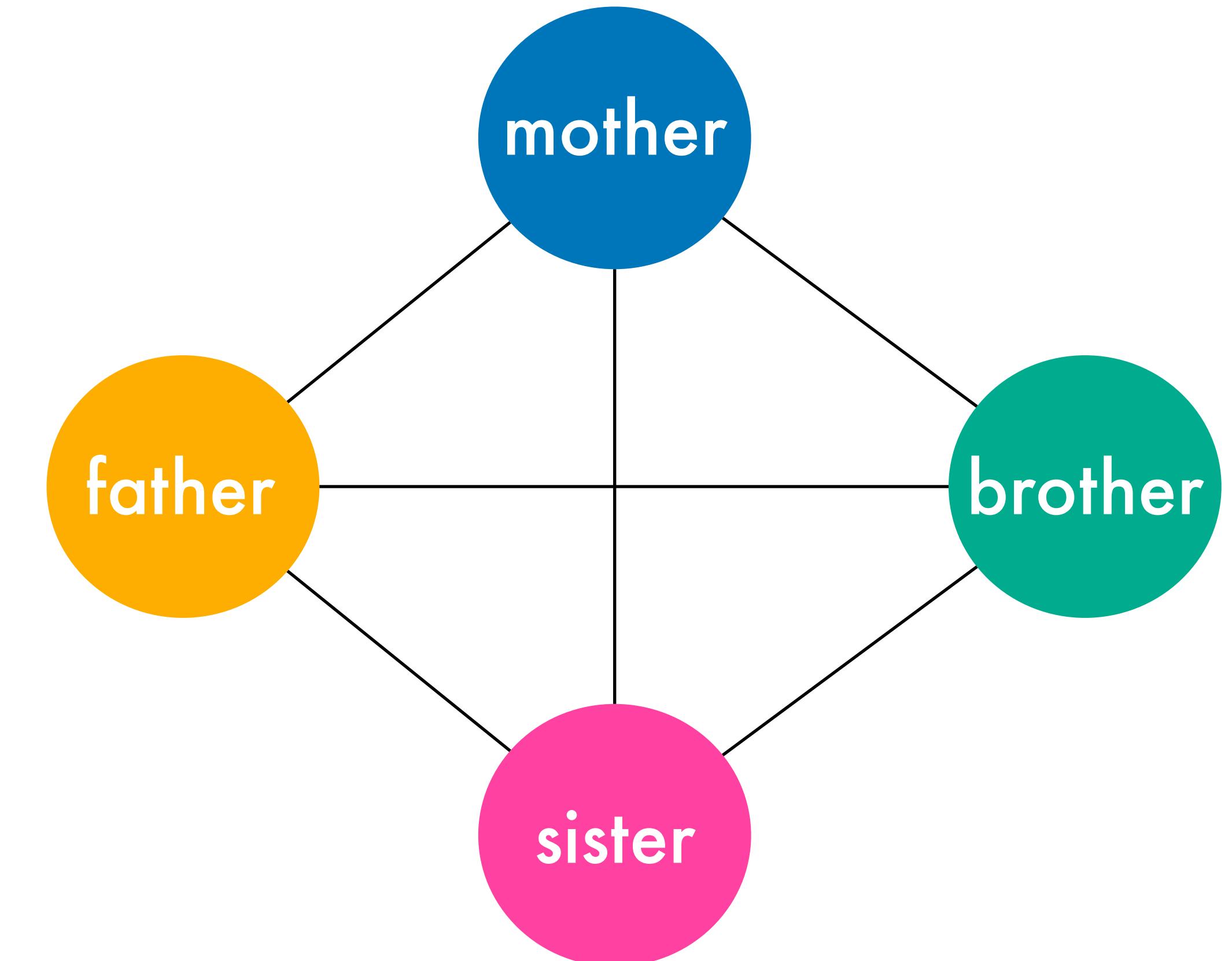
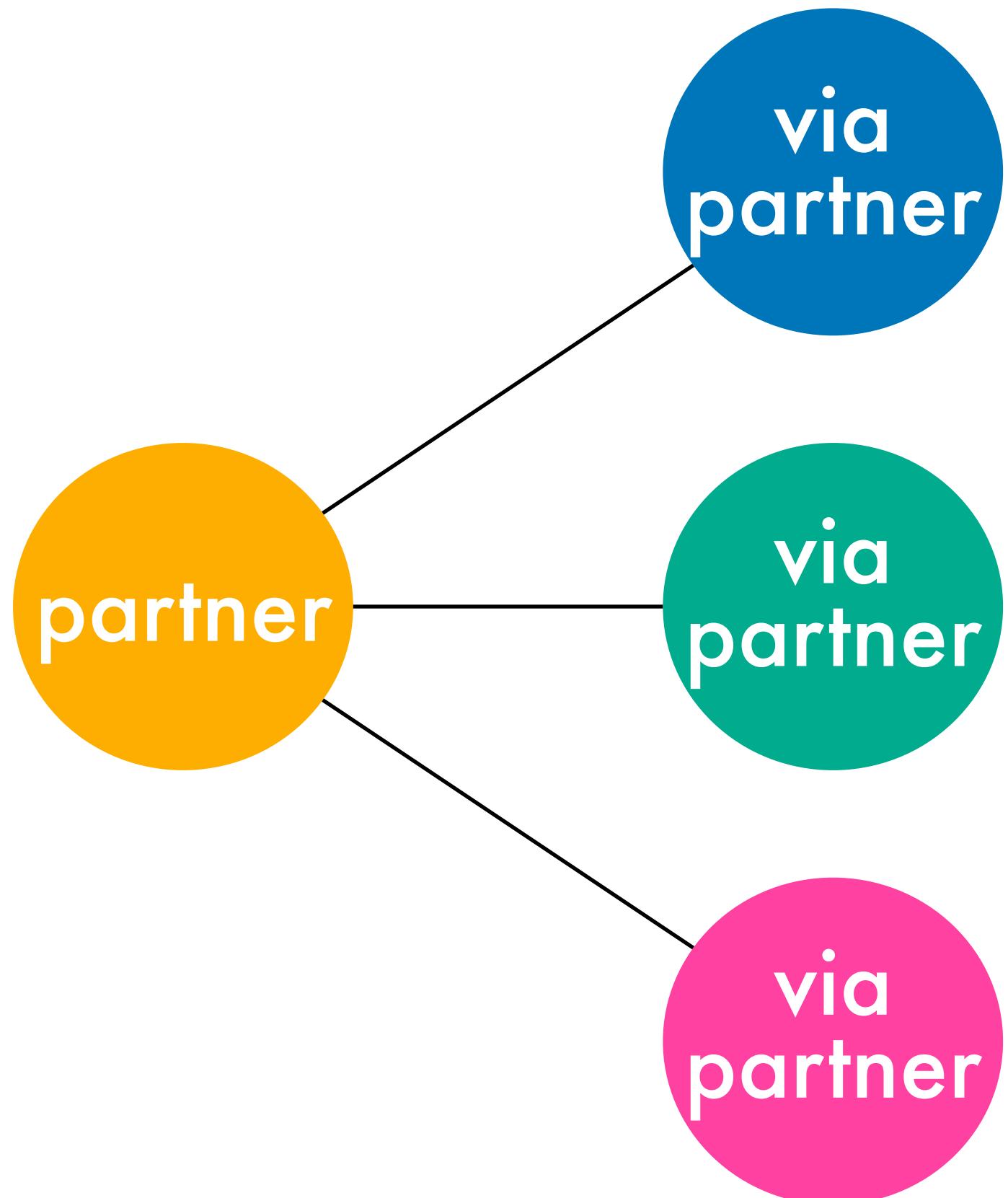
**Collecting large personal networks feasible**

Not too time-consuming

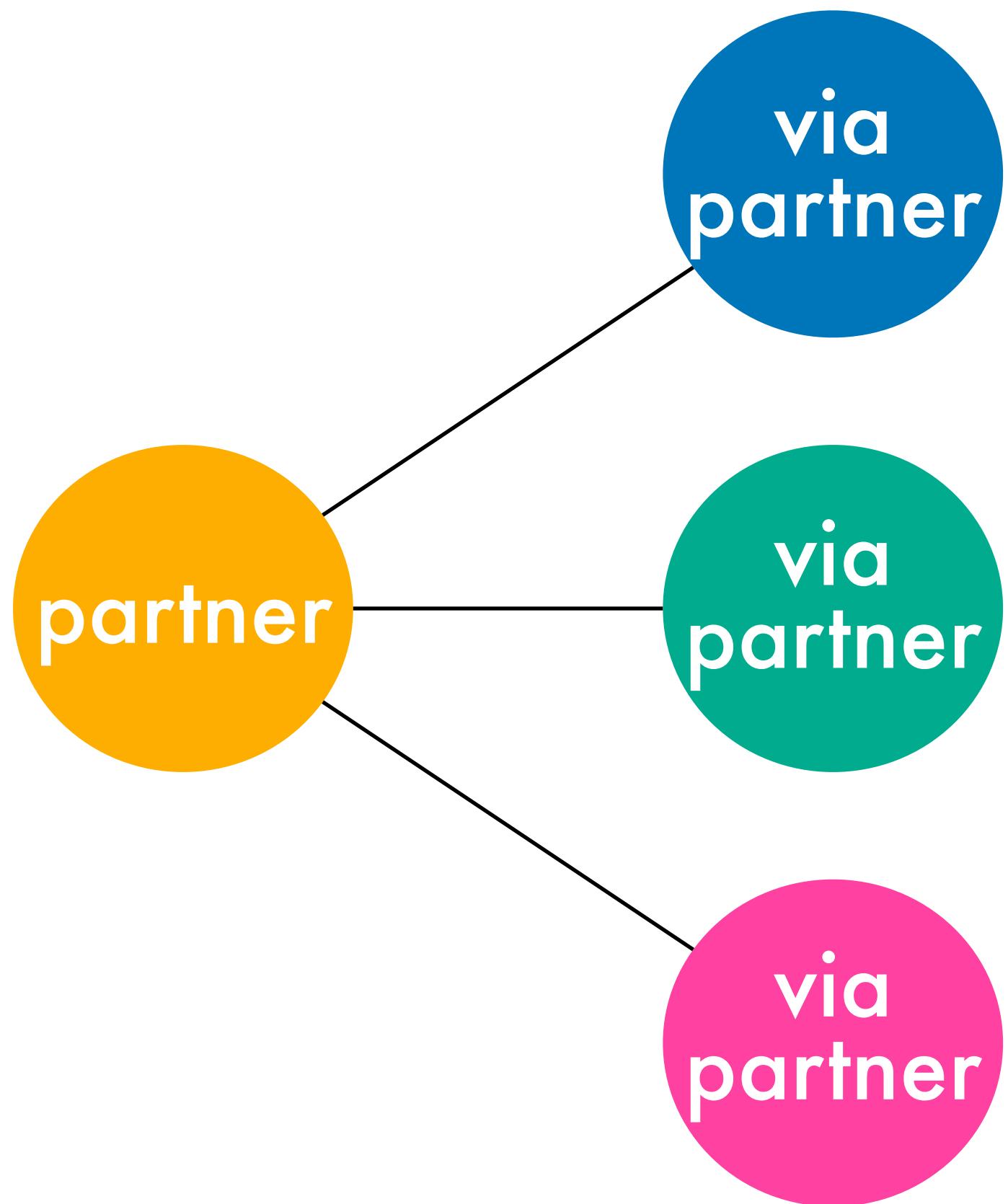
Little missing data

Data quality?

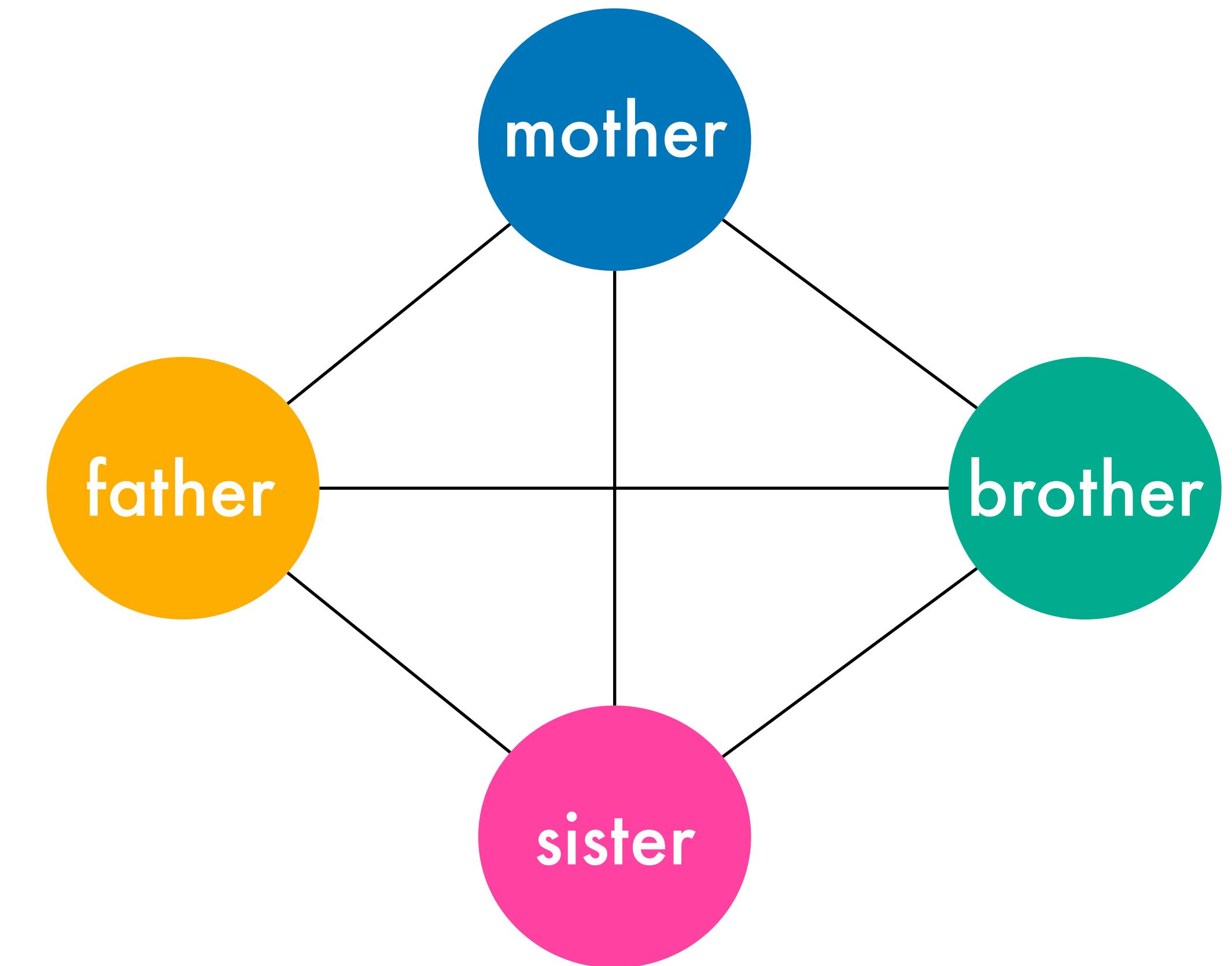
# Quantity ≠ Quality



# Quantity ≠ Quality



89% of all possible ties were reported



87% of all possible ties were reported

# Conclusion

**Collecting large personal networks feasible**

Not too time-consuming

Little missing data

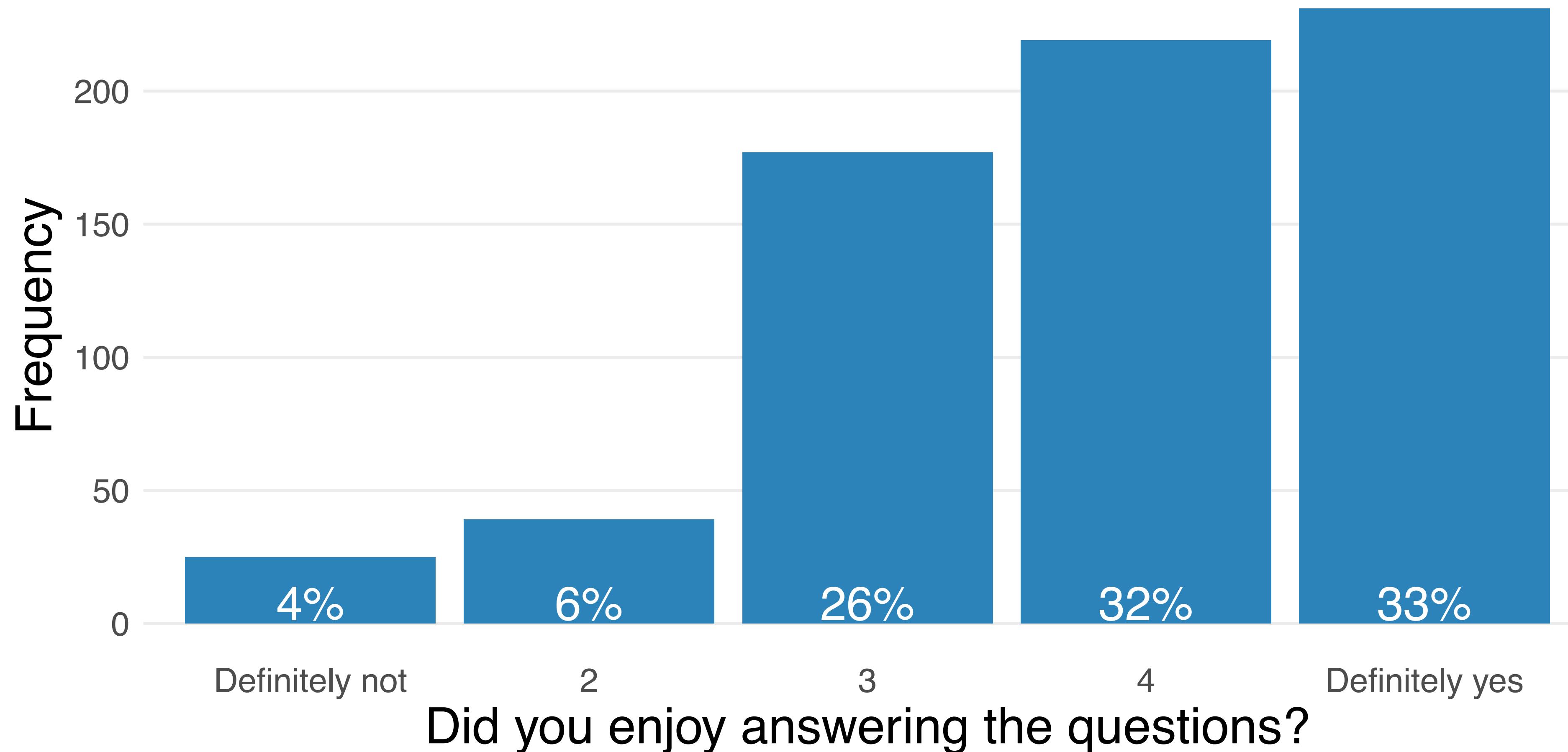
Data quality?

**Gensi useful for large(r) networks**

Improved user experience?

**65% of the respondents enjoyed filling in the survey,  
whereas 10% did not enjoy it so much**

N = 691



# Conclusion

**Collecting large personal networks feasible**

Not too time-consuming

Little missing data

Data quality?

**Gensi useful for large(r) networks**

Improved user experience?

**Valuable data**

## Programmed in JavaScript

### Pros

- “Light” (1 Mb)
- Works with any device with browser
- Can be implemented in other surveys
- Free

### Cons

- Not ideal for mobile phones (currently)
- Answers can't be saved for later use
- Being able to “go back” requires considerable coding

[www.tobiasstark.nl/GENSI](http://www.tobiasstark.nl/GENSI)

[www.gertstulp.nl/GENSI](http://www.gertstulp.nl/GENSI)

# Alternatives



Network Canvas

<https://www.networkcanvas.com/>

OpenEddi

<https://github.com/jfaganUK/openeddi3>

GENTLE

<https://www.gentle.eu/>

# PART I

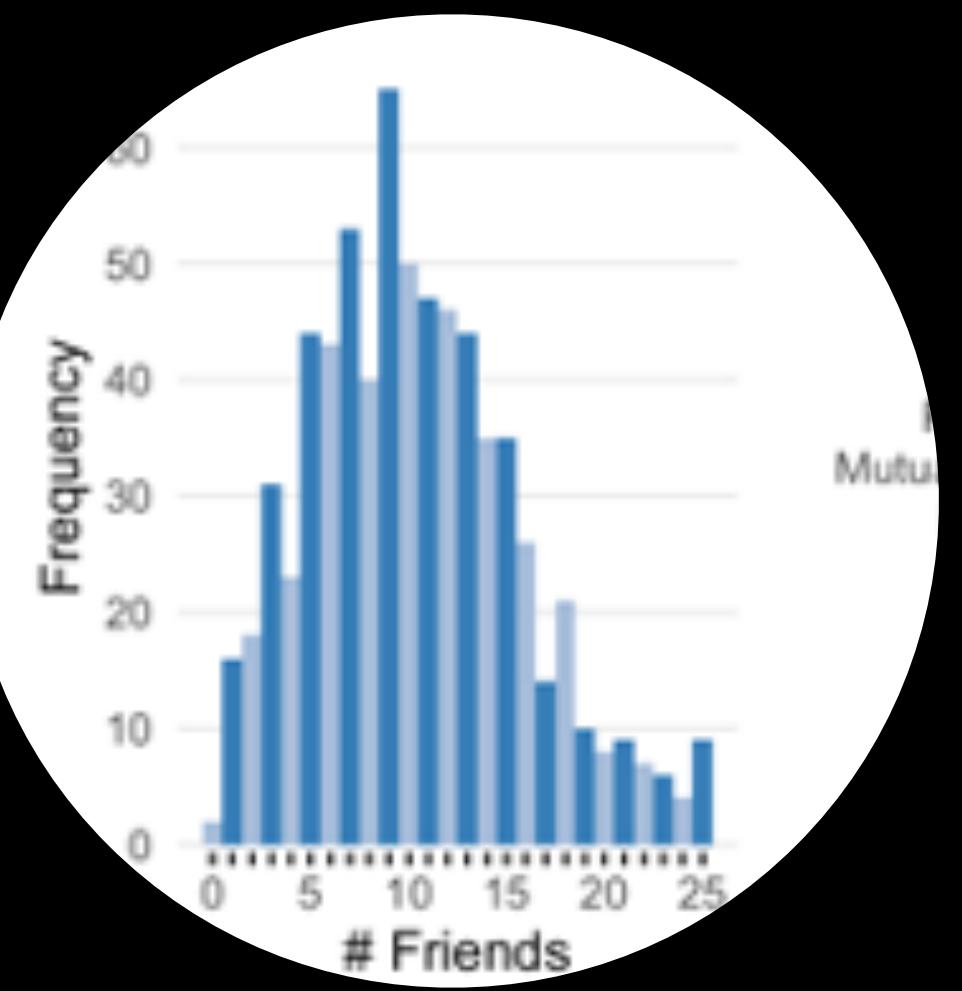


# PART II

Marie  
Stadel



# PART III



# Balancing Bias and Burden

**scientific interest**  
weak ties  
network structure  
network composition



**respondent burden**  
time  
boredom  
poor(er) response

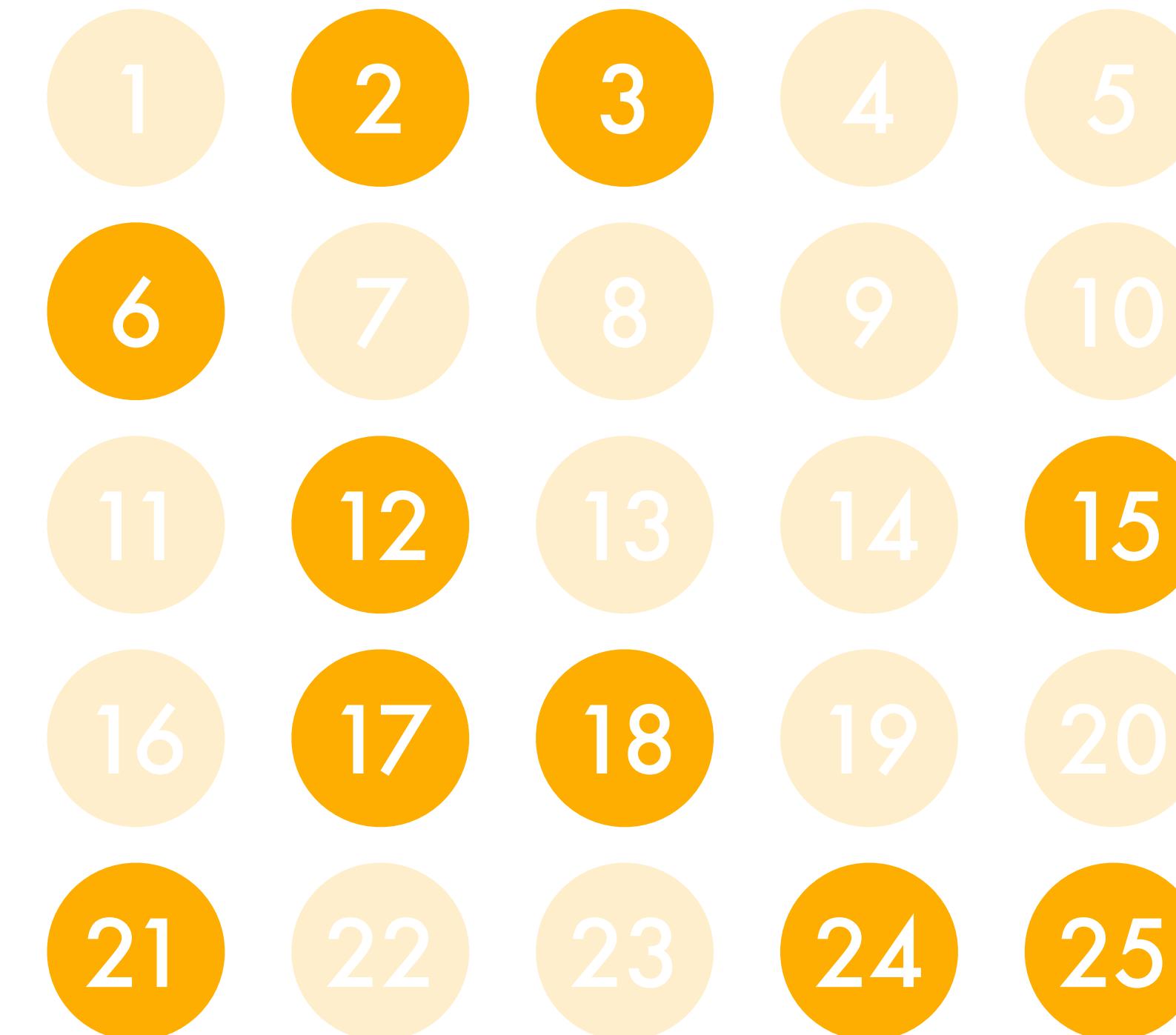
# Quantifying Bias

**evaluating two strategies to reduce burden  
by lowering number of alters**

1. dropping alters



2. random subset



# Quantifying Bias

## network structure

Density

Proportion of Isolates

Maximum Degree

Degree Centralisation

Betweenness Centralisation

Mean Betweenness Centrality

Maximum Betweenness Centrality

Closeness Centralisation

Mean Closeness Centrality

Maximum Closeness Centrality

## network composition

Average and SD of:

Alter age

Closeness

Frequency of F2F contact

Frequency of other contact

Education

Proportion of:

Female Alters

Friends

Kin

# Quantifying Bias

**<https://socialsciencemethods.shinyapps.io/BalancingBiasAndBurden>**

# Conclusions

**Lowering number alters increases bias**

15-20 'sufficient' for most measures

**Randomly sampling alters superior to dropping alters**

More consistent, less bias

**More bias in structural versus compositional measures**

Huge variation

# Practical Guide

## A potentially useful strategy:

- 1) Eliciting large number of alters
- 2) Alter-alter-ties for random sample
- 3) Alter attributes for smaller subsample

## Results can serve as guide for novel data collection

<https://socialsciencemethods.shinyapps.io/BalancingBiasAndBurden>

Carefully examine outcome

Amount of bias versus time gains

Time gains through different type of questions

# Practical Guide

## A potentially useful strategy:

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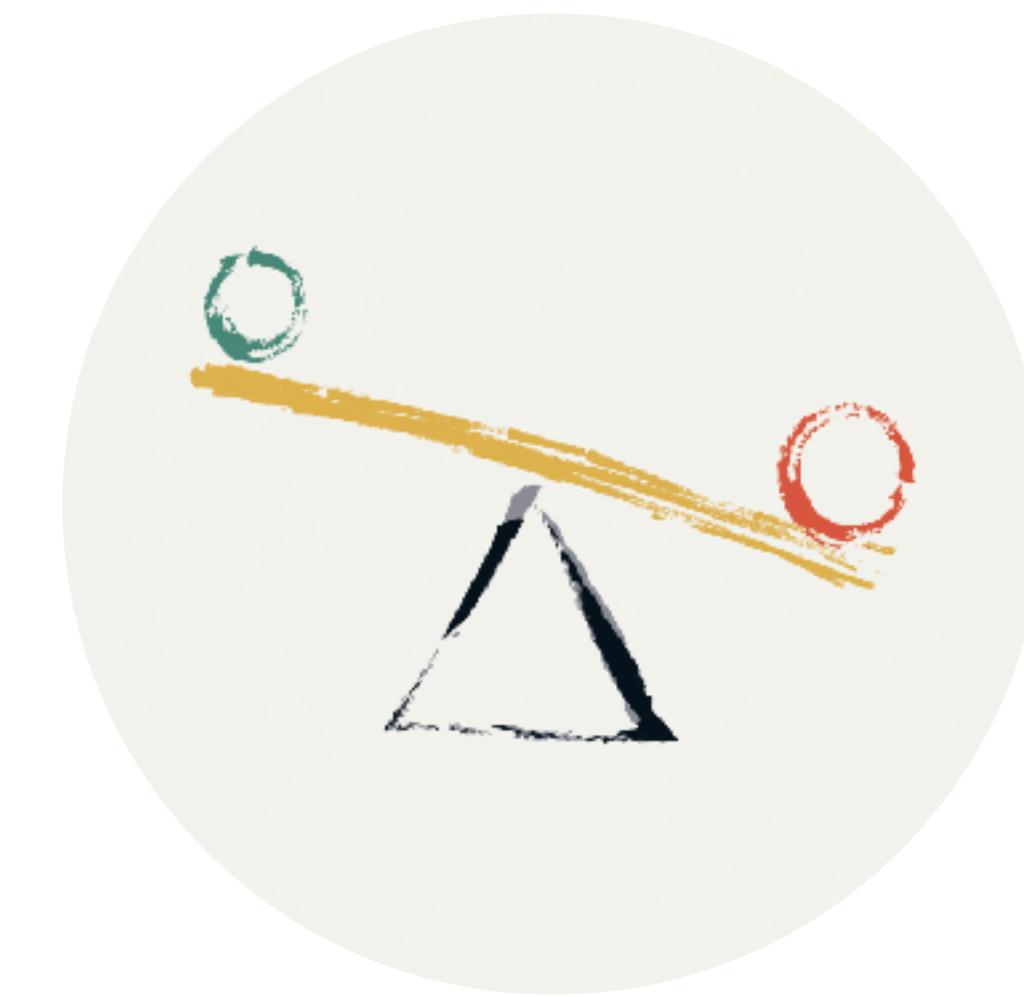


**Results May Vary**  
“representative”  
survey experience  
paid well

# PART I

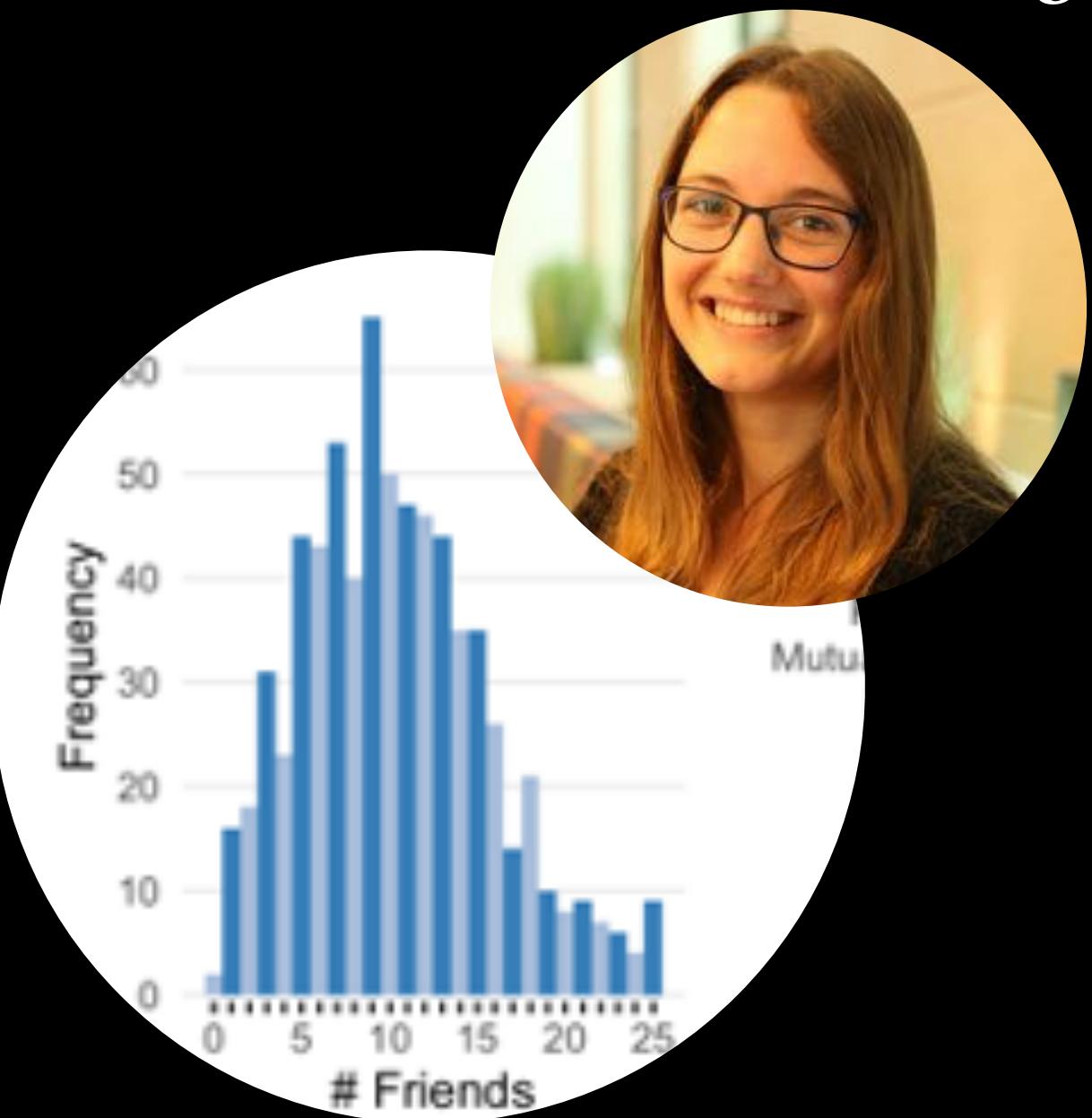


# PART II



# PART III

Vera  
Buijs



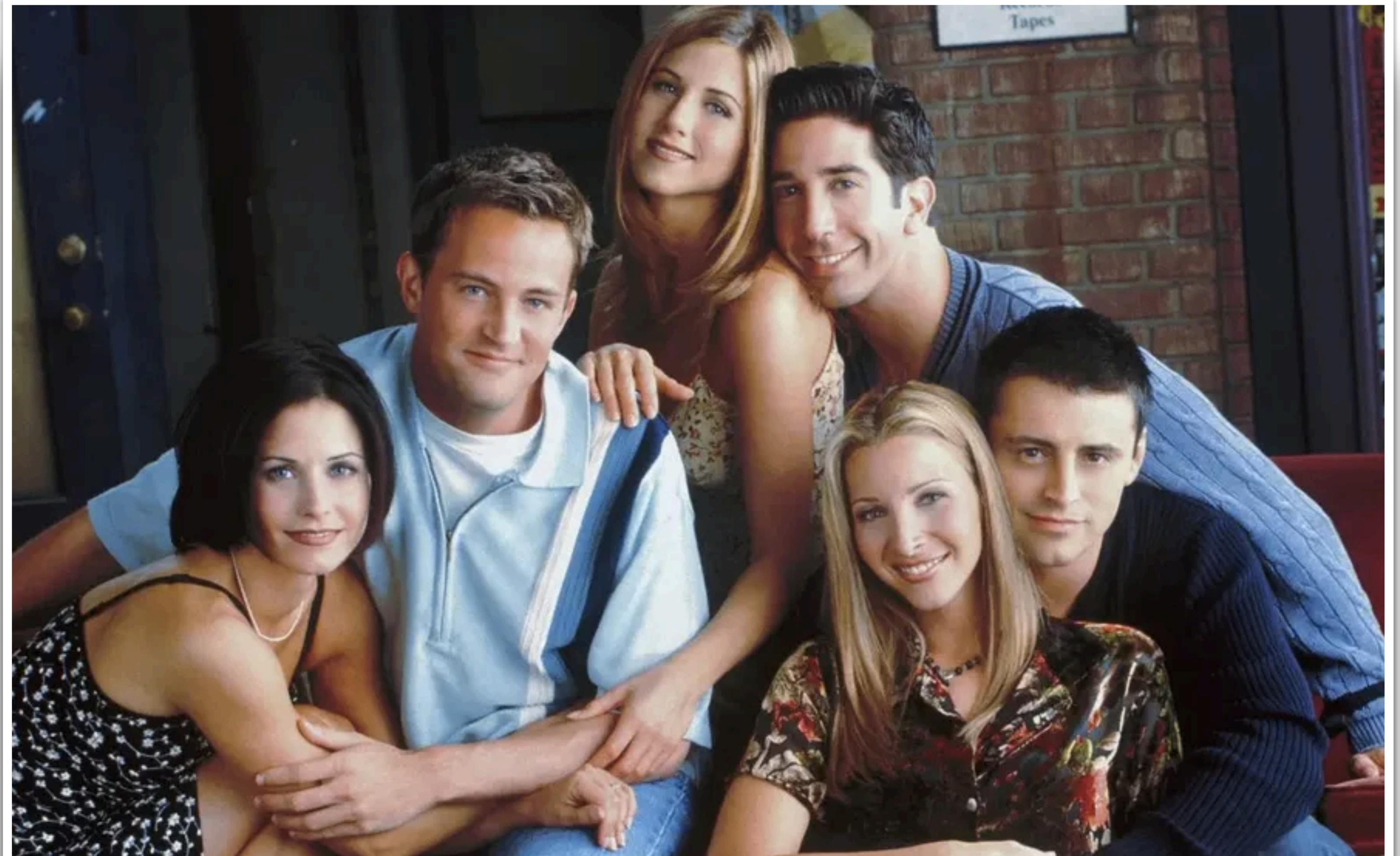
# Friends, Family, Family Friends

friends

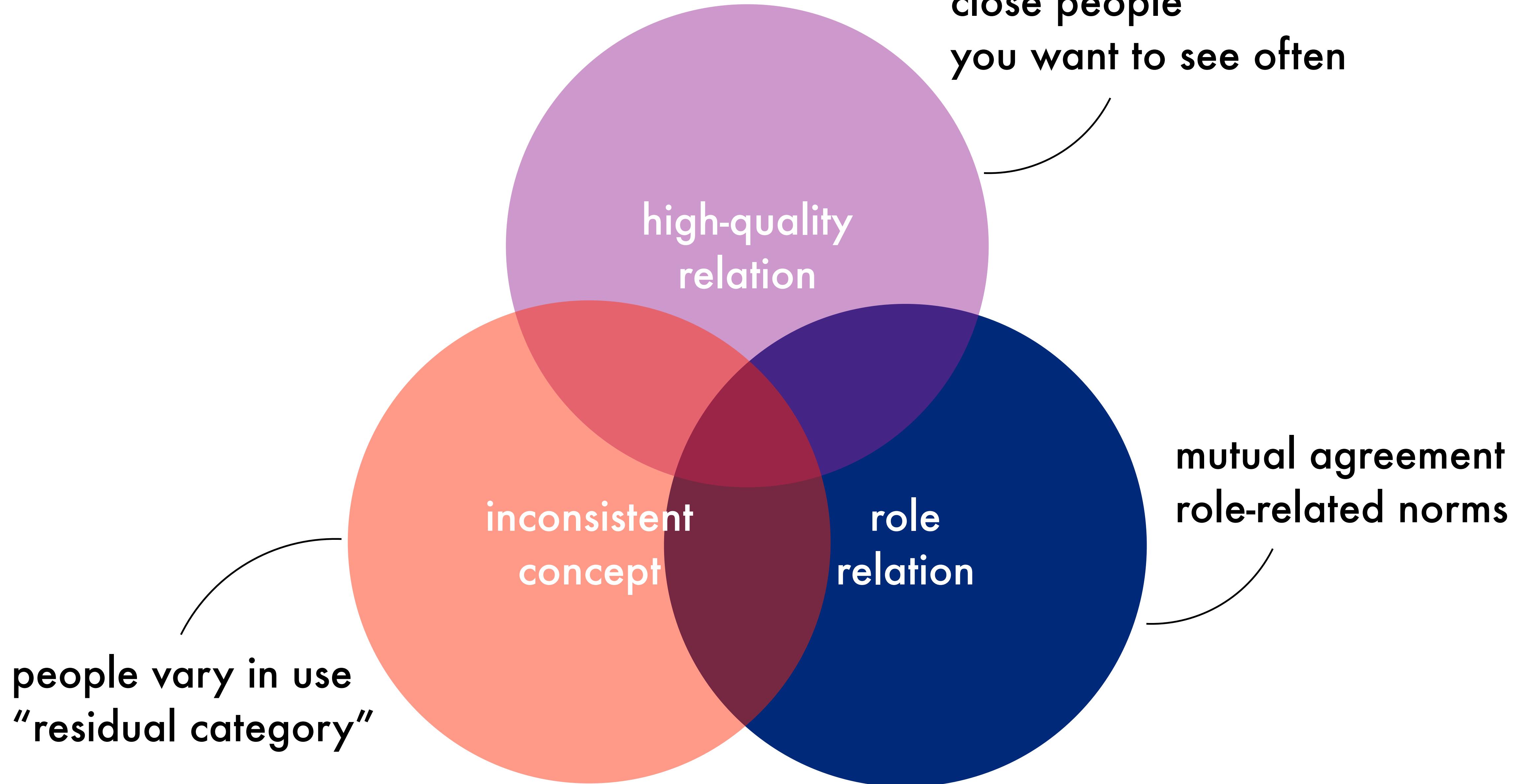
family

family of choice

close  
seen often  
long-term



# “Friends”



# AIM

predicting who is considered a friend among **kin** and **non-kin**  
using three measures of tie strength:

closeness

frequency of f2f contact

frequency of other forms of contact

# SETUP

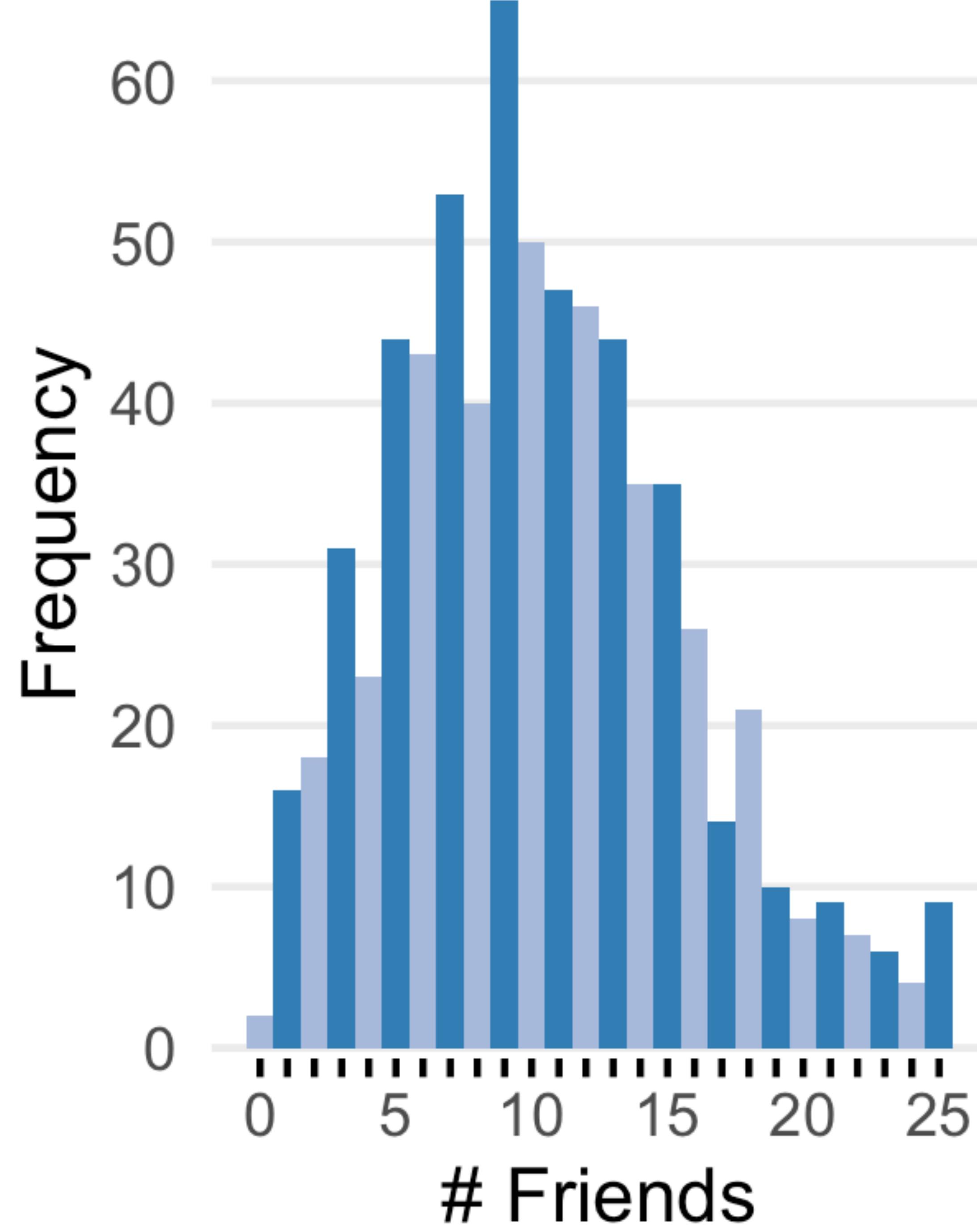
Personal characteristics (e.g. age of respondent)

Alters (25 names)

Origin of the relationship ("What is your relationship  
with <name> or how do you know him/her?")

Relationship characteristics (e.g. closeness to alter,  
per alter)

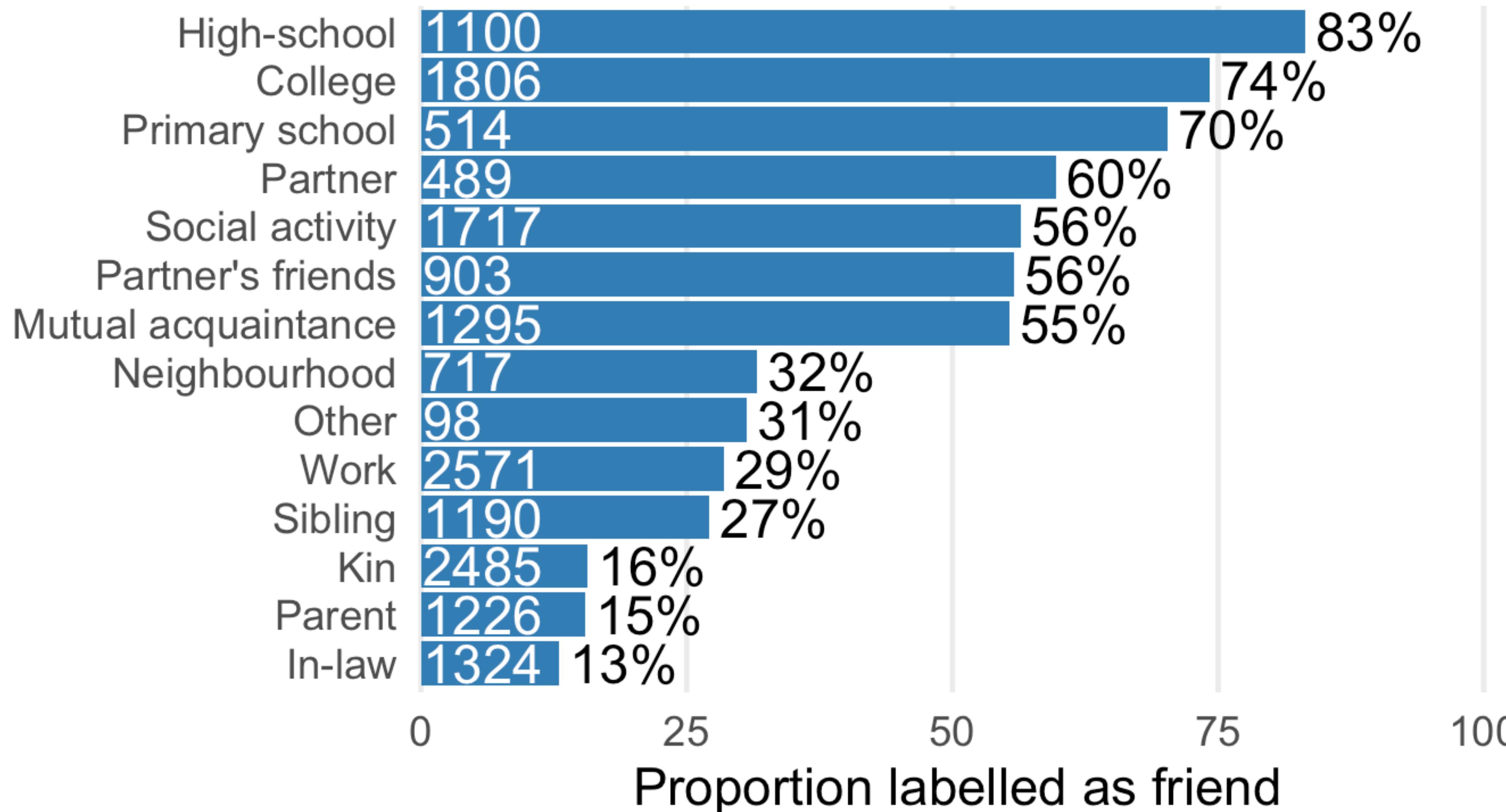
Friendship ("Which of these people do you consider a  
friend?")



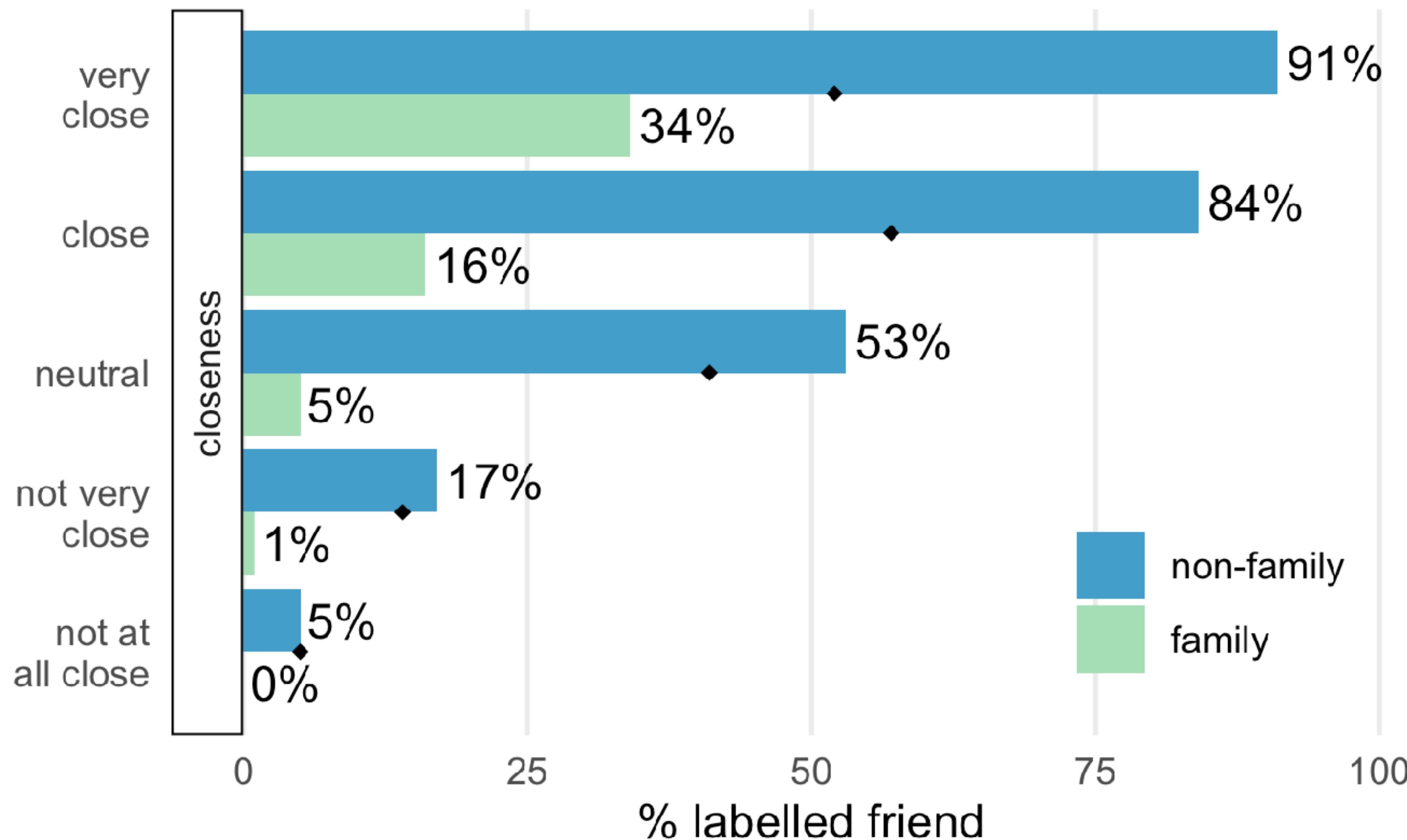
701 respondents reporting on  
17,525 alters classified  
7,331 as friends

on average 10 friends (SD = 5)

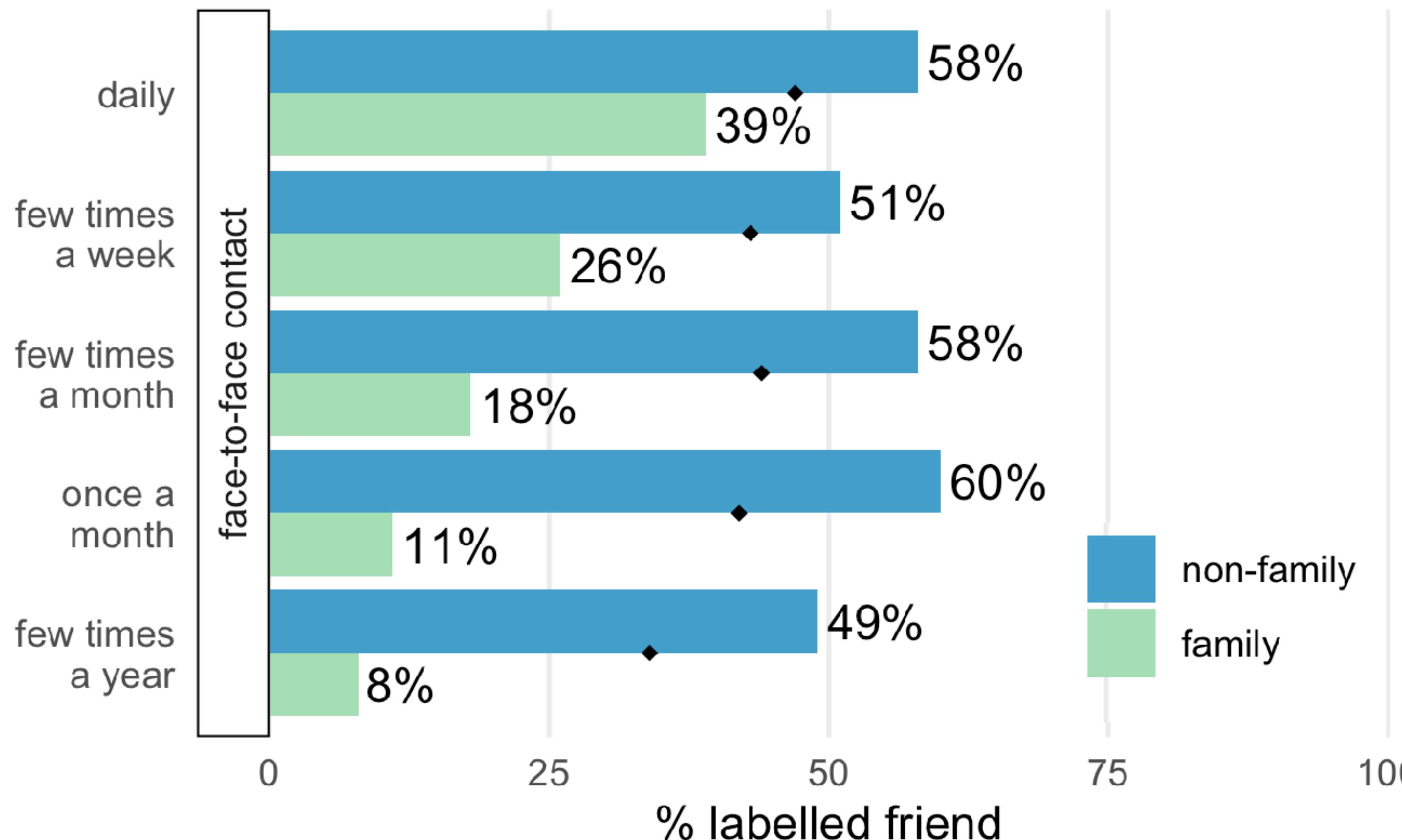
## Friend certainly not orthogonal to family



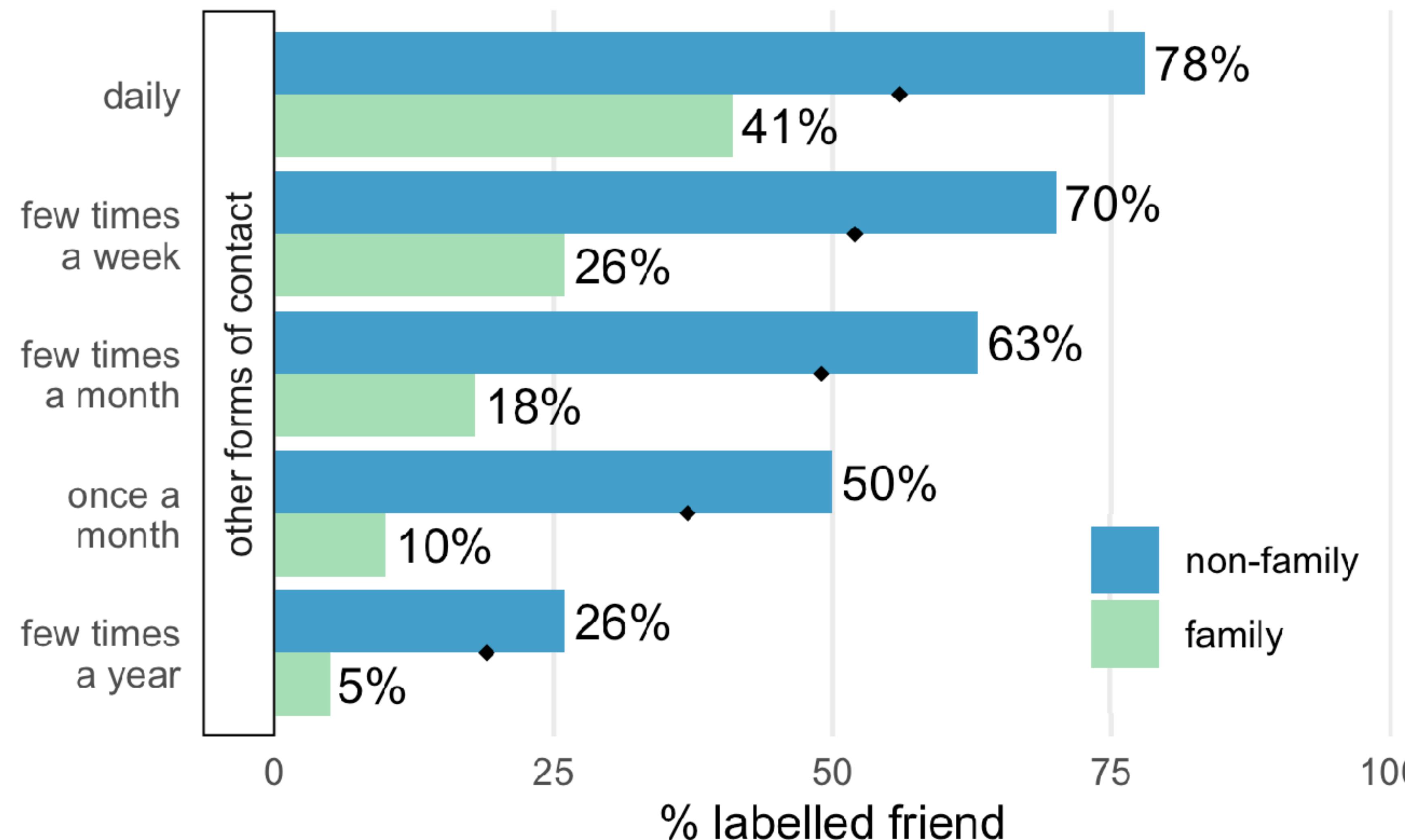
# Closeness strong predictor of friendship particularly in non-family, not close people also considered friends



## Frequency of face-to-face contact weaker predictor, different effect in family versus non-family



## Frequency of other forms of contact consistently predicts friendship, but much weaker than closeness



# Prediction

**Prediction accuracy of friendship based on measures of tie strength:**  
[closeness, frequency of f2f contact, frequency of other forms of contact]

Family



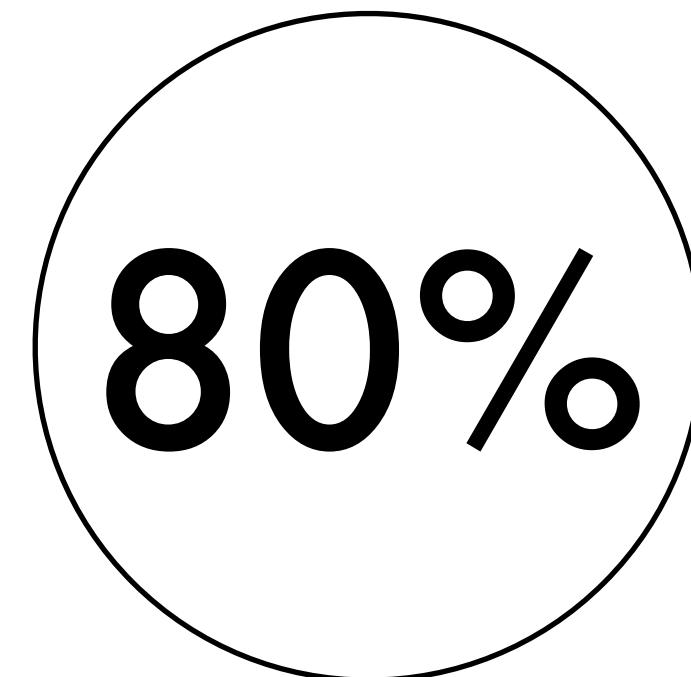
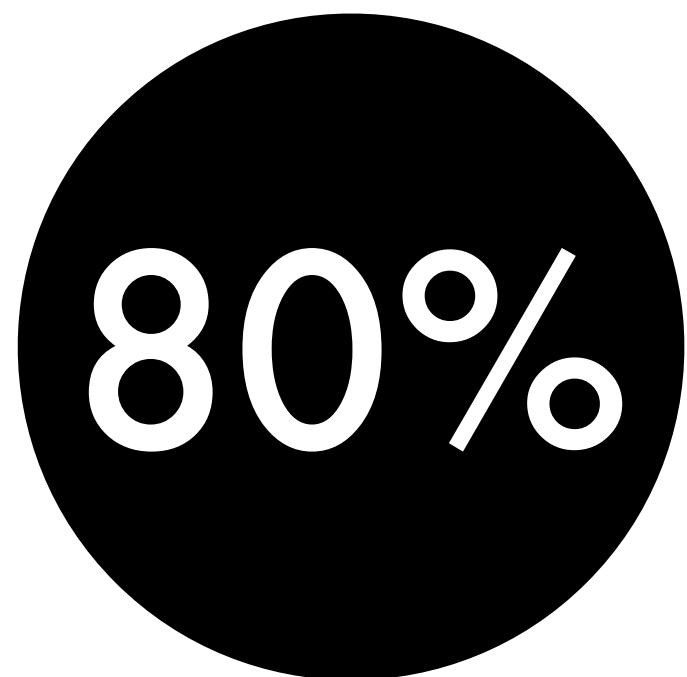
Non-family



# Prediction

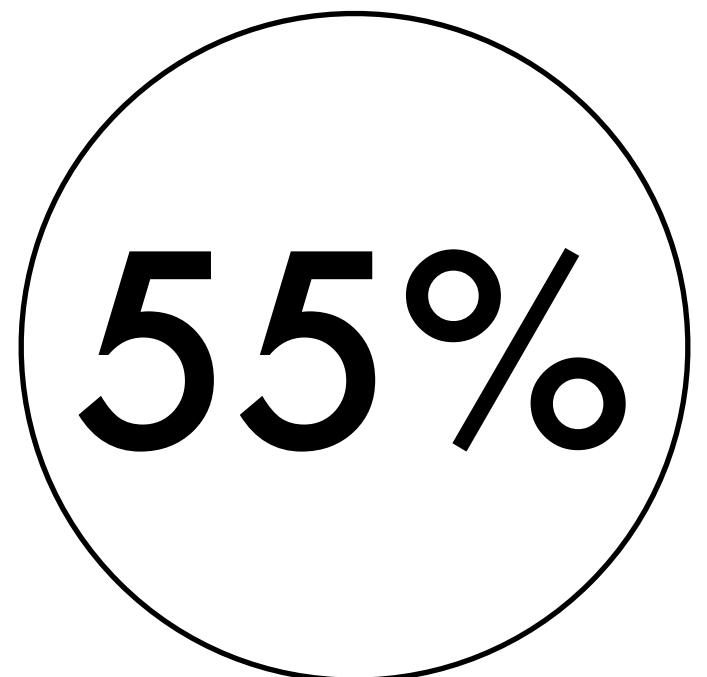
**Prediction accuracy of friendship based on measures of tie strength:**  
[closeness, frequency of f2f contact, frequency of other forms of contact]

Family



baseline

Non-family

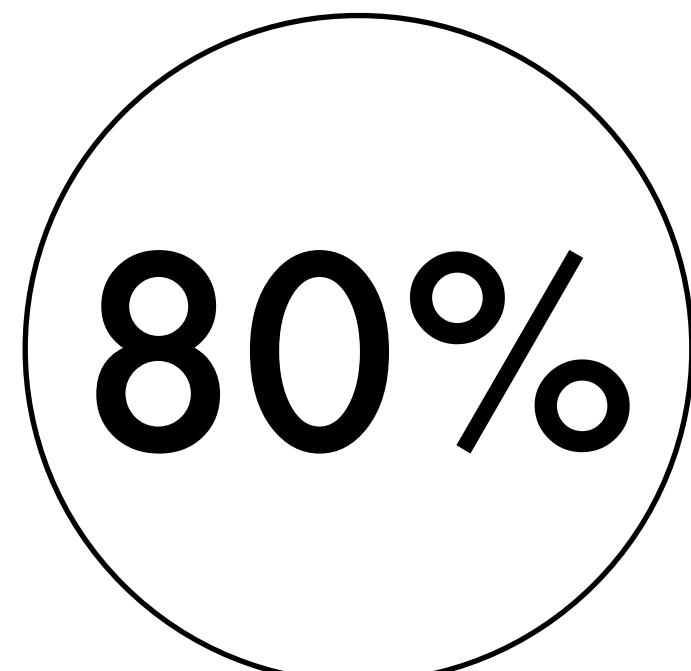


baseline

# Prediction

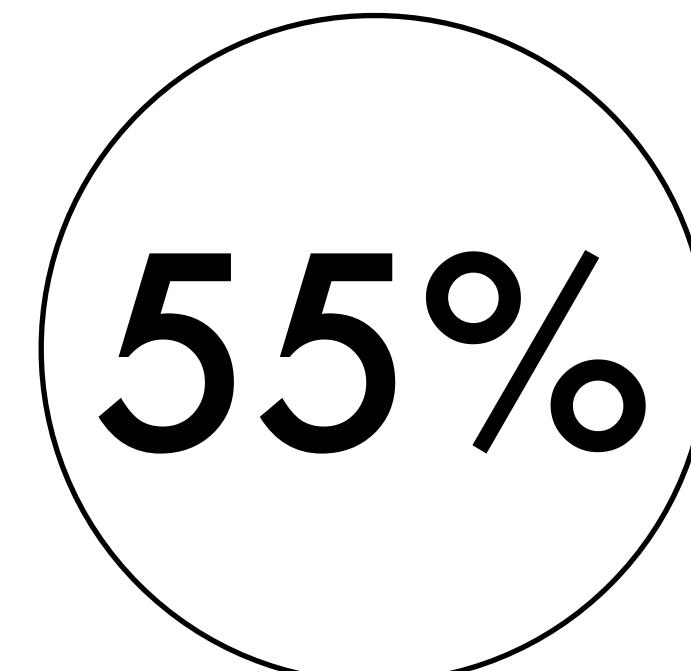
**Prediction accuracy of friendship based on measures of tie strength:**  
[closeness, frequency of f2f contact, frequency of other forms of contact]

Family



baseline

Non-family

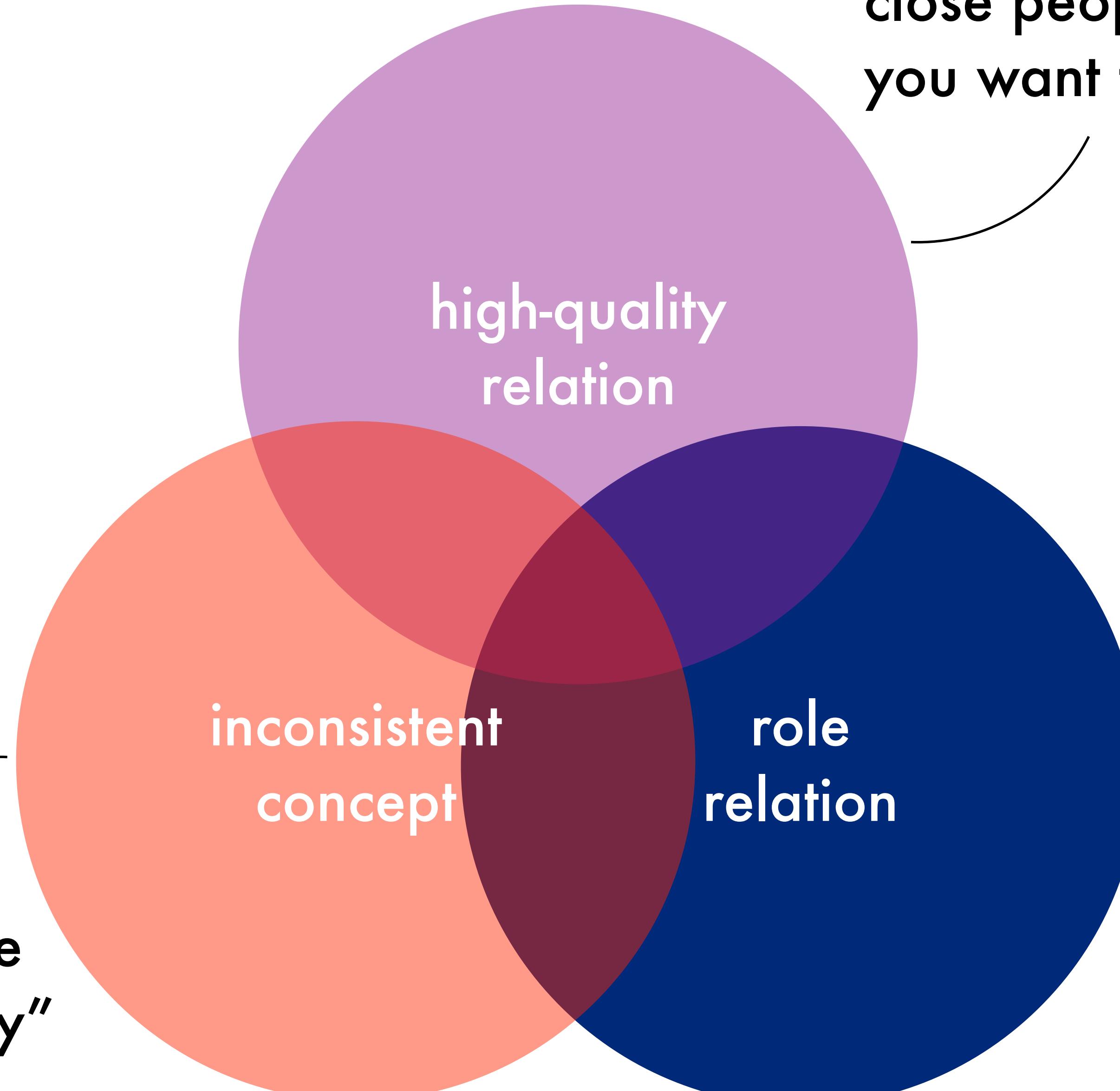


baseline

- 3 measures of tie strength!
- No family
- Homogenous sample

# “Friends”

people vary in use  
“residual category”



close people  
you want to see often



mutual agreement  
role-related norms

Kitts & Leal 2021  
[GO READ!]

# Asking for a friend...

“

**probably too vague a concept  
to be used in scientific research**

Claude Fischer (1982)

when using name generators:

- asking for friends might give you in-laws
- asking for family might give you friends
- asking for close, frequently seen people might not give friends

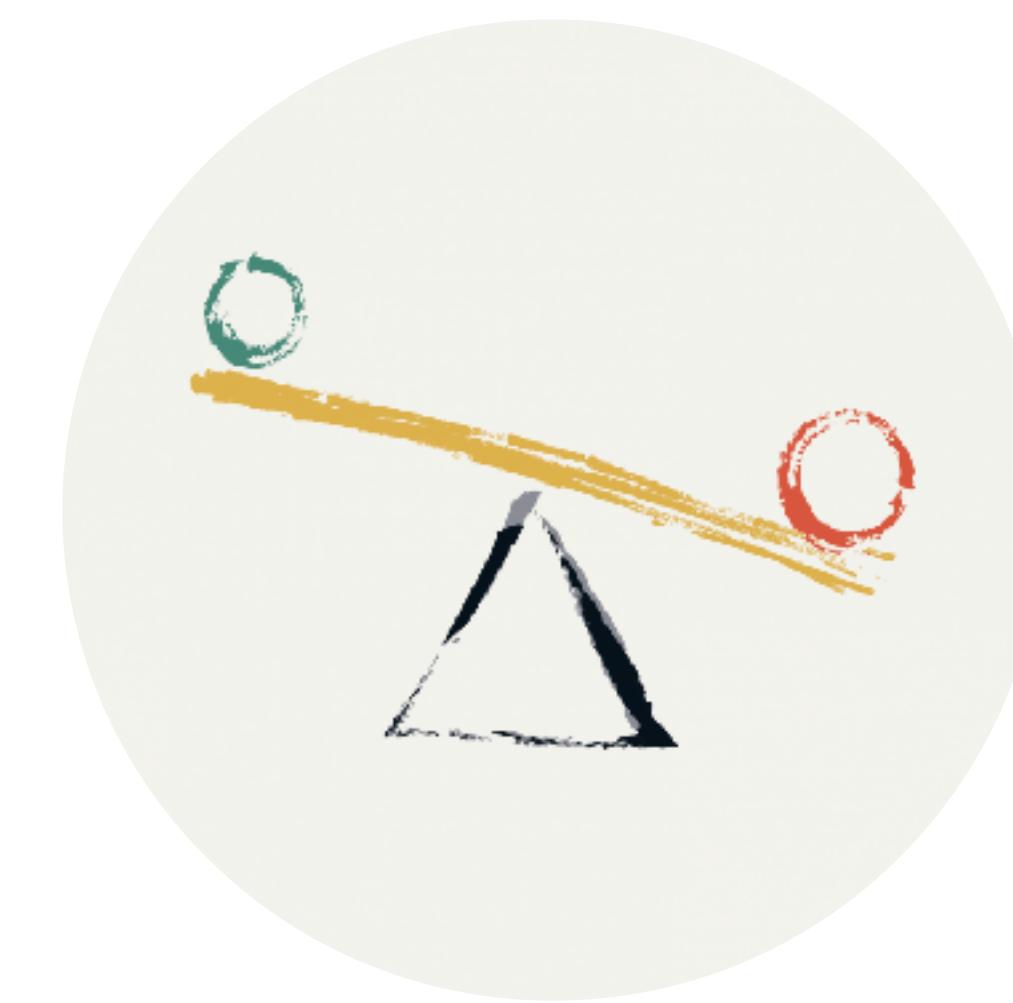
when used as classification:

- friend not orthogonal to family, neighbours, colleagues
- people vary in use, some unpredictable some predictable (e.g. age, sex)

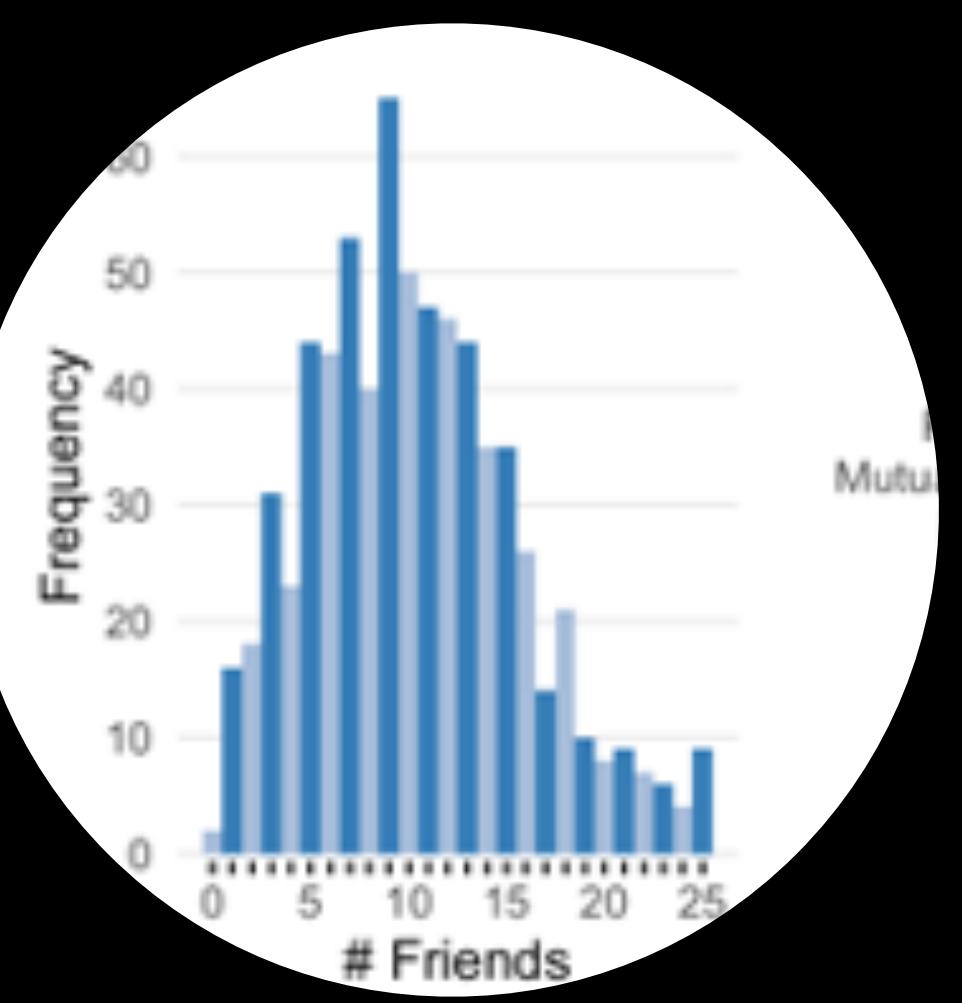
# PART I



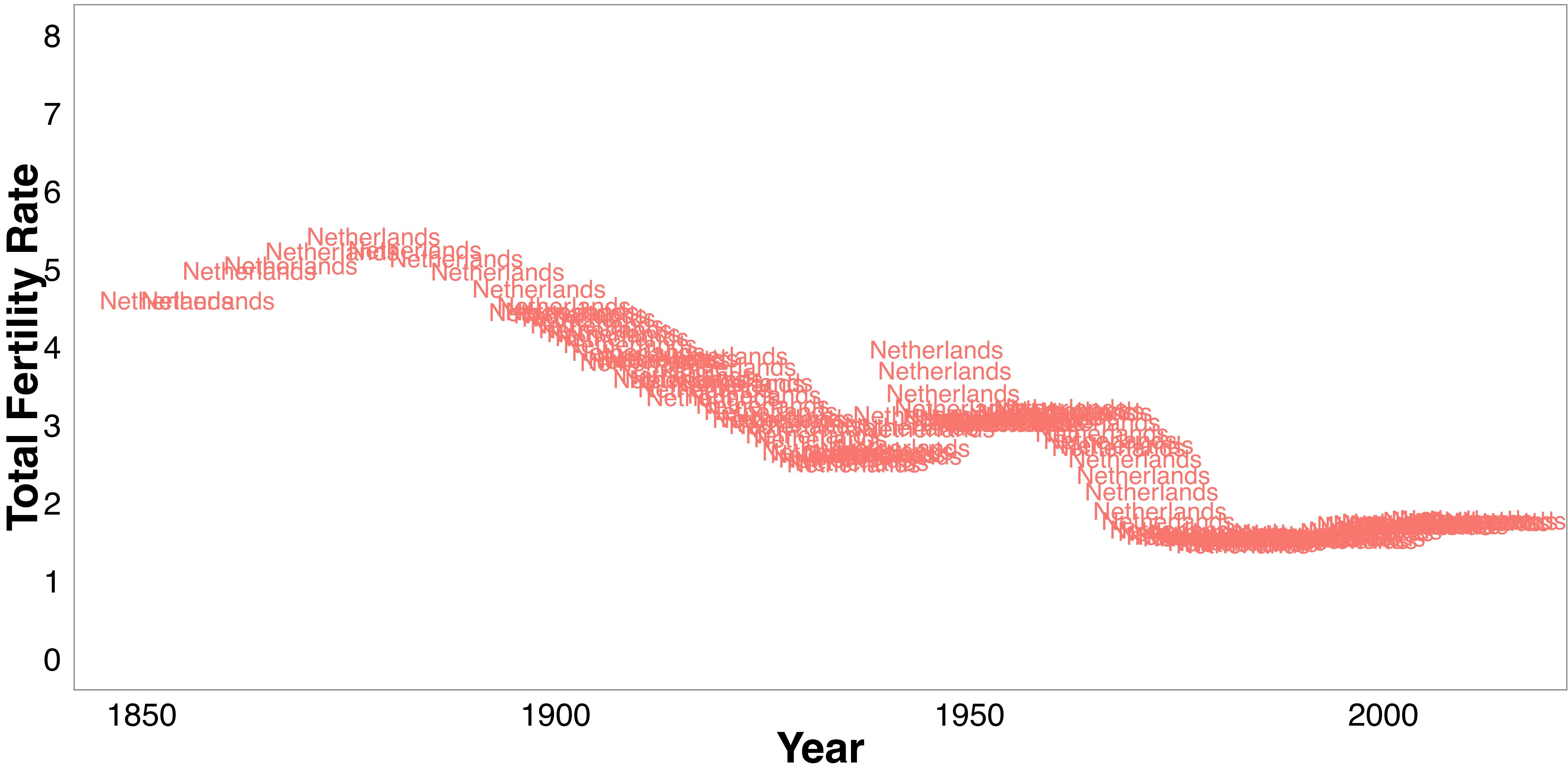
# PART II



# PART III



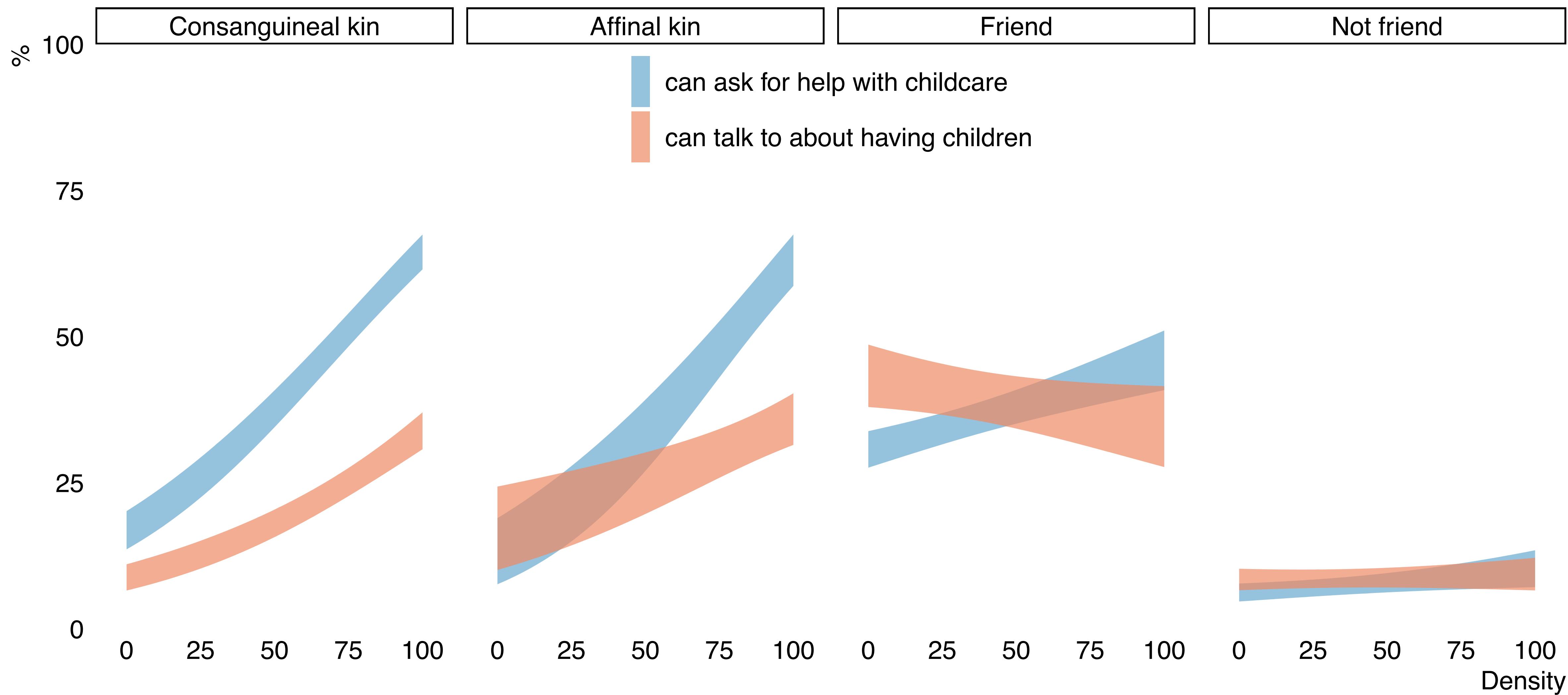
# Shrinking kin-networks



## Dense networks can provide more support, particularly in kin



# Dense networks can provide more support, particularly in kin



# methodological challenges and theoretical opportunities of collecting large personal networks in large samples

- Stulp, G.  
Collecting large personal networks in a representative sample of Dutch women. *Social Networks*
- Buijs, VL & Stulp, G.  
Family, and Family Friends: Predicting Friendships of Dutch Women.
- Stadel, M & Stulp, G. (2021).  
Balancing Bias and Burden in Personal Network Studies.
- Stulp, G & Barrett, L.  
Do data from large personal networks support cultural evolutionary ideas about kin and fertility?

