

# Social Network Analysis

## 3: Whole-network research design and network measurement

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Let's get practical!

Measurement in social network research

Background

## (Difficult) decisions

- ▶ Research question: Do friends' gender-based stereotypes affect female secondary school students' decisions on university career paths?
- ▶ Ego-network or whole-network?

Let's get practical!

# SOCIABLE research project

- ▶ Research question: Does complexity of personal networks ( $X$ ) mitigate older adults' cognitive decline ( $Y$ )?

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- ▶ Network-variable: complexity of personal networks
- ▶ Personal-network design

# Actual questionnaire

Name:

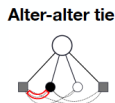
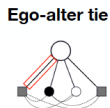
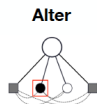
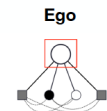
1. the members of your household
2. your children's and their spouses' names
3. other relatives
4. neighbours
5. former colleagues
6. civic organizations, church, volunteering
7. other friends or acquaintances
8. other

Name only those people with whom you have frequent contacts and perceive as important

For every nomination, report contact frequency: 1-8 scale



# Personal-network data collection



- ▶ Sampling a target population
- ▶ Name generators: questionnaire items that ask respondents to nominate other nodes of the network (in this case, *alters*)
- ▶ Questions need to stimulate *recall*

# A research question I

- ▶ *Social exchange theory* (Blau 1964)
  - ▶ Economic exchange vs. social exchange
  - ▶ Economic exchange = an exchange of any resources within the frame of a negotiated agreement
- ▶ Can economic exchange generate solidarity? (Bianchi 2020)
  - ▶ Solidarity: willingness to costly support another individual with no assurance of reciprocation (Lindenberg 1998)
- ▶ *Affect theory of social exchange* (Lawler 2001)
  - ▶ Yes! The interaction entailed by negotiation preceding economic exchanges allows parties to attribute the responsibility of the positive emotions caused by a successful exchange to the other party, which generates feelings of solidarity.

## A research question II

- ▶ *Reciprocity theory of solidarity* (Molm, Collett, and Schaefer 2007)
  - ▶ No! Economic exchanges reduce risk of exploitation through negotiated agreements, which does not allow parties to learn each other's trustworthiness, which is a pre-condition of solidarity
- ▶ Loosely bounding (informal) agreements allow trust to emerge, which could generate solidarity (Molm, Schaefer, and Collett 2009; Kuwabara 2011)

# Research design

- ▶ Ego-centric design:
  - ▶ ego-alter collaboration ties might relate to different social *foci*  
→
  - ▶ different histories →
  - ▶ different opportunities to evolve towards other relationships
- ▶ **Whole-network design:**
  - ▶ subjects need to have the same opportunities to develop trust and support relationships
  - ▶ this design ensures that all that happens in a social system is tracked
  - ▶ it is closer to lab conditions
- ▶ Limitations: case-based study, limited generalizability

## Case selection

From the theory to the field:

Theory	Field
economic exchange	professional collaboration
autonomy in partner selection	no formal hierarchy
no collective interest	no formal organization
risk of opportunistic behaviour	no strict contracts

# Preliminary qualitative fieldwork

- ▶ Aim:
  - ▶ Verifying case appropriateness
  - ▶ Building trust relationships with the subjects to maximise participation to the survey
- ▶ Method:
  - ▶ Uncovered participant observation (4 months upon agreement with management)
  - ▶ Semi-structured qualitative interviews to prominent persons (not included in the survey)
  - ▶ Access to internal survey data

# Survey

- ▶ CAPI (Computer-Assisted Personal Interviews) questionnaire
- ▶ Name generators on relationships
- ▶ Node attributes

# Hypotheses

1. Positive collaboration links are not correlated to support links
2. Trust links are positively correlated to support links



# Network variables

- ▶ **Outcome:** Social support
- ▶ **Predictors:**
  - ▶ Successful professional collaboration
  - ▶ Trust (as business partner)

# Name generators (outcome)

## Social support

### ► Material support

*Suppose that you need to solve some practical problems related to your daily life. In order to accomplish this, you need help from another person, who will provide time, effort, or tools. To which TaG member would you turn?*

### ► Emotional support

*Suppose that you have a problem related to your private life and you need to talk about it with someone for advice or comfort. To which TaG member would you turn?*

# Roster method

43. Immagini di avere un problema relativo alla Sua vita privata e di volere parlare con qualcuna/o per ricevere un consiglio o del conforto. A quali tra le/gli abitanti si rivolgerebbe? \*

Indichi almeno una persona.

*Seleziona tutte le voci applicabili.*

- ☐ Anna Cellini
- ☐ Marco Bazzani
- ☐ Claudio Martelli
- ☐ Parvinder Singh
- ☐ Joni Neri
- ☐ Paolo Bellan
- ☐ Serena Zampini

# Name generators (predictors) / I

## Positive collaboration

### ► Incoming commission:

*Have you ever been offered a commission or a collaboration opportunity by another TaG member? If so, please select their names only in the case you accepted the offer.*

### ► Outgoing commission:

*Have you ever offered a commission or a collaboration opportunity to another TaG member? If so, please select their names only in the case they accepted the offer. Please do not consider simple information sharing with other TaG members.*

## Name generators (predictors) / II

► Common projects:

*Have you ever started a common project with another TaG member (e.g., a new partnership, a joint venture, etc.)? If so, please select their names, independently of the outcome. Please consider only those cases that were regulated by an explicit agreement about time, resources and payment.*

► Partner evaluation:

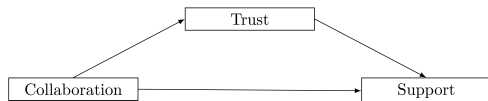
*Please consider all TaG members whom you have cited so far as collaborators (incoming or outgoing commissions, common projects). Based on your personal experience, how much would you recommend them as business partners to others? In case you collaborated with agencies, please rate only those people with whom you actually interacted.*

## Name generators (predictors) / 2

### Trust as business partner

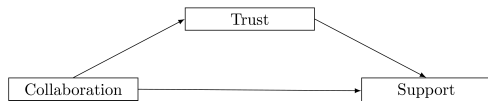
*Suppose that you needed to involve other TaG members in a new personal business project, potentially open to all competencies supplied within TaG. Whom would you trust as business partners? Please, do not consider the competencies needed for your current business.*

# Control variables



► node-level

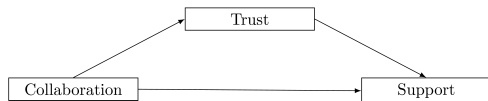
# Control variables



- ▶ node-level
- ▶ age

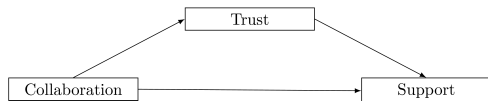


# Control variables



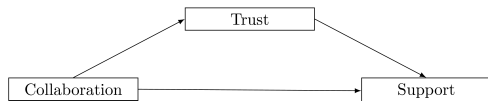
- ▶ node-level
  - ▶ age
  - ▶ seniority

# Control variables



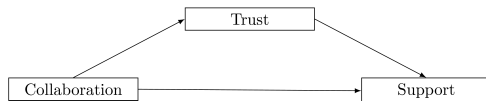
- ▶ node-level
  - ▶ age
  - ▶ seniority
  - ▶ gender

# Control variables



- ▶ node-level
  - ▶ age
  - ▶ seniority
  - ▶ gender
- ▶ dyad-level

# Control variables



- ▶ node-level
  - ▶ age
  - ▶ seniority
  - ▶ gender
- ▶ dyad-level
  - ▶ previous acquaintance

# Measurement in social network research

## Relational states vs. relational events

- ▶ Collaboration:
  - ▶ Because we were interested in the *actual* collaboration ties, we asked subjects for specific *events*, not their perception (which could have been biased by selective memory or feelings towards partners)
  - ▶ To handle *recall* problems, we reconstructed different types of collaboration events (preliminary study!) and asked them multiple name generators
- ▶ Support:
  - ▶ We were not interested in *actual* support events because these are conditioned to the need for support
  - ▶ Exchange events are conditioned not only on the receiver's desire but also on the giver's control of the exchanged resource

# Background

# Reading

Bianchi, Casnici, and Squazzoni (2018)

Borgatti, Everett, and Johnson (2013), Ch. 1

Robins (2015), Ch. 3, 5



# References I

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