Mechanisms, processes, network
Research design
Sociocentric vs. egocentric
Background

Social Network Analysis

2: Research design

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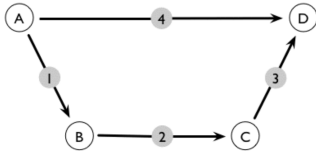
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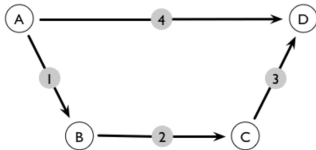Sociocentric vs. egocentric
Background

Social mechanisms

Coleman (1994)

- ▶ Social network research doesn't commit to any particular paradigm
- ▶ Basic assumption: actors' intentionality
- ▶ *Analytical* approach to sociology: Explaining macro-level social phenomena through micro-level causal mechanisms (Hedström and Bearman 2009)
- ▶ Network analysis: testing *relational* processes implied by hypothetical causal mechanisms
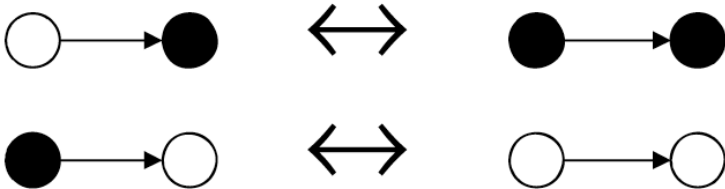- ▶ Mechanisms > relational processes (behaviour)

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Network processes

▶ Social *influence*: Networks shape actors' opportunities to:
  ▶ interact with others
  ▶ access resources controlled by others (e.g., material goods, information), inc. being exposed to others' behaviour, opinions, beliefs, values (culture)
▶ Social *selection*: Actors choose interaction partners among those available according to their:
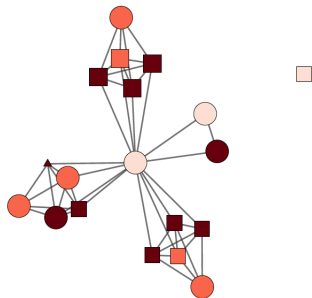 ▶ beliefs
  ▶ desires
  ▶ preferences
  ▶ . . .

Research design

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Network as *explanans*

- ▶ Social networks can be studied as predictors (X) of certain outcomes (Y)

- ▶ Estimating the effect of actors' social network positions (X_i) on other individual properties (Y_i)

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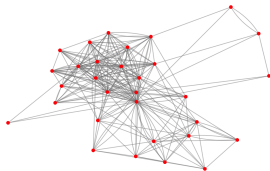Sociocentric vs. egocentric
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Complexity of personal networks on cognitive decline

Bianchi et al. (2023)

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

▶ Mechanism: Interacting with people of different clusters implies behaving within different normative and cultural frames, which keeps the brain active and mitigates older adults' neurophysiological ageing

▶ Hypothesis: Negative effect of number of clusters on MMSE (Mini-Mental State Examination)

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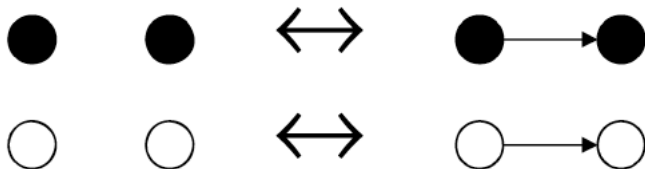Research design
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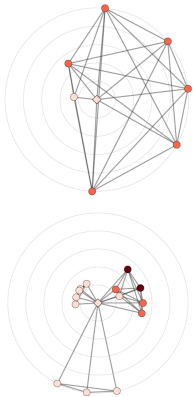# Peers' influence on academic aspirations

Vit et al. (2023)

▶ Research question: Do high-school students adjust their academic aspirations to their school friends'?

▶ Mechanism: Teenagers are especially sensitive to peer pressure from their classmates, which pushes them towards conformity to avoid psychological stress and the risk of being ostracized, which then brings them to adapt their aspirations to their peers

▶ Hypothesis: Positive effect of average aspiration level in reading and maths of one's school friends on own aspirations over time

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Networks as *outcomes*

- ▶ Social networks can be explained as outcomes (*explanandum*) (Y) of certain individual-level predictors (X)

- ▶ Estimating the effect of actors' properties (e.g., physical traits, beliefs, preferences, behaviour, etc.) (X_i) on their network position (Y_i)

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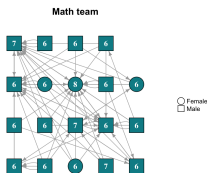**Research design**
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Age and intergenerational contact

Vacca et al. (2023)

▶ Research question: Does age increase the likelihood of intergenerational contacts?

▶ Mechanism: High mortality of same-age friends and acquaintances increase the relative degree of opportunities to physically interact with younger-generation individuals.

▶ Hypothesis: Positive effect of age on the proportion of younger contact partnres in older adults' personal networks

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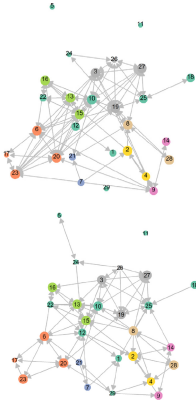Background

Gender and STEM ability attribution
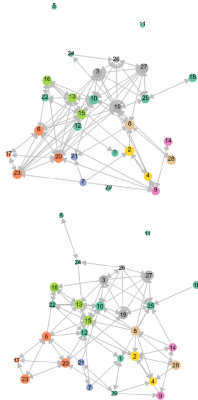

De Gioannis, Bianchi, and Squazzoni (2023)

▶ Research question: Do high-school students underestimate females' abilities in maths?

▶ Mechanism: Perception of social status based on unobservable skills is affected by stereotyped beliefs, which leads high-school students to underestimate females' abilities in maths

▶ Hypothesis: Negative effect of being female on the net likelihood of being nominated as maths expert, despite actual performance.

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More complex design?

▶ Bianchi, Casnici, and Squazzoni (2018)

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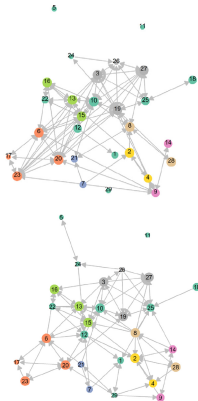Research design
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More complex design?

- ▶ Bianchi, Casnici, and Squazzoni (2018)
- ▶ Can support expectations emerge from professional collaboration relationships?

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More complex design?

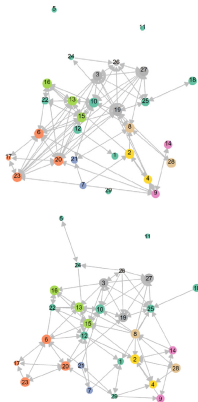

- ▶ Bianchi, Casnici, and Squazzoni (2018)
- ▶ Can support expectations emerge from professional collaboration relationships?
- ▶ Are networks predictors or outcomes? Is there anything as a purely structural process?

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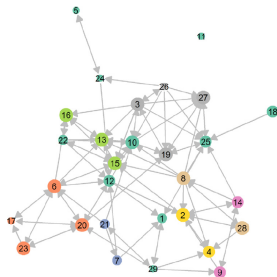Sociocentric vs. egocentric
Background

More complex design?

- ▶ Bianchi, Casnici, and Squazzoni (2018)
- ▶ Can support expectations emerge from professional collaboration relationships?
- ▶ Are networks predictors or outcomes? Is there anything as a purely structural process?
- ▶ Mechanism: Risky, informal economic exchange allows actors to learn each other' trustworthiness, which eventually generates expectations of receiving social support (Molm, Collett, and Schaefer 2007)
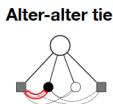
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Whole-network design

Bianchi, Casnici, and
Squazzoni (2018)
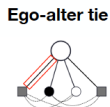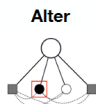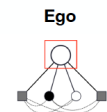
▶ Synonims: *full-network* or
sociocentric design
▶ Studying the set of links among all
pairs of nodes in a given set
▶ Problem: network boundaries!

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Personal-network design

Vacca et al. (2023)

▶ Synonims: *ego-centred* or *egocentric* design or *ego-network*
▶ *Personal network*: the set of links that a focal actor has with a set of other actors
▶ A *personal-network study* is the study of the personal networks of a **sample** of *egos*

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Reading

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

Robins (2015), Ch. 3-5

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Bianchi, Federico, Matteo Piolatto, Alessandra and Marengoni, and Flaminio Squazzoni. 2023. 'Structure of Personal Networks and Cognitive Abilities: A Study on a Sample of Italian Older Adults'. *Social Networks* 74: 71–77.

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Molm, Linda D, Jessica L Collett, and David R Schaefer. 2007. 'Building Solidarity Through Generalized Exchange: A Theory of Reciprocity'. *American Journal of Sociology* 113 (1): 205–42. https://doi.org/10.1086/517900.

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Vit, Eszter, Federico Bianchi, Marco Castellani, and Károly Takács. 2023. 'Friends Can Help to Aim High: Peer Influence and Selection Effects on Academic Ambitions and Achievement'. *Under Review*.