# A SOCIO COGNITIVE PERSPECTIVE TO NETWORK SCIENCE

caterina suitner

Dipartimento di Psicologia dello Sviluppo e della Socializzazione
caterina.suitner@unipd.it

Networks

- *"network, nodes, links" = technology*
- *"graph, vertices, edges" = mathematics*
- *"brain area, neurons, synapsis"= neuroscience*
- *"group, persons, relations" = social psychology*
- *" mental representation, concepts, associations" = social cognition*
- *"discourse, words, sentences"= language*

nodes (or vertices)
edges (or links)

equality
gender
violence
right
girl
woman
world
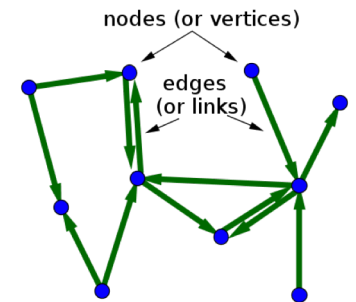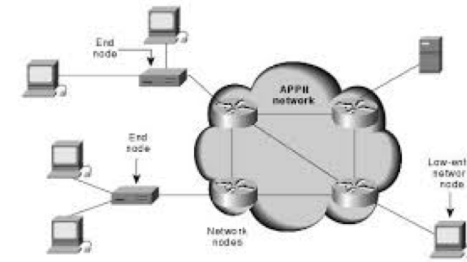
According to Gordon Allport's classic definition, social psychology is an attempt to understand and explain how the thought, feeling, and behavior of individuals is influenced by the actual, imagined, or implied presence of others.
Allport, 1954

Social cognition is a social psychological approach that focuses on the processes, namely on HOW people elaborate, store and apply information about other people and social contexts
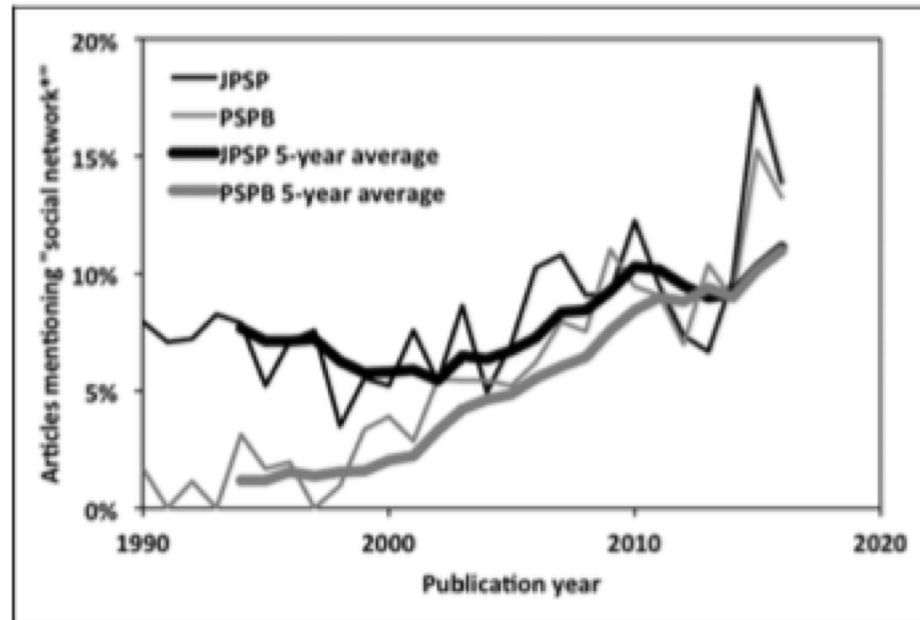
Figure 1. Percentages of *JPSP* (black) or *PSPB* (gray) articles mentioning "social network" or "social networks" over time. Thin lines show raw data; thick lines show 5-year moving averages (e.g., 1994 reflects the average of 1990–1994). *JPSP* = *Journal of Personality and Social Psychology; PSPB = Personality and Social Psychology Bulletin.*

- Because social networks represent relationships (ties) among people (nodes) in groups, they should interest both social and personality psychologists.

- However this type of analyses is not very popular in this field (Clifton & Webster, 2017).

RESEARCH   RESEARCH METHODS + THEORY

QUANTITATIVE

QUALITATIVE

Quantitative approaches tend to look at issues broadly but shallowly, effectively averaging out complexity to make generalizations across cases.

Qualitative approaches tend to look narrowly but deeply, yielding a weaker argument for generalization to other cases but a stronger one for truly understanding the determinants of behavior in a particular case

Social networks and a relational approach promise a way to bridge the gap between scholars and employ insights derived from deep qualitative study in quantitative analysis. By examining the role that the structure of interactions between actor we can better understanding the behavior of individual actors, and, therefore, in aggregate behavior

Mention your main sources of information

- Who have you spoken with about politics?

- List the last 6 people you have spoken to.

Mention your main sources of information

- Do these poeple know each other? Make a matrix

	Giulia	Marc	Oliver	Thomas	Sarah	Anna
Giulia	X					
Marc	0	X				
Oliver	1	0	X			
Thomas	1	1	0	X		
Sarah	1	1	1	0	X	
Anna	0	0	0	1	1	x

Count the 1_s (min=0, max=15)

Mention your main sources of information

■ Mark in RED those who share your political ideology (rough categorization!)

	Giulia	Marc	Oliver	Thomas	Sarah	Anna
Giulia	X					
Marc	0	X				
Oliver	1	0	X			
Thomas	1	1	0	X		
Sarah	1	1	1	0	X	
Anna	0	0	0	1	1	x

Count the 1_s separately for reds and blacks

- How many red (same political standing) names do you have in your network?

- How many people in your network know each other? (number of ones?)

- Is this number equal for red (same) and black (different political standing)?

Social capital

- Coleman (1990) defined social capital as any aspect of social structure that creates value and facilitates the actions of the individuals within that social structure.

- Which is the best position?

- And Why?

A

B
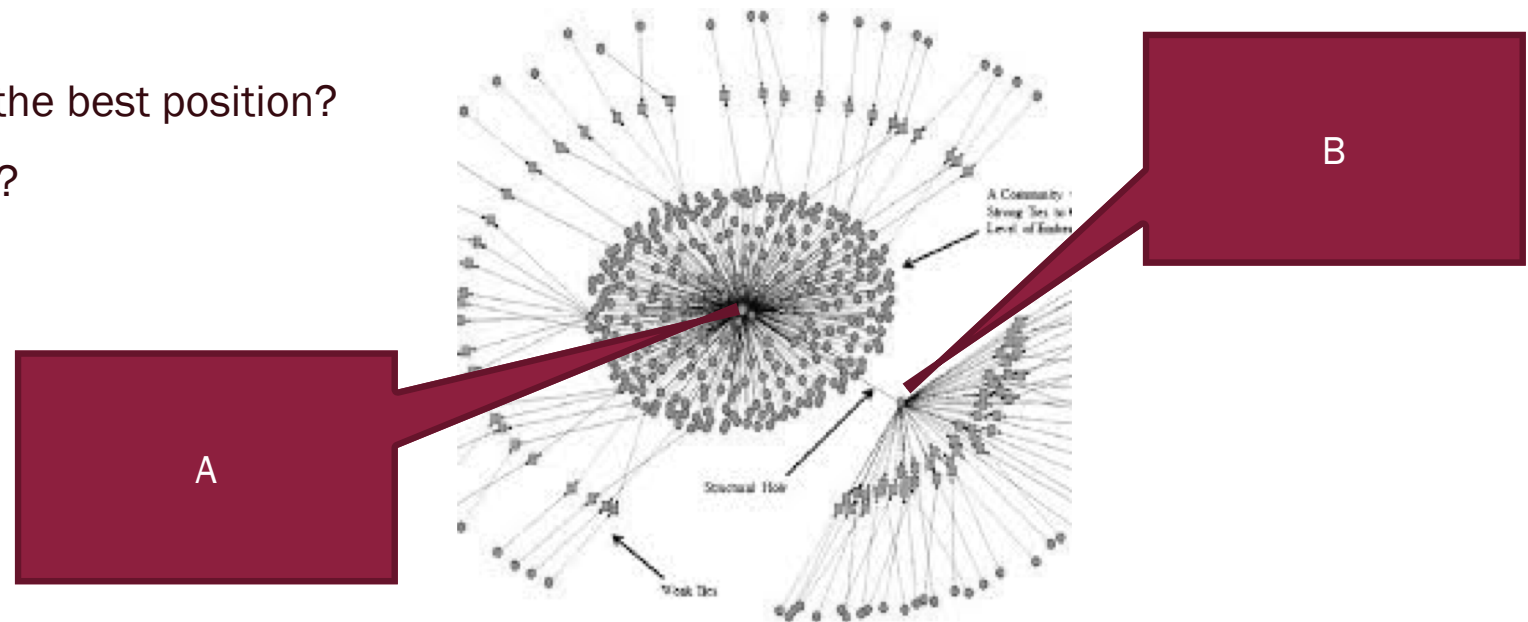
Social capital

Bonding Social Capital

strongly tied individuals, such as family and close friends

little diversity
stronger personal connections

-> provides strong emotional and substantive **support** and enables **mobilization**.

Bridging social capital

individuals from different backgrounds make connections between social networks

tentative relationships
broader social horizons or world views

-> open up opportunities for information or new resources.

Social Group: entitativity

- **Entitativity:** Perceived unit (which distinguishes a GROUP from an aggregate of people)

- Property that makes a group appear as a coherent, distinct and unitary entity.

- A highly entitative group is relatively **homogeneous** (nodes resemble each other) and has an **evident internal structure** (ties) and has clear boundaries that distinguish it from other groups.

High (manipulated) group entitativity....

- people **identify** more strongly with highly entitative groups because these groups contribute more easily to the individuals' <u>self-esteem and self-efficacy</u> and provide them with a clear understanding of who they are and of their relationships with others, satisfying their <u>needs for inclusion and differentiation</u> (Yzerbyt, et al., 2000)

- High group entitativity increases intergroup bias→ tendency to favor the own group over the other group (Mlisky, 1993; Castano et al. 2002)

- High (vs. low) group entivatity increased behavioral and attitudinal bias (Gaertner and Schopler, 1998) i.e. behaviors of group members are explained not taking into account situational features, but rather using the group as the main cause

Ostracism

to be excluded and ignored
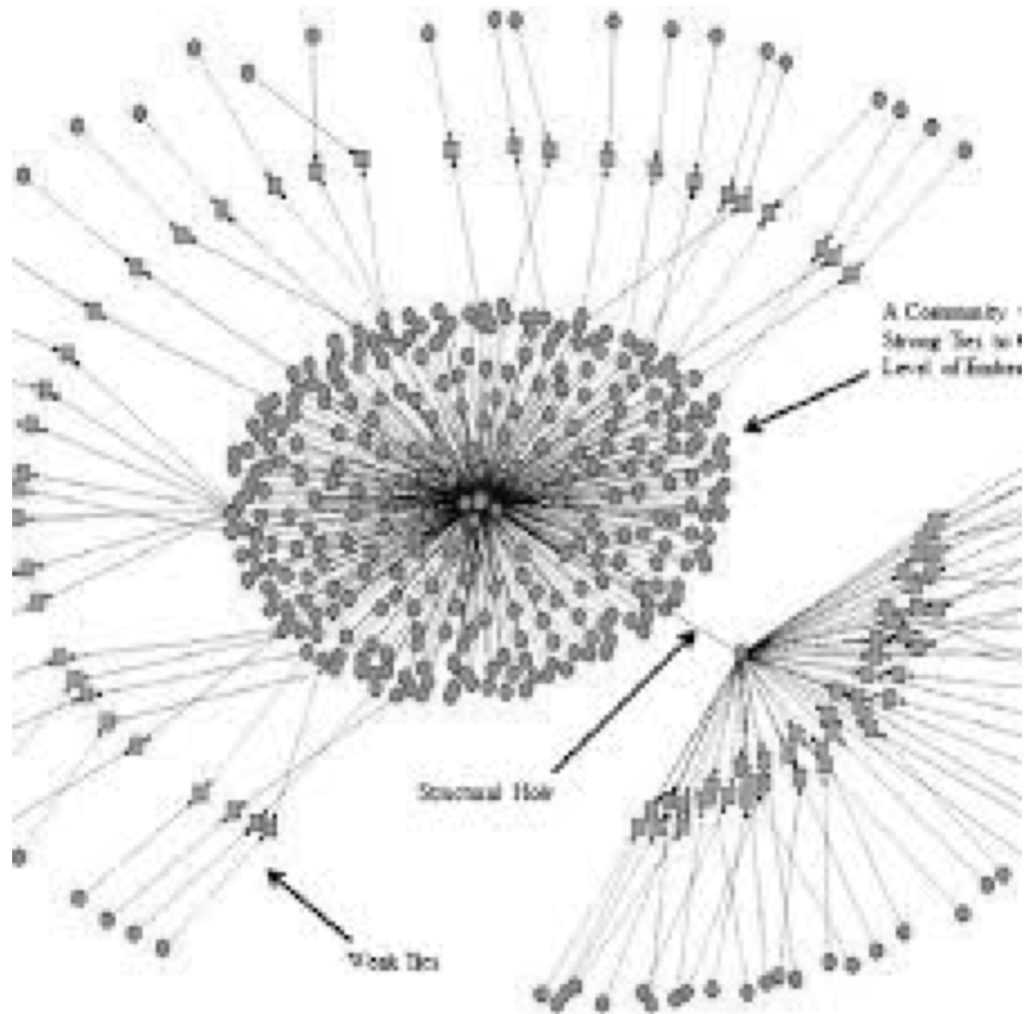
Ostracism

Ostracism often pervades our interactions with loved ones, coworkers, and friends. Research suggests that ostracism can have negative physiological, psychological, and behavioral effects ranging from elevated blood pressure to alienation to aggression.

-> psychological functioning (e.g., decreases in positive mood)
-> interpersonal behaviors (e.g., increases in social susceptibility or aggressive behaviors

Cyber ball

Cyberball is a virtual ball-tossing game that is used to manipulate the degree of social inclusion or ostracism in social psychological experiments.

The program varies the degree to which the participant is passed the ball

Ostracized players are not passed the ball after two initial tosses and thus obtain fewer ball tosses than the other players.

 Included players are repeatedly passed the ball and obtain an equal number of ball tosses as the other players.

Hartgerink CHJ, van Beest I, Wicherts JM, Williams KD (2015) The Ordinal Effects of Ostracism: A Meta-Analysis of 120 Cyberball Studies. PLOS ONE 10(5): e0127002. https://doi.org/10.1371/journal.pone.0127002
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0127002

Cyber ball

Meta-analysis: Hartgerink et al. 2015

200 published papers involving the Cyberball paradigm to study ostracism
over 19,500 participants

the average ostracism effect is large (d > |1.4|) and generalizes across structural aspects (number of players, ostracism duration, number of tosses, type of needs scale), sampling aspects (gender, age, country), and types of dependent measure (interpersonal, intrapersonal, fundamental needs).

Social capital

Cohesion

Coleman 1988, 1990

Strong, close relationships characterized by trust, cooperation, mutual <u>support</u>, or solidarity

A measure: **degree (n° of connections of a node with the other nodes of the NTW)**

**Brokerage**

Burt 1992, 2005; Gabbay and Zuckerman 1998

Brokers connect unconnected parties with each other, and by means of that gain social leverage, access to resources transmitted between the parties, and hence access to non-redundant information.

A measure: **Betweeness**

Weak tie theory (Granovetter, 1973)

In his 1973 paper entitled "The strength of weak ties", Mark Granovetter developed his theory of weak ties.
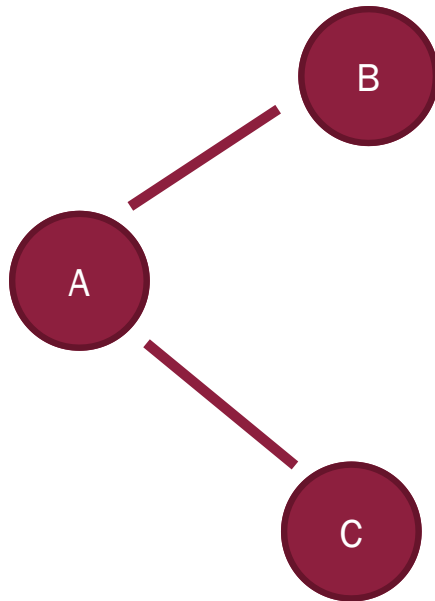
DEFINITION

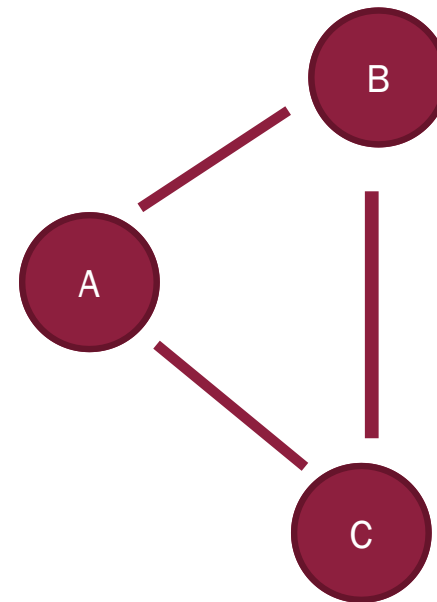------- Weak Tie

———— Strong Tie
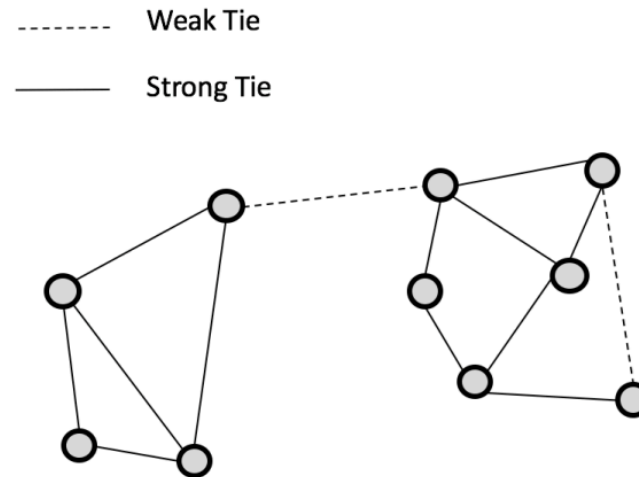
*The **strenght** of a tie is a (probably linear) combination of the <u>amount of time</u> , the <u>emotional intensity</u>, the <u>intimacy</u> (mutual confiding), and the <u>reciprocal services</u> which characterize the tie.*

Heider's Balance Theory

-> Need or cognitive consistency

The unlikely triad!!

Weak tie theory (Granovetter, 1973)

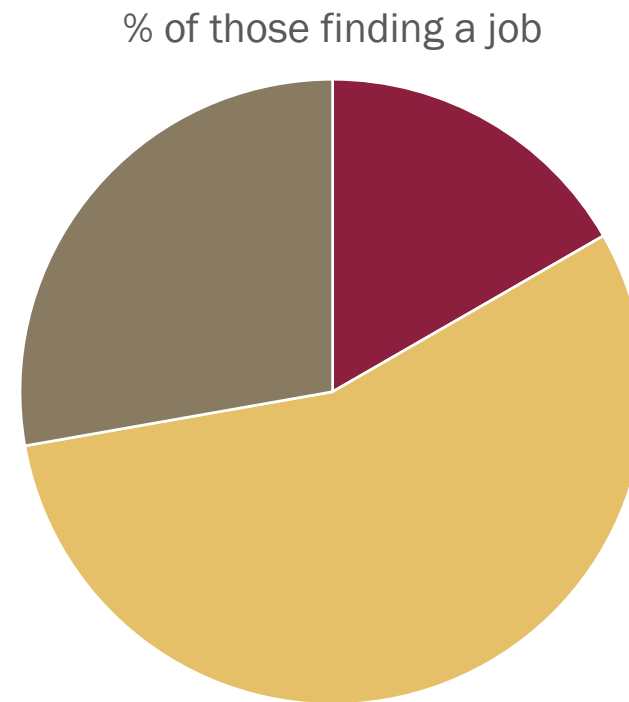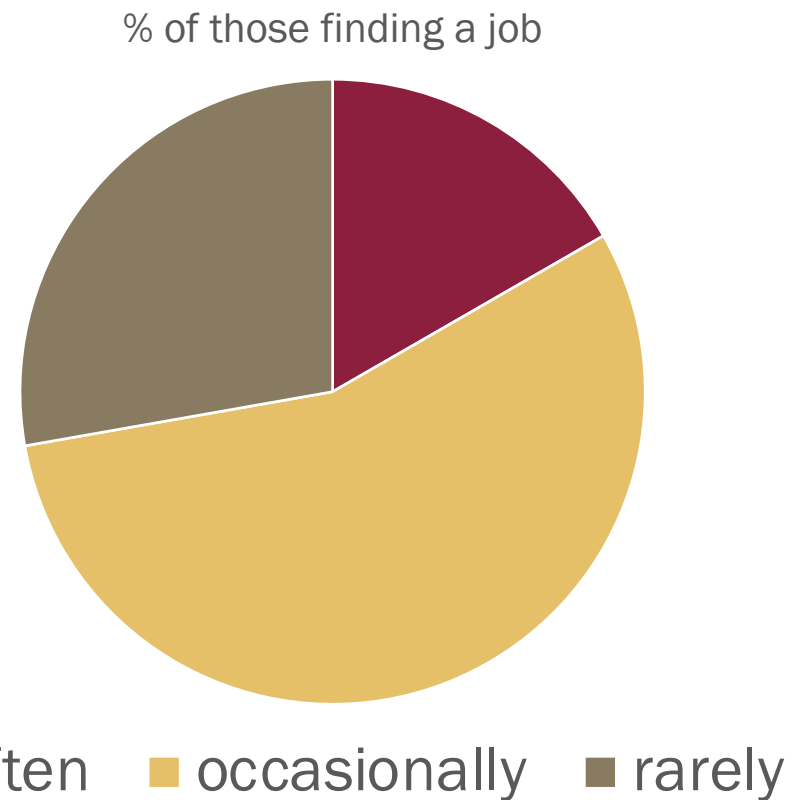| Strong Ties	Weak Ties
emotionally intense, frequent, and involving multiple types of relationships, such as ties **WITHIN** the network of friends, advisors, and coworkers ->The information possessed by any one member of the clique is likely to be either shared quickly or already redundant with the in- formation possessed by the other members.	ties that reach **OUTSIDE** of one's social clique are likely to be weak (that is, not emotionally in-tense, infrequent, and restricted to one narrow type of relationship) ->weak ties are often a bridge between densely interconnected social cliques and thus provide a source of unique information and resources

Granowetter's Study

- Random sample of job changers

- Question: How often did you saw the contact through which you got the new job?
  - *Often*
  - *Occasionally*
  - *Rarely*

- Guess: which colour represents the «often»

% of those finding a job

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% of those finding a job

■ often   ■ occasionally   ■ rarely

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