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Networking: the "making of" social networks. A closer look at the process and antecedents of some resourcing-oriented behaviors in organizations.

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Why social networks? Why now?

This story began almost ten years ago..

Starting my work career abroad as HR advisor for a big oil&gas company, I used to see people jumping from an exploration project to another not only because of their knowledge and skills, but very often managing their "network" resources smartly. That made me look from a different angle to my job and my skills too.

Moving from oil&gas sector to italian public sector I found that, despite a completely different environment, people's connections and their ways to manage them really do matter. The spark that made me start studying social networks in organizations came up meeting a young (at that point in time..) researcher who applied network analysis to educational settings.

My first "thanks" therefore goes to Elvis Mazzoni who still gives me hints and shares stimulating reflections on how to improve my research methods and tools.

Making "network experiments" has been for sometimes (and still is) a passion that involved me and my closest friends. A big thank for his help in developing ideas and getting things done goes to Nicola Grande with his curiosity and enthusiasm in making network experiments.

Moving from a hobby to something more challenging, like engaging into a doctoral research (approaching my forties..) wouldn't be possible without the help of a savvy mentor: here are my special thanks to Prof. Marco Depolo who, once again, trusted in me.

Abstract

Social networks are one of the "hot" themes in people's life and contemporary social research. Considering our "embeddedness" in a thick web of social relations is a study perspective that could unveil a number of explanations of how people may manage their personal and social resources. Looking at people's behaviors of building and managing their social networks, seems to be an effective way to find some possible rationalization about how to help people getting the best from their resources . The main aim of this dissertation is to give a closer look at the role of networking behaviors. Antecedents, motivations, different steps and measures about networking behaviors and outcomes are analyzed and discussed. Results seem to confirm, in a different setting and time perspective, that networking behaviors include different types and goals that change over time. Effects of networking behaviors seem to find empirical confirmation through social network analysis methods. Both personality and situational self-efficacy seem to predict networking behaviors. Different types of motivational drivers seem to be related to diverse networking behaviors.

Networking: the "making of" social networks.

A closer look at the process and antecedents of some resourcing-oriented behaviors in

organizations.

1. Introduction

More than one billion…

This was the number of Facebook's monthly active users in the world at the end of December 2012.

Beside this groundbreaking "revolution", other more specialized (purpose specific) on-line social networks offer a variety of possibilities to get in touch with other people.

We live in a world of possibilities (at least most of people living in developed countries), but what before on line social networks? Wasn't it possible to get in touch with friends and acquaintances and to make new connections?

Starting from a vocabulary definition, Networking is "the exchange of information or services among individuals, groups, or institutions; specifically : the cultivation of productive relationships for employment or business"[1].

Before managing our relationships in a virtual environment wasn't there any way to exchange information among individuals? Of course, networking behaviors started well before the appearance of on-line "facilities".

Why do people devote time, energies, hopes, reputation…their efforts to get in touch, maintain and use social relationships?

What do they, we, expect from this? Which kind of reward, benefit, results do we pursue? Is this always a voluntary activity, or sometimes it happens without a specific willingness to get something from it?

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[1] Merriam-Webster on-line dictionary: http://www.merriam-webster.com/dictionary/networking

Why social networks have sought to be so central in the life of many people, in the last few years?

What's the added value that on-line social networks brought to everyday life of millions on people?

Certainly, a number of new possibilities has shown up with nowadays virtual communities.

Now we can "see" the network, we can explore the "2nd level" (friends of friends) and more (friends of friends of friends…); Moreover, it's now easier to keep track automatically of our networking activity (like a sort of diary); Finally, we now have more possibilities to act in a non-synchronous way (without having to be in the same place at the same time) to cultivate our relationships.

All these new possibilities can be considered of some help in doing something that dates back to origins of social interactions, both between individuals and groups: cultivating relationships.

An interesting approach to the study of networks of social relationships has been traced by the british anthropologist and evolutionary psychologists Robin Dunbar in his studies on evolutionary bases of sociality, cognition and brain function in primates and humans. From his "social brain hypothesis" (Dunbar, 1998) Dunbar theorized a correlation between the number of social relationships managed by individuals and the cognitive resources needed to handle them.

Dunbar's works seem to have found some empirical confirmations in recent studies (Dunbar, 2004; 2011a; Shultz & Dunbar, 2007), thanks to new research technologies, and have acquired a certain visibility in scientific and non-scientific discussions (Dunbar, 2011b).

A research perspective focused on social relationships and resources has been explored in subsequent communication studies inspired by Dunbar's works (Goncalves & Perra, 2011), and seems to be driving a number of web projects that put emphasis on patterns of relationships between network nodes better than solely on their attributes.

It's quite interesting to see how two big players of internet's information search and share, like Google and Facebook,[2] try to develop new tools to help people move around in a dizzying amount of information.

Moving from network and big data studies (Barabási, 2011; Barabási, Jeong, Néda, & Ravasz, 2002; Szabo & Barabási, 2006), these new trends seem to put more and more attention on a "networked" approach to explain complex phenomena. The real added value seems to rely on finding patterns of relationships between chunks of information and their sources, better than on the mere quantity of available data.

Studying patterns of behaviors has a long tradition in organizational studies (Ibarra & Andrews, 1993; Schein, 1990) and a point of view that embraces network of relationships to explain organizational behavior has received increasing attention in the last few years (Jones & Volpe, 2010), it's a way to look at organizations as "crossroads of networks" (Tagliaventi, 2006).

Taking inspiration from more scientific disciplines, an interesting study perspective is the one that integrates a sociological approach into the modeling of individual behavior emphasizing "how social context and social interdependencies influence the ways individuals make choices" (Durlauf, 2001).

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[2] Google Knowledge Graph (http://www.google.com/insidesearch/features/search/knowledge.html)

Facebook Graph Search (https://www.facebook.com/about/graphsearch)

This approach seem to share some points of contact with interactions-based models in economics, that are at one level game-theoretic models (D'Ignazio & Giovannetti, 2004). In this view, connection between two actors (nodes) has impact on strategies and choices that those and other actors may make to maximize their benefits (D'Ignazio & Giovannetti, 2004).

Using different levels of analysis, sociological and economics seem to look at the role of (social) networks in influencing decision making and learning processes, opening the possibility to observe and explain strategies and behaviors from another point of view.

What seems to be new in recent years it's not the possibility to model networks (social, informational or else) through relational methods, but the idea to integrate the "network approach" in the study of phenomena, previously studied mainly focusing on single (node, actor, information) elements or groups of them, spotlighting patterns of relationships.

An innovative approach to research and intervention in Work & Organizational Psychology could benefit, in my opinion, from integrating the use of a network perspective in modeling the observed individual and organizational phenomena.

This dissertation aims to give a little contribution in adding some knowledge about how social networks form and develop in organizations, through networking behaviors.

Work in organizations is based more and more on knowledge or "competent, goal-oriented activity" (Quinn, 2005), but scientific research has shown that knowledge itself (or more broadly: technical skills) is not always enough to ensure a good performance (Mitchell & Flin, 2008). The importance of "non-technical" skills (e.g. communication/interpersonal skills; situation awareness; problem solving/decision making; leadership; stress management) has been acknowledged starting from late 1970's, mainly in "high-risk work settings" (medicine, aviation,

nuclear plants, military and shipping) (Mitchell & Flin, 2008), and refers to cognitive, social skills and behavioral aspects of performance at work.

Non-technical skills involve social, relational dimensions that, analyzed from a social network perspective, may help to better understand some working life processes and dynamics that influence organizational behaviors. Some key issues (e.g. career development, leadership, stress management, knowledge transfer) in Work & Organizational Psychology have recently been investigated, from a network perspective, focusing on how individuals manage quality and scope of their relationships (Kilduff & Brass, 2010).

Starting from the idea that individuals are embedded in thick webs of social relations and interactions (Borgatti, 2009), social network analysis,[3] approaches the study of individual's and organizational behaviors as embedded in social networks, taking as starting point the premise that social life is created primarily and most importantly by relations and the patterns formed by these relations (Marin & Wellman, 2010).

Instead of explaining individual's outcomes or characteristics as a function of other characteristics of the same individual, "..the social network perspective looks to the individual's social environment for explanations, whether through influence processes (e.g., individuals adopting their friends' occupational choices) or leveraging processes (e.g., an individual can get certain things done because of the connections he or she has to powerful others)." (Borgatti, 2009).

Networking is a behavioral individual level construct that focuses on individual actions and assesses to what extent individuals proactively build and develop social contacts. According

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[3] See Borgatti, 2009 for a review.

to recent research, networking seems to be considered one out of several predictors of network structures (Wolff & Moser, 2009).

Moving from a definition of networking we will examine some application fields (such as career development and leadership studies) in which it has been used to explain how individuals perceive and modify the web of relations they are embedded in and how they bring into play their "Social Capital" (Coleman, 1990).

This dissertation focuses on networking behaviors and, supported by a network perspective, aims to find some answers to questions like: could networking represent an effective way to enhance/enrich individual's resources? In which conditions?

Are there any antecedents for networking behaviors? Is it a strategy based on homogeneous behaviors or are there different types of networking?

Do we enact networking behaviors on a constant basis or their nature and or intensity changes over time?

Which motivations, expectations and criteria may influence networking behaviors?

2.1 Knowledge work,collaboration, information sharing, creating, negotiating

Working in a competitive context requires more and more the ability to find, utilize and combine the skills, knowledge and experience of others.

A large part of many people's work consists of interactions with others. Individuals in organizations are more and more engaged in collaborative, knowledge-producing work, and tasks require a higher degree of social interaction, information gathering, and innovation (Kilduff & Brass, 2010).

Next challenge for HR professionals (and for applied psychological research) seems to be connected to a change of perspective: moving the focus from "within-employee factors" to "between-employee factors", that is to say, the connections that combine to create new processes, products and services.

Recent contributes on collaborative learning (Mazzoni, 2007) for example, point out the importance of considering networking activities to evaluate workgroup performance. Other research paths focus on the ways computer-mediated networks supports social interaction, cooperation and collaboration for learning and knowledge building (Resta & Laferrière, 2007)

Tracking back an extensive literature in social sciences, it is acknowledged the importance of relationships for information acquisition (Granovetter, 1973) (Allen, 1977) (Burt, 1992). Research on social networks found three enduring relational characteristics that are some way predictive of the behavior of information seeking: 1) knowing what another person knows, 2) valuing what that other person knows in retain to one's work, and 3) being able to gain timely access to that person's thinking (Borgatti & Cross, 2003).

Since G.H. Mead's work, we know that creation of knowledge is a social process. Cognitive and social processes represent a significant part of work in modern organizations, *but*

what do we know about the role of cognitive and social skills involved in managing these organizational processes?

To better address our discussion on social skills, a brief mention of the concept of Social Capital is noteworthy.

Social capital has received many attentions from economists and social scientist in the last decade, and the number of its definitions has grown significantly since Putnam's work[4] (Paldam, 2000) and has gained space in official statistics:[5]

"Social capital is defined as the norms and social relations embedded in the social structures of societies that enable people to co-ordinate action to achieve desired goals."[6] "The term social capital has found its way into economic analysis only recently, although various elements of the concept have been present under different names for a long time in institutional economics as well as in the political, sociological and anthropological literature. Economists have added the focus on the contribution of social capital to economic growth." (OECD, 2000)

From an organizational perspective, social capital encompasses communities of practice, knowledge exchanges, information flows, interest groups, social networks and other emergent connections between employees, suppliers, regulators, partners and customers.

Social capital is what connects various forms of human capital. It is these patterns of connections that produce advantage for one group, and constraint for another. In a "networked economy" the ones with best connections may have a valuable competitive advantage.

Social Capital has been defined as "the social relations and resource advantages of both individuals and communities" (Coleman, 1990) (Kilduff & Tsai, 2003), (Ibarra, Kilduff, & Tsai,

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[4] Putnam, R.D., 1993. Making Democracy Work: Civic Traditions in Modern Italy.
[5] Organisation for Economic Co-operation and Development (http://www.oecd.org)

2005). Some types of individual networking behaviors (such as acquiring new knowledge through ties built with people outside the community) can benefit both the individual and the community, whereas in some cases an individual advantage may not represent a collective benefit (e.g. brokering behaviors c.f. Burt 1992).

A social network is often defined in literature as a set of actors and the relations (such as friendship, communication, and advice) that connect the actors. Although dyadic relationships form the building blocks for networks, the idea of a network typically implies more than two actors and the focus is on the pattern of relations among at least a triad of actors. It is typically assumed that indirect ties (e.g., friend of a friend) are important (Kilduff & Tsai, 2003).

In the past few years several authors have expressed the need for social network analysis (Ibarra, Kilduff, & Tsai, 2005), to help research on how people use, adapt and change the networks of relationships that form an essential part of working life.

Since the work of Bavelas and colleagues (MIT, 1950) on the effects of different communication network structures on the speed and accuracy with which a group's could solve problems (Borgatti, 2009) (Fig.1).

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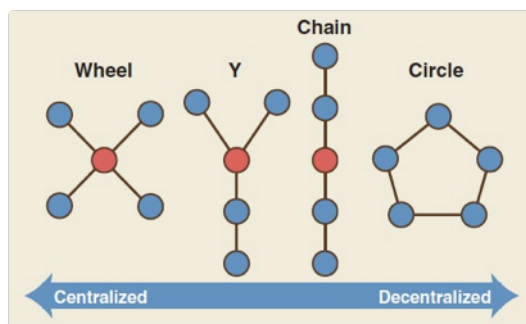
[6] [Social Capital: the Missing Link?, Social Capital Initiative, C. Grootaert, Working Paper No. 3, World Bank, 1998].

Fig. 1 "Four network structures examined by Bavelas and colleagues at MIT. Each node represents a person; each line represents a potential channel for interpersonal communication. The most central node in each network is colored red." (in Borgatti S. , 2009)

In Work & Organizational Psychology many researchers have focused the attention on workgroups striving to reduce ambiguity, making sense of what is happening and negotiating strategies and problem's solutions (Depolo, 1998) (Schein, 1990).

These organizational processes take place through many types of interactions, formalized or not, that drive and influence knowledge transfer, problem solving and decision making processes (Mason & Watts, 2012).

2.2 Levels of analysis

Social network structures (ego-network, complete organizational network and inter-organizational network) represent the typical levels of analysis for researchers dealing with social networks (Scott, 1997); (Wasserman & Faust, 1994). Nevertheless, the problem of finding a right articulation between psychological and sociological approaches has challenged social psychologists since long time.

In fact, studying social processes (in particular those based on relationships between members of a given network) involves more than one level of explanation (Doise, 1986). Following Doise's distinction of four levels of analysis in experimental social psychology we can associate the typical articulation adopted in social network analysis, with the different levels proposed by Doise.

It seems, indeed, quite interesting to match our approach to the study of social network dynamics with a broad-spectrum framework that includes the following levels:

I. I.   intra-personal processes   **(intra-personal level)**

II. II.   inter-personal and situational processes   **(inter-personal level)**

III. III.   differences in social positions   **(positional level)**

IV. IV.   ideological and cross-cultural differences   **(ideological level)**

This format, proposed by Doise to promote more research paradigms that deal with articulation of levels, considers *"..each level as a filter which captures one aspect of reality while others escape. All science inevitably involves abstraction and can never capture the whole of reality"* (Doise, 1986, p. 16).

This research focus is set on the ability to perceive, manage and modify the web of relationships in which people are embedded. Consequently, analyzing individual's **ego-**

network (the web of relations involving the individuals immediately connected to the one on which the analysis is focused) <u>concerns intra-personal processes:</u> how individuals organize their perceptions, their judgements, their social environment and their behavior within this environment. At this level of analysis are based foundational works such as, for example, Heider's Balance Theory (1958), Festinger's Cognitive Dissonance Theory (1957), Tajfel's Social Categorization Theory (1963).

Dealing with ego-network level involves, as well, psychological processes included in Doise's second level: <u>inter-personal and situational processes</u>.

At this level, within a given situation (such as a bounded personal network), the different social positions occupied by individuals outside the ego-network are not considered. *"The object of study is the dynamics of the relations established at a given moment by given individuals in a given situation."* (Doise, 1986).

Most research on game theory and the mentioned work of Bavelas and colleagues on communication networks[7] are on this level of analysis, focused on relations between individuals and their position in a given network.

In sum, <u>network analysis on ego-network level involves Doise's levels I and II</u>.

Expanding our focus to a **full network analysis** (a full network analysis, comprising not just direct connections but also individuals' indirect connections to everyone in the organization), a third level of investigation comes into play: <u>differences in social positions</u>.

According to Doise, the "positional level" is that level of analysis which takes into account the effects of social positions (such as social status, organizational function/department, which exist prior to interaction between different categories of subject) on interactions between

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[7] see previous chapter 2.1

individuals. Thus, at this third level, the analysis is not limited to elements in the experimental situation. Studies on causal attribution, for example, have demonstrated how *"a given act, with identical results, nevertheless produced quite different attributions depending on the status relationships introduced into the situation."* (Doise, 1986).

This consideration is fundamental to understand how the social experiences and social positions of subjects in a given situation are influenced by pre-existing social relations. Doise underlined how, frequently, the effect of a given situation in an experiment, can only be studied in terms of changes in a pre-existing dynamic.

Social network analysis on a complete organizational network involves Doise's levels I, II and III.

In some cases, a complete organizational network analysis may be run to investigate social dynamics that involve ideological and cross-cultural differences. Both in case of multinational enterprises, networks between organizations (in this case each organization is a node of the network), and in case of research studies that take into account *"ideologies, systems of beliefs and representations, values and norms, which validate and maintain the established social order"* (Doise, 1986, p. 15), it may be necessary to consider factors which go beyond the above mentioned levels of analysis:

"Such institutions as business, the church, the government, and the educational establishment provide other legitimate realms of activity, each justified by the values and needs of the society, and also from the standpoint of the typical person, accepted because they exist as part of the world in which he's born and grows up." (Milgram, 1974: 142 in Doise, 1986: 15).

Social network analysis on a complete organizational network involves Doise's levels I, II, III and IV.

To investigate how individuals perceive, manage and modify the web of relationships in which they are embedded, it is valuable to consider the articulation of the different levels identified by Doise. Choosing the "right filter" trough which reading psycho-social processes may significantly enhance the quality of answers brought by research.

The aim of this study is, then, to capture the individual in the context of a larger network picture. It is a research perspective that still has few bridges linking the micro and macro, as there seems to be a need for scholars to "bring the individual back in" when conducting structural analysis (e.g. a complete organizational network analysis) (Kilduff & Krackhardt, 1994).

Citing a seminal work in social network research: *"the analysis of processes in interpersonal networks provides the most fruitful micro-macro bridge. In one way or another, it is through these networks that small-scale interaction becomes translated into large-scale patterns, and that these, in turn, feed back into small groups."* (Granovetter, 1973)

Given the need to merge a multilevel perspective, our discussion will continue focusing on intra-personal and inter-personal levels of analysis, being aware of the possible helpful hints to be considered looking through level three an four.

Starting from individual's **ego-network** (the web of relations involving the individuals immediately connected to the one on which the analysis is focused): _how are social networks built, developed, and maintained?_

2.3 Networks of relationships

The role, the potential effects and constraints of social networks over individual's and organizational life has been approached by a consistent literature based on a structuralist perspective (Kilduff & Brass, 2010).

The roots of social network theory are very interdisciplinary, involving research in sociology, social psychology, and anthropology (Scott, 2000; Wasserman & Faust, 1994). Researchers sought to capture and explain relationships among webs of people and movement of information between them.   Sociologists and anthropologists studied factories, towns, and corporations, keeping track of the patterns and results of interactions.

A number of studies have considered how the network structure (stable patterns of relationships between nodes) may configure opportunities and constraints for information flow, resources, ideas and even threats (like health diseases or infection for example) (Barabási, 2011; Barabási et al., 2002; Barabási, de Menezes, Balensiefer, & Brockman, 2004; Hidalgo, Blumm, Barabási, & Christakis, 2009).

Some evidence has been provided about the characteristics of transmission of behaviors or behavioral styles over a social network, particularly focusing on cooperative behaviors (Fowler & Christakis, 2010) or social support (Beaudoin & Tao, 2007).

In terms of behavior's transmission between individuals connected by social ties, interesting studies have been conducted on health related behaviors (obesity, smoking, alcohol consumption) (O'Malley & Christakis, 2011) and on epidemiology (Christakis, 2009; Christakis & Fowler, 2010; 2012).

Most of these research are based on the concept of homophily (Fu, Nowak, Christakis, & Fowler, 2012; Golub & Jackson, 2008; McPherson, Smith-Lovin, & Cook, 2001) applied to influence processes in social networks.

Whether people realize it or not, their lives are profoundly affected by the lives of their friends, their friends' friends, and even their friends' friends' friends (Christakis & Fowler, 2011).

2.4 Network cognition

How do people perceive, keep track of and make sense of social network connections in organizations?

Kilduff and colleagues (2008), tried to answer this question focusing on high tech managers in relatively small organizational networks.

Even small organizations require the individual to monitor hundreds of possible relationship pairs. This level of complexity may pose a cognitive challenge (Kilduff & Krackhardt, 1994), but an accurate mapping of relationships is often of crucial importance to individuals trying to form project teams, build alliances or share information across groups (Janicik & Larrick, 2005). Managerial work involves talking to key people in social networks (Mintzberg, 1973), then, a clear understanding of the structure of such networks seems to be essential (Kilduff, Crossland, Tsai, & Krackhardt, 2008).

People asked to report their perception of the social network they are embedded in, may not always be able to draw an effective picture, exhibiting some cognitive biases. According to Kilduff & colleagues, people keep track of friendship relations in organizational settings *"by adapting rules known, in network research, as small world principles. As applied to perceived networks, these rules involve arranging people in clusters and connecting the clusters (using perceived-central people as cognitive reference points)."* (Kilduff, Crossland, Tsai, & Krackhardt, 2008).[8] This cognitive strategy seems to be aimed to the simplification of the system-wide organization of perceptions, in order to reduce the cognitive burden of keeping track of hundreds of possible relationships. *"Cognitive distortion in terms of more "small worldedness" can facilitate the rapid cognition and memorization of complex social relations,*

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[8] See Figg. 3, 4 for a visual representation (from Kilduff et. Al., 2008)

and may provide a comforting sense of connectivity across social divides." (Kilduff et al., ibidem)

The authors propose that biases in perceptions of friendship networks in organizations emerge through the activation of cognitive schemas, referring to mental structures that enable people to anticipate the general features of recurring situations (Neisser, 1976).

Schemas help people to manage complex social information, fill in missing data by supplying default options, and categorize events, things, people, interactions, and other stimuli into familiar categories (Isenberg, 1986). The use of schemas helps a faster (and often unconscious) pattern matching and decision making, but at the expense of misperception and bias (Gladwell, 2005).

Since Heider's work on Cognitive Balance Theory we are aware of individual's tendency to promote connections between their friends (Heider, 1958).
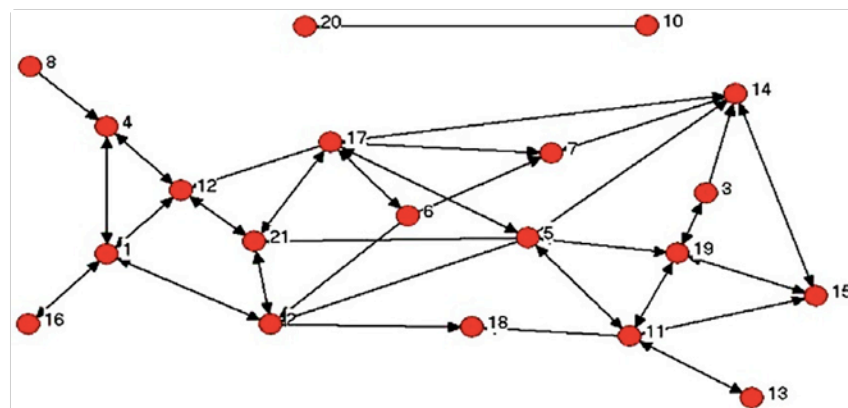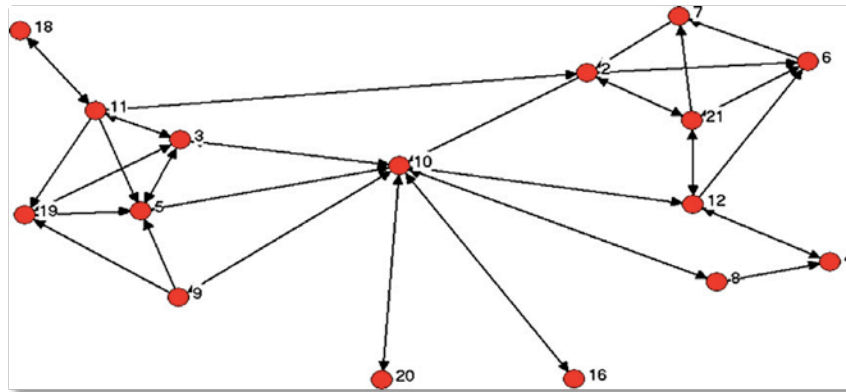
Fig. 2 – Actual Network

Fig. 3 – Perceived Network

Building on Kilduff and colleagues we may draw a connection between the cognitive representation of a social network environment, the mental structures involved (and the possible misperceptions) and the transversal competences.

As part of the personal skills set, the ability to make a rapid and fairly accurate diagnosis of work's social environment may be a transferable competence between different work situations. This type of skill has been analyzed in work contexts where the diagnosing process, together with other "non-technical" skills, seem to be essential for a safe and effective performance. One of the most common definitions of this capability is situation awareness (Endsley, 1995 p.36), that has received particular attention in high risk environments such as aviation, aerospace and medicine, as well as many other fields (Helmreich, 2000).

2.5 Social Support

A review on social networks and health studies considers how, traditionally, most studies of social network effects on health and well being actually focused on a related, but not identical, phenomenon: **social support**. (Smith & Christakis, 2008).

"Early studies operationalized social networks as an individual-level measure of the number of social contacts a person has (structural support, or its quantitative aspect) or how helpful they are, as subjectively reported by the person (functional support, or its qualitative aspect)" (Smith & Christakis, 2008).

From a comparative point of view, the authors examined the two different perspectives through which social research has approached this topic:

"In contrast to social support studies, social network studies analyze the web of social relations around an individual, including, most importantly, who the contacts are and the nature of the ties that connect them. Thus, whereas social support studies assess the quality or quantity of a person's social ties, social network studies treat the ties themselves as objects of study potentially relevant to outcomes of interest, and thus draw them explicitly". (Smith & Christakis, 2008)

The social network perspective actually maps subjects' relationships, analyzing the impact of particular network components and kinds of ties. Therefore the study of social networks is significantly different from the study of social support, moving from a conceptual distinct perspective: networks have emergent properties not explained by the constituent parts and not present in the parts (Watts, 2004). Understanding such properties requires seeing whole groups of individuals and their interconnections at once (Smith & Christakis, 2008).

Beyond considering social support as a given and relatively unchanging resource for individuals, we try to explore if and how individual actions proactively build, develop and maintain potentially helpful contacts.

Studies on social support have actually a long tradition in literature. To cite one of the main research streams on this subject, social support has been extensively used to refer to the mechanism by which interpersonal relationships presumably buffer one against a stressful environment (Cohen & McKay, 1984).

The protective effect of social support in facing psychosocial stress, for example, has been widely explored within the buffering hypothesis framework, distinguishing between different forms of support (tangible or non psychological, and psychological: subdivided in appraisal support and emotional support) (Cohen & McKay, 1984).

In terms of coping strategies, the effect of social support in enhancing a person's coping abilities is widely acknowledged, given that both stressful events and social support are meant to be multidimensional concepts (Cohen & McKay, 1984).

Over the years, more recent conceptual analysis have suggested four of the most frequently used defining attributes of social support: emotional, instrumental, informational, appraisal (Hinson Langford, Bowsher, Maloney, & Lillis, 1997).

Along with these dimensions, three main antecedents of social support have been identified:

- Social network, defined as the vehicle through which social support is provided, is meant to be the structure of an interactive process where social support is the function.

- Social embeddedness, defined as the connectedness people have to significant others within their social network (Barrera, 1986), is considered as the depth and strength of relational ties between the person and each member of the social network.

- Social climate, defined as an atmosphere of helpfulness and protection for social supportive behaviors (Hinson Langford, Bowsher, Maloney, & Lillis, 1997).

Proactively managing our social networks through networking behaviors: could it be a way of fostering social support?

If a large social network may not mean large amount of support (Kahn & Antonucci, 1980), to investigate how individuals seek for and proactively manage a resource like social support it seems useful to focus on networking behaviors.

Approaching this argument, some personal and cultural factors have to be considered.

Among personal factors, Social self-efficacy and Self Disclosure seem to be two dimensions involved in socialization processes. According to a longitudinal study on American students' transition to university, two indices of social competence: social *self*-**efficacy** and comfort with *self-disclosure*, may represent social competencies that protect freshmen from developing feelings of loneliness and subsequent depression during a stressful transition period (Wei, Russell, & Zakalik, 2005).

Social *self*-**efficacy** refers to individuals' beliefs about their capability of initiating social contact and developing new friendships. Similarly, *self-disclosure* refers to individuals' verbal communication of personally relevant information, thoughts, and feelings in order to let themselves be known to others.

According to the authors, Self-disclosure is an important tool to get to know new people and to build friendships in a new environment.

"Research on *self-disclosure* has found that the ability to reveal one's thoughts and feelings to others is a basic social skill not only for developing interpersonal relationships (Altman & Taylor, 1973; Berscheid & Walster, 1978) but also for decreasing feelings of loneliness and subsequent depression." (Wei, Russell, & Zakalik, 2005).

S*elf-disclosure* seems to be associated with social network size, network multiplicity, and network density. In particular, *self-disclosure* of emotions or distress a powerful predictor of relationship development (Wei, Russell, & Zakalik, 2005).

Considering **cultural effects**, a variety of norms and cultural expectations are concerned with self-disclosure. In Western societies a certain degree of self-disclosure seems to be a prerequisite for a "fair" social exchange, whereas in cultures of collectivistic orientation, "situation awareness" (in terms of social relationships, norms, rules of conduct and group solidarity) is more influential in determining an individual's behavior than personal dispositions. (see Ignatius & Kokkonen, 2007 for a recent review).

Dealing with social support, recent works on cultural differences on the impact of social support on psychological and biological stress responses distinguish between explicit social support and implicit social support (the latter is more focused on the emotional comfort that comes from belonging to a company of close others, without disclosing or discussing one's problem), and put emphasis on potentially negative relational implications of seeking social support (different cultures hold different models of the self and its relationships with others) (Taylor, Welch, Kim, & Sherman, 2007).

Among other factors, networking behaviors could be helpful to foster social support as a resource, in particular in cases where social support seems to play a significant role (e.g. coping with stressors).

2.6 Networking and resources

Examining roles and interactions of knowledge, personal skills, social networks and network cognition, we may try to draw a network perspective to analyze people's networking behavior.

In literature, the main research focus is put primarily on behaviors: **networking** is defined as *"behaviors that are aimed at building, maintaining, and using informal relationships that possess the (potential) benefit of facilitating work-related activities of individuals by voluntarily granting access to resources and maximizing common advantages"* (Forret & Dougherty, 2001; 2004; Wolff & Moser, 2009).

The construct is defined on a behavioral level (e.g., Michael & Yukl, 1993) and is considered a set of interrelated behaviors consistently shown by individuals. Networking measures typically assess how often individuals show networking behaviors (e.g., by socializing outside of working hours or meetings, using contacts to get confidential advice, attending social activities, doing favours, providing mentoring and advice).

Networking is not considered, thus, a personality trait, but a set of interrelated behaviors that are frequently and consistently shown by "networkers". Networking relationships are characterized as work-related, informal (vs. formal), cooperative (vs. competitive) and rely on a reciprocal exchange. It is assumed that networking relationships provide individuals with resources such as task advice and strategic information that may enhance individual's performance (Wolff & Moser, 2009).

It is understood that these behaviors lead to informal, voluntary, and reciprocal relationships that in turn facilitate access to resources such as task-related support, strategic information, or career success (Kaplan, 1984) (Michael & Yukl, 1993) (Podolny & Baron, 1997).

Networking is distinct from the concept of social capital, which is referred to a different level of analysis (see previous paragraph), and is linked to the position of an individual in a network, typically characterized by specific aspects of network structures, such as network size, density, or structural holes (Burt, 1992). Networking is an individual level construct and focuses on individual behavior, it emphasizes individual actions and assesses to what extent individuals proactively build and develop contacts, as part of the informal organization (Michael & Yukl, 1993).

According to Wolff & Moser (2009), networking can be considered one out of several predictors of network structures.

It may be useful to list here some key points on networking (Michael & Yukl, 1993):

- It can be considered a distinct behavior category in taxonomies of managerial behavior

- It is important for managerial effectiveness and advancement

- It is useful to distinguish between internal networking (with members of the organization, including peers, except from direct subordinates and the immediate superior) and external networking (with customers, suppliers, vendors and other organization's members).

- It is related to manager's hierarchical level and subunit function.

Commenting their results Michael & Yukl highlight an interesting aspect: "..we did not determine whether a manager had the skills to use a network successfully".

Starting from this comment, we can identify some possible research directions on networking. Available studies in literature focus mostly on the amount of networking activities better than on the *quality of networking behaviors*.

Few studies seem to have been focused on different professional profiles other than managers. Available works measure networking using individual perception scales about task-

oriented behaviors, often on a cross sectional design and not on a longitudinal lookout (see Wolff & Moser, 2009).

To our knowledge, a network perspective, using relational data, has not yet been used to track networking behaviors. Finally, a small number of researches seem to include networking behavior's antecedents (in terms of skills, personality traits, gender, education etc.) (Forret & Dougherty, 2004).

We refer to networking as the ability to perceive, manage and modify the web of relationships in which people are embedded.

According to Hobfoll's works on psychosocial resources use (Hobfoll, 2002) "people strive to retain, protect, and build resources and what is threatening to them is the potential or actual loss of these valued resources".

This theoretical approach seems to be convincing to envisage an integrated resource theory that may be helpful to fit psycho-social resources as part of a greater dynamic process associated with well-being through the general use of resources. Rather than focusing on a specific resource, the possession of multiple resource reservoirs as those represented by a well developed personal network may be an efficient way to promote and maintain well-being and health (Hobfoll, 2002).

This research has been inspired by the idea that personal and social resources may have a joint effect in supporting efforts to facing life demands.

People's behavior may be interpreted as "aimed at the protection and enhancement of self, fundamental goals after which people strive". Hobfoll, in his **Conservation of Resources** theory, considers how "individuals seek to create and maintain personal characteristics (e.g., mastery or self-esteem, self-efficacy) and social circumstances (e.g.,

tenure or relationships) that will increase the likelihood of receipt of reinforcement and to avoid the loss of such characteristics and circumstances..". (Hobfoll, 1989). In terms of resources, social support has been widely used to refer to the mechanism by which interpersonal relationships presumably buffer one against a stressful environment (Cohen, McKay, Baum, & Singer, 1984). But is it only a matter of stress preventing?

In literature, social resources have often been studied as social "capital" (Burt, 1997) for individuals (Langford & Bowsher, 1997); (Taylor, Welch, & Kim, 2007); (Cohen et al., 1984): increasing or decreasing the number and/or the quality of social connections, together with people's social network characteristics (network structure and individual position), could actually make the difference in people's availability of support, information and other helpful resources.

Using this "economic" perspective, we try to understand if and how individual behaviors proactively build, develop and maintain potentially helpful resources to pursue their goals.

In studies about career success (Bozionelos, 2008) network resources were related to extrinsic and intrinsic career success, and to affective organizational commitment. Instrumental and expressive network resources were differentially related to career success and organizational commitment.

Some interesting studies on mentoring look at potential relationships between mentoring and social capital. Seibert and colleagues (2001) note that social capital consists of mentorships and network resources and Bozionelos (2003) notes that mentoring can play a direct role in building network resources, which in turn influence career success.

From a "resourcing" perspective, networking behaviors could represent in many ways a strategy to get access to useful help and support.

Networking may involve both formal and informal contacts, in particular contacts with people in higher positions in an organization's hierarchy, can provide individuals with information and influence (Granovetter, 1974; Lin, 1999; Marsden & Hurlbert, 1988).

Though several studies have shown that networking has beneficial consequences, e.g., enhanced career success, few studies have examined potential costs of networking behavior. One study that has addressed this issue (not published yet)[9] uses a multidimensional perspective on networking to investigate if and how costs are incurred only in some networking dimensions. Investments of time and involvement into the work role were considered production costs of networking. According to author's findings, production costs of networking seem to exist and networking may be associated with time based and strained based work family conflict indicating that there are also opportunity costs of networking behavior.

Engaging in networking, thus, has not only positive consequences, but is also associated with a focus on the work role and potential sacrifices in other roles.

Though the negative side isn't the main focus of our research project, being aware of the possible costs of networking may be helpful for a better understanding of networking process and people's motivation to engage in networking behaviors, in future studies.

Following the rational above, some questions may rise:

Proactively managing social networks through networking behaviors: could it be a way of enhance individual's resources, like personal network of relationships and prestige?

Are there any antecedents for networking? In which conditions some factors may influence networking behaviors and their possible changes over time?

Which may be the outcomes of networking behaviors?

Trying to better understand how individuals manage their resource in organizations, we focus on networking behaviors antecedents, effects and possible changes over time.

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[9] "The costs of networking behavior" (paper presented at eawop congress 2011 – Maastricht) Wolff, H.-G., University of Erlangen-Nurnberg

2.7 Competences

Being aware of our embeddedness in a network of relationships is a point of advantage in managing our social resources, but is it only a matter of awareness and network cognition or do we need to take in consideration other factors to understand how individuals behave in a network environment?

Which individual characteristics and resources may affect the role played in a social network, influencing how people perceive, use, adapt and change the network of relationships in which they are embedded?

Taking into consideration people in their working life, a useful categorization of individual attributes that help managing people's social capital may be inspired by a wide set of studies on professional competences.

Which are the key competences for effective networking? In which conditions?

A reference point could be a theoretical model on competences, well known in Italy as "the ISFOL model" (Sarchielli G., 1998), here we consider one of the three inter-connected subsets of which it is made:

1. 1.   **personal resources** *(knowledge, work habits, personal and social identity.)*;

2. 2.   personal **skills set** *(more details below)*,

3. 3.   **organizational context demands** *(expected working behavior, working conditions, environment and organization, in order to activate and modulate individual's professional competences)*.

Individual's skills set or "transversal competences", (Di Francesco, 2001), represent a set of abilities (useful for an effective working behavior), based on cognitive, emotional, relational

and physical processes that may be applied to many different working tasks and, therefore, transferable between different work environments (Sarchielli G., 2003).

To get back to social capital, a transversal competence's approach (or, better, a subset of them often labelled "social skills") may be useful to investigate how people manage their "social resources" via their network connections.

Following this reasoning it has been acknowledged that some cognitive, social skills and behavioral aspects of performance at work, though not belonging to the specific technical knowledge domain, could be determinant for a safe and effective performance[10] of individual's and workgroups (Mitchell & Flin, 2008).

Non-technical skills refer to some categories, such as: situation awareness, decision-making, teamwork, communication, and others.

The above listed skills find their application mainly in understanding situations, information sharing, sense making (Weick, 1995) and decision-making. All these social processes involve the ability to perceive, manage and modify the web of relationships in which people are embedded.

Studying networking behaviors may benefit from taking into account some social skills that have been recognized as being different from personality traits (e.g. Extraversion) and of some predicting value in understanding people's social behavior.

To our purposes, the theory of self-monitoring (Snyder, 1974; 2000) first introduced almost four decades ago, can be considered of interest in analyzing social skills that may be involved in networking behaviors. The fundamental postulates of the theory state that people differ in how they engage in expressive control. Some people seem to monitor their expressive

behavior and accordingly regulate their self-presentation for the sake of desired public appearances. Thus, the behavior of these *high self-monitors* may be highly responsive to social and interpersonal cues of situationally appropriate performances (Snyder, 2000). Other people, instead, who engage in expressive control relatively less than others, seem to have not the same concern for the situational appropriateness showing more publicly their own inner attitudes, emotions, and dispositions.

The theory of self-monitoring concerns "differences in the extent to which people value, create, cultivate, and project social images and public appearances" (Snyder, 2000).

Building and maintaining our social relationships may profit of social skills like self-monitoring. For this reason, self-monitoring has been included here in the set of possible antecedents of networking behaviors.

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[10] especially in "high-risk work settings" (medicine, aviation, nuclear plants, military and shipping).

2.8 Antecedents

Given the above presented framework and considering networking behaviors as a mean to enrich individual's resources, we start from some personal resources that may represent possible antecedents of networking behaviors.

Personality

As one of the main factors concerning people's behavior (namely networking behaviors) we included some personality dimensions according to previous research findings (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007), (Wolff & Moser, 2009), (Brass, 2010).

Referring to the Big Five as a comprehensive framework for addressing major individual differences in personality, agreeableness has been depicted as a major determinant of prosocial behavior (Caprara, Alessandri, Di Giunta, Panerai, & Eisenberg, 2010). Several studies seem to confirm three main predictors of social skills: extraversion, agreeableness and openness (Asendorpf, 1998; Campbell, 2001; Carver & Connor-Smith, 2010; Klein, Lim, Saltz, & Mayer, 2004; Oh & Kilduff, 2008; Snyder, 1974; Tong et al., 2004).

According to Wolff and Kim (Wolff & Sowon, 2011), some of the above mentioned dimensions have significant effects on networking behaviors. Findings confirm that extraversion and openness to experience are broadly related to the set of networking dimensions (building, maintaining, using contacts). The Authors also found evidence for differential relationships, for example, that agreeableness is related to internal, but not external networking (within organizations). Both, conscientiousness and emotional stability seem to be not so related to networking behaviors.

We may now consider which, among the most used personality dimension (taking as reference the five factor model: Extraversion, Neuroticism, Conscientiousness, Agreeableness, Openness) could have effect on individual's social networks management.

According to (Carver & Connor-Smith, 2010), the personality dimension that could have more significant effects on the social network perspective that we have embraced seems to be agreeableness.

Agreeableness is often characterized as being broadly concerned with the maintaining of relationships (Jensen-Campbell & Graziano, 2001). Agreeableness implies a broad social perspective: taking the needs of others into account (Carver & Connor-Smith, 2010). Agreeable people are friendly and helpful, empathic and able to inhibit their negative feelings. This personality dimension seems to involve high levels of trust and concern for others (Caspi et. al 2005) and to be linked to low interpersonal conflict, thus less social stress (Asendorpf, 1998). Agreeableness is generally associated with greater well being (Steel et al. 2008).

According to some authors, those high in agreeableness tend to have strong social networks (Bowling et al 2005), therefore agreeableness may be considered as predictor of social support. Individuals high in extraversion or agreeableness may be better skilled at obtaining social support (Vollrath, 2001).

Self-efficacy

Moving from Bandura's definition of self-efficacy as one's belief in one's ability to succeed in specific situations, we consider networking behaviors through the lenses of social cognitive theory: among the mechanisms of human agency, people's perceived self-efficacy is one of the most significant. Whatever other factors may operate as guides and

motivators, they are rooted in the core belief that one has the power to produce effects by one's actions. Perceived self-efficacy is considered as a key factor in many areas of working life (e.g. career choice and development) (Bandura et al., 2001).

Self-efficacy beliefs influence self-regulative standards adopted by people, the amount of effort they invest, and the choices they make at crucial points in their life. They are not static traits, but rather dynamic constructs that can be enhanced through mastery experiences and learning (Bandura, 1997).

In terms of agency, engaging in networking behaviors may require motivation, time and cognitive resources. Self efficacy has been included in personal resources and operationalized following the work of Xanthopoulou and colleagues (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009).

Social self-efficacy

Traditionally, self-efficacy beliefs have been conceptualized as reflecting highly contextualized knowledge that affects appraisal processes, which in turn guide actions. As people reflect on their experiences in specific settings, they may construct beliefs about their capabilities in various domains of functioning, including "clusters" of interrelated circumstances and situations such as self-efficacy beliefs associated with the domains of emotional understanding and interpersonal relationships (Di Giunta et al., 2010)

Recent studies on self efficacy and interpersonal relations research findings attest to the role of affective and interpersonal self-efficacy beliefs in sustaining and promoting individuals' tendencies to behave prosocially. Empathic self-efficacy beliefs (individuals' judgments about their abilities to be sensitive to others' feelings in situations of need) seem

to account for a significant portion of individual differences in prosociality. We suggest that networking may benefit from social self efficacy as a resource for effectiveness, especially in building new contacts.

Self-monitoring

In the perspective of Social Cognitive Theory, social factors affect the operation (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001) of the self-regulative system. According to Bandura's Social Cognitive Theory, human behavior is highly motivated and regulated by self-influence processes. Self-regulative mechanisms include, together with self-efficacy, also self-monitoring of one's behavior. The theory of self-monitoring (Snyder, 1974), which concerns differences in the extent to which people value, create, cultivate, and project social images and public appearances, involves expressive control.

Looking at organizational behaviors through a social network's perspective, Mehra and colleagues (2001) tested how self-monitoring orientation and network position related to work performance. Their findings suggest that high self-monitors are more likely than "true-to-themselves" low self-monitors to occupy central positions in social networks. Moreover, self-monitoring and centrality in social networks independently predicted individuals' workplace performance (Oh & Kilduff, 2008). Research results seem to "paint a picture of people shaping the networks that constrain and enable performance" (Mehra et al., 2001).

Trust

According to examined literature, Trust is a multifaceted construct that highly affects the relational dimension in interpersonal relationships, as well as group dynamics. Though there's a rich debate on how to get to a wide consensus on how to operationalize and measure it (McEvily & Tortoriello, 2011), as far as networking behaviors are concerned it seems of crucial importance to include this dimension in our study.

Following recent research on trust as a multifaceted dimension (Costa, 2011) we included **Propensity to trust**, commonly viewed as a dispositional trait referred to as the general willingness to trust others (J. Rotter, 1971; 1980; J. B. Rotter, 1967).

Taking into consideration trust in its sub-dimensions, we posit that trust may be involved in building network ties (propensity to trust).

Trust in networking behaviors as a personal resource has been included in previous research on relational capital in virtual teams (Zornoza, Orengo, & Penarroja, 2009).

2.9 Agency and Social Networks

Social cognitive theory, in Bandura's theorizations sees a bidirectional influence between social structure and personal agency (Bandura, 1989; 1998; 2000; 2001; Fernandez-Ballesteros, Diez-Nicolas, Caprara, Barbaranelli, & Albert Bandura, 2002). Social skills and proactive behaviors seem to play a key role in shaping individuals' career paths and workgroup performance through an active management of personal and organizational networks (Ng & Feldman, 2010; Wolff & Moser, 2009).

Some studies have been conducted operationalizing networking as a set of behaviors (Forret & Dougherty, 2004; Wolff & Moser, 2009), but to our knowledge a Social network analysis perspective, considering network characteristics besides individual self-reported behaviors hasn't been used extensively yet (Borgatti, Mehra, Brass, & Labianca, 2009); (Brass, 2010); (Cross, Parker, Prusak, & Borgatti, 2001); (Thompson, 2011).

As a point of innovation, to put emphasis on the characteristics of relationships between actors (number of connections, centrality and centralization indexes of single nodes and group of nodes within the same network), social network analysis methods (Wasserman & Faust, 1994) (Carrington, Scott, & Wasserman, 2005) have been included in this research design. We aim to extend our analysis from actor's attributes to the characteristics of their reciprocal relations.

Indeed, we consider very important to include a matching check between self reported behaviors and relational data tracked from a different source to get a more reliable picture of hypothesized relations between considered antecedents and effects of networking. For example, network measures like **degree, egonet size** and **centrality** (Borgatti, 2005; Borgatti & Everett, 2006); (Borgatti, Mehra, Brass, & Labianca, 2009) may give a more

consistent help in evaluating effects and implications of networking activity done by individuals.[11]

Motivation

To integrate what has been presented in terms of potential antecedents and drivers of networking behaviors[12] we propose to use a qualitative approach to investigate some possible motivational drivers to networking behaviors.

If motivation is a psychological process resulting from the interaction between the individual and the environment, then the importance of context is acknowledged (Latham & Pinder, 2005) and useful to better understand why people would engage in networking behaviors to achieve their goals

Motivation has been defined as the process that determines how energy is used to satisfy needs. In this perspective, motivation is a "resource-allocation process" (Latham & Pinder, 2005) that includes the direction, intensity, and persistence of an imaginary array. The perceived relationship between applying energy to actions and the resulting need satisfaction influences how much of the energy pool is devoted to that action.

Without going into a deeper analysis of models based on Vroom's Expectancy Theory (Vroom, 1964) (Van Eerde & Thierry, 1996), individual's expectations about the desirable outcomes of networking behaviors should be taken into account to draw a more detailed picture.

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[11] see chapter 3 for details on network measures
[12] see previous paragraphs 2.8 and 2.9 on self-efficacy and agency

2.11 Application fields

Given our framework, we see networking behaviors as a way to enhance people's social resources.

Which are, according to existing literature, some possible outcomes of these "resourcing driven" behaviors?

The concept of networking in previous studies seems to be connected with two interesting research domains: career management and leadership.

This dissertation is mainly focused on measuring networking behaviors, examining their possible antecedents and figuring out how these behaviors may change over time.

Nevertheless, to complete the picture of the possible outcomes and impact of a strategy based networking two examples are described in the following pages.

Networking as a career management strategy?

One of the explored research paths analyzes the effects of networking on career success. Wolff & Moser (2009), distinguish between objective career success and subjective success.[13] Using a dynamic perspective, their longitudinal study results confirm that networking is related to both objective and subjective career success (Forret & Dougherty, 2004; Michael & Yukl, 1993), showing that networking is related to concurrent salary and to the growth rate of salary

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[13] "Objective career success refers to observable career accomplishments that can be reliably judged by others (e.g., pay and ascendancy). Subjective career success pertains to appraisals by individuals of their career success. This subjective judgment is influenced not only by objective criteria but by individual aspiration levels, social comparisons to relevant others, and situational constraints such as opportunities for advancement in a profession." Wolff, H. G., & Moser, K. (2009). Effects of Networking on Career Success: A Longitudinal Study. *Journal of Applied Psychology , 94* (1), 196-206.

over time. Networking seems to be also related to concurrent career satisfaction, although no effects of networking on the growth of career satisfaction were found.

According to Forret and Dougherty, networking as a career management strategy is important for individuals to carry the responsibility of their career, shifted from the organization to the individual, as employability is becoming one's career goal (Forret & Dougherty, 2004).

Some individuals may be more likely than others to engage in networking behaviors. Previous research identified five types of networking behavior: maintaining contacts, socializing, engaging in professional activities, participating in community, and increasing internal visibility. Results showed that gender, socioeconomic background, extraversion, self-esteem, and attitudes toward workplace politics seem to be related to the networking behavior of managers and professionals (Forret & Dougherty, 2001).

Forret & Dougherty (2004) highlighted two most career-enhancing types of networking behavior: increasing internal visibility and engaging in professional activities. These networking behaviors were related to objective career success outcomes for men only, so that networking behaviors seems to be not as advantageous for women as for men. The authors envisage future researches to examine how networking behaviors shape the structure of an individual's social network, and how this, in turn, influences career outcomes.

Some practical implications, highlighted by Michel & Yukl's work, suggest to include networking skills (e.g. building networks and developing effective interpersonal relationships) in assessment procedures in organizations, for a variety of functions and levels. (Michael & Yukl, 1993).

"Net-worked" Leadership

Another interesting correlate of networking behavior is leadership.

About the concept of leadership, defined as the use of influence to encourage participation in achieving set goals (Yukl, 2006), McCallum and O'Connell (2009) in their review highlight some key elements: 1) "it is a process that involves the leader's personality and behaviors, the follower's perception of the leader and the context within which the interaction takes place"; 2) leadership is centered on the relationship, between leaders and followers, in which leaders must structure or restructure situations, perceptions and expectations of group members. Consequently leadership extends beyond individual's characteristics, being a relational process between leader and followers, molded by the context (McCallum & O'Connell, 2009).

According to the authors:

"An effective leader understands social network relationships among organization members and also between members and others beyond the organization boundaries, and is able to leverage individuals' personal networks for the benefit of the organization (Balkundi & Kilduff, 2006).*"*

Fundamental characteristics of leadership then include the ability to build and maintain relationships, cope with change, motivate and inspire others and deploy resources.

On this relational dimension, Pearce (2007) underlines the importance of networking for leaders: *"specifically networking skills are critical for capacity acquisition and capital accrual. Accordingly, networking skills seem to be a particularly useful area to concentrate future leadership development efforts, especially when it comes to knowledge work"* (Pearce, 2007).

The importance of network cognition and networking skills, applied to leadership studies, may be summarized into accurately perceive the network relations that connect people, and to (pro) actively manage these relations.

The expression network cognition is a "catch-all" definition, used to include all those situations in which using social network ties helps to pursue personal and/or organizational objectives. Leaders, for example, must be able to perceive the existence, nature and structure of these ties—not just the ties surrounding the leader, but the ties connecting others in the organization (and often outside the organization).

Balkundi & Kilduff (2006) presented a model that emphasizes, from a network perspective, how the cognitions in the mind of the individual influence the network relationships negotiated by the individual, and how this individual network affects leadership effectiveness both directly and through informal networks, both within organizations and across organizations. The authors link together social cognitions and social structure making a new network approach to leadership.

Traditional leadership research has focused on human capital attributes of leaders and situational attributes of leadership contexts.

According to Balkundi & Kilduff (2006) *"a social network perspective does not eclipse the valuable results of conventional leadership research; rather, a network perspective can complement existing work without repeating it."*

In sum, network cognition and networking skills seem to be important characteristics for leaders (or would-be leaders), and a network perspective in leadership studies may enhance the understanding of leadership processes.

The emphasis on how some traditional research areas for W&O psychologists, would benefit from including social network analysis among study perspectives, suggests to test its application also to other domains of study.

2.12 Open issues

Considering existing literature we tried to draw a possible perspective through which investigating people's behavior on a networking perspective. The concept of networking may be a bridge to better understand how individual and social layers interact each other.

Resources, motivations, cognition and behaviors..how does these elements may be fitted into a framework that facilitates a better understanding of "the making of" social networks?

Following the concept of networking (and its potential antecedents) we positioned the concept of networking in the theoretical framework of "resources models" (Hobfoll, 2002). Investigating the role of networking as an effective way to enhance personal resources through a proactive strategy is a research perspective that needs to consider a multilevel perspective (individual, dyadic and group) to take the advantage of seeing "both the forest and the trees" (Hanneman, 2002).

Though the focus of this analysis has been set on the individual level, the whole research project has been planned from the very beginning on a multilevel perspective, group level variables and data have been collected and entered.

For the sake of simplicity and clarity of this doctoral dissertation only the individual level has been presented.

Future developments of this research will make use of those data, trying to include more facets in understanding the role of networking behaviors.

3.1 Research objectives

Moving from the scenario presented in the first two chapters and given the chosen theoretical framework, the objectives of this research are to analyze networking behaviors through a multifaceted approach.

The main focus is on networking activity, through its antecedents, possible changes over time and potential drivers.

Building on previous studies on networking behaviors (Wolff & Moser, 2009), the **first** research objective is to test the fit of a networking model (based on a mid-term organizational perspective (e.g. Career and/or rewards) to a shorter term educational environment in which goals and time perspective are substantially different form the original validation of the model.

A **second** aim of this research is to enlarge the scope of possible antecedents of networking behaviors, including not only personality traits but also considering personal resources like self-efficacy and social skills in order to take into account more possible facets and explications.

The choice of including social cognition (Bandura, 1989; Kilduff & KRACKHARDT, 2008; Latham & Pinder, 2005) and skills (McClelland, 1985; Snyder, 1974) as personal resources that may predict networking behaviors is functional to test a concept of networking as a dynamic process. Thus, sustaining a perspective in which some determinants of networking behaviors may evolve and change over time to meet personal goals or to face new challenges.

Following this reasoning, the **third** objective of this dissertation is to examine, with an explicit time perspective, a process that unfolds in time, on a dynamic view. Differentiating from some empirical findings that consider networking as stable over time (Sturges, Guest,

Conway, & Davey, 2002) or other studies that did not consider networking at subsequent

waves (Wolff & Moser, 2009), we propose that networking behaviors may change over time in

quality and quantity, to meet different goals and /or to cope with events that may require a

"resourcing" strategy.

The **fourth** aim of this research concerns the exploration of possible motivations,

expectations and driving criteria that may move networking behaviors, in order to spot some

possible paths to be explored in further research.

Finally, the **fifth** (last but not least) objective of this research is to analyze the

characteristics of the social network in which participants are embedded, visualizing the structure

of network's structure and verifying the possible effects of networking behaviors on individual's

social networks[14] using a longitudinal perspective.

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[14] "ego networks" cfr. (Wasserman & Faust, 1994) for definitions

3.2 Research design, methods and procedures

Dealing with networking behaviors, this research design has been built moving from previous studies, among which the most inspiring have been those measuring networking using self report scales (Wolff & Moser, 2006) on a longitudinal lookout (Wolff & Moser, 2009).

Networking behavior's antecedents have been included[15], on a cross sectional approach, considering their relative stability compared with networking behaviors. In examined literature a network perspective, using relational data, has rarely been used to track networking behaviors an example is recent work on college students (Smith, 2010).

This research design aims to pursue the main objectives, using a two folded strategy: on one side to test the fit of a model that measures networking behaviors, their antecedents and effects; on the other side, to analyze networking over time, as a process in which some motivational drivers may play a significant role.

Actually, investigating how people build and manage their social networks may face different levels of difficulty depending on the type of variables analyzed and situational constraints. Considering organizational settings in which posing questions about personality, trust and similar constructs along with questions on who interacts with who (or some form of network tracking), may result in some difficulties mainly due to perceived intrusiveness and hidden links with appraisal procedures. Thus, in times of economic crisis and increased worker's diffidence towards "potential" threats, an educational environment has been preferred.

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[15] in terms of personality traits, self-efficacy perceptions and social skills.

To better focus on relations between presented constructs, taking into account environmental constraints and opportunities to get suitable samples, the research design has been composed by two main studies:

- study 1 on networking model proposed by Wolff et al. (Wolff & Moser, 2006; 2009) and its possible antecedents and effects on network measures, at individual level and on a cross sectional design

- study 2 on networking process over time on a longitudinal design.

The population involved in both studies is composed by students in the first two years of their university career.

Study one is focused on networking behaviors at the very beginning of academic year for both first and second year students, while study two concerns only first year students on a two waves design.
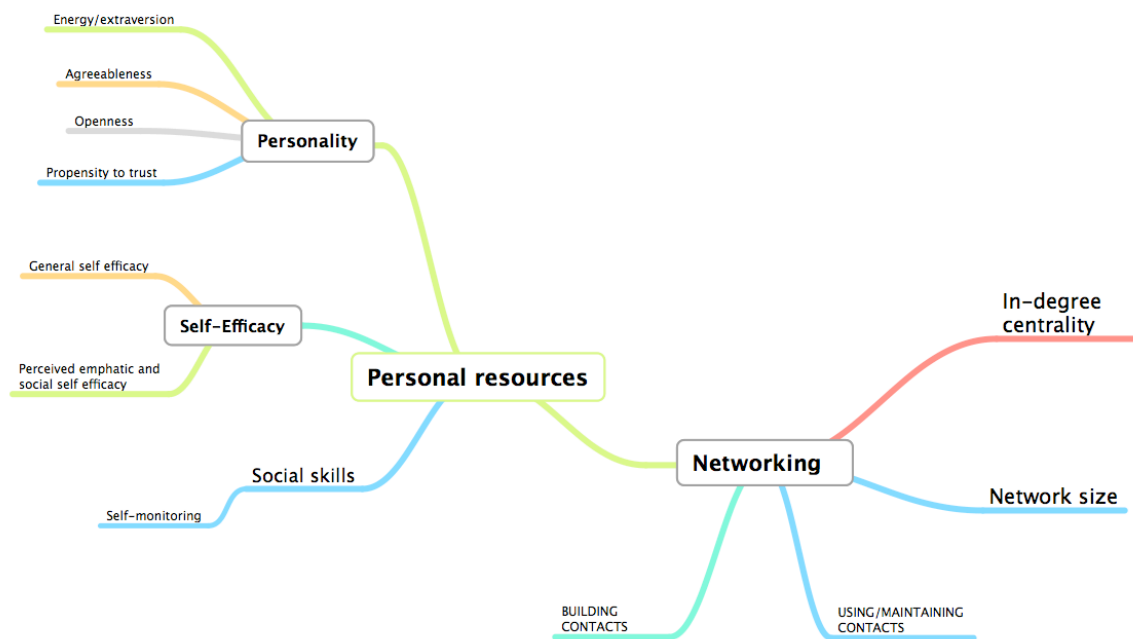
3.3 Study 1 - Networking, antecedents and effects

Networking

Networking is considered a set of interrelated behaviors that are frequently and consistently shown by "networkers". It is assumed that network relationships provide individuals with (job) resources such as task advice and strategic information that in turn enhance an individual's work performance and career success.

Wolff and Moser's (2006) networking scales have been developed by means of a facet theoretical approach. These authors distinguish between two facets. The first, a structural facet of internal vs. external networking, refers to contacts within or outside one's own organization. The second, a functional facet, distinguishes between building, maintaining, and using contacts, reflecting the typical process of relationship development. The combination of these two facets leads up to the classification of six networking subscales: *building internal contacts, maintaining internal contacts, using internal contacts, building external contacts, maintaining external contacts,* and *using external contacts*. Three studies by Wolff and Moser (2006) provide evidence for the validity of the scales.

Moving from those and subsequent studies on networking behaviors (Wolff & Kim, 2012; Wolff & Moser, 2009), this study aims to test the fit of that networking model (based on a mid-term organizational perspective[16] to a short term educational environment in which goals and time perspective are substantially different form the original validation of the model.

This choice involves some inevitable differences from a conceptual point of view.

We refer to real groups of individuals (whose composition isn't determined experimentally) that, nevertheless, don't follow a mid-long term career perspective, but

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[16] usually referring to career and rewards.

engage in a fixed (short) term training program. This scenario is clearly distinct from a future work career.

In this scenario, with regard to the structural facet of the networking model proposed by Wolff and colleagues (2009), suggesting main differences between internal and external networking, this study focuses merely on the internal side, due to the environmental characteristics of the educational context.

Concerning the functional facet of the mentioned networking model, we support the point of view of the authors for building and maintaining contacts are preconditions to using contacts (Wolff and Moser, 2010).

An important point of this relationship's development process is that it includes an instrumental dimension that unfolds over time. Building contacts refers to behaviors related to initiating and making new connections. In this social activity social skills (e.g. self monitoring) play an important role. Wolff and colleagues (2012) stress how instrumentality dimension becomes more important in maintaining and using contacts, "as individuals choose which contacts to maintain and develop and instrumental concerns supplement sociability concerns". The instrumental aspect gains more importance as individuals actively use their contacts, when they need a particular resource and ask for support.

This is one of the reasons that inspired us to widening the scope of possible antecedents of networking behaviors, including not only personality traits but also considering personal resources like self-efficacy and social skills in order to take into account more possible facets and explications of a networking concept as a dynamic process. Thus, sustaining a perspective in which some determinants of networking behaviors

may not be stable and evolve, changing over time, to meet personal goals or to face new challenges.and /or to cope with events that may require a "resourcing" strategy.

Following this reasoning and given the objectives of this study, the following research hypothesis has been set:

Hypothesis 1: even in a shorter time perspective, a networking behaviors model based on different phases will show consistence. We expect to find confirmation of different sub-scales as proposed by (Wolff & Moser, 2006; Wolff, Schneider-Rahm, & Forret, 2011).

3.3.1. Networking antecedents

The set of variables used to investigate some possible networking antecedents includes three personality dimensions already tested in organizational environment (Wolff & Kim, 2012), enlarging the predictors set with social skills and personal beliefs (Bandura, 1989) proven to be relevant in educational context (Caprara, Alessandri, Di Giunta, Panerai, & Eisenberg, 2010).

Personality

The Five Factor model or Big Five is acknowledged as a model describing the main aspects of personality traits (Barrick, 2005) and has been validated across cultures (McCrae and Costa, 1997) as well as over time (Hampson and Goldberg, 2006).

The five dimensions are extraversion, agreeableness, openness to experience, conscientiousness, and emotional stability. Among personality researchers there is "strong consensus" (Cuperman & Ickes, 2009) that, on a broad level, the dimensions are relevant for specific behavioral domains. Extraversion and agreeableness refer to the domain of interpersonal behavior (Ashton, Lee, & Paunonen, 2002)as well as a major determinant of prosocial behaviour (Caprara, Alessandri, Di Giunta, Panerai, & Eisenberg, 2010), whereas

openness to experience is relevant to individuals' intellectual life or idea-related endeavors. Conscientiousness is relevant to "engagement in task-related endeavors" (Ashton & Lee, 2001) and emotional stability refers to individuals' affective experiences or feelings.

Several studies seem to confirm three main predictors of social skills: <u>extraversion, agreeableness and openness</u> (Asendorpf, 1998; Campbell, 2001; Carver & Connor-Smith, 2010; Klein, Lim, Saltz, & Mayer, 2004; Oh & Kilduff, 2008; Snyder, 1974; Tong et al., 2004).

According to Wolff and Kim(Wolff & Kim, 2012), the above mentioned dimensions have significant effects on networking behaviors. Findings confirm that extraversion and openness to experience are broadly related to the set of networking dimensions (building, maintaining, using contacts). They also found evidence for differential relationships, for example, that agreeableness is related to internal, but not external networking (within organizations). Both, conscientiousness and emotional stability seem to be not related to networking behaviors.

On the basis of previous studies on networking behaviors and personality (Wanberg, Kanfer, & Banas, 2000; Wolff & Kim, 2012), we consider that individuals with higher extraversion (e.g., because they are outgoing and active), agreeableness (e.g., because they are trusting, cooperative, good-natured, and have warm relationships with others) and openness to experience (e.g., because they are flexible and open to trying different techniques and methods) display higher levels of networking intensity than individuals with lower extraversion, agreeableness and openness to experience.

Building on Wolff (2012) the following hypothesis have been set:

Hypothesis 2: *a significant relation between selected personality measures (Agreeableness, Extraversion, Openness) and networking behaviors.*

H2a. *Extraversion is positively related to networking behaviors.*

H2b. *Extraversion is more closely related to building contacts than to maintaining and using contacts.*

H2c. *Agreeableness is positively related to networking behaviors.*

H2d. *The relationship between agreeableness and maintaining or using contacts is stronger than the relationship with building contacts.*

H2e. *Openness to experience is positively related to networking behaviors.*

Trust

Following the framework proposed by McEvily & Tortoriello (2011) some measures of trust have been chosen among those which may be more suitable to catch the potential link between dispositional trust and behavior. According to Gillespie (2003), from a measurement point of view, a willingness to be vulnerable by engaging in trusting behavior is proximally closer to trust behavior than perceptions of another's trustworthiness, and therefore better able to predict actual trust behavior. Gillespie's findings (Gillespie, 2003) have shown that beliefs about another's trustworthiness are distinct from, but significantly associated with, the willingness to be vulnerable by behaving in a trusting manner been. For this reason, as a potential antecedent of networking behaviors and given a research design focused on individual level, "propensity to trust" has been chosen as a distinct predictor on individual level. On the basis of the work of Goldberg (1999; 2006) among the measures of personality, Propensity to trust has been included among networking antecedents.

Hypothesis 3. *Propensity to trust is positively related with networking behaviors*

Self-efficacy

Self-efficacy beliefs attain to how effectively a person believes he or she can act to meet goals or to cope effectively with challenging situations. Although these beliefs concern people's perceptions of their own capacities rather than actual capacities, a vast literature attests to the pervasive influence that self-efficacy exerts on individuals' performance and achievement in various tasks (Di Giunta et al., 2010).

Bandura's Social Cognitive Theory (SCT) posits a bidirectional influence between social structure and personal agency (Bandura, 1989; 1998; 2000; 2001; Fernandez-Ballesteros, Diez-Nicolas, Caprara, Barbaranelli, & Albert Bandura, 2002).

SCT looks at people's motivation influenced by the foresight of goals, where specific high goals create negative discrepancies to be mastered. In this perspective, behaviors and resources are mobilized based on anticipatory estimates of what is necessary for goal attainment. Self efficacy beliefs, in a resourcing strategy that moves from hobfoll's (Hobfoll, 2002) ideas of resources and adaptation, may be suitable predictors of networking behaviors in terms of goal setting and motivation. A wide-range of research, work-related laboratory and field studies provide overwhelming evidence that efficacy beliefs influence the level of motivation and performance (Latham & Pinder, 2005).

Though SCT refuses the trait approach to human behavior, considering perceived self-efficacy and outcome expectancies as not contextless global dispositions assessed by an "omnibus" test (Bandura 2002), some authors (Chen, Gully, & Eden, 2004) have validated a measure of general rather than task-specific self-efficacy. They found that self-efficacy is distinct from self-esteem in predicting important outcomes in organizational settings. According to Luszczynska and colleagues (2005), perceived general self-efficacy appears to be a

universal construct that yields meaningful relations with other psychological constructs (such as personality, self-regulation, self-esteem, etc..) across different countries.

Although trait theory and theory regarding self-efficacy beliefs have different roots, it may be useful to integrate both approaches to obtain a better comprehension of psychological structures and mechanisms conducive to stable individual differences in managing networks of relationships. These two approaches may complement each other as they address different structures ad processes that are crucial to fully account for personality functioning and major individual differences.

To analyze networking behaviors antecedents Self efficacy has been included in this research design in both forms: as a general, unspecific, construct and as a more contextualized dimension (social self-efficacy) that may be related to building, maintaining and using social contacts.

Social Self-Efficacy

Social relationships play an important role in individual development and functioning and empathy is an important predictor of interpersonal functioning. Positive relations have been found between empathy adolescents' social competence and quality of functioning in friendships (Caprara, Scabini, & Barbaranelli, 1998).

Building and maintaining good interpersonal relationships in any culture requires an effort and a variety of communicative skills, social skills and empathic abilities.

These aspects have been considered in terms of capabilities to experience another person's feelings and to engage in social interactions to contribute to an individual's perceived abilities to experience empathy and to competently engage in social interactions (i.e., perceived empathic self-efficacy [PESE] and social self-efficacy beliefs [PSSE]). Presuming that these two

types of self-efficacy beliefs, although related, are not one and the same, being based on different

skills (i.e., perceived capabilities to recognize and vicariously share others' emotions and to

manage different types of interpersonal relation- ships), two scales were developed to assess

PESE and PSSE (Di Giunta et al., 2010).

The PESE Scale is designed to assess individuals' perceived capability to experience

emotion from another's perspective, to respond emotionally and compassionately to others'

distress and misfortune, and to be sensitive to how one's actions affect others' feelings, while the

PSSE Scale measures people's beliefs in their capabilities to voice their own opinions with

others, to work cooperatively and to share personal experiences with others, and to manage

interpersonal conflicts.

Following Caprara and colleagues, the capacity to handle interpersonal relationships

is critical to promote successful adaptation and well-being (Caprara, Alessandri, Di Giunta,

Panerai, & Eisenberg, 2010; Di Giunta et al., 2010; Wei, Russell, & Zakalik, 2005).

Moving from previous studies examining interpersonal and social self-efficacy beliefs

(Caprara, Alessandri, Di Giunta, Panerai, & Eisenberg, 2010), as well as agreeableness, as major

determinants of pro-sociality, a multidimensional approach on self-efficacy has, thus, been

preferred.

Besides general self efficacy, as a predictor of networking behaviors, perceived

empathic self-efficacy [PESE] and social self-efficacy beliefs [PSSE] measures (Di Giunta

et al., 2010) have been included in this research design.

Hypothesis 4: *Self-Efficacy is positively related to networking behaviors.*

H4a. Domain-specific Self-Efficacy measures are positively related with different networking behaviors: the relationship between Perceived Empathic Self-Efficacy and maintaining or using contacts is stronger than the relationship with building contacts.

H4b. Domain-specific Self-Efficacy measures are positively related with different networking behaviors: the relationship between Perceived Social Self-Efficacy and maintaining or using contacts is stronger than the relationship with building contacts.

Self-Monitoring

In the perspective of Social Cognitive Theory, social factors affect the operation (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001) of the self-regulative system. According to Bandura's Social Cognitive Theory, human behavior is highly motivated and regulated by self-influence processes. Self-regulative mechanisms include, together with self-efficacy, also self-monitoring of one's behavior. The theory of self-monitoring (Snyder, 1974), which concerns differences in the extent to which people value, create, cultivate, and project social images and public appearances, involves expressive control.

Looking at organizational behaviors through a social network's perspective, Mehra and colleagues (2001) tested how self-monitoring orientation and network position related to work performance. Their findings suggest that high self-monitors are more likely than "true-to-themselves" low self-monitors to occupy central positions in social networks. Moreover, self-monitoring and centrality in social networks independently predicted individuals' workplace performance (Oh & Kilduff, 2008). Research results seem to "paint a picture of people shaping the networks that constrain and enable performance" (Mehra et al., 2001).

Among individual characteristics that may influence networking behaviors and network structure, Self monitoring has been included in the research design as a personal resource that may predict networking behaviors.

Hypothesis 5: personal resources, like social skills and self-efficacy, may be positively related to networking behaviors.

H5a. Self-Monitoring is positively related to networking behaviors.

H5b. The relationship between Self-Monitoring and building contacts is stronger than the relationship with maintaining or using contacts

3.3.2 Networking effects

An innovative characteristic of this study lays on analyzing the potential effects of networking behaviors on the social networks in which respondents are embedded. Only few studies, in fact, seem to be focused on networking antecedents and behaviors, also integrating relational data to verify some possible effect of networking behaviors on an individual level of analysis (McPherson, Smith-Lovin, & Cook, 2001; Smith, 2010). A social network analysis method has been used in this study, to get a more detailed picture, cross checking different methods.

Applying social network analysis (SNA) methods to focus on relations between individuals, an exploring perspective has been adopted following the suggestions given by seminal works in this field (Wasserman & Faust, 1994) and subsequent advances (Carrington et al., 2005) (BORGATTI, 2011).

It may be useful here to recall some basic assumptions from which the social network perspective moves:

- ✓ Actors and their actions are considered interdependent rather than autonomous

- ✓ Links between actors are channels to transfer or flowing of resources

- ✓ Network structure represents opportunities and/or constraints for individual action

- ✓ Network models conceptualize structure as <u>lasting</u> patterns of relations among actors

In dealing with networking behaviors an important point is represented by the environment: networking doesn't take place in a general, unspecified environment but in the actual network where the actors are embedded.

This research isn't primarily set on network structure's property, so, according to Wasserman (1994, p.9) it can be classified as "auxiliary network study".

Network theories and measurements here are used as explanatory factors in understanding individual behavior, setting opportunities and constraints for action. University courses represent a social environment where relations are an important and common factor, even though actor's goals are not exactly the same as a business. Understanding individual's behaviors in a social environment through analyzing actor's perceptions (self report scales in questionnaires) could benefit from adding a network analysis complement.

In this study SNA has been used as a framework for testing the role of the social environment being shaped and shaping individual action.

In SNA basics definitions of actors, groups, relations and other modeling units are well described in (Wasserman & Faust, 1994). When we define a social network we refer to "a finite set of actors and the relations defined on them" (Wasserman & Faust, 1994).

Obviously, a very important concern in studying a social network is which actors to include in the group to be observed.

As our population is part of an educational environment, in which classes are often considered as units of analysis, we considered a "class-bounded" network for our studies. Observing networking behaviors on a short-medium time span, we focused on the social exchanges that are more likely to occur on a daily basis. Moreover it's quite common to have students to work in teams for a project work. Therefore, the sampling procedure has included all the members of a class, not considering students from other classes.
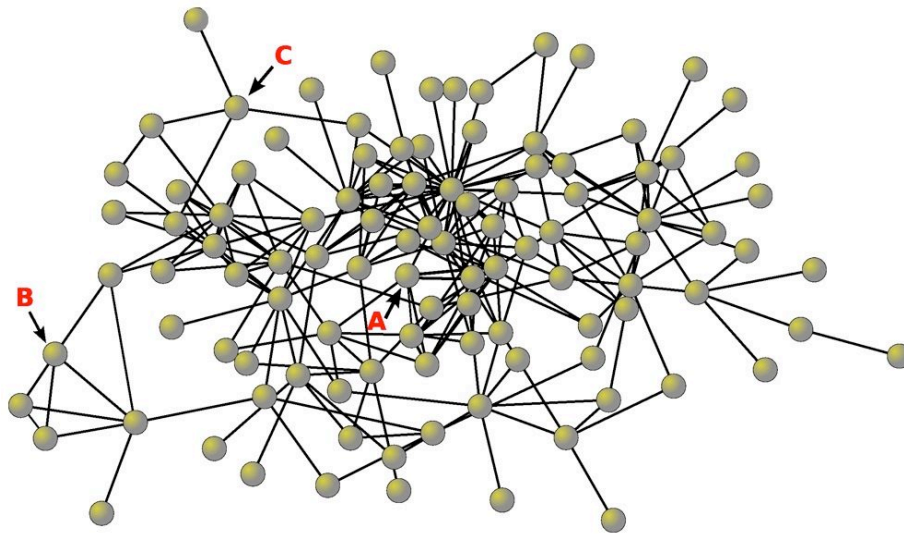
Fig.4 Network Illustrating Structural Parameters.[17] This real network of students shows variation in structural attributes and topological position. Each circle represents a person and each line represents a friendship tie. Nodes A and B have different ''degree,'' a measure that indicates the number of ties. Nodes with higher degree also tend to exhibit higher ''centrality'' (node A with six friends is more central than B and C who both only have four friends).

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[17] adapted from (Christakis & Fowler, 2010)

We posit that networking behaviors are related to individual's position in the social network they are embedded in. Moreover we expect a bigger personal network size for those who engage more in building contacts.

Hypothesis 6: a positive relation between networking behaviors and node activity, networking sub-scales to predict node centrality and ego network size.

H6a: building contacts behaviors to predict higher node prestige measures.

Social network indexes

To test Hypothesis 2, a relational questionnaire, based on the roster method (S. Borgatti, 2005) (Carrington et al., 2005; Hanneman & Riddle, 2005; Wasserman & Faust, 1994) has been developed. Social network analysis indexes, such as degree centrality and ego network size, (Borgatti et al., 2009) will be used to check the effects of networking behaviors on network characteristics.[18]

Study design

This study has been designed as cross sectional, on a multi sample strategy, in order to widen the number of participants from different educational contexts. Aiming to extend the generalizability of results, we focused first on networking measures, then on possible antecedents and finally on analyzing the effects of these behaviors on social networks.

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[18] see next paragraph for more details on network measures

3.3.3 Method

Samples and procedure

This study has been conducted on three samples of students from the Faculty of Psychology of the Universities of Bologna and University of Parma (north-east of Italy) to participate at the research, filling a paper questionnaire on October 2011, within one week from the beginning of the academic year.

The complete sample (N=296) has been composed by three subsamples:

CE(1) First year's students, University of Bologna; N= 131 (68% Women)

CE(2) Second year's students, University of Bologna; N= 86 (74% Women)

PR   Second year's students, University of Parma; N= 79 (78% Women)

This research is focused on real situations where individuals build and manage their social networks. Thus, though the three samples are substantially equivalent in terms of gender, they haven't been balanced for this variable. Students were kindly asked to participate to a research project aimed to study networking behaviors of university students. Due to non anonymous relational data needed for social network analysis and subsequent longitudinal study (two) specific information and privacy guarantee have been provided.

All questionnaires have been coded for social network analysis and follow up (where applicable[19]).

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[19] only first year students)

Networking behaviors and sub-scales

Following previous works of Wolff & Moser (2006;2009) and thanks to the collaboration with Prof. H.G. Wolff, an Italian version of a german multidimensional networking scale (Wolff et al., 2011) has been adapted to the educational context ad translated into italian.

Original networking scales were composed of six types of networking behaviors, for this study purposes only the internal networking scales have been included[20] to measure networking activity split into three different dimensions :

Building contacts (BC), six items, e.g. "I use university events to make new contacts", Chronbach's alpha (α= .77);

Maintaining contacts (MC), seven items, e.g. "I catch up with students from other courses about what they are working on", (α= .70);

Using contacts (UC) ,eight items, e.g. "I use my contacts with students of other course in order to get advice in study matters", (α= .75);

The time dimension has been referred to the last couple of weeks (e.g., "thinking about last few weeks, since university courses started, how often do you..").

Personality

Big Five

To test the role of the chosen three main dimension of Big Five: extraversion, agreeableness and openness we used the italian version of the Big Five Questionnaire (Caprara, Barbaranelli, & Borgogni, 1993). The BFQ contains five domain scales and 10

'facet' scales to assess the Big Five Factors of personality. The psychometric properties of the

BFQ have been validated on large samples of Italian respondents as well as in cross-cultural

comparisons (Barbaranelli & Caprara, 2000; Caprara, Barbaranelli, Bermudez, Maslach, &

Ruch, 2000).

Following BFQ domain scale have been used:

Energy/extraversion, twenty-four items, Chronbach's alpha (α= .81);

Agreeableness, twenty-four items, (α= .75);

Openness, twenty-four items, (α= .75);

Trust

On the basis of the work of Goldberg (1999; 2006) among the measures of

personality, "Propensity to trust"[21] has been included among networking antecedents:

Propensity to trust, ten items[22] (e.g. "I Believe that others have good intentions", "I

Distrust people"), (α= .80);

Self efficacy

Self-efficacy

General self-efficacy has been measured using The Italian Adaptation of the General

Self-Efficacy Scale (GSE) ("Self-Efficacy Generalizzata"- Sibilia, Schwarzer & Jerusalem,

1995") (Jerusalem & Schwarzer, 1995), originally developed in German in 1979 by Matthias

Jerusalem and Ralf Schwarzer. Respondents answer items using a 4-point Likert scale, ranging

from (1) Not at all true to (4) Exactly true.

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[20] given the educational environment in which external networking goes beyond the scope of this research.

[21] Trust (Preliminary IPIP Scales - Goldberg, L. R. (1999)

[22] items were measured using a 5-point response scale (1 = *absolutely truth* to 5 = *absolutely false*).

General Self-efficacy scale (GSE), ten items (e.g., ''Thanks to my resourcefulness, I can handle unforeseen situations'', ''I am certain that I can accomplish my goals''), Chronbach's alpha (α= .83);

Social Self-Efficacy

Perceived empathic self-efficacy [PESE] and social self-efficacy beliefs [PSSE] scales (Di Giunta et al., 2010) have been used in this research. Both PESE and PSSE items were measured using a 5-point response scale (1 = *not well at all* to 5 = *very well*).

A factorial analysis to test the fit of social self-efficacy scales has suggested to prefer a factorial solution that confirmed two factors:[23]

F_1 Perceived empathic self-efficacy [PESE], five items (e.g. How well can you read your friend's needs?), explaining 29,55% of total variance, Chronbach's alpha (α= .77);

F_2 Perceived social self-efficacy [PSSE], four items (e.g. How well can you actively participate in group activity?), explaining 24,86% of total variance, Chronbach's alpha (α= .72);

Social skills

Self-Monitoring

Among individual characteristics that may influence networking behaviors and network structure, Self monitoring has been included in the research design as a personal resource. The scale used is an Italian version of Snyder's Self Monitoring Scale – Short version (Snyder, 1974; 2000).

Self-monitoring (SM) has been calculated, as a mono dimensional scale as follows:

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[23] Kaiser-Meyer-Olkin Measure of Sampling Adequacy= ,773; Principal components analysis with Varimax rotation, items below .4 were dropped

SM, eighteen items (e.g. "I find it hard to imitate the behavior of other people", "I would probably make a good actor"), Chronbach's alpha (α= .69).

Social network analysis

In our setting, we refer to a "one-mode" network (a single set of actors) where the unit of observation are single actors and the modeling unit is the actor and set of actors.[24]

As a relational quantification here we followed a directional coding (from who to who) and we asked participants to assign a value to each tie, as a sort of rating, using these options:

1) acquaintance;

2) previous acquaintance (person known since before the beginning of university classes);

3) collaboration (person with whom the respondent has some kind of exchange: information, notes, books…)

Following examples of collecting relational data using roster method in university classes (KRACKHARDT, 1988), the data collection method used here has been a questionnaire roster (complete list of the other actors in the set) for first year students, whereas a free recall method has been used for second year students. This choice has been made considering that second year student may have already built and developed their network of stable relationships and do not need to choose their friends and acquaintances from a list to remember their names.

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[24] Another possible method of analysis for social networks, called "two-mode" or "affiliation" network includes two different set of units: for example actors and events.

Actually, rosters were provided to first year students to aid recall, to reduce measurement error so to improve data reliability (Marsden, 1990; O'Malley & Marsden, 2008).

Finally, fixed choice measurement error (Wasserman & Faust, 1994, p. 59) has been avoided allowing free choice without restrictions.

Graphs and measures

Graph theory (terminology and concepts) is used in social network analysis to measures network's and node's properties[25].

When using a graph to model a social network, actors are represented by points (called nodes) and ties between actors are represented by lines. Use of graphs to represent social relations and quantifying structural properties, commenced with Moreno in 1934 (Moreno, 1943).

In graph theory nodes are indicated by (n_i) a number of measures can be used to analyze node's characteristics and structural properties of a network.

Here, for our purposes, we describe the measures used to investigate networking behaviors at individual level of analysis.

Nodal degree

To measure the number of relations in which a node is involved (number of ties), represented by the number of lines incident with that node (n_i) the index commonly used in SNA is nodal degree.

Nodal degree (d) is a count that ranges from a minimum of 0 to a maximum of g-1 (where g is the total number of nodes in the set). When n_i is adjacent to all other nodes in the graph $d_{max} = $ g-1. In case d(n_i)=0 then n_i *is isolated.*

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[25] Iacobucci in Wasserman & Faust, 1994

The mean nodal degree of a graph is calculated with this formula:

$$\bar{d} = \frac{\sum_{i=1}^{g} d(n_i)}{g} = \frac{2L}{g}$$

Actually, the degree of a node can be used as a proxy of it's "activity" (or, better, of the actor it represents). Variability in nodal degree is often represented with the following formula to calculate the Standard Deviation.

$$SD = \sqrt{\frac{\sum_{i}^{g} = 1\left(d(n_i) - \bar{d}\right)^2}{g}}$$

Considering the possible paths between a pair of nodes, the shortest of these paths is commonly referred to as "geodesic". The **distance** between two nodes is, therefore, the length of any shortest path between them.

The diameter of a connected graph is considered as the largest geodesic distance between any pair of nodes. The diameter of a graph can range from a minimum of 1 (if the graph is complete) to a maximum of g-1

Centrality and prestige in graph theory

Centrality and prestige in graph theory are one of the most frequent measures used in social network analysis to identify the "most important" actors in a social network

In this study we aim to analyze some characteristics of the network as well as the activity and the prominence[26] of single actors, in order to verify possible correlations with networking behaviors.

For this purpose we consider two SNA indexes:

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[26] or "status" according to Moreno (Moreno, 1943)

In-Degree centrality

This index measures actor's centrality in terms of number of contacts received. For our purposes, in fact, it is important to distinguish between contacts sent (outgoing from a single actor) and received. In this research all adjacency matrixes (Wasserman & Faust, 1994) are directed as recommended by Wasserman & Faust (1994)(meaning that ties between actors are coded in terms of from who to who, thus not symmetric). This measure is considered a "prestige" index in terms of number of choices received, thus the actors who receive many nominations or choices tend to be "prestigious".

In study one we posit in-degree centrality as a measure of feedback of networking behaviors: the more "prestigious" nodes may enact better (in terms of efficacy) networking behaviors.

Another point to highlight about the choice of this index is related to questionnaire responses. Using in-degree centrality we consider the number of contacts received, thus it's possible to calculate this index even for those who did not respond to the questionnaire, enlarging the sample.

Referring to nodal degree formula, in-degree centrality is calculated as follows:

$$\frac{d_I(n_i)}{g-1}$$

That is the proportion of actors who choose actor *i*.[27] *The larger is the index, the more prestigious is the actor (this index ranges from 0 to1).*

In this study we preferred to use in-degree centrality vs simple in-degree or other centrality measures for its standardization, thus being able to compare the same index between the different sub-network analyzed for our sub-samples.

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[27] standardizing with respect of the number of nodes in the network.

Ego-network size

This index has been calculated to measure the actual size of individual's personal network, that is to say, for each actor those "others" in their immediate "neighborhood". The "ego-network" of a single actor is the set of actors who are connected to that actor, along with the relations between ego and the alters, and any relations among the alters. The structure of ego networks are often critical variables in understanding and predicting the behavior of "ego" (Hanneman & Riddle, 2005).

Describing and indexing the variation across individuals in the way they are embedded in "local" social structures is the goal of the analysis of ego networks.

A network has as many egos as it has nodes. "Neighborhood" is the collection of ego and all nodes to whom ego has a connection at some path length. In social network analysis, the "neighborhood" is almost always one-step; that is, it includes only ego and actors that are directly adjacent. The neighborhood also includes all of the ties among all of the actors to whom ego has a direct connection. The boundaries of ego networks are defined in terms of neighborhoods (Hanneman & Riddle, 2005).

In this study, we used one-step neighborhood, thus egonet size is calculated as the number of nodes directly connected to "ego".

data analysis

Network data have been analyzed using Net Miner[28] (see (Huisman & van Duijn, 2005) and Snijders in (Carrington et al., 2005) for a review).

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[28] Cyram (2009). Netminer 3 3.4.0.d.090924 Seoul: Cyram Co., Ltd.

Social network analysis in terms of methods and chosen indexes has been conducted following the guidelines provided by acknowledged reference (Hanneman & Riddle, 2005) (Wasserman & Faust, 1994) (Carrington et al., 2005; Marin, 2009; Valente, 2005).

Though SNA indexes at individual level (node level) have been analyzed for correlations on the full sample (N=296) they have been calculated separately for each sub-sample (e.g. First year students from University of Bologna, Second year students from University of Bologna, Second year students from University of Parma, referring to the actual network in which participants are embedded).

As far as association analysis are concerned, where applicable, Pearson's r correlation index has been used, with two tailed significance level and listwise missing treatment criterium[29]

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[29] unless otherwise specified.

3.3.4 Results

Networking model

The **first** objective of study one is to test the fit of the chosen networking model (based on a mid-term organizational perspective (e.g. Career and/or rewards) to a shorter term educational environment in which goals and time perspective are substantially different form the original validation of the model.

To test Hypothesis 1 (stating that, even in a shorter time perspective, a networking behaviors model based on different phases would show consistence) a Confirmative Factor Analysis (CFA) has been conducted.

We expected to find confirmation of different sub-scales as proposed by (Wolff et al., 2011; Wolff & Moser, 2006).

Though the analysis of original scales has shown acceptable reliability,[30] CFA did not support a satisfactory three factors solution.

A two factors model, keeping the original "Building contacts" scale as Factor 1 and the merging of "maintaining contacts" and "using contacts" has been tested on data collected in two samples (N1=296; N2=251) using Confirmative Factor Analysis with LISREL 8.80 for Windows (Jöreskog & Sörbom 2006) (Joreskog & Sörbom, 1996).

Data analysis have been conducted over 296 questionnaires for T1 measures and 251 questionnaires for T2 measures.[31] Matching cases for T1 and T2 were 112.

Sample one included both first and second year students from both Bologna and Parma Universities, while Sample 2 included only first year students from Bologna's University.

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[30] see par. 3.3.3 for Chronbach's reliability.
[31] Kaiser-Meyer-Olkin Measure of Sampling Adequacy. has shown adequate value for both samples (KMO_1= 0,853; KMO_2=0,773)

Sample 1

χ^2= 396.87 (P = 0.00)

Root Mean Square Error of Approximation
(RMSEA)= 0.074[32]

Non-Normed Fit Index (NNFI)= 0.93

Standardized RMR= .063

Comparative Fit Index (CFI) = 0.94

Sample 2

χ^2= 265.09 (P = 0.00)

Root Mean Square Error of Approximation
(RMSEA)= 0.049[33]

Non-Normed Fit Index (NNFI)= 0.93

Standardized RMR= .059

Comparative Fit Index (CFI) = 0.94

Fit indices have been chosen as follows: χ^2 (Bollen, 1989); Steiger's Root Mean Square Error of Approximation (RMSEA; Steiger, 1990; Steiger & Lind, 1980); Non Normed Fit Index (Bentler, 1980); Standardized Root Mean Square Residual (SRMR) (Bentler, 1995); Bentler's (1990) Comparative Fit Index (CFI).

Results of the Confirmative Factor Analysis, examined following Hu e Bentler (1998, 1999) and subsequent (Schermelleh-Engel, Moosbrugger, & Müller, 2003; Weston, 2006) recommendations on alternative indexes values, seem to show an acceptable fit.[34]

Though a further validation of the scales is recommended, in order to extend these results to other organizational settings, the solution more adherent to the original model has been preferred. These fit indexes are in-line with those obtained by Wolff et al. in previous studies (Wolff et al., 2011; Wolff & Moser, 2006; 2009).

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[32] 90 Percent Confidence Interval for RMSEA = (0.065 ; 0.083)
[33] 90 Percent Confidence Interval for RMSEA = (0.039 ; 0.059)
[34] Following Weston's (2006) hints: "when CFI values between .90 and .95, RMSEA values between .05 and .10, and SRMR values between .08 and .15 are observed, readers should consider the sample size used to estimate the model (using more stringent criteria for samples

Networking behaviors have been measured using the following scales:

Building contacts (**BC**) (5 items, Chronbach's alpha for T_1/T_2: α= 0.76/0.69)[35];

Using/Maintaining contacts (**UMC**) (14 items α= 0.83/0.77).

Descriptive statistics are reported in Table 1, p.82.

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larger than $n = 500$) and the model complexity (using more stringent criteria for less complex models)".

[35] *the reliability estimate of Building Contacts fell slightly below the "magic threshold" of .70 in sample T2. As Cronbach's alpha for this subscale was above this threshold in previous studies by Wolff and Moser and possessed adequate stability, we assume that the true reliability of this scale is close to the threshold of .70 and attribute this minor deviation to sampling fluctuation.*

Networking and possible control factors

Reasonably, at the beginning of their career at university 1st year students seem to enact less than 2nd year on NW behaviors to use/maintain contacts ($t_{(293)}$ −2.86, p=. 005).

Fig.5 – Differences in networking behaviors by classes
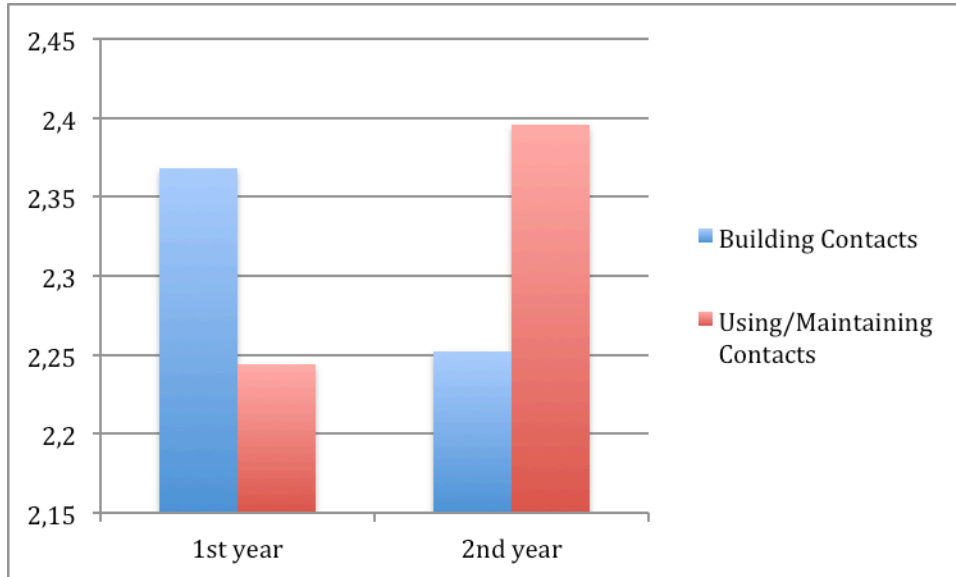
All other control variables (campus, gender, presence at classes) seem not to make any remarkable differences between groups.

According with these results, H1 seems to be acceptable. Even on a shorter time perspective we found support for a model that distinguishes specific sub dimensions oriented to different scopes, on a dynamic perspective: Building contacts as a condition to get access to people and resources, then managing (using/maintaining contacts) contacts to socialize and benefit from available connections.

Same sample correlations (n=112) have been measured over time in two waves, in order to test networking behaviors change over time. As suggested by (Wolff et al., 2011) some empirical findings have shown that networking is stable over time, though here we face a

different time perspective on a shorter time frame. Socialization processes for first year students at university may show a different distribution over time of diverse (but related) networking behaviors.

Therefore, changing in networking behaviors on the same respondents have been investigated in study two.

Table 1. Descriptives statistics and intercorrelations among study 1 variables

Variable	Range	M	SD	1	2	3	4	5	6	7	8	9	10
1 Building Contacts	1-4	2.30	0.64	(0.76)									
2 Using/Maintaining Contacts	1-4	2.33	0.46	.458**	(0.83)								
3 Energy/extraversion	1-5	3.19	0.45	.404**	.254**	(0.81)							
4 Agreeableness	1-5	3.34	0.39	.183**	.252**	0.084	(0.75)						
5 Openness	1-5	3.54	0.41	.252**	.240**	.272**	.251**	(0.75)					
6 General Self-Efficacy	1-4	2.78	0.39	.210**	.181**	.521**	0.052	.400**	(0.83)				
7 Perceived Empathic Self-Efficacy	1-5	4.05	0.50	.164**	.213**	.187**	.293**	.215**	.267**	(0.77)			
8 Perceived Social Self-Efficacy	1-5	3.63	0.72	.354**	.407**	.447**	.399**	.193**	.222**	.275**	(0.72)		
9 Self Monitoring	0-18	7.60	3.24	.279**	.143*	.322**	-0.023	.173**	.224**	0.084	.121*	(0.69)	
10 Propensity to trust	1-5	3.07	0.65	.195**	.219**	.176**	.633**	.181**	0.114	.166**	.318**	0.017	(0.80)

Note: n=296. Figures in parenthesis are alpha reliabilities
*p<0.05; **p<0.01.

Antecedents

Pursuing the **second** aim of this research, to enlarge the scope of possible antecedents of networking behaviors, we complemented personality traits with personal resources like self-efficacy and social skills in order to take into account more possible facets and explications.

This choice is functional to test a concept of networking as a dynamic process, in which antecedents of networking behaviors may not being stable but evolving and changing over time to meet personal goals or to face new challenges.

Table X shows variable intercorrelations and descriptive statistics for the whole sample (N=296).

Personality

Building on previous studies on networking behaviors and personality (Wanberg et al., 2000; Wolff & Kim, 2012), we hypothesized that individuals with higher extraversion, agreeableness and openness to experience would display higher levels of networking intensity than individuals with lower extraversion, agreeableness and openness to experience (H2).

As shown in table X *a statistically significant positive relation between selected personality measures (Agreeableness, Energy/Extraversion, Openness) and networking behaviors has been verified for all variables, yielding* <u>*support for H2*</u>.

H2a, H2c and H2e further specifying H2 for the single variables are supported as well.

Accepting the approach proposed by (Wolff & Kim, 2012) we hypothesized extraversion to characterize the tendency to approach social situations and to obtain social attention.

According to author's analysis of the functional facet of networking, "social attention is readily available from building contacts, but less important in maintaining and using contacts, as these behaviors do not only serve social, but also instrumental needs" (Wolff & Kim, 2012). We found support for this, confirming __*H2b, for*__. *extraversion to be more closely related to building contacts than to maintaining and using contacts.*[36]

If extraversion is positively related to how individuals approach social situations, agreeableness is expected to concern the mode of relating to others. Assuming that an agreeable style in relating to others may help in networking behaviors, we hypothesized that the relationship between agreeableness *and maintaining or using contacts is stronger than the relationship with building contacts (H2d). As reported in table X, our data seem to confirm this hypothesis.*

In sum, all personality variables have shown a positive relation with both networking sub-scales, with energy/extraversion showing the bigger correlation.

Trust

As a potential antecedent of networking behaviors and given a research design focused on individual level, "propensity to trust" has been chosen as a distinct predictor on individual level, to catch the potential link between dispositional trust and networking behavior.

Hypothesis 3, *stating Propensity to trust to be positively related with networking behaviors, seem to be supported by data shown in table x.*

Self Efficacy

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[36] *Actually, having merged maintaining and using contacts in one factor we are not able to verify for differences in these two aspects separately.*

Among networking behaviors antecedents Self efficacy has been included in this research design on a multidimensional approach. Besides general self efficacy, as a predictor of networking behaviors, perceived empathic self-efficacy [PESE] and social self-efficacy beliefs [PSSE] measures (Di Giunta et al., 2010) have been considered as domain specific aspects.

Self-Efficacy, as shown in table X, is positively related to networking behaviors in all the three different dimensions, yielding support for H4.

Domain-specific Self-Efficacy measures (PESE and PSSE) are both positively related with different networking behaviors and the relationship between Perceived Empathic Self-Efficacy and maintaining/using contacts seems to be stronger than the relationship with building contacts, supporting **H4a**. Likewise, the relationship between Perceived Social Self-Efficacy and maintaining/using contacts seems to be stronger than the relationship with building contacts, supporting **H4b** (table x, p.)**.**

About this aspect, we found support for hypothesized role of both domain specific self-efficacy in relation with maintaining and using contacts, with a stronger association for Perceived social self-efficacy (PSSE) with both networking behaviors sub dimensions.

Therefore, individuals' perceived capability to experience emotion from another's perspective and people's beliefs in their capabilities to work cooperatively sharing personal experiences seem to be associated with networking behaviors.

Self-Monitoring

Finally, ending with a possible antecedent of networking behaviors that may account for self-regulative mechanisms, together with self-efficacy, we examine self-monitoring of

one's behavior. The differences in the extent to which people value, create, cultivate, and project social images and public appearances, involves expressive control that we posit to be related with networking behaviors and especially with building contacts.

Looking at results on table X these hypothesis (H5a and H5b) seem to be both supported.

Predictors

Having examined in detail all variables considered to be potential predictors of networking behaviors we found support for all our hypothesized relations. In sum, it seems that both dispositional traits and self regulative mechanisms are related with networking behaviors, either in building contacts and using/maintaining contacts.

In order to highlight the main predictors for each networking sub-scale, all antecedents variable have been regressed on each networking scale.

Building contacts

Predictors of networking behaviors aimed at building contacts seem to be, according to our results:

1. **Energy/extraversion**, $\beta = .22$, $t_{(290)} = 3.56$, $p < .001$

2. **Perceived Social Self-Efficacy** $\beta = .21$, $t_{(290)} = 3.63$, $p < .001$

3. **Self Monitoring** $\beta = .16$, $t_{(290)} = 3.04$, $p = .003$

4. **Openness** $\beta = .12$, $t_{(290)} = 2.19$, $p = .030$

These predictors also explained a significant proportion of variance in building contacts,

$R^2 = .24$, $F(4, 290) = 22.73$, $p < .001$.

Using/maintaining contacts

Predictors of networking behaviors aimed at using and/or maintaining contacts seem to be, according to our results:

1. **Perceived Social Self-Efficacy** $\beta = .37$, $t_{(292)} = 6.95$, $p < .001$

2. **Openness** $\beta = .17$, $t_{(292)} = 3.14$, $p = .002$

These predictors also explained a significant proportion of variance in using/maintaining contacts,

$R^2 = .19$, $F(2, 292) = 35.09$, $p < .001$.

To sum up our results, the above listed variables seem to be the stronger predictors of networking behaviors, where energy/extraversion and self monitoring are mainly related with building contacts, while perceived social self-efficacy together with openness are mostly related with using and/or maintaining contacts.

In other words, our results seem to assign to extraversion (e.g., being outgoing and active) and self-regulative mechanisms like expressive control (self-monitoring) a primary role in building contacts. On the other hand, as far as managing existing relationships is concerned, people's beliefs in their capabilities to voice their own opinions with others, to work cooperatively, to share personal experiences and manage interpersonal conflicts seem to be the most important factors, together with being flexible and open to try different strategies.

Effects

The **fifth** challenging objective of this research aims to analyze the characteristics of the social network in which participants are embedded, visualizing the structure of network's structure and verifying the possible effects of networking behaviors on individual's social networks

We posited networking behaviors to be related to individual's position in the social network they are embedded in (H6), and expecting a bigger personal network size for those who engage more in building contacts(H6a).

To test our hypothesis we used the following centrality and network size indexes:[37]

- **In-degree centrality** (proportion of inbound connections with respect to the entire graph: in order to compare graphs of different dimensions).

- **Ego-network size** (number of nodes composing a single's node network of contacts).

Matching network centrality with networking behaviors a clear difference emerges looking at the network position of different networking profiles.

Splitting the sample in two groups based on in-degree centrality scores we identified two main profiles: high centrality and low centrality actors[38] we found significant differences in networking behaviors (see fig. 6 below).

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[37] see par. 3.3.3 for more details on indexes calculation.
[38] sub groups were created using in -degree centrality median (0.11 on a theoretic score range between 0-1) as splitting criteria.

FIG. 6 – Differences in Networking behaviors between high and low central actors.
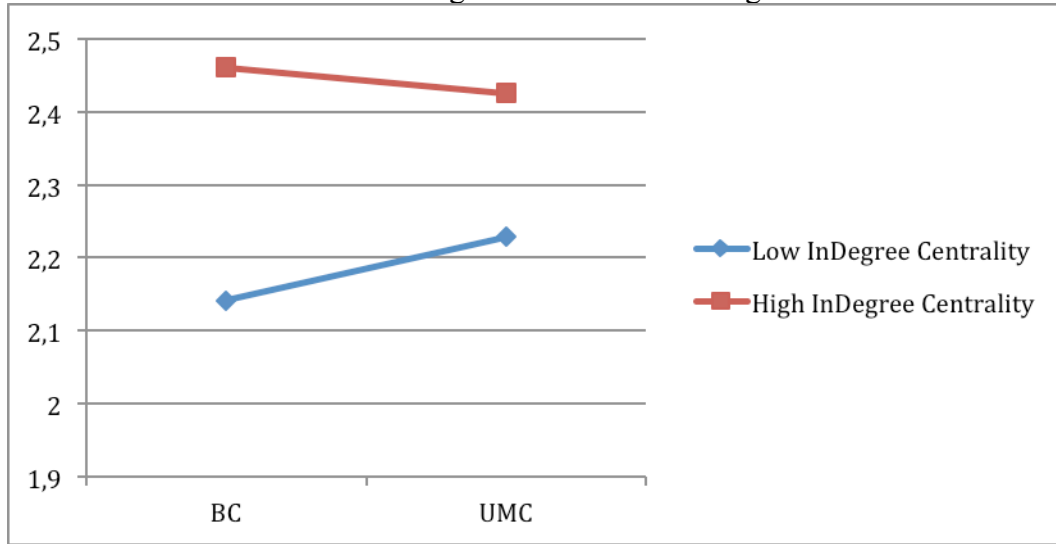
Both building contacts behaviors, $F(1, 293) = 19.92$, $p < .001$, and managing contacts behaviors $F(1, 293) = 14.36$, $p < .001$, show significative differences, with bigger effects for building contacts.

In annex 1, table 1 are presented descriptive statistics for the analyzed sub-networks.

Here are shown descriptives on network properties

Table 2. Descriptives statistics about network structural properties

Variable	Range	M	SD	1	2	3	4
1 In-degree Centrality	86	0.014	0.011	1			
2 Ego network size	79	6.91	4.83	.73**	1		
3 Building contacts	1-4	2.30	0.64	.30**	.36**	1	
4 Using/Maintaining Contacts	1-4	2.33	0.46	.25**	.20**	.46**	1

Note: n=296

<u>Predictors of SNA indexes</u>

Networking behaviors that seem to be more associated with SNA are those aimed at

building contacts: associated to in-degree centrality, $r_{(286)}= .30$, $p<.001$, and to ego-network

size $r_{(286)}= .36$ $p<.001$.

On the other hand, networking behaviors aimed at **using and/or maintaining contacts**

are as well associated to in-degree centrality, $r_{(286)}= .25$, $p<.001$, and to ego-network size $r_{(286)}=$

$.20$ $p=.001$.

A positive relation between networking behaviors and node activity seems therefore

supported for both networking sub-scales to predict node centrality and ego network size,

confirming empirical support for H6.

Regarding H6a, about building contacts behaviors to better predict higher node

prestige measures, our results indicate building contacts as the main predictor[39] $\beta = .24$, $t_{(285)}$

$= 3.78$, p $< .001$, and using/maintaining contacts as a significant but less powerful predictor $\beta =$

$.14$, $t_{(285)} = 2.18$, p $= .030$, yielding support for H6a.

These predictors explain a significant proportion of variance of in-degree centrality, R^2

$= .11$, F(2, 285) $= 16.80$, p $< .001$.

To verify other potential influence factors on social network analysis indexes we used

"*Presence at lessons*[40]*"* as a control variable.

Attending all lessons seems to positively affect centrality measures and network size,

students more present at lessons show higher scores for In degree centrality, $t_{(255)}$ 3.62, $p<.001$;

and ego-network size, $t_{(256)}$ 3.30, $p=.001$.

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[39] on a stepwise linear regression analysis Criteria: Probability-of-F-to-enter <= ,050,
Probability-of-F-to-remove >= ,100).

Networking behaviors, on the other hand, do not show significative differences for presence at lessons: it's possible, then, that more presence at lessons could represent more chances to enact the same behaviors.

Graphical representation of sub-sample networks considered for social network analysis are available in Annex B

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[40] dicothomized variable: always present/not always, originally measured on four points scale from 4 (always present) to 1= almost never.

3.3.5 Discussion

In this study, the fit of a multidimensional networking scale has been tested on Italian students attending the first two years of a university course. Results indicated that the chosen scales show an acceptable consistency and fit with data. The shorter time perspective adopted seem to adjust but not substantially modify the structure of networking process described by original authors (Wolff, Schneider-Rahm, & Forret, 2011). Consistently with previous findings, extraversion seems to play a key role in predicting networking behaviors and outcomes, as well as significant effects of context specific self-efficacy beliefs. Results on self-reported behavioral patterns seem to be significant predictors of social network measures. Centrality indexes in social network analysis seem to confirm the role of networking behaviors in influencing the considered outcomes in terms of network structure: node's centrality in the network and ego-network size. These findings suggest that the multidimensional networking model examined shows consistency and may be successfully adapted to a shorter term scenario in educational processes.

Trying to spot plausible antecedents of networking behaviors we complemented personality factors with social cognitive elements to stress a dynamic perspective in analyzing social agency. In this view we found a coexistence of stable traits (e.g., energy/extraversion) and self-regulative mechanisms like expressive control (e.g., self-monitoring) in predicting building contacts. On the other hand, people's beliefs in their capabilities and being flexible and open to try different strategies seem to be the two most important factors for managing existing relationships.

Given the presented short term educational scenario in which network behaviors have been analyzed, we found support for a significant association between enacted behaviors and social ties among the actors involved. Devoting time and energies to building contacts and

managing the existing ones doesn't seem to be a waste of time. At the contrary those who actively engage in networking behaviors have more chances to occupy a central position in the web of relations they are embedded in, offering them a wider choice of potential resources in their personal network.

Limitations

This study was designed to test a networking model in a different scenario. Thus, with the aim of keeping measures as close as possible to the original scales we obviously had to make some operational choices for scale adaptation and validation. Though an acceptable adaptation of the model has been reached, a further work in refining items and scales is strongly recommended to enhance this model maintaining its predictive power in contexts other than the original (long term, career) time perspective.

Moreover, to test networking sub-dimensions and antecedents on a wider population we mixed different samples (students from first and second year) from two university campuses. This aspect may have contributed to introduce uncontrolled and confounding variables.

To make more consistent analyses, based on a more homogeneous sample and looking at networking phenomena unfolding over time, study two has been realized.

3.4 Study 2 – Networking process

The purpose of this study is to examine, with an explicit time perspective, a process that unfolds over time, on a dynamic view. In current studies only few examples of explicit longitudinal design (Smith, 2010) have been found in literature dealing with similar topics and using a relational approach. This study aims to fill the gap already highlighted by Wolff (2009, p.204) when admitting to have focused on one measurement of networking to predict career success but did not consider networking at subsequent waves.

Networking behaviors may change over time, even though previous empirical findings have found support for networking to be stable over time, considering a mid-long term scenario (e.g., Sturges, Guest, Conway, and Davey, 2002). What about our short term educational environment?

Social network analysis method has been used to get a more detailed picture on monitoring outcomes of networking behaviors.

On a two waves research design, changes in networking behaviors, network centrality effects and dyadic level dynamics are investigated.

Starting from the research main focus on networking behaviors, we d'like to give a close look at how people in organizations build new contacts, maintain those already available and make use of them when necessary.

Building on previous studies, that posit networking behaviors to be substantially stable over time, we expect to find confirmation about the following hypothesis:

H1: a significant correlation between networking behaviors over time

As a network resources perspective has gained more attention, in the last decade new theoretical models have put the accent on some kind of explanations about people's choices in a social embedding environment(Sparrowe et al., 2001; Sterling, Scott, & Labianca, 2010).

In socio-economic studies, an interesting approach to decision making and individual behavior has been explored by interactions-based models in economics (Durlauf, 2001).

In his work, Durlauf (2001) begins modeling assuming that "each individual possesses preference orderings over the space of possible choices he faces and chooses the one ranked highest". An underlying idea is that each individual is affected by his beliefs about the choices of others, not himself.

A standard assumption in economics is that expectations are rational, which means that the subjective beliefs of individuals are consistent with the conditional probabilities that actually characterize the variables over which these beliefs are formed.

Following this line of reasoning, the presence (or absence) of connection between two or more actors (nodes) has impact on strategies and choices that those and other actors may make to maximize their benefits (D'Ignazio & Giovannetti, 2004).

Following this reasoning, and given our shorter time perspective[41], we hypothesize that, networking behaviors may change in objectives and quality over time (H2), to adapt and respond to new needs and challenges.

On the basis of results reported in study one, we posit that networking behaviors significantly impact on typical network measures (e.g. In-degree centrality and ego-network size). In this study we *hypothesize that networking behaviors will show a consistent association with network position (prestige) over time(H3).*

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[41] if compared with the original networking model by Wolff & Moser (2006, 2009)

Moving from Social Cognitive Theory, we propose a view of networking process not only driven by dispositional traits or patterns but considering a more conscious and intentional strategy to achieve selected goals. On these premises we **hypothesis (H4) that** *networking behaviors aimed to mobilize social resources (namely active collaboration exchanges) may predict tie formation over time.*

Study Design

This study has been designed as longitudinal, on a single sample strategy, using a combination of psychometric and sociometric data, with two waves on a time span of six months.

This study has been inspired by Prof. Roe's suggestions about the role of time in organizational studies (Roe & Waller, 2009).

The period of six months between the two data collection has been set in order to let socialization processes develop over a reasonable duration, in line with the beginning of the second semester on a typical time perception for university students in Italy.

While the first wave has been set in accordance with the beginning of the academic year, the second has been subsequent to a "natural" interruption of teaching activity followed by examination session. This type of events (e.g., Christmas holidays, a change in daily lessons routine and preparation of exams) could have facilitated students in re-organizing their social relationships in order to pursue a "social resourcing" strategy (e.g., to get useful social support for their career [study] objectives and/or to nurture affective relationships).

3.4.1. Method

Participants and procedure

The study has been conducted on a sample of students of Psychology attending the first year. Wave one of data collection has involved the same participants to study one (n=131), while the second wave has concerned a sample of 213 students to analyze networking outcomes on a longitudinal research design. Data collecting for this study has been completed in March 2012.

Measures

In order to test the described hypothesis, the following measures are included in the research design:

Networking behaviors and sub-scales

Following previous works of Wolff & Moser (2006;2009) and thanks to the collaboration with Prof. H.G. Wolff, an Italian version of a german multidimensional networking scale (Wolff et al., 2011) has been adapted to the educational context ad translated into italian.

Original networking scales were composed of six types of networking behaviors, for this study purposes only the internal networking scales have been included[42] to measure networking activity, split into two different dimensions following results obtained in study one.[43]

Networking behaviors have been measured using the following scales:

Building contacts (**BC**) (5 items, Chronbach's alpha for T_1/T_2: $\alpha = 0.76/0.69$)[44];

Using/Maintaining contacts (**UMC**) (14 items $\alpha = 0.83/0.77$).

The time dimension for self reported networking behaviors has been referred to the last few weeks (e.g., "thinking about last few weeks, how often do you..").

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[42] given the educational environment in which external networking goes beyond the scope of this research.

[43] see par. 3.3.4 for more details

[44] *the reliability estimate of Building Contacts fell slightly below the "magic threshold" of .70 in sample T2. As Cronbach's alpha for this subscale was above this threshold in previous studies by Wolff and Moser and possessed adequate stability, we assume that the true reliability of this scale is close to the threshold of .70 and attribute this minor deviation to sampling fluctuation.*

Social network analysis

In our setting, we refer to a "one-mode" network (a single set of actors) where the unit of observation are single actors and the modeling unit is the actor and set of actors.[45]

As a relational quantification here we followed a directional coding (from who to who) and we asked participants to assign a value to each tie, as a sort of rating, using these options:

1) acquaintance;

2) previous acquaintance (person known since before the beginning of university classes);

3) collaboration (person with whom the respondent has some kind of exchange: information, notes, books…)

Following examples of collecting relational data using roster method in university classes (Krackhardt, 1988), the data collection method used here has been a questionnaire roster (complete list of the other actors in the set).

Actually, rosters were provided to students to aid recall, to reduce measurement error so to improve data reliability (Marsden, 1990; O'Malley & Marsden, 2008).

Finally, fixed choice measurement error (Wasserman & Faust, 1994, p. 59) has been avoided allowing free choice without restrictions.

Graphs and measures

Graphs and measures

Graph theory (terminology and concepts) is used in social network analysis to measures network's and node's properties[46].

When using a graph to model a social network, actors are represented by points (called nodes) and ties between actors are represented by lines. Use of graphs to represent social relations and quantifying structural properties, commenced with Moreno in 1934 (Moreno, 1943).

In graph theory nodes are indicated by (n_i) a number of measures can be used to analyze node's characteristics and structural properties of a network.

Here, for our purposes, we describe the measures used to investigate networking behaviors at individual level of analysis.

Nodal degree

To measure the number of relations in which a node is involved (number of ties), represented by the number of lines incident with that node (n_i) the index commonly used in SNA is nodal degree.

Nodal degree (d) is a count that ranges from a minimum of 0 to a maximum of g-1 (where g is the total number of nodes in the set). When n_i is adjacent to all other nodes in the graph d_{max} = g-1. In case d(n_i)=0 then n_i *is isolated.*

The mean nodal degree of a graph is calculated with this formula:

$$\bar{d} = \frac{\sum_{i=1}^{g} d(n_i)}{g} = \frac{2L}{g}$$

Actually, the degree of a node can be used as a proxy of it's "activity" (or, better, of the actor it represents). Variability in nodal degree is often represented with the following formula to calculate the Standard Deviation.

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[45] Another possible method of analysis for social networks, called "two-mode" or "affiliation" network includes two different set of units: for example actors and events.
[46] Iacobucci in Wasserman & Faust, 1994

$$SD = \sqrt{\frac{\sum_{i}^{g}=1\left(d(n_i)-\bar{d}\right)^2}{g}}$$

Considering the possible paths between a pair of nodes, the shortest of these paths is commonly referred to as "geodesic". The **distance** between two nodes is, therefore, the length of any shortest path between them.

The **diameter** of a connected graph is considered as the largest geodesic distance between any pair of nodes. The diameter of a graph can range from a minimum of 1 (if the graph is complete) to a maximum of g-1

Centrality and prestige in graph theory

Centrality and prestige in graph theory are one of the most frequent measures used in social network analysis to identify the "most important" actors in a social network

In this study we aim to analyze some characteristics of the network as well as the activity and the prominence[47] of single actors, in order to verify possible correlations with networking behaviors.

For this purpose we considered two SNA indexes:

In-Degree centrality

This index measures actor's centrality in terms of number of contacts received. For our purposes, in fact, it is important to distinguish between contacts sent (outgoing from a single actor) and received. In this research all adjacency matrixes (Wasserman & Faust, 1994) are directed as recommended by Wasserman & Faust (1994)(meaning that ties

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[47] or "status" according to Moreno (Moreno, 1943)

between actors are coded in terms of from who to who, thus not symmetric). This measure is considered a "prestige" index in terms of number of choices received, thus the actors who receive many nominations or choices tend to be "prestigious".

In study one we posit in-degree centrality as a measure of feedback of networking behaviors: the more "prestigious" nodes may enact better (in terms of efficacy) networking behaviors.

Another point to highlight about the choice of this index is related to questionnaire responses. Using in-degree centrality we consider the number of contacts received, thus it's possible to calculate this index even for those who did not respond to the questionnaire, enlarging the sample.

Referring to nodal degree formula, in-degree centrality is calculated as follows:

$$\frac{d_I(n_i)}{g-1}$$

That is the proportion of actors who choose actor i.[48] *The larger is the index, the more prestigious is the actor (this index ranges from 0 to1).*

In this study we preferred to maintain in-degree centrality vs simple in-degree or other centrality measures for its standardization, thus being able to compare the same index between the different sub-network analyzed for our sub-samples on T1 and T2.

Ego-network size

This index has been calculated to measure the actual size of individual's personal network, that is to say, for each actor those "others" in their immediate "neighborhood". The "ego-network" of a single actor is the set of actors who are connected to that actor, along with

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[48] standardizing with respect of the number of nodes in the network.

the relations between ego and the alters, and any relations among the alters. The structure of ego networks are often critical variables in understanding and predicting the behavior of "ego" (Hanneman & Riddle, 2005).

Describing and indexing the variation across individuals in the way they are embedded in "local" social structures is the goal of the analysis of ego networks.

A network has as many egos as it has nodes. "Neighborhood" is the collection of ego and all nodes to whom ego has a connection at some path length. In social network analysis, the "neighborhood" is almost always one-step; that is, it includes only ego and actors that are directly adjacent. The neighborhood also includes all of the ties among all of the actors to whom ego has a direct connection. The boundaries of ego networks are defined in terms of neighborhoods (Hanneman & Riddle, 2005).

In this study, we used one-step neighborhood, thus egonet size is calculated as the number of nodes directly connected to "ego".

Data Analysis

Network data have been analyzed using Net Miner[49] (see (Huisman & van Duijn, 2005) and Snijders in (Carrington et al., 2005) for a review).

Social network analysis in terms of methods and chosen indexes has been conducted following the guidelines provided by acknowledged reference (Hanneman & Riddle, 2005) (Wasserman & Faust, 1994) (Carrington et al., 2005; Marin, 2009; Valente, 2005).

SNA indexes at individual level (node level) have been analyzed on the full sample of first year students at T2(N=213)

As far as association analysis were concerned, where applicable, Pearson's *r* correlation index has been used, with two tailed significance level and listwise missing treatment criterium[50].

Sna data regressions

The dyadic analyses (on the possible predictors of social ties) feature a specific kind of regression analysis. In typical statistical analysis, a researcher could perform multiple regression to find out if there is a relationship between the independent and dependent variables. Because network measures by definition violate a key assumption of regression, that measures are independent observations, this method cannot be used. The most used Social Network Analysis software (Ucinet, Net Miner) contain a method of analysis called QAP (Quadratic Assignment Procedure), which takes the interconnectedness of the data into account by using a method similar to bootstrapping (Hanneman & Riddle, 2005).

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[49] Cyram (2009). Netminer 3 3.4.0.d.090924 Seoul: Cyram Co., Ltd.
[50] unless otherwise specified.

Multiple regression quadratic assignment procedures (MRQAP) tests are permutation tests for multiple linear regression model coefficients for data organized in square matrices of relatedness among n objects. Such a data structure is typical in social network studies, where variables indicate some type of relation between a given set of actors. In brief, multiple samples are taken from the larger sample to estimate the likelihood that the observed data is a departure from randomness. The specific multiple regression QAP method used in this study for dyadic regressions is the Double Dekker Semi-Partialing MRQAP (Dekker, Kackhardt, & Snijders, 2007).

This fairly new permutation method complements the family of extant approaches to MRQAP tests. This method, across a variety of conditions of network autocorrelation, spuriousness (size of confounder effect), and of skewness in the data seems to be the most robust against a wide array of these conditions (Dekker et al., 2007).

Results yield coefficients (standardized), measures of statistical significance, and r-square values, which can be interpreted in a manner similar to regular linear regressions.

3.4.2 Results

Networking behaviors over time

The **third** objective of this dissertation is to examine, with an explicit time perspective, a process that unfolds in time, on a dynamic view. Moving from some empirical findings that consider networking as stable over time (Sturges et al., 2002) and being inspired by other studies that did not consider networking at subsequent waves (Wolff & Moser, 2009), we propose that networking behaviors though quite stable over time in overall quantity may change in quality, to meet different goals and /or to cope with events that may require a "resourcing" strategy.

This study focuses on how some changes in networking behaviors and/or network structure (actor's centrality, ego-network size) may occur over time.

Actually, looking at fig.7 below it is evident how the social network in which students are embedded develops over a six months period.

Fig. 7 Network properties at Time one and Time two – study two

	1st Year T1	1st Year T2
■ # of Links	729	3.727
▲ Density	0,01	0,05
✕ Average Degree	2,67	13,652
✳ Reciprocity (Dyad)	0,213	0,296
● Mean Distance	3,618	2,504
┼ Diameter	9	8
◆ Connectedness	0,083	0,468
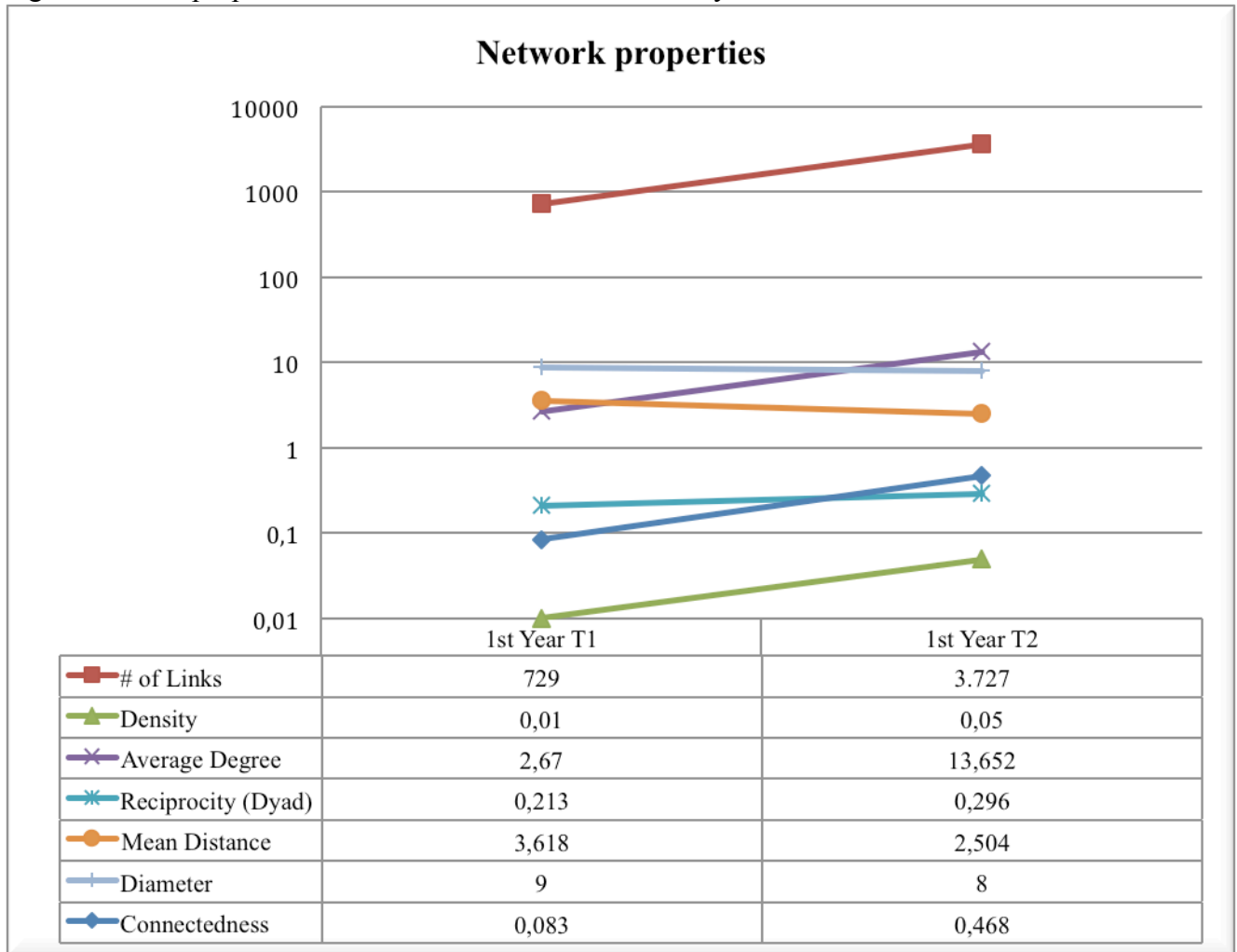
The number of links between actors has grown of five times, and so is network density and the average node's degree.

While network's diameter and dyad reciprocity (number of reciprocated connections between actor's) are substantially stable, the mean distance between nodes is reduced of about thirty percent (thanks to a connectedness five times higher).

In tab. 3 are summarized the descriptive statistics and associations between the analyzed variable for this study.

Table 3. Descriptives statistics and intercorrelations among study 2 variables

Variable	Range	M	SD	1	2	3	4	5	6	7	8
Time 1											
1 Building Contacts	1-4	2.38	0.61	1							
2 Using/Maintaining Contacts	1-4	2.26	0.53	0.43**	1						
3 In-Degree Centrality	0-1	0.009	0.0006	.28**	.13	1					
4 Ego-network size	0-33	4.40	4.99	.43**	.12	.79**	1				
Time 2											
5 Building Contacts	1-4	2.22	0.53	.66**	.38**	.23*	.36**	1			
6 Using/Maintaining Contacts	1-4	2.29	0.39	.18	.46**	.07	.18	.33**	1		
7 In-Degree Centrality	0-1	0.05	0.048	.17	.11	.10	.03	.21*	-.03	1	
8 Ego-network size	0-103	21.06	18.63	.14	.05	.02	-.00	.14	-.01	.81**	1

Note: listwise N=112. *p<0.05; **p<0.01

From an individual agency perspective, Fig. 7 below shows how individual's networking behaviors quality changed over time, therefore H2 seems to be supported by our data.

Fig. 7 – Networking behaviors over time
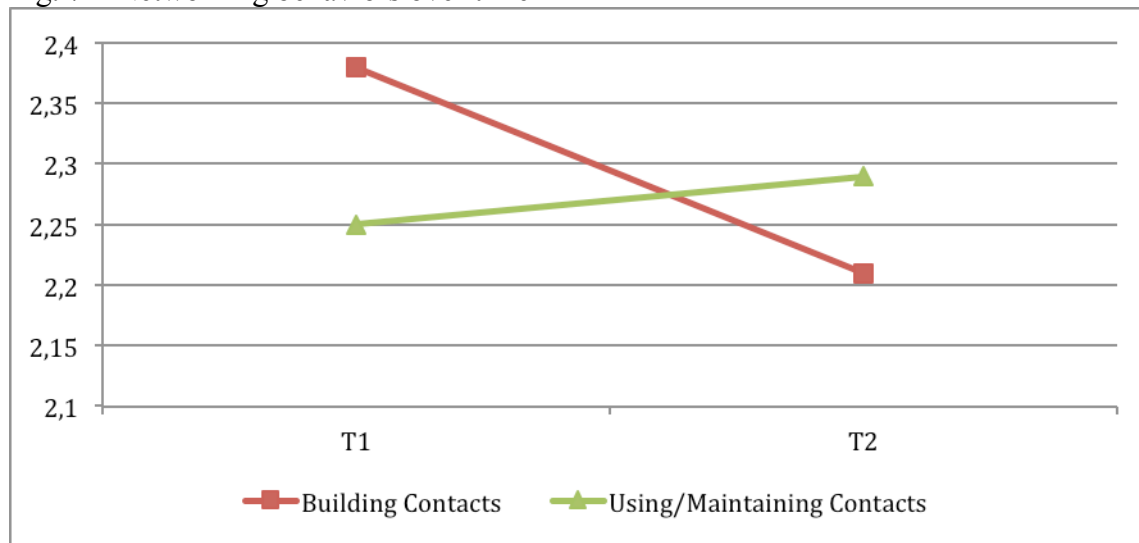
Arguably while building contacts behaviors decreases, over six months, from an initial higher level, $t(111) = 3.65, p < .001$, using/maintaining contacts activity seems to slightly increase, though non significantly. Beside this, the impact of networking behaviors on individual's network size, $t(272) = -16.84, p < .001$ and centrality position seems to follow accordingly a growth trend, $t(272) = -15.60, p < .001$.

This observation may lead to see how, despite less effort put (or, better, perceived to be put) in building contacts, the number of contacts received and the size of actor's own network significantly increases. After an initial "inertial" kick-off, the effect of networking behaviors seems to pay off and give results.

Matching networking behaviors with network centrality, a difference emerges looking at the network position of different networking profiles, analyzed over time.

Splitting the sample in two groups based on in-degree centrality scores we identified two main profiles: high centrality and low centrality actors[51], so we found significant differences in networking behaviors (see fig. 8).

Fig. 8 – Different networking profiles over time – Building contacts
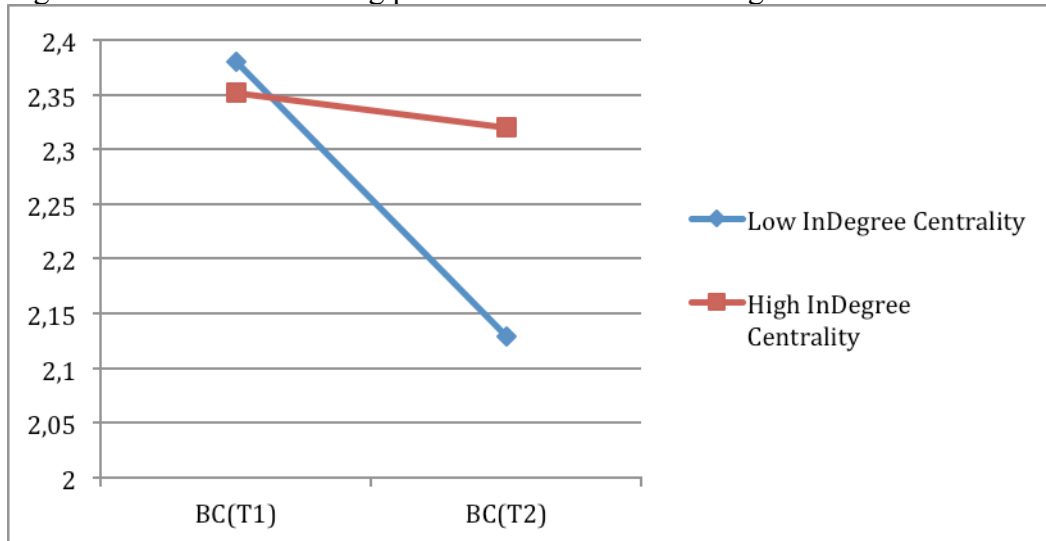
While at T1 there are no significant differences on building contacts behaviors between high centrality and low centrality actors, at T2 it's quite evident how high central actors essentially "keep building" while low central nodes don't, $F(1, 211) = 6.02$, $p = .01$.

No significant differences have been found for managing (using/maintaining) contacts behaviors over time (see Fig. 9, below)

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[51] sub groups were created using in-degree centrality median at time 1 (0.11 on a theoretic score range between 0-1) as splitting criteria.

Fig. 9 – Different networking profiles over time – Managing contacts
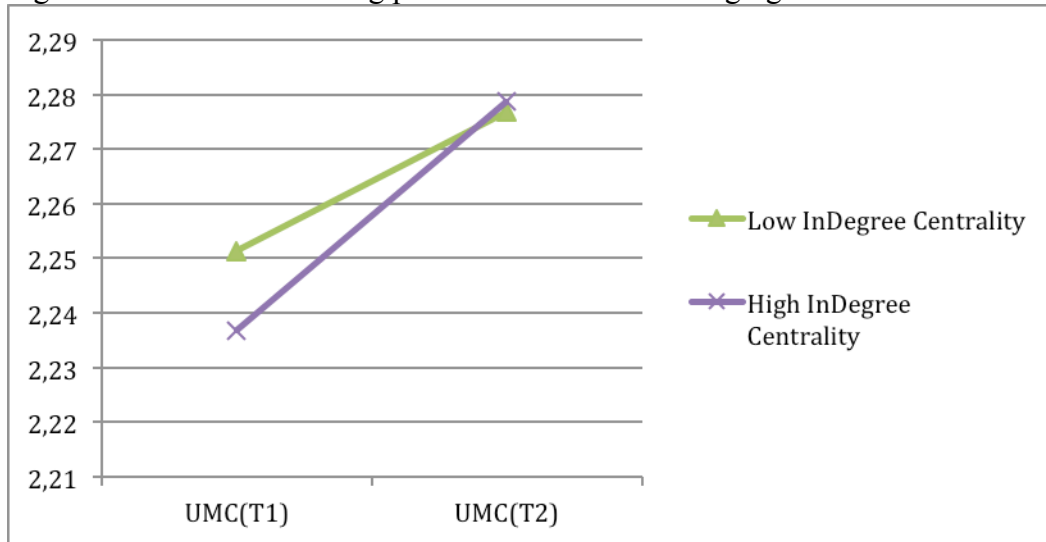
Given these findings, keeping building contacts seems to be a fruitful strategy, even for those who already are in a central position in the social network ,

Networking behaviors over time have been analyzed considering those who responded at both waves (n=112) about their networking behaviors.

Observing tab. A it's quite clear that networking behaviors are highly associated over time so it's interesting to verify which could be the main predictors of networking behaviors changing over time.

Building contacts at wave one significantly predicts building contacts at wave two, $\beta =$ .66, $t_{(110)} = 9.24$, $p < .001$, explaining a significant proportion of variance, $R^2 = .43$, $F(1, 110) = 85.42$, $p < .001$.

No other networking behavior, nor network centrality or ego network size seems to have significant effect over building contacts at time two.

Like wise, managing contacts activity at T_1 significantly predicts the same networking

behavior after six months $\beta = .46$, $t_{(110)} = 5.44$, $p < 001$, explaining a significant proportion of

variance, $R^2 = .21$, $F(1, 110) = 29.54$, $p < .001$.

These findings seem to confirm the idea of a stable pattern of networking behaviors over

time.

Individuals who actively engage in building and managing contacts joining a new social

context seem to keep behaving accordingly, at least after the first six months. Thus H1 seems to

be supported by data.

Network structure over time

Analyzing the strong correlations between centrality indexes and ego-network size over

time, in tab. 4 below, we see how a node's network central position at time two is highly

associated to a previous central position and ego-network size.

Table 4. Correlations among study 2 network variables: full sample

	In-Degree Centrality T1	Egonet Size T1	In-Degree Centrality T2	Egonet Size T2
In-Degree Centrality T1	1			
Egonet Size T1	0.82**	1		
In-Degree Centrality T2	0.60**	0.56**	1	
Egonet Size T2	0.56**	0.56**	0.86**	1

Note: N=273 full sample

This seem to indicate a consistent stability of node's position over the considered six

months period, at least looking at networks from a node's level of analysis.

Levels of analysis

Node level

Predictors of network centrality/prestige

In a multiple regression model[52] including networking behaviors at time 2[53] (referred to the past six months), network centrality at time 1 and ego-network size at time 1 to predict node's in-degree centrality at time two we found support for consistency in actor's role within their social network.

A significant proportion of variance, $R^2 = .40$, $F(3, 213) = 46.40$, $p < .001$, is explained by in-degree centrality at T1, $\beta = .40$, $p < .001$, as well as Ego-network size at T1, $\beta = .23$, $p = .03$, and Building contacts at T2 $\beta = .14$, $p = .04$.

Though keeping to spend energy in building contacts after the first few weeks since the beginning of the academic year seems to impact on actor's prestige at wave two, supporting H3, these results seem to assign a stronger effect to the network position acquired by networkers on the first few weeks of socialization. Is this a confirmation of "you'll never have a second chance to give a first impression" adagio?

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[52] on a QAP significance testing (see.par. X for more details) based on 2000 iterations and 95% confidence interval.
[53] n=213

Dyadic level

Focusing on dyadic level of analysis, matrix correlation between T1 and T2 has shown a statistically significant association between the social network at T1 and at T2, that is to say: ties on t1 are significantly associated to ties a T2, $r_{(74254)}=0.26$, $p<.05$.

It seems then that social relationship among actors at T2 are, to some extent, associated to something happened six months before, but not perfectly associated. Some socialization processes may have contributed to tie formation during this period.

Predictors of ties formation

To this point we looked at how behaviors and network positions may change over time, but what about possible determinants of tie formation?

Results of multiple regressions[54] conducted on adjacency matrix on t1 and t2 indicated that, if searching for possible predictors of a social tie in T2 we consider the existence of ties in T1, we find the following significant predictors:

acquaintances at T1, $\beta = .22$, $p < .001$, as well as previous acquaintances[55] at T_1, $\beta = .11$, $p < .001$, and collaboration at T1 $\beta = .09$, $p < .001$.

A small but significant proportion of variance, $R^2 = .07$, $F(3, 74256) = 2667.99$, $p < .001$, is thus explained by existing relationship at T1, where *the main role is played by contacts built during the first few weeks, kept alive and maintained over time*.

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[54] using MRQAP double-dekker semi-partialing (Dekker et al., 2007) with iteration N=2000

[55] since before the beginning of university courses in October 2011.

These results about the effect of networking behaviors during the six months interval between the two waves seem to assign more importance to what happens during the first few weeks.

But, including in a multiple regression analysis[56] both previous connections (ties already present at T1 and actor's perception of those previous contacts at T2) and present collaboration ties at T2, we found support for a different picture.

Relationships reported at time one (all types: acquaintances, previous connections, early collaborations) are a significant predictor of subsequent relationships at time two, $\beta = .17$, $p < .001$.

Likewise, also actor's cognition about previous relationships that were active at time two resulted to be a significant predictor, $\beta = .18$, $p < .001$, of relationships ties at time two.

At last (but, absolutely, not least) participant's reported ties with others for collaboration purposes[57] are the stronger predictor, $\beta = .47$, $p < .001$.

A significant proportion of variance, $R^2 = .32$, $F(3, 74256) = 17038.81$, $p < .001$, is explained by previous connections and collaboration at T2, therefore, may be assigned to *the role played by collaboration relationships with contacts built after the first few weeks*.

Remarkably, the same analysis applied to explain time one predictors has shown similar but smaller effects. At time one, indeed, previous acquaintances accounted for a significant effect on actual ties, $\beta = .33$, $p < .001$, while ongoing forms of collaboration had a significant and comparable effect $\beta = .38$, $p < .001$.

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[56] keeping MRQAP double-dekker semi-partialing (Dekker et al., 2007) with iteration N=2000

[57] classmates with whom the respondent has some kind of exchange: information, notes, books…

A significant proportion of variance, $R^2 = .25$, $F(2, 74256) = 25367.49$, $p < .001$, was explained by previous connections and collaboration at T1.

Given these results, the proportion of variance explained by individual's agency seems to increase over time, yielding support to *(H4) about networking behaviors, aimed to mobilize social resources (namely active collaboration exchanges), to predict tie formation over time.*

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3.4.3 Discussion

Results seem to indicate that networking behaviors, even in a relatively short term time perspective, are subject to changes in quality and in quantity, over time.

If, after an initial "inertial" kick-off, the effect of networking behaviors seems to pay off and to give results (receiving contacts and incrementing actor's personal network), these outcomes seem to be driven by different behaviors for high central actors and less embedded ones.

Keeping building contacts looks like a fruitful strategy, over time, even for those who already are in a central position in the social network.

This seems to provide support to Hobfoll's Conservation of resources theory as networking could help to retain, protect, and build social resources against a potential or actual loss of these valued resources (Hobfoll, 2002). The possession of multiple resource reservoirs as those represented by a well developed personal network may be an efficient way to achieve and maintain good results.

At the same time, stable patterns of networking behaviors seem to be typical in our sample. This aspect indicates a certain stability of node's position over the considered six months period, at least looking at networks from a node's level of analysis.

If this had fully supported the idea of a mere dispositional approach to networking behaviors, we would expect not to find confirmation for cognitive and self-regulating mechanisms in determining networking behaviors.

Instead, looking at the process of ties formation on the considered six months long time span, we observed how the proportion of variance explained by individual's agency (e.g. various forms of collaboration) seemed to increase over time. This may support the hypothesis of an

emerging networking strategy that moves from natural, dispositional behavioral patterns and turns into more "selective", targeting behavioral strategies over time. A possible transition from a "stumble upon" to a strategy driven approach.

In this scenario the role of functional consciousness, intentionality and forethought, self-regulation by self-reactive influence, and self-reflectiveness about one's capabilities would play a central role, as proposed by Bandura (2001), and could support a resourcing strategy approach to networking.

Limitations

This study is mainly exploratory. Behavioral measures and social network analysis have been applied trying to highlight issues and processes that may be fruitfully used in the future. While the results of this study may have limited generalizability, they do provide some hints for thinking about ways that network and relational perspective may be useful to understand socialization dynamics in a learning environment like higher education.

4. Closing discussion

In this research we have examined various aspects of networking behaviors that assume different weights in subsequent phases of a networking processes. Over the considered period of time motivational and choosing dynamics in managing relationships have been observed in participants' networking behaviors.

A significant point regards going beyond extraversion, that confirms to play a key role in predicting networking behaviors and outcomes, to discover significant effects of context specific self-efficacy beliefs in driving networking behaviors unfolding over time.

Centrality indexes in social network analysis seem to confirm the role of networking behaviors in influencing the considered outcomes in terms of network structure: node's centrality in the network and ego-network size. We found a significant association between enacted behaviors and social ties among the actors involved. Those who actively engage in networking behaviors have more chances to occupy a central position in the web of relations they are embedded in, offering them a wider choice of potential resources in their personal network

These findings suggest that the multidimensional networking model examined shows consistency and may be successfully adapted to a shorter term scenario in educational processes.

Results seem to indicate that networking behaviors, even in a relatively short term time perspective, are subject to changes in quality and in quantity, over time.

Keeping building contacts looks like a fruitful strategy, over time, even for those who already are in a central position in the social network.

This seems to provide support to Hobfoll's Conservation of resources theory as networking could help to retain, protect, and build social resources against a potential or actual loss of these valued resources (Hobfoll, 2002).

Furthermore, we found some support for the hypothesis of an emerging networking strategy that moves from natural, dispositional behavioral patterns and turns into more "selective", targeting behavioral strategies over time. A possible transition from a "stumble upon" to a strategy driven approach.

In this scenario the role of functional consciousness, intentionality and forethought, self-regulation by self-reactive influence, and self-reflectiveness about one's capabilities would play a central role, as proposed by Bandura (2001), and could support a resourcing strategy approach to networking.

Practical implications

These studies may help explaining why some individuals experience more difficulties to networking than others and which self regulating processes may be useful in networking trainings. Practitioners should also take into account a multidimensional set of variables to accurately predict networking skills in selection assessments.

Originality/value

This study provides a broader scope of networking's antecedents, which is an important help for individual's resources management strategy. It also offers a more consistent framework on the personal resources-networking relationship as prior research looked mainly to personality traits. Establishing differential relations also fosters understanding on core differences between networking dimensions and their possible impact on network structure and resources available to networkers.

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ANNEX 1 - NETWORKS

Table 1. Descriptives statistics about network structural properties – Study One

Sample	N	# of Links	Density	Average Degree	Reciprocity (Dyad)	Mean Distance	Diameter	Connectedness
1 2nd Year CE	86	362	0.017	2.50	0.26	4.59	12	0.067
2 2nd Year PR	79	506	0.014	2.61	0.20	3.94	11	0.029
3 1st Year T1	131	729	0.01	2.67	0.21	3.62	9	0.083

Table 2. Descriptives statistics about network structural properties – Study Two

Sample	N	# of Links	Density	Average Degree	Reciprocity (Dyad)	Mean Distance	Diameter	Connectedness
1 1st Year T_1	131	729	0.01	2.67	0.21	3.62	9	0.083
2 2nd Year T_2	213	3.727	0.05	13.65	0.30	2.50	8	0.47

Fig. 1 Degree centrality 1st Year T1
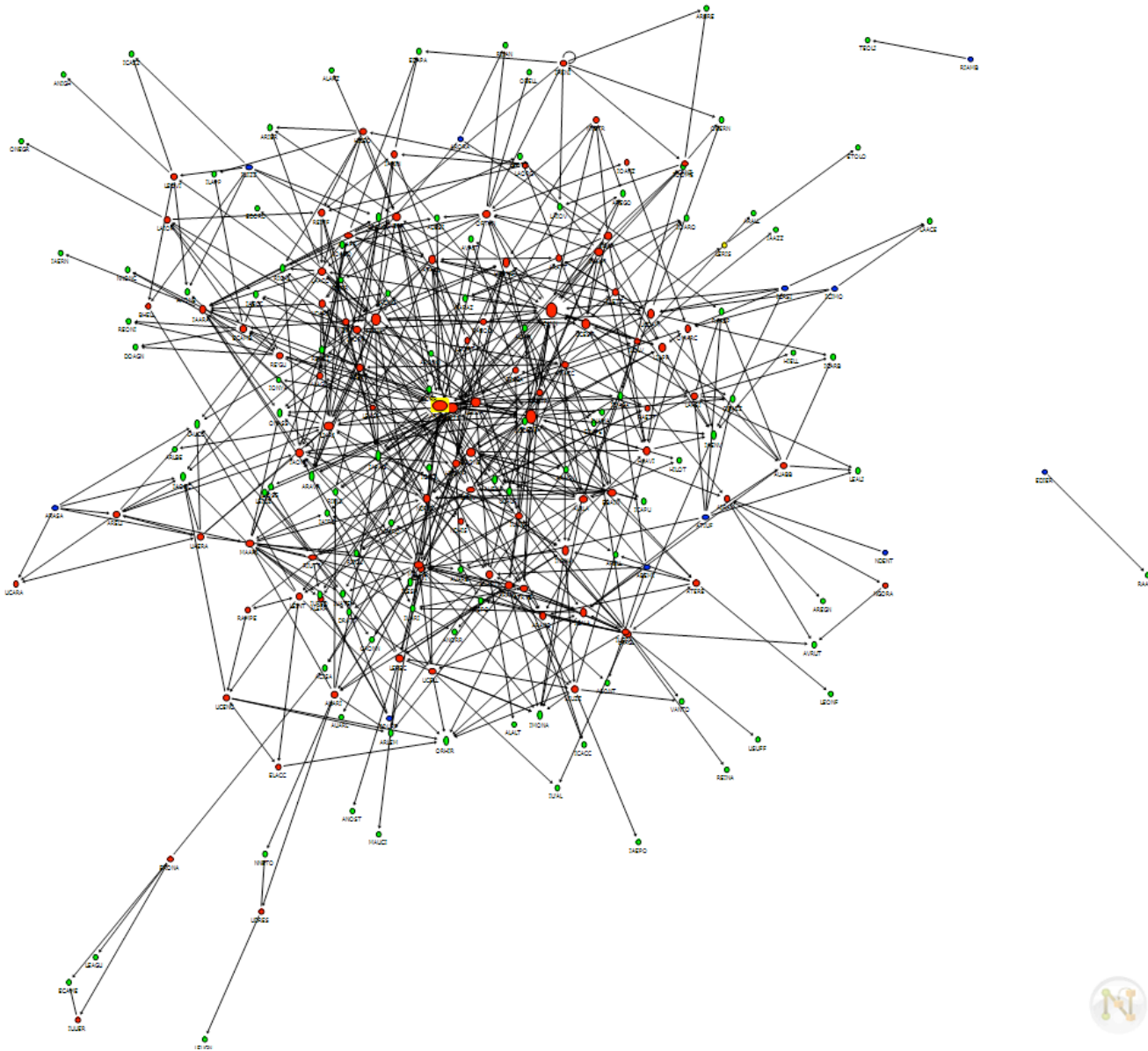
Fig. 2 Degree centrality 2nd Year Cesena campus
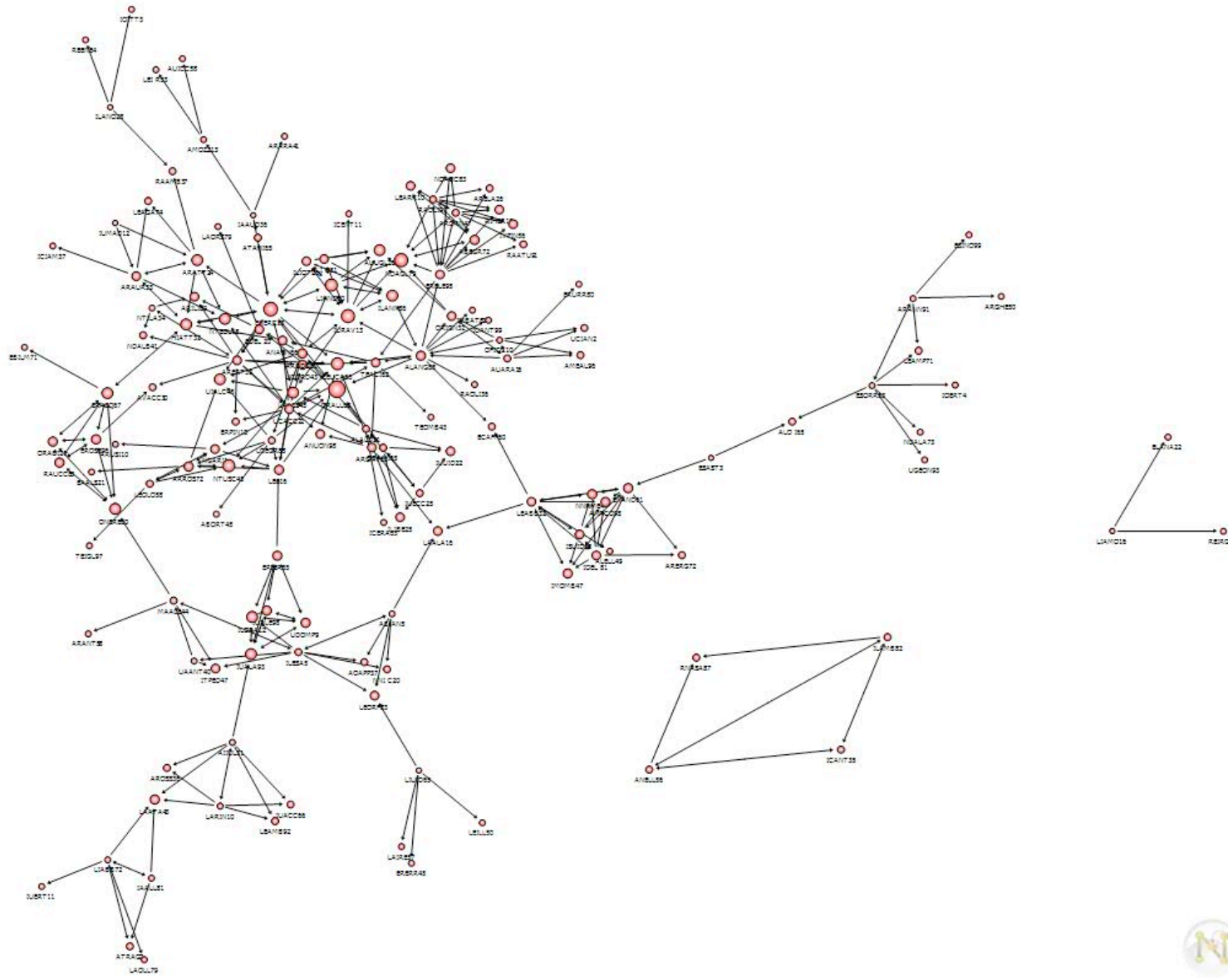
Fig. 3 Degree centrality 2nd Year Parma Campus

Presentazione

Gentile Studente/ssa,

questa ricerca ha lo scopo di indagare i processi di networking (come si costruiscono, mantengono e utilizzano i contatti in una rete sociale) ed fattori ad essi potenzialmente correlati.

Ringraziandoti per la disponibilità nel rispondere, ti si chiede di farlo nel modo più spontaneo possibile (non esistono risposte giuste). In una sezione del questionario è prevista la raccolta di dati relazionali (chi conosce chi) per i quali è necessario conoscere il nome del rispondente ai fini della costruzione della rete. Sebbene questo sia necessario in fase di raccolta dei dati, verrà assolutamente garantita la riservatezza in fase di presentazione dei risultati (sostituendo i nomi con simboli), alla quale sarete tutti invitati.

Anagrafica

Nome _____

Cognome _____

Codice *(riservato per l'elaborazione dei dati)* _____

Anno di corso:

□ primo   □ secondo   □ terzo

Frequenza alle lezioni: in che misura frequenti le lezioni?

□ Sempre presente
□ La maggior parte
□ In parte
□ Quasi mai

Risorse personali

Scale BFQ-3

N	Item	Assolutamente vero per me	Abbastanza vero per me	Né vero, né falso	Piuttosto falso per me	Assolutamente falso per me
1	Mi sembra di essere una persona attiva e vigorosa.	⑤	④	③	②	①
2	Nono sono particolarmente preoccupato/a delle conseguenze che le mie azioni possono avere sugli altri.	⑤	④	③	②	①
3	Sono sempre informato/a su quello che accade nel mondo	⑤	④	③	②	①
4	Non ho mai detto una bugia.	⑤	④	③	②	①
5	Non mi piacciono quelle attività in cui è necessario impegnarsi allo spasimo.	⑤	④	③	②	①
6	Capisco quando la gente ha bisogno del mio aiuto.	⑤	④	③	②	①
7	Non ricordo con facilità i lunghi numeri telefonici.	⑤	④	③	②	①
8	Sono sempre andato/a completamente d'accordo con tutti.	⑤	④	③	②	①
9	Generalmente tendo ad impormi piuttosto che accondiscendere	⑤	④	③	②	①
10	Non è necessario comportarsi in maniera cordiale con tutti.	⑤	④	③	②	①
11	Non sono molto attratto/a da situazioni nuove e inattese.	⑤	④	③	②	①
12	Ho sempre risolto immediatamente ogni problema che mi si è presentato.	⑤	④	③	②	①

N	Item	Assolutamente vero per me	Abbastanza vero per me	Né vero, né falso	Piuttosto falso per me	Assolutamente falso per me
13	Non mi piacciono gli ambienti di lavoro in cui c'è molta competizione.	⑤	④	③	②	①
14	Mi piace mescolarmi alla gente.	⑤	④	③	②	①
15	Ogni novità mi affascina.	⑤	④	③	②	①
16	Non mi sono mai impaurito/a di fronte a un pericolo, anche se molto grave.	⑤	④	③	②	①
17	Tendo a decidere con rapidità.	⑤	④	③	②	①
18	Non credo di essere una persona ansiosa.	⑤	④	③	②	①
19	Di fronte alle disgrazie dei miei amici mi capita di non capire come comportarmi.	⑤	④	③	②	①
20	Ho una memoria di ferro.	⑤	④	③	②	①
21	Sono sempre stato/a assolutamente sicuro/a di tutte le mie azioni.	⑤	④	③	②	①
22	Nel lavoro non do particolarmente importanza a rendere meglio degli altri.	⑤	④	③	②	①
23	Se necessario non mi tiro indietro dal dare un aiuto a sconosciuti.	⑤	④	③	②	①
24	Le situazioni in continua trasformazione non esercitano su di me alcun fascino.	⑤	④	③	②	①
25	Non ho mai disubbidito agli ordini ricevuti, neppure da piccolo/a.	⑤	④	③	②	①
26	Non mi piacciono quelle attività in cui è necessario spostarsi e muoversi continuamente.	⑤	④	③	②	①
27	Sono disposto/a ad impegnarmi a fondo pur di primeggiare.	⑤	④	③	②	①
28	Non mi astengo dal criticare gli altri, specie quando se lo meritano.	⑤	④	③	②	①
29	Ritengo che non vi siano dei valori o delle usanze validi "in eterno".	⑤	④	③	②	①
30	Nell'affrontare un problema non è produttivo tenere in considerazione molti punti di vista differenti.	⑤	④	③	②	①
31	In ogni circostanza mi è facile ammettere di aver sbagliato	⑤	④	③	②	①
32	Non perdo tempo nell'acquisire conoscenze che non sono strettamente attinenti al mio campo d'interesse.	⑤	④	③	②	①
33	So quasi sempre come venire incontro alle esigenze altrui.	⑤	④	③	②	①
34	Non mi piace fare più attività contemporaneamente.	⑤	④	③	②	①
35	Di solito ho un atteggiamento cordiale anche con persone per le quali provo una certa antipatia.	⑤	④	③	②	①
36	Spesso sono del tutto assorbito/a dai miei impegni e dalle mie attività.	⑤	④	③	②	①
37	Non mi interessano i programmi televisivi troppo "impegnativi".	⑤	④	③	②	①

N	Item	Assolutamente vero per me	Abbastanza vero per me	Né vero, né falso	Piuttosto falso per me	Assolutamente falso per me
38	Sono una persona cha va sempre in cerca di nuove esperienze.	⑤	④	③	②	①
39	Trovo sempre validi argomenti per sostenere i miei motivi e persuadere gli altri della loro validità.	⑤	④	③	②	①
40	Mi piace tenermi informato anche di argomenti che sono distanti dai miei ambiti di competenza.	⑤	④	③	②	①
41	Non do molta importanza a mettere in mostra le mie capacità.	⑤	④	③	②	①
42	Non concedo facilmente un prestito anche a persone che conosco bene.	⑤	④	③	②	①
43	Non mi piacciono le comitive numerose.	⑤	④	③	②	①
44	Non mi hanno mai interessato i modi di vita e i costumi di altri popoli.	⑤	④	③	②	①
45	Non esito a dire ciò che penso.	⑤	④	③	②	①
46	In genere, non è il caso di mostrarsi sensibili alle difficoltà altrui.	⑤	④	③	②	①
47	Nelle riunioni non mi preoccupo in modo particolare di attrarre l'attenzione.	⑤	④	③	②	①
48	Credo che un problema possa essere risolto in modi molto diversi.	⑤	④	③	②	①
49	Se ritengo di avere ragione mi preoccupo di convincere gli altri del mio punto di vista anche se ciò può costare tempo ed energia.	⑤	④	③	②	①
50	Di solito tendo a non fidarmi eccessivamente del mio prossimo.	⑤	④	③	②	①
51	Non dedico molto tempo alla lettura.	⑤	④	③	②	①
52	Non sono solito/a conversare con eventuali compagni di viaggio.	⑤	④	③	②	①
53	Mi sono sempre comportato/a in maniera totalmente disinteressata.	⑤	④	③	②	①
54	Non mi è mai capitato di alzare la voce o di litigare con qualcuno.	⑤	④	③	②	①
55	Tengo in grande considerazione il punto di vista dei miei colleghi.	⑤	④	③	②	①
56	Le scienze mi hanno sempre appassionato.	⑤	④	③	②	①
57	Mi confido volentieri con gli altri.	⑤	④	③	②	①
58	Non credo che conoscere la storia serva a tanto.	⑤	④	③	②	①
59	Non c'è nessuna cosa che io abbia fatto, che avrei potuto fare meglio.	⑤	④	③	②	①
60	Ritengo che in ogni persona ci sia qualcosa di buono.	⑤	④	③	②	①
61	Mi risulta facile parlare con persone che non conosco.	⑤	④	③	②	①
62	Non credo che esistano possibilità di convincere gli altri quando non la pensano come noi.	⑤	④	③	②	①
63	Sono sempre stato/a affascinato dalle culture molto diverse dalla mia.	⑤	④	③	②	①
64	Non sono una persona loquace.	⑤	④	③	②	①
65	Non è molto produttivo adeguarsi alle esigenze dei propri colleghi, se ciò comporta un rallentamento dei propri ritmi.	⑤	④	③	②	①

N	Item	Assolutamente vero per me	Abbastanza vero per me	Né vero, né falso	Piuttosto falso per me	Assolutamente falso per me
66	Ho sempre capito immediatamente ogni cosa che ho letto.	⑤	④	③	②	①
67	Sono sempre sicuro/a di me stesso/a.	⑤	④	③	②	①
68	Non capisco cosa spinga le persone a comportarsi in maniera diversa dalla norma.	⑤	④	③	②	①
69	Mi piace molto vedere i programmi di informazione culturale e /o scientifica.	⑤	④	③	②	①
70	Se è necessario non esito a dire agli altri di pensare ai loro affari.	⑤	④	③	②	①
71	Se una mia attività può risultare sgradita a qualcuno, sicuramente vi rinuncio.	⑤	④	③	②	①
72	Sono convinto/a che si ottengano risultati migliori cooperando piuttosto che mettendosi in competizione.	⑤	④	③	②	①
73	Preferisco leggere piuttosto che fare un'attività sportiva.	⑤	④	③	②	①
74	Non ho mai criticato nessuno.	⑤	④	③	②	①
75	Affronto ogni mia esperienza con grande entusiasmo.	⑤	④	③	②	①
76	Non si ottiene nulla nella vita senza essere competitivi.	⑤	④	③	②	①
77	Cerco sempre di vedere ogni cosa da angolature differenti.	⑤	④	③	②	①
78	Generalmente non mi comporto in maniera espansiva con estranei.	⑤	④	③	②	①
79	Non mi piacciono le attività che comportano del rischio.	⑤	④	③	②	①
80	Non ho mai provato molto interesse per le materie scientifiche e/o filosofiche.	⑤	④	③	②	①
81	Generalmente ho fiducia negli altri e nelle loro intenzioni.	⑤	④	③	②	①
82	Ho provato sempre simpatia nei confronti di ogni persona che ho conosciuto.	⑤	④	③	②	①
83	Con certe persone non bisogna essere troppo tolleranti.	⑤	④	③	②	①
84	Non è lavorando in gruppo che si realizzano nel modo migliore le proprie competenze.	⑤	④	③	②	①
85	Non vado in cerca di una soluzione nuova a quei problemi per i quali ne è già disponibile una efficace.	⑤	④	③	②	①

Scala T

N	Item	Assolutamente vero per me	Abbastanza vero per me	Né vero, né falso	Piuttosto falso per me	Assolutamente falso per me
1	Mi fido degli altri	⑤	④	③	②	①
2	Credo che gli altri abbiano buone intenzioni.	⑤	④	③	②	①
3	Sono sempre cauto/a nei confronti degli altri.	⑤	④	③	②	①
4	Sono convinto/a della bontà umana.	⑤	④	③	②	①
5	Non mi fido delle persone	⑤	④	③	②	①
6	In generale, penso che tutto andrà bene.	⑤	④	③	②	①
7	Mi fido di quello che le persone dicono	⑤	④	③	②	①
8	Penso che le persone siano essenzialmente malvage.	⑤	④	③	②	①
9	Sospetto che gli altri abbiano secondi fini.	⑤	④	③	②	①
10	Credo che le persone siano fondamentalmente oneste.	⑤	④	③	②	①

Scala G-SE

N	Item	Totalmente vero per me	Abbastanza vero per me	Poco vero per me	Per nulla vero per me
1	Riesco sempre a risolvere problemi difficili se ci provo abbastanza seriamente	④	③	②	①
2	Se qualcuno mi contrasta, posso trovare il modo o il sistema di ottenere ciò che voglio	④	③	②	①
3	Per me è facile attenermi alle mie intenzioni e raggiungere i miei obiettivi	④	③	②	①
4	Ho fiducia di poter affrontare efficacemente eventi inattesi	④	③	②	①
5	Grazie alle mie risorse, so come gestire situazioni impreviste	④	③	②	①
6	Posso risolvere la maggior parte dei problemi se ci metto il necessario impegno	④	③	②	①
7	Rimango calmo nell'affrontare le difficoltà perchè posso confidare nelle mie capacità di fronteggiarle	④	③	②	①
8	Quando mi trovo di fronte ad un problema, di solito trovo parecchie soluzioni	④	③	②	①
9	Se sono in "panne", posso sempre pensare a qualcosa da mettere in atto	④	③	②	①
10	Non importa quello che mi può capitare, di solito sono in grado di gestirlo	④	③	②	①

Scala PESE/PSSE

N	In che misura lei riesce bene a:	Molto bene				Per nulla
1	Capire i bisogni dei suoi amici?	⑤	④	③	②	①
2	Riconoscere quando qualcuno ha bisogno di conforto e supporto emotivo, anche senza darlo esplicitamente a vedere?.	⑤	④	③	②	①
3	Riconoscere se una persona è infastidita da lei?	⑤	④	③	②	①
4	Riconoscere quando una persona è bloccata dalla paura?	⑤	④	③	②	①
5	Riconoscere quando un suo compagno/a ha bisogno del suo aiuto?	⑤	④	③	②	①
6	Riconoscere quando una persona sta attraversando un periodo di depressione?	⑤	④	③	②	①
7	Lavorare o studiare bene con gli altri?	⑤	④	③	②	①
8	Aiutare qualcuno ad entrare in un gruppo del quale lei fa parte?	⑤	④	③	②	①
9	Condividere un'esperienza interessante che ha vissuto, con altre persone?	⑤	④	③	②	①
10	Partecipare attivamente ad attività di gruppo?	⑤	④	③	②	①

Scala SM

N	Item:	Vero	Falso
1	Trovo difficile imitare il comportamento di altre persone.	☐	☐
2	Alle feste o nelle occasioni di ritrovo non cerco di dire cose per compiacere gli altri.	☐	☐
3	Sostengo solamente le idee nelle quali credo.	☐	☐
4	Sono in grado di improvvisare discorsi "a braccio" su argomenti per i quali non ho praticamente informazioni	☐	☐
5	Sarei capace di mettere in scena uno spettacolo per impressionare o intrattenere altre persone.	☐	☐
6	Probabilmente sarei un buon attore.	☐	☐
7	In un gruppo di persone mi trovo raramente al centro dell'attenzione.	☐	☐
8	In differenti situazioni, con persone differenti, mi comporto come una persona ogni volta diversa.	☐	☐
9	Non sono particolarmente bravo/a nel farmi apprezzare dalle persone	☐	☐
10	Non sempre sono la persona che sembro essere	☐	☐
11	Non cambierei la mia opinione, o il modo in cui faccio le cose, per compiacere qualcuno o guadagnarmi il suo favore.	☐	☐
12	Ho pensato alla carriera di artista/intrattenitore	☐	☐
13	Non sono mai stato/a bravo nelle sciarade o nella recitazione improvvisata.	☐	☐
14	Ho difficoltà nel cambiare il mio comportamento per adeguarmi a differenti interlocutori e differenti situazioni.	☐	☐
15	Alle feste lascio che siano gli altri a organizzare scherzi e divertimenti	☐	☐
16	Mi sento un po' a disagio in compagnia e non mi metto in evidenza come dovrei	☐	☐
17	Posso guardare chiunque negli occhi dicendo una bugia (a fin di bene), mantenendomi impassibile.	☐	☐
18	Potrei ingannare le persone fingendomi cordiale, mentre in realtà non mi piacciono affatto.	☐	☐

Networking

Quella che segue è una lista di possibili comportamenti che possono caratterizzare le relazioni interpersonali nell'ambito della vita professionale. Accanto a ciascun enunciato sono indicate quattro possibili risposte. Le risposte si riferiscono alla *frequenza* con la quale i comportamenti descritti si verificano.

Non ci sono risposte "giuste" o "sbagliate": seleziona con una croce non l'alternativa che secondo voi potrebbe dare "la migliore impressione", bensì quella che trova maggiore riscontro nella vostra personale realtà.

N.B.: con il termine "relazioni" ci si riferisce ai rapporti informali che si possono estendere oltre l'attività di studio/frequenza alle lezioni.

N	Item	mai/molto raramente	a volte	spesso	molto spesso/sempre
1	All'Università mi capita di rivolgere la parola, senza difficoltà, a persone che fino a quel momento conoscevo solo di vista.	①	②	③	④
2	Approfitto degli eventi organizzati dall'Università per allacciare nuovi contatti.	①	②	③	④
3	In occasione di eventi o attività universitarie mi capita di rivolgere la parola a colleghe/i che non conosco.	①	②	③	④
4	Quando faccio una nuova conoscenza in Facoltà, utilizzo le pause tra le lezioni per approfondire il contatto.	①	②	③	④
5	Quando, in occasione di riunioni formali, incontro persone a me sconosciute, mi presento a loro personalmente prima o al termine della riunione.	①	②	③	④
6	Quando desidero conoscere una persona che potrebbe essere importante per me dal punto di vista formativo/professionale prendo l'iniziativa e mi presento per primo/a.	①	②	③	④
7	Quando un/a studente/ssa mi chiede aiuto per risolvere un problema inerente il percorso di studi mi rendo disponibile anche se la cosa non rientra tra i miei doveri.	①	②	③	④
8	Durante le pause mi trovo a discutere di questioni legate al percorso di studi con gli altri studenti.	①	②	③	④
9	Discuto di questioni di studio con gli altri studenti anche al di fuori dell'effettivo orario di lezione.	①	②	③	④
10	Se uno studente/ssa mi offre consigli su come affrontare un problema difficile, lo ricontatto dopo qualche tempo per riferirgli come è stato risolto.	①	②	③	④
11	Mi informo presso gli studenti di altri Corsi di Laurea per sapere a cosa stanno attualmente lavorando.	①	②	③	④
12	Quando non riesco ad aiutare personalmente uno studente/ssa che mi ha chiesto aiuto, mi informo presso altri per suo conto.	①	②	③	④
13	Con colleghi di altri Corsi discuto dei loro problemi di studio.	①	②	③	④
14	Quando i testi o gli articoli scientifici sono poco comprensibili chiedo chiarimenti ai miei compagni.	①	②	③	④
15	Scambio opinioni con gli altri studenti in merito a future riorganizzazioni della Facoltà.	①	②	③	④

N	Item	mai/molto raramente	a volte	spesso	molto spesso/sempre
16	Utilizzo i miei contatti con studenti di altri corsi per farmi consigliare da loro, in merito a determinate questioni di studio.	①	②	③	④
17	Se vengo a sapere di interessanti opportunità di studio/lavoro mi rivolgo ai compagni che possono fornirmi maggiori informazioni in merito.	①	②	③	④
18	Quando non sono sicuro della corretta esecuzione di un determinato compito chiedo a colleghi di mia fiducia di verificare nuovamente l'esito.	①	②	③	④
19	Chiedo agli studenti di altri corsi di raccogliere determinate informazioni per me.	①	②	③	④
20	In occasione di incontri informali mi capita di scambiare pareri con studenti di altri corsi.	①	②	③	④

Social network analysis

Di seguito si trova un elenco degli studenti iscritti al Corso di laurea, **in ordine alfabetico**. Puoi indicare, tra quelli in elenco, quelli che: **A)** conosci <u>di persona</u>; **B)** conoscevi anche prima di frequentare il corso; **C)** scambiano con te informazioni e/o collaborano per attività di studio o altro (eventualmente attività ricreative extra-accademiche). PER COLORO CHE NON SONO IN ELENCO SI POSSONO UTILIZZARE LE RIGHE VUOTE IN FONDO ALL'ELENCO STESSO.

#	Nome	Cognome	A Conosci	B Da prima	C Studi/scambi appunti, informazioni o altro
1			☐	☐	☐
2			☐	☐	☐
3			☐	☐	☐
4			☐	☐	☐
5			☐	☐	☐
6			☐	☐	☐
7			☐	☐	☐
...			☐	☐	☐

Presentazione

Gentile Studente/ssa,

questa ricerca ha lo scopo di indagare i processi di networking (come si costruiscono, mantengono e utilizzano i contatti in una rete sociale) ed fattori ad essi potenzialmente correlati.

Ringraziandoti per la disponibilità nel rispondere, ti si chiede di farlo nel modo più spontaneo possibile (non esistono risposte giuste). In una sezione del questionario è prevista la raccolta di dati relazionali (chi conosce chi) per i quali è necessario conoscere il nome del rispondente ai fini della costruzione della rete. Sebbene questo sia necessario in fase di raccolta dei dati, verrà assolutamente garantita la riservatezza in fase di presentazione dei risultati (sostituendo i nomi con simboli), alla quale sarete tutti invitati.

Anagrafica

Nome _____

Cognome _____

Codice *(riservato per l'elaborazione dei dati)* _____

Anno di corso:

□ primo   □ secondo   □ terzo

Frequenza alle lezioni: in che misura frequenti le lezioni?

□ Sempre presente
□ La maggior parte
□ In parte
□ Quasi mai

Risorse personali

Scale BFQ-3

N	Item	Assolutamente vero per me	Abbastanza vero per me	Né vero, né falso	Piuttosto falso per me	Assolutamente falso per me
1	Mi sembra di essere una persona attiva e vigorosa.	⑤	④	③	②	①
2	Nono sono particolarmente preoccupato/a delle conseguenze che le mie azioni possono avere sugli altri.	⑤	④	③	②	①
3	Sono sempre informato/a su quello che accade nel mondo	⑤	④	③	②	①
4	Non ho mai detto una bugia.	⑤	④	③	②	①
5	Non mi piacciono quelle attività in cui è necessario impegnarsi allo spasimo.	⑤	④	③	②	①
6	Capisco quando la gente ha bisogno del mio aiuto.	⑤	④	③	②	①
7	Non ricordo con facilità i lunghi numeri telefonici.	⑤	④	③	②	①
8	Sono sempre andato/a completamente d'accordo con tutti.	⑤	④	③	②	①
9	Generalmente tendo ad impormi piuttosto che accondiscendere	⑤	④	③	②	①
10	Non è necessario comportarsi in maniera cordiale con tutti.	⑤	④	③	②	①
11	Non sono molto attratto/a da situazioni nuove e inattese.	⑤	④	③	②	①
12	Ho sempre risolto immediatamente ogni problema che mi si è presentato.	⑤	④	③	②	①

N	Item	Assolutamente vero per me	Abbastanza vero per me	Né vero, né falso	Piuttosto falso per me	Assolutamente falso per me
13	Non mi piacciono gli ambienti di lavoro in cui c'è molta competizione.	⑤	④	③	②	①
14	Mi piace mescolarmi alla gente.	⑤	④	③	②	①
15	Ogni novità mi affascina.	⑤	④	③	②	①
16	Non mi sono mai impaurito/a di fronte a un pericolo, anche se molto grave.	⑤	④	③	②	①
17	Tendo a decidere con rapidità.	⑤	④	③	②	①
18	Non credo di essere una persona ansiosa.	⑤	④	③	②	①
19	Di fronte alle disgrazie dei miei amici mi capita di non capire come comportarmi.	⑤	④	③	②	①
20	Ho una memoria di ferro.	⑤	④	③	②	①
21	Sono sempre stato/a assolutamente sicuro/a di tutte le mie azioni.	⑤	④	③	②	①
22	Nel lavoro non do particolarmente importanza a rendere meglio degli altri.	⑤	④	③	②	①
23	Se necessario non mi tiro indietro dal dare un aiuto a sconosciuti.	⑤	④	③	②	①
24	Le situazioni in continua trasformazione non esercitano su di me alcun fascino.	⑤	④	③	②	①
25	Non ho mai disubbidito agli ordini ricevuti, neppure da piccolo/a.	⑤	④	③	②	①
26	Non mi piacciono quelle attività in cui è necessario spostarsi e muoversi continuamente.	⑤	④	③	②	①
27	Sono disposto/a ad impegnarmi a fondo pur di primeggiare.	⑤	④	③	②	①
28	Non mi astengo dal criticare gli altri, specie quando se lo meritano.	⑤	④	③	②	①
29	Ritengo che non vi siano dei valori o delle usanze validi "in eterno".	⑤	④	③	②	①
30	Nell'affrontare un problema non è produttivo tenere in considerazione molti punti di vista differenti.	⑤	④	③	②	①
31	In ogni circostanza mi è facile ammettere di aver sbagliato	⑤	④	③	②	①
32	Non perdo tempo nell'acquisire conoscenze che non sono strettamente attinenti al mio campo d'interesse.	⑤	④	③	②	①
33	So quasi sempre come venire incontro alle esigenze altrui.	⑤	④	③	②	①
34	Non mi piace fare più attività contemporaneamente.	⑤	④	③	②	①
35	Di solito ho un atteggiamento cordiale anche con persone per le quali provo una certa antipatia.	⑤	④	③	②	①
36	Spesso sono del tutto assorbito/a dai miei impegni e dalle mie attività.	⑤	④	③	②	①
37	Non mi interessano i programmi televisivi troppo "impegnativi".	⑤	④	③	②	①

N	Item	Assolutamente vero per me	Abbastanza vero per me	Né vero, né falso	Piuttosto falso per me	Assolutamente falso per me
38	Sono una persona cha va sempre in cerca di nuove esperienze.	⑤	④	③	②	①
39	Trovo sempre validi argomenti per sostenere i miei motivi e persuadere gli altri della loro validità.	⑤	④	③	②	①
40	Mi piace tenermi informato anche di argomenti che sono distanti dai miei ambiti di competenza.	⑤	④	③	②	①
41	Non do molta importanza a mettere in mostra le mie capacità.	⑤	④	③	②	①
42	Non concedo facilmente un prestito anche a persone che conosco bene.	⑤	④	③	②	①
43	Non mi piacciono le comitive numerose.	⑤	④	③	②	①
44	Non mi hanno mai interessato i modi di vita e i costumi di altri popoli.	⑤	④	③	②	①
45	Non esito a dire ciò che penso.	⑤	④	③	②	①
46	In genere, non è il caso di mostrarsi sensibili alle difficoltà altrui.	⑤	④	③	②	①
47	Nelle riunioni non mi preoccupo in modo particolare di attrarre l'attenzione.	⑤	④	③	②	①
48	Credo che un problema possa essere risolto in modi molto diversi.	⑤	④	③	②	①
49	Se ritengo di avere ragione mi preoccupo di convincere gli altri del mio punto di vista anche se ciò può costare tempo ed energia.	⑤	④	③	②	①
50	Di solito tendo a non fidarmi eccessivamente del mio prossimo.	⑤	④	③	②	①
51	Non dedico molto tempo alla lettura.	⑤	④	③	②	①
52	Non sono solito/a conversare con eventuali compagni di viaggio.	⑤	④	③	②	①
53	Mi sono sempre comportato/a in maniera totalmente disinteressata.	⑤	④	③	②	①
54	Non mi è mai capitato di alzare la voce o di litigare con qualcuno.	⑤	④	③	②	①
55	Tengo in grande considerazione il punto di vista dei miei colleghi.	⑤	④	③	②	①
56	Le scienze mi hanno sempre appassionato.	⑤	④	③	②	①
57	Mi confido volentieri con gli altri.	⑤	④	③	②	①
58	Non credo che conoscere la storia serva a tanto.	⑤	④	③	②	①
59	Non c'è nessuna cosa che io abbia fatto, che avrei potuto fare meglio.	⑤	④	③	②	①
60	Ritengo che in ogni persona ci sia qualcosa di buono.	⑤	④	③	②	①
61	Mi risulta facile parlare con persone che non conosco.	⑤	④	③	②	①
62	Non credo che esistano possibilità di convincere gli altri quando non la pensano come noi.	⑤	④	③	②	①
63	Sono sempre stato/a affascinato dalle culture molto diverse dalla mia.	⑤	④	③	②	①
64	Non sono una persona loquace.	⑤	④	③	②	①
65	Non è molto produttivo adeguarsi alle esigenze dei propri colleghi, se ciò comporta un rallentamento dei propri ritmi.	⑤	④	③	②	①

N	Item	Assolutamente vero per me	Abbastanza vero per me	Né vero, né falso	Piuttosto falso per me	Assolutamente falso per me
66	Ho sempre capito immediatamente ogni cosa che ho letto.	⑤	④	③	②	①
67	Sono sempre sicuro/a di me stesso/a.	⑤	④	③	②	①
68	Non capisco cosa spinga le persone a comportarsi in maniera diversa dalla norma.	⑤	④	③	②	①
69	Mi piace molto vedere i programmi di informazione culturale e /o scientifica.	⑤	④	③	②	①
70	Se è necessario non esito a dire agli altri di pensare ai loro affari.	⑤	④	③	②	①
71	Se una mia attività può risultare sgradita a qualcuno, sicuramente vi rinuncio.	⑤	④	③	②	①
72	Sono convinto/a che si ottengano risultati migliori cooperando piuttosto che mettendosi in competizione.	⑤	④	③	②	①
73	Preferisco leggere piuttosto che fare un'attività sportiva.	⑤	④	③	②	①
74	Non ho mai criticato nessuno.	⑤	④	③	②	①
75	Affronto ogni mia esperienza con grande entusiasmo.	⑤	④	③	②	①
76	Non si ottiene nulla nella vita senza essere competitivi.	⑤	④	③	②	①
77	Cerco sempre di vedere ogni cosa da angolature differenti.	⑤	④	③	②	①
78	Generalmente non mi comporto in maniera espansiva con estranei.	⑤	④	③	②	①
79	Non mi piacciono le attività che comportano del rischio.	⑤	④	③	②	①
80	Non ho mai provato molto interesse per le materie scientifiche e/o filosofiche.	⑤	④	③	②	①
81	Generalmente ho fiducia negli altri e nelle loro intenzioni.	⑤	④	③	②	①
82	Ho provato sempre simpatia nei confronti di ogni persona che ho conosciuto.	⑤	④	③	②	①
83	Con certe persone non bisogna essere troppo tolleranti.	⑤	④	③	②	①
84	Non è lavorando in gruppo che si realizzano nel modo migliore le proprie competenze.	⑤	④	③	②	①
85	Non vado in cerca di una soluzione nuova a quei problemi per i quali ne è già disponibile una efficace.	⑤	④	③	②	①

Scala T

N	Item	Assolutamente vero per me	Abbastanza vero per me	Né vero, né falso	Piuttosto falso per me	Assolutamente falso per me
1	Mi fido degli altri	⑤	④	③	②	①
2	Credo che gli altri abbiano buone intenzioni.	⑤	④	③	②	①
3	Sono sempre cauto/a nei confronti degli altri.	⑤	④	③	②	①
4	Sono convinto/a della bontà umana.	⑤	④	③	②	①
5	Non mi fido delle persone	⑤	④	③	②	①
6	In generale, penso che tutto andrà bene.	⑤	④	③	②	①
7	Mi fido di quello che le persone dicono	⑤	④	③	②	①
8	Penso che le persone siano essenzialmente malvage.	⑤	④	③	②	①
9	Sospetto che gli altri abbiano secondi fini.	⑤	④	③	②	①
10	Credo che le persone siano fondamentalmente oneste.	⑤	④	③	②	①

Scala G-SE

N	Item	Totalmente vero per me	Abbastanza vero per me	Poco vero per me	Per nulla vero per me
1	Riesco sempre a risolvere problemi difficili se ci provo abbastanza seriamente	④	③	②	①
2	Se qualcuno mi contrasta, posso trovare il modo o il sistema di ottenere ciò che voglio	④	③	②	①
3	Per me è facile attenermi alle mie intenzioni e raggiungere i miei obiettivi	④	③	②	①
4	Ho fiducia di poter affrontare efficacemente eventi inattesi	④	③	②	①
5	Grazie alle mie risorse, so come gestire situazioni impreviste	④	③	②	①
6	Posso risolvere la maggior parte dei problemi se ci metto il necessario impegno	④	③	②	①
7	Rimango calmo nell'affrontare le difficoltà perchè posso confidare nelle mie capacità di fronteggiarle	④	③	②	①
8	Quando mi trovo di fronte ad un problema, di solito trovo parecchie soluzioni	④	③	②	①
9	Se sono in "panne", posso sempre pensare a qualcosa da mettere in atto	④	③	②	①
10	Non importa quello che mi può capitare, di solito sono in grado di gestirlo	④	③	②	①

Scala PESE/PSSE

N	In che misura lei riesce bene a:	Molto bene				Per nulla
1	Capire i bisogni dei suoi amici?	⑤	④	③	②	①
2	Riconoscere quando qualcuno ha bisogno di conforto e supporto emotivo, anche senza darlo esplicitamente a vedere?.	⑤	④	③	②	①
3	Riconoscere se una persona è infastidita da lei?	⑤	④	③	②	①
4	Riconoscere quando una persona è bloccata dalla paura?	⑤	④	③	②	①
5	Riconoscere quando un suo compagno/a ha bisogno del suo aiuto?	⑤	④	③	②	①
6	Riconoscere quando una persona sta attraversando un periodo di depressione?	⑤	④	③	②	①
7	Lavorare o studiare bene con gli altri?	⑤	④	③	②	①
8	Aiutare qualcuno ad entrare in un gruppo del quale lei fa parte?	⑤	④	③	②	①
9	Condividere un'esperienza interessante che ha vissuto, con altre persone?	⑤	④	③	②	①
10	Partecipare attivamente ad attività di gruppo?	⑤	④	③	②	①

Scala SM

N	Item:	Vero	Falso
1	Trovo difficile imitare il comportamento di altre persone.	☐	☐
2	Alle feste o nelle occasioni di ritrovo non cerco di dire cose per compiacere gli altri.	☐	☐
3	Sostengo solamente le idee nelle quali credo.	☐	☐
4	Sono in grado di improvvisare discorsi "a braccio" su argomenti per i quali non ho praticamente informazioni	☐	☐
5	Sarei capace di mettere in scena uno spettacolo per impressionare o intrattenere altre persone.	☐	☐
6	Probabilmente sarei un buon attore.	☐	☐
7	In un gruppo di persone mi trovo raramente al centro dell'attenzione.	☐	☐
8	In differenti situazioni, con persone differenti, mi comporto come una persona ogni volta diversa.	☐	☐
9	Non sono particolarmente bravo/a nel farmi apprezzare dalle persone	☐	☐
10	Non sempre sono la persona che sembro essere	☐	☐
11	Non cambierei la mia opinione, o il modo in cui faccio le cose, per compiacere qualcuno o guadagnarmi il suo favore.	☐	☐
12	Ho pensato alla carriera di artista/intrattenitore	☐	☐
13	Non sono mai stato/a bravo nelle sciarade o nella recitazione improvvisata.	☐	☐
14	Ho difficoltà nel cambiare il mio comportamento per adeguarmi a differenti interlocutori e differenti situazioni.	☐	☐
15	Alle feste lascio che siano gli altri a organizzare scherzi e divertimenti	☐	☐
16	Mi sento un po' a disagio in compagnia e non mi metto in evidenza come dovrei	☐	☐
17	Posso guardare chiunque negli occhi dicendo una bugia (a fin di bene), mantenendomi impassibile.	☐	☐
18	Potrei ingannare le persone fingendomi cordiale, mentre in realtà non mi piacciono affatto.	☐	☐

Networking

Quella che segue è una lista di possibili comportamenti che possono caratterizzare le relazioni interpersonali nell'ambito della vita professionale. Accanto a ciascun enunciato sono indicate quattro possibili risposte. Le risposte si riferiscono alla *frequenza* con la quale i comportamenti descritti si verificano.

Non ci sono risposte "giuste" o "sbagliate": seleziona con una croce non l'alternativa che secondo voi potrebbe dare "la migliore impressione", bensì quella che trova maggiore riscontro nella vostra personale realtà.

N.B.: con il termine "relazioni" ci si riferisce ai rapporti informali che si possono estendere oltre l'attività di studio/frequenza alle lezioni.

N	Item	mai/molto raramente	a volte	spesso	molto spesso/sempre
1	All'Università mi capita di rivolgere la parola, senza difficoltà, a persone che fino a quel momento conoscevo solo di vista.	①	②	③	④
2	Approfitto degli eventi organizzati dall'Università per allacciare nuovi contatti.	①	②	③	④
3	In occasione di eventi o attività universitarie mi capita di rivolgere la parola a colleghe/i che non conosco.	①	②	③	④
4	Quando faccio una nuova conoscenza in Facoltà, utilizzo le pause tra le lezioni per approfondire il contatto.	①	②	③	④
5	Quando, in occasione di riunioni formali, incontro persone a me sconosciute, mi presento a loro personalmente prima o al termine della riunione.	①	②	③	④
6	Quando desidero conoscere una persona che potrebbe essere importante per me dal punto di vista formativo/professionale prendo l'iniziativa e mi presento per primo/a.	①	②	③	④
7	Quando un/a studente/ssa mi chiede aiuto per risolvere un problema inerente il percorso di studi mi rendo disponibile anche se la cosa non rientra tra i miei doveri.	①	②	③	④
8	Durante le pause mi trovo a discutere di questioni legate al percorso di studi con gli altri studenti.	①	②	③	④
9	Discuto di questioni di studio con gli altri studenti anche al di fuori dell'effettivo orario di lezione.	①	②	③	④
10	Se uno studente/ssa mi offre consigli su come affrontare un problema difficile, lo ricontatto dopo qualche tempo per riferirgli come è stato risolto.	①	②	③	④
11	Mi informo presso gli studenti di altri Corsi di Laurea per sapere a cosa stanno attualmente lavorando.	①	②	③	④
12	Quando non riesco ad aiutare personalmente uno studente/ssa che mi ha chiesto aiuto, mi informo presso altri per suo conto.	①	②	③	④
13	Con colleghi di altri Corsi discuto dei loro problemi di studio.	①	②	③	④
14	Quando i testi o gli articoli scientifici sono poco comprensibili chiedo chiarimenti ai miei compagni.	①	②	③	④
15	Scambio opinioni con gli altri studenti in merito a future riorganizzazioni della Facoltà.	①	②	③	④

N	Item	mai/molto raramente	a volte	spesso	molto spesso/sempre
16	Utilizzo i miei contatti con studenti di altri corsi per farmi consigliare da loro, in merito a determinate questioni di studio.	①	②	③	④
17	Se vengo a sapere di interessanti opportunità di studio/lavoro mi rivolgo ai compagni che possono fornirmi maggiori informazioni in merito.	①	②	③	④
18	Quando non sono sicuro della corretta esecuzione di un determinato compito chiedo a colleghi di mia fiducia di verificare nuovamente l'esito.	①	②	③	④
19	Chiedo agli studenti di altri corsi di raccogliere determinate informazioni per me.	①	②	③	④
20	In occasione di incontri informali mi capita di scambiare pareri con studenti di altri corsi.	①	②	③	④

Social network analysis

Di seguito si trova un elenco degli studenti iscritti al Corso di laurea, **in ordine alfabetico**. Puoi indicare, tra quelli in elenco, quelli che: **A)** conosci <u>di persona</u>; **B)** conoscevi anche prima di frequentare il corso; **C)** scambiano con te informazioni e/o collaborano per attività di studio o altro (eventualmente attività ricreative extra-accademiche). PER COLORO CHE NON SONO IN ELENCO SI POSSONO UTILIZZARE LE RIGHE VUOTE IN FONDO ALL'ELENCO STESSO.

#	Nome	Cognome	A Conosci	B Da prima	C Studi/scambi appunti, informazioni o altro
1			☐	☐	☐
2			☐	☐	☐
3			☐	☐	☐
4			☐	☐	☐
5			☐	☐	☐
6			☐	☐	☐
...			☐	☐	☐