

How Network Properties Affect One's Ability to Obtain Benefits: A Network Simulation

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Abstract

Networks and the social capital that they carry enable people to get things done, to prosper in their careers, and to feel supported. To develop an effective network, one needs to know more than how to make connections with strangers at a reception; understanding the consequences of network properties on one's ability to obtain benefits is essential. Such understanding enables students to better assess who to connect to. The simulation described herein enables participants to experience and therefore better understand the consequences of their position within a network and to overcome potential aversion to networking by recognizing its benefits and potential for reciprocity. It has been used effectively with undergraduates, MBA students, and executive audiences.

Keywords

networks, social capital, simulation, network analysis

Social networks, and the benefits that they provide, are critical for success. They are an indispensable resource to get things done, to get ahead, and to

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feel supported. Developing an effective network involves more than establishing connections, that is, networking; it requires an understanding of who to establish connections with. Although excellent experiential tools exist to help our students to cultivate networking skills (e.g., de Janasz & Forret, 2008; Friar & Eddleston, 2007; Van Buren & Hood, 2011), I was unable to find any simulations to facilitate learning about the important structural properties of networks.

A network is a set of relations between objects of any kind but social networks, the topic of this article, refer to relations between people. Although recently the name *social networks* in everyday language is often used to refer to online networking websites such as Facebook®, LinkedIn®, and Twitter®, the term in the scholarly literature refers to sets of relationships between people much more broadly. This is how I will use the term, as well.

The simulation described below allows participants to experience—and thus better understand—the impact of an individual's position within the global and local network and the impact of characteristics of individuals' dyadic relationships on the benefits that they are able to derive from their networks. I have used this simulation successfully, with participants engaging in it enthusiastically and reporting that they benefitted from it, in undergraduate, MBA, and executive classrooms.

In the sections that follow, I first review the relevant literature on social networks and social capital. I then present the background for the simulation (its learning objectives and logistics) and detailed instructions for conducting the simulation, including all materials needed to run it successfully. I discuss how to debrief the simulation to achieve its learning objectives and how to tie the learning back to participants' real-life experiences and conclude with some evidence of the simulation's effectiveness.

Literature Review

Social Networks

Social networks are a critical source of valuable information and resources (Burt, 1992). Individuals get task-related advice (Blau, 1955; Dalton, 1979; Durmuşoğlu, 2013; Kanter, 1977), career support (Briscoe & Kellogg, 2011; de Janasz, Sullivan, & Whiting, 2003; Seibert, Kraimer, & Liden, 2001), and social support (Ibarra, 1995; Kram, 1988; Vigoda-Gadot & Talmud, 2010) from their networks. As a result, well-networked individuals are better able to identify job opportunities (Burt, 1992; Granovetter, 1973; McDonald, 2011; Meverson, 1994), get things done (Burt, 1992, 1997; Coleman, 1988; Zou & Ingram, 2013), achieve career success (Seibert et al., 2001), and obtain higher compensation (Briscoe &

Kellogg, 2011; Meverson, 1994; Wolff & Moser, 2009), among other desirable outcomes. In short, networks are a source of resources and power.

To reap those benefits, individuals must be (a) willing and (b) able to build strong networks. Unfortunately, despite the fact that students of management—undergraduates, MBAs, and executives—tend to understand that networks are important, their networks often leave much to be desired. Both willingness and ability are the reasons. Some individuals are uncomfortable with networking and find it intimidating (de Janasz & Forret, 2008; Ferrazzi, 2005). Introverts and those with low self-esteem, in particular, are less comfortable with networking than extraverts and those with high self-esteem (de Janasz, Dowd & Schneider, 2006; Forret & Dougherty, 2001), seemingly because they are less willing to create connections but also because they are less skilled at it. This is an important issue to address, and there are several tools at our disposal to help with this process (e.g., de Janasz & Forret, 2008; Friar & Eddleston, 2007; Gerard, 2012).

The simulation described in this article addresses two additional reasons for network weakness: (a) seeing networking as self-serving and (b) lack of understanding of network properties. A quick Internet search yields a number of sources that reflect people's sentiment that networking is selfish (e.g., Tracy, n.d.; Wenell, 2011). One goal of the simulation is to dispel this myth by demonstrating how essential reciprocity is for good functioning of a network. In fact, research suggests that self-interest, if perceived, is counterproductive in relationship building (Brass, 2012).

This simulation also effectively highlights the impact of network properties (beyond size) on people's ability to accrue benefits from them. When it comes to networks, "structural and locational properties" (Wasserman & Faust, 1994) and "distributions" (Kadushin, 2012) are important to consider. In other words, to understand a person's ability to accrue benefits from a network, we need to examine (a) an individual's position within the global network and (b) the local network structure surrounding the individual. In addition, the content of a dyadic tie is important (Burt, 1992; Ibarra & Andrews, 1993; Sosa, 2011) so that we need to look at (c) the characteristics of the individual's dyadic relationships. Each of these properties can be captured in various ways. In this exercise, participants are introduced to network properties through (a) centrality, which reflects an individual's position within the global network; (b) structural holes, which reflect the local network structure; and (c) multiplexity and strength of ties, which reflect characteristics of a particular dyadic relationship. Although these are not the only possibilities (e.g., density would be a possible alternative to structural holes when considering local network structure), they have proven to serve well in the learning process. I describe each in more detail below.

Centrality. Central actors in networks have many ties to others (i.e., degree centrality), are able to reach many others (i.e., closeness centrality), have connections to centrally located actors (i.e., eigenvector centrality), or are connecting others who have no direct connections (i.e., betweenness centrality; Kilduff & Brass, 2010). Network centrality brings access to and control over resources (Hinings, Hickson, Pennings, & Schneck, 1974); plays a critical role in perceptions about acceptance, access to information, autonomy, and support for risk taking (Ibarra & Andrews, 1993); and is related to organizational commitment (Lee & Kim, 2011).

Structural Holes. A structural hole is said to exist in a network when two clusters in a network are not connected with each other. A person who connects those two clusters creates a “bridge” and serves as a broker. Brokers can gather a lot of nonredundant information and play their connections against one another, which gives them more control (Burt, 1992). Capitalizing on betweenness centrality, network brokers are paid more, get more recognition, get higher evaluations, and get promoted more quickly than their peers (see Burt, 2005; Burt, Kilduff, & Tasselli, 2013, for reviews).

Multiplexity. A multiplex relationship is one in which two individuals are connected on several dimensions. For example, coworkers who are also friends and belong to the same church have a multiplex relationship. Unidimensional relationships that focus on only one type of activity or connection are called simplex. Based on the content of the relationships within networks, the networks literature distinguishes between instrumental networks and friendship/social support networks (Fombrun, 1982; Tichy, Tushman, & Fombrun, 1979). Instrumental networks can be further divided into task networks, which help people in getting their jobs done, and career networks, which help people advance their careers by providing guidance, opportunities, and advocacy (Ibarra, 1996). If these various networks are completely distinct, people have simplex relationships; if they overlap, people have multiplex relationships.

Strength of Ties. All network ties are not equal. Some are closer and stronger, with more frequent and richer interactions, such as with friends and family. Others are more distant, characterized by infrequent and more superficial interactions, such as with acquaintances. Those with whom an individual has strong ties are likely to know each other, as well. An individual's acquaintances, however, are more likely not to be connected.

Each type of relationship brings benefits and has limitations. Strong ties are more motivated to help, can be more easily accessed, and facilitate more

effective information transfer (Granovetter, 1992; Hansen, 1999). Trust is higher, richer information is exchanged, and problem-solving capabilities are better in strong ties. However, such ties require more time and energy to maintain and also imply a strong obligation to provide help to others (Brass, 2012). Weak ties provide access to nonredundant information because they are likely to bridge structural holes. People with more weak ties are more likely to find jobs than those with more close friends (Granovetter, 1973), which suggests that motivation of friends is less impactful than the network properties. Weak ties are also more likely to connect individuals with others who are more unlike them (Granovetter, 1973; Uzzi & Dunlap, 2005), which contributes to a diverse network.

Social Capital

Scholars have yet to agree on a definition of social capital, as many have noted (Fischer, 2005; Kadushin, 2004; Manski, 2000; Mouw, 2006; Portes, 1998). Here, I will focus on what has been referred to as “network” social capital (Mouw, 2006): “the ability of actors to secure benefits by virtue of membership in social networks or other social structures” (Portes, 1998, p. 6). In short, social capital as used here refers to benefits derived from relationships with others (Brass, 2012). The concept of social capital considers individuals to be constrained by social context but still agentic within those constraints (Coleman, 1988). Similar to human capital, which is created by changing a person’s skills or knowledge, social capital is created by changing interpersonal relationships. Social capital can be built over time, by building one’s own network, or borrowed, by using a network of one’s connection to accrue benefits. Borrowing is particularly helpful when a person lacks the legitimacy needed to extract benefits from a network. In that case, using a network of someone with higher legitimacy, such as a leader (Sparrowe & Liden, 2005) or a sponsor (Burt, 1998; Ibarra, Carter, & Silva, 2010), can be more effective than trying to establish one’s own connections.

Social capital is productive, as it enables achievement of certain goals, but is also somewhat specific in that it can be helpful in achievement of certain goals but not helpful, or even damaging, in achievement of others. For example, those individuals who are well suited to provide personal support may be able to do little to help address challenges at work (Trefalt, Merrill-Sands, Kolb, Wilson, & Carter, 2011). Similarly, someone who is critical in opening doors to major stretch assignments for career advancement may not be the right person to turn to for encouragement in times of despair. It is therefore important to develop different types of networks that offer access to a variety of resources. Resources can be tangible, such as money, products, and facilities, or

intangible, such as information, status, and political support. Some resources can be easily passed along if the giver is willing to part with them (e.g., material resources), others are more difficult to transfer but they can be borrowed (e.g., status or legitimacy), and yet others are created in the process and are therefore akin to services (e.g., a recommendation or social support).

Simulation Background

I initially developed this simulation for an executive education program on strategic relationship development. I needed a simulation that would facilitate participants' learning about the impact of properties of social networks on the ability to accrue benefits from networks rather than about the process of networking. I was unable to find one that met my needs. Although executive education participants often desire some assistance with the process of networking, my assessment was that understanding more deeply how networks function and how their properties affect outcomes would serve as a strong motivator to find effective ways of networking and demonstrate that networks can be beneficial for all members. Often, individuals shun networking as opportunistic and selfish. This simulation, however, demonstrates the critical role that reciprocity plays in social networks, and thus effectively counteracts that preconceived notion.

The main structure of the simulation is the following: Participants are assigned to positions in a network. Some of them are more central than others, and some bridge structural holes. The network as a whole has a set of resources in the form of letters. Each of the participants begins with three letters and has a task to find three, at least some of them different from what the participant started with. There is a perfect amount of resources in the network, so that everyone is able to get what he or she needs. For n participants, three of each of the first n letters of the alphabet are used (e.g., for nine participants, letters A through I are used). Below, I will describe the simulation in nine-member networks. The simulation can be adapted to more or fewer members, depending on the number of students in a class. I recommend that, in larger classes, multiple smaller groups be used instead of one larger one, so that the similarities in results across groups underscore the impact of network properties on outcomes and the differences deepen and enrich the discussion.

Learning Objectives

The goal of this simulation is to enable participants to recognize the importance of network *properties* and reduce their *reluctance* to network in order

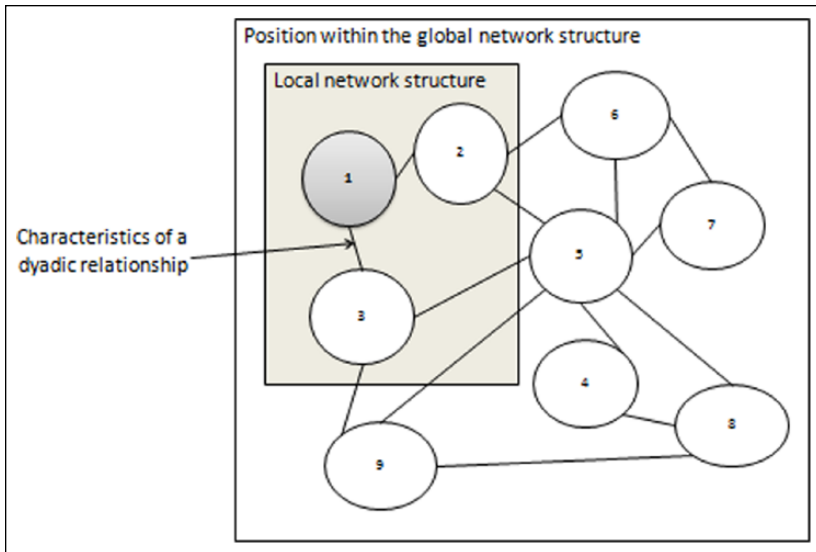


Figure 1. Network properties from Number 1's perspective.

to evaluate their current networks and improve them. Depending on the setting and teaching goals, I assign minimal or no prereading for the simulation. Readings that work well, if desired, are Ibarra's (1996) note *Managerial Networks* and Uzzi and Dunlap's (2005) article "How to Build Your Network." I have not observed any differences in how the simulation runs when participants read on networks before class and when they do not. The debrief, however, can be more participant-led and more substantive if participants are already familiar with some concepts and vocabulary from the social networks literature. The simulation fits well into a general organizational behavior or management course, can be productively integrated into a course on organizational change, or can serve as a significant building block of an executive module on networking.

The simulation demonstrates the importance of centrality, the value of bridging structural holes, the notion of borrowing social capital, and the importance of reciprocity. In sum, the simulation is designed for participants to:

1. understand how the properties of one's network affect one's ability to derive benefits from it (see Figure 1 for three types of properties) and
2. change perceptions of networking as selfish, opportunistic, or insincere by recognizing its benefits and potential for reciprocity.

Table 1. Recommended Groupings by Class Size (a Sample).

| No. of students | No. of networks | Size of each network | No. of observers |
|-----------------|-----------------|----------------------|------------------|
| 18 | 2 | 9 | 0 |
| 19 | 2 | 9 | 1 |
| 20 | 2 | 9 | 2 |
| 21 | 3 | 7 | 0 |
| 22 | 3 | 7 | 1 |
| 23 | 3 | 7 | 2 |
| 24 | 3 | 8 | 0 |
| 25 | 3 | 8 | 1 |
| 26 | 3 | 8 | 2 |
| 27 | 3 | 9 | 0 |
| 28 | 3 | 9 | 1 |
| 29 | 3 | 9 | 2 |
| 30 | 3 | 9 | 3 |
| 31 | 4 | 7 | 3 |
| 32 | 4 | 8 | 0 |

Simulation Overview

The logistics of this simulation may seem intimidating but, after carefully reading the instructions and implementing them, other instructors have found it quite simple to use. That said, the specific design and rules of the simulation need to be followed, since they, in words of one of my colleagues, “create the context that engenders the exact behaviors and strategies that the simulation is designed for students to experience.”

The simulation proceeds as follows: First, I provide a short introduction, distribute handouts (see Appendix A), and explain the rules of the simulation.

1. Class is divided into groups of nine, eight, or seven individuals, depending on the size of class (a sample list of recommended groupings by class size is available in Table 1). The simulation works equally well with all group sizes. I recommend using one size for all groups in a class to simplify the process of debriefing. If needed because of the number of students in class, some individuals are assigned as observers. Each group works as an independent network—the groups are not connected in any way. Each group is given the materials. (Materials for seven-, eight-, and nine-member networks are available as supplemental materials.)

2. Participants proceed with the simulation. Their goal is to get the letters listed on their individual material by communicating with those members of the network with whom they are directly connected.
3. The simulation is over when all individuals in all groups have all the required resources or after about 20 to 25 minutes, whichever comes first. I have never had all the groups complete the simulation within that time frame.
4. Participants engage in a structured debrief of their experience in the simulation.
5. Students reflect on how the learning can help them improve their own networks.

The entire simulation, with the basic debrief, takes between 60 and 70 minutes. If more time is available, two activities supplement the simulation well: a more systematic treatment of network concepts (e.g., strength of connection, centrality, structural holes) and a detailed analysis of individuals' networks with the help of a tool such as Ibarra's Network Assessment Exercise for undergraduate and MBA students (2002) or for executives (2008). If used, these assessment exercises should be completed before class so that class time can be used for their analysis and action planning.

Implementing the Simulation

Instructor Preparation

To conduct the simulation, the instructor needs to prepare the following:

1. An area for each of the groups (all within the same room). Tables large enough so that each can accommodate all members of one group are best. If you decide to keep participants standing, make sure to keep their communication under control (their communication should be limited to passing written notes to one another)
2. Scrap paper or note cards for each group—for written communication
3. "Name tags" for each group member (see Appendix B)—showing the number that represents their position in the network. I print them on adhesive labels so that participants can attach them to their chests. (A layout that is printable on six-per-sheet labels is available as supplemental material.)
4. Marked envelopes (envelopes have the same "name tags" as the participants) with material for each participant:
 - a. A snapshot of each person's ego network¹ (see Appendix C) with information about the needed resources (three letters) and the

- current resources (three letters, at least some of them different from the ones that are needed). On the ego network, all of a person's connections are designated by numbers
- b. Resources, that is, three letters (see Appendix D)
- c. A stopwatch or another way to measure 2-minute time increments (for each observer)
- 5. A picture of the entire network—one for each observer, so that he or she can monitor the communication (see Appendix E)
- 6. A board or a flip chart for each of the networks to record who finishes at what time (see Appendix F for a board or flipchart plan)

Classroom Introduction of the Simulation (10-15 Minutes)

The simulation works well with very little introduction. The following logistics need to be attended to:

1. If needed, divide the class into multiple groups of equal size. If the numbers do not add up, assign observers and ask them to help with logistics, particularly with the rule enforcement. (Materials for groups of seven, eight, and nine are available as supplemental materials.)
2. Ask each group to move to a table, where they will find:
 - a. Name tags with the group's symbol (to differentiate between groups) and the individual's number—one per participant, none for observers (see Appendix B)
 - b. Paper or note cards for communicating
 - c. A flip chart or assigned space on a board
 - d. A writing instrument for the board or flip chart
3. Ask participants to pick a name tag and attach it where it is clearly visible.
4. Review out loud the rules of the simulation, summarized in a slide, and distribute the handout to the participants (see Appendix A for a list of rules).
5. Ask participants if they have any questions and respond to them.
6. Give observers a stopwatch or ask them to use their phones to time 2-minute increments. Ask them to enforce the rule about "only written communication" and a 2-minute time-out for each person who violates the rule.
7. Tell participants that you will distribute envelopes and that they should take the one that matches their name tag. Also ask them to not open their envelopes until they are told to do so. Remind them to keep

their materials in their envelopes so that others cannot see them. Each participant should have a pen ready.

8. Explain to participants that cheating defeats the purpose of the simulation. They will do best for everyone if they try hard to complete their task as effectively as possible but follow all the rules. (Initially, I was surprised to see how competitive participants got and how many of them tried to violate the rules.) Also make sure that participants understand that each group engages in a completely separate simulation. There is no competition between groups, and members are not allowed to engage members of other groups during the simulation.
9. Finally, distribute to each group the envelopes, one for each network member. The name tags on envelopes should match network members' name tags. Each envelope contains a picture of each person's ego network, three letters, and information about which letters the person needs to obtain.

Conducting the Simulation (20-25 Minutes)

Ask participants to start playing. Participants will open their envelopes to see their ego networks, available resources, and needed resources, and then start writing messages to each other. The instructor and/or designated observers need to enforce the rule of only written communication and passing on folded messages. Without that, it is difficult to restrict information flow to only the designated ties. Participants tend to get carried away and start giving nonverbal signs and signals or even start talking to each other to allay frustration. This is particularly true for those who are in structurally disadvantaged positions, such as Number 1, who is often abandoned by other players soon after the beginning of the simulation. I usually give a warning before I impose the 2-minute time-out, but the simulation will not be particularly informative if participants communicate outside of their designated network, so enforcement is important. A little humor goes a long way as I try to keep participants in line.

It is important to make sure that participants who have collected their needed resources mark their completion times on the board or flip chart and hand in their resources and to remind them that they can (but do not have to) return to the network and continue playing.

After about 20 to 25 minutes, depending on the time available and on the progress of the simulation—it is good that a few people finish but it is not necessary to wait for everyone—announce that the simulation is over. Do not be concerned if only one or two people finish. Ask the participants to stay in their networks and keep their “name tags.”

Debriefing the Simulation (15-35 Minutes)

I begin the debrief with a general question: How did it go? As participants start referring to their experiences, I show them the entire network on a slide (see Appendix E). If groups in class were of various sizes, all corresponding networks should be displayed. I usually cover most of the topics in the outline below, but I am flexible with the order and I remain open to what emerges from the simulation and analyze first the aspects that participants are most excited about or frustrated with. The depth of the debrief depends on the available time and the needs of the class; I pick and choose the areas that are most relevant for the group with which I am working. For everyone to be able to connect the comments to the properties of the displayed network, I ask participants to start their comments by announcing their number in the simulation. For example, "I was Number 5 and I found this exhausting!"

The debrief below is organized around the learning objectives and network properties, for ease of review. In class, however, I structure the debrief around the following questions: (a) What worked well and what didn't work so well? (b) Who was fastest and why? (c) How does this simulation resemble networks and social capital in real life and how is it different? I let the topics emerge as participants respond to these questions, and I organize the topics on the board according to the structure below, to bring home the learning objectives at the end of the class.

Debriefing the First Learning Objective: Impact of Network Properties. To address the first learning objective, I make sure that we touch on all three aspects of network properties: their general structure, their local structure, and the characteristics of dyadic relationships.

Global structure

1. Participants often find that figuring out the lay of the land, that is, mapping their network, works to their advantage. This can be done by sending out messages asking others about who they are connected to, what resources they have, and what resources they need. Few participants tend to do this, because most are focused too narrowly on the task at hand. Those who do gather information about the network, however, tend to benefit from it, since they identify opportunities for not only direct but also indirect exchanges.
2. It helps to have information, to know who has what. I let participants look at the entire network for a while and then ask, Would you have acted differently if you knew what the network looked like?

Participants recognize easily that knowing who is connected to whom and what resources each person has and needs makes it much easier to obtain resources that they need as well as to provide help to others. This observation reinforces the point that knowing the structure of your network is a source of power (Krackhardt, 1990). Like in this simulation, in real life, the resources that you have (knowledge, information, skills, connections, etc.) are likely valuable to someone, somewhere. It is important to make sure that people know what you have to offer so that they can turn to you when they need it. Providing the resources others need activates the law of reciprocity (Cialdini, 2001), which enables you to count on others to return the favor.

3. Participants notice that some of them were better connected than others. Some were connected to many others, and some were connected to others who were well connected themselves. When this point comes up, I discuss the notion of borrowed social capital—capitalizing on networks of one's connections (Burt, 1998). I discuss this as an alternative to building one's own social capital but also as a more productive approach when one is not perceived as a highly legitimate member of a group (Burt, 1998; McGuire, 2002). (See Point 5 of this debrief for another opportunity to discuss borrowing of social capital.)

Global and local structure

4. The importance of centrality and structural holes is illustrated by the fact that, most often, Number 5 is the first to finish. I point out that Number 5 is connected to many people in the network (and is therefore central) but also that Number 5 connects two otherwise disconnected clusters, and thus bridges a structural hole. I explain the benefits that can be derived from this kind of a network position and ask participants for examples of structural holes that they bridge. Some, for example, have moved from one continent to another and thus have disparate networks in both locations; some have transferred from one school to another; some are engaged in sets of activities that few others combine (e.g., pottery and student government).

Local structure

5. Number 3 is a broker between Number 1 and the rest of the network, most vitally Number 9, who has all the resources that Number 1 needs. (As you can see in Appendix E, Number 1 needs D, D, and E, and that is exactly what Number 9 has. The two are connected through

Number 3.) That said, Number 3 will likely want to keep Number 9's E to herself, because she needs it, too. Exchanging resources with others often works well but is difficult to do if one's direct connections do not have the needed resources. This is another opportunity to discuss the concept of borrowed social capital (Burt, 1992, 1998, 2000; Sparrowe & Liden, 2005), that is, capitalizing on the networks of one's network connections. For example, in the nine-person network, Number 1 borrows social capital of Number 3, to get the two letters D from Number 9, to whom Number 1 is not connected but Number 3 is.

6. This simulation differs from real life in an important way: In real life, networks change over time. One can get introduced to people with whom one can later communicate directly and thus change one's local network structure. That is not possible in this simulation.

Local structure and nature of relationships

7. The act of "borrowing social capital" also offers an opportunity to discuss the importance of sponsors who are able to lend their social capital to their protégés. Sponsors are critical for career success and many more men than women tend to have them (Foust-Cummings, Dinolfo, & Kohler, 2011; Hewlett, Peraino, Sherbin, & Sumberg, 2010; Ibarra et al., 2010). Particularly, executive participants frequently realize that although they feel supported, they do not really have anyone to sponsor them. Here, I also emphasize the difference between sponsors and mentors. According to Ibarra et al. (2010), there are several critical differences. Although mentors can occupy any position and level in an organization, sponsors must be senior managers with ample influence. This is the structural component of the sponsor's position. In addition, the nature of the relationships between sponsors and their protégés is different from the nature of the relationship between mentors and mentees. Mentors' main objective is enhancing mentees' personal and professional development. They serve as role models and provide feedback, advice, and emotional support and help mentees navigate organizational politics, work to increase the mentee's sense of competence and self-worth. Sponsors, on the other hand, are focused on their protégé's career progression. They provide to their protégés exposure to other executives, make sure that they are considered for important opportunities and challenging assignments, fight for them to get promoted, and also protect them from negative publicity and damaging contact with senior executives.

Nature of relationship

8. Although the simulation is designed in a way that all relationships are equal (no strong or weak ties), participants sometimes draw on their real-life relationships to get things done. For example, participants who are close friends in real life as well as connected in the simulation network are more likely to help one another than a third party, because their relationship extends beyond this exercise. This is an opportunity to discuss the advantages and disadvantages of strong and weak ties (see the literature review above) as well as multiplex versus simplex relationships.
9. In this simulation, all relationships are conduits for the needed resources (letters). In real life, however, people tend to have networks with different “content,” such as getting the job done, social support, and career advancement (Ibarra, 1996), and it is not realistic to seek all kinds of resources from all network connections. I again discuss simplex versus multiplex relationships here, and the findings that suggest that people who are well suited to offer social support may not be able to help in dealing with certain professional issues (Trefalt, Merrill-Sands, Kolb, Wilson, & Carter, 2011).

Debriefing the Second Learning Objective: Changing Perceptions About Networking. To address the second learning objective that aims to change perceptions of networking as selfish and recognize its benefits beyond the focal individual, I cover the following topics:

10. Sending out notes not only about what you need but also about what you have to offer can be productive. By doing so, you are signaling the intended reciprocity of the exchange. Some participants, particularly those in weaker network positions, become creative here and, in addition to the letters that they have in their envelopes, offer to take their colleagues for coffee after class or do other favors for one another. This is another opportunity to discuss the impact of multiplexity of relationships on the ability to obtain benefits.
11. Freely sharing the resources a participant initially had—to build trust and goodwill—without asking for what is needed works well sometimes but can backfire other times. This is a great opportunity to discuss trust and reciprocity as well as power. If trust is not there and the norm of reciprocity is not strong, a player’s ability to get resources depends on the resources she has and on her structural position. If Number 1 gives away her resources, she might be stranded. However,

reciprocity is critical to maintain and develop relationships (Blieszner & Roberto, 2004; Gouldner, 1960; Kleinbaum, Jordan, & Audia, 2012). Indeed, participants in Number 1 position are often able to get Number 3s to work on their behalf by simply stating their expectation of reciprocity on their message when they pass on their resources. On the other hand, if no such expectation is expressed, Number 3 may become too busy to notice Number 1's subsequent attempts to get her attention.

12. Some people share information about what they have without actually giving resources away until their direct connections are able to make direct exchanges. This preserves the participant's power but at the same time slows down the simulation and implies lack of trust. It also does not activate "the law of reciprocity" (Cialdini, 2001), the sense that we need to *return* favors. In other words, giving a letter to another participant usually makes the participant feel like he or she has to find the letter that the giver asked for. In contrast, if a participant only proposes an exchange (e.g., "I'll give you my C if you find me an E"), the other person feels no obligation to participate in this exchange and might find his or her E somewhere else. (Notice that there are three copies of each letter within the network, which means that—at least initially—there are multiple players from whom one can get the needed resources.)
13. Some participants withhold information and/or lie about their resources and connections. If this goes unnoticed, participants can benefit from it, but if it is perceived, it works against them. Either scenario provides a good opportunity to discuss ethical implications, reciprocity, and reputation. With respect to ethical implications, I acknowledge that it may be tempting to misrepresent the reality in order to obtain benefits from one's network. I then connect this topic to the topic of ethics and ethical decision making, if those are part of the course or program that the participants are part of, or I encourage a discussion of ethics more generally. In addition, I refer to Cialdini's (2001) research that suggests dishonesty, too, activates the law of reciprocity, so that if you mislead others, others are likely to try to mislead you, as well. I also reiterate that self-interest, if detected, is counterproductive in relationship building (Brass, 2012). Finally, I encourage participants to think about the implications of dishonest and self-interested behavior in these times of social networking platforms, where our reputation can spread much more quickly than it used to and thus any breach of trust or misrepresentation may cast a very long shadow.

14. Another way to point out that we are not primarily driven by selfish motives in networking is the fact that participants who finish the game always return to it to help others. (I have never had a player stop playing after obtaining the resources that he or she needed.) I ask participants who returned why they made that choice. They sometimes invoke competitiveness, particularly if there are multiple groups involved in the simulation at the same time, but they also mention the sense of wanting or feeling obligated to help others, not wanting to be left out, and feeling like it would not be fair to stop. Frequently, they are dumbfounded by the possibility—they simply cannot see any reason not to participate. If desired, this is a wonderful opportunity to discuss norms, and how they, too, are a form of social capital in the broader sense (Coleman, 1988, 1990).
15. Particularly if Number 5 is not the first one to finish, this provides an opportunity to discuss excessive selflessness in networks. Networking is time-consuming in terms of not only establishing connections but also maintaining them by providing help to those who request it. It is therefore important to be thoughtful about your time investments. Rather than just going for more connections, I encourage participants to think strategically about where their contributions will make the biggest difference.
16. It is usually the case that individuals who do well come from networks that have also done well as a whole. That is, the network in which Number 5 finishes first from among all Number 5s tends to do better than other groups overall as well (more people finish by the time that the simulation is over). This is a good opportunity to talk about the fact that effective, productive networks benefit not only individuals but also their organizations (e.g., Kleinbaum, 2012). This is one more reason to not feel selfish when it comes to building strategic networks.

Debriefing an Additional Topic: Resources. If students bring it up and if time permits, I also include a short discussion of resources in the debrief. The following points have proven to be helpful:

17. The insight that knowing what the network looks like brings benefits to those who have that information shows that information is an important resource, in addition to tangible, material resources (e.g., letters in the case of this simulation).
18. In the simulation, all resources are such that you can either keep them or give them away. In real life, only tangible resources have that

- property. Intangible resources may be more difficult to transfer, but even if you can they may also remain in possession of their original owner. Information is an example; even if you pass it on, you still have it.
19. In the simulation, there is the perfect amount of resources for everyone—no one will be left without what she needs. In addition, there are multiple sources for each resource—it is available from multiple people. That is often not the case, or at least not perceived to be the case, in real life. The competition is therefore often much exacerbated in real life.
 20. The simulation also allows for the discussion of the relative value of resources. Although, on the global level, all of the resources are needed equally (the supply and demand are exactly matched), locally, that is not the case. In the nine-person network, for example, the letter D seems worthless in the immediate vicinity of Number 9, who has two Ds and none of its connections need it. Number 1, who needs two Ds, however, is just one step removed. Therefore, understanding where the locally available resources may be needed enables individuals and parts of a network to productively use what they have for mutually beneficial indirect exchanges.

Reflecting on Participants' Real-Life Networks (0-15 Minutes)

At the end of the debrief, I ask participants to quietly reflect on lessons that they can draw from the simulation for their own networks. After about 5 minutes, I ask them to share their insights with the rest of the class. If participants have completed the Network Assessment Exercise (Ibarra, 2002, 2008) prior to class, this part of the discussion can be structured around specific types of networks that participants list in the exercise. If time permits, I ask them to work in pairs to develop specific action steps toward improving their networks.

Learning Outcomes

Participants, even those who are frustrated because of their structural position in the network, tend to really appreciate the simulation. Number 5s sometimes complain about being overwhelmed with all the messages and Number 1s about being isolated, but they quickly recognize that this reflects real-life in which they could find themselves. Although almost everyone has some understanding of the value of networks, they walk away with a much deeper and more thorough understanding of the factors that truly contribute to their

ability to benefit from their connections. Below, I summarize and provide illustrative evidence from participants and faculty for the learning for each learning objective.

Learning Regarding the First Learning Objective: Impact of Network Properties

Participants learn that, in networks, “more is better” can be a misleading motto. Their understanding about the benefits of centrality (see Brass, 2012, for one review), borrowing social capital (Burt, 1992, 1998, 2000; Sparrowe & Liden, 2005), weak ties (Granovetter, 1973), and bridging structural holes (Burt, 1992) really highlights the need to view one’s network strategically. In words of one executive: “It will be really useful to think about my network more strategically and develop an action plan.” Instead of simply counting the number of connections established, participants now have better tools to evaluate a network’s potential to bring benefits. Moreover, the experiential aspect of learning through the simulation solidifies some of the lessons beyond what readings and discussions could do. An MBA student who was in the isolated position of Number 1 but still finished first exclaimed, “I have to find a sponsor in real life!” referring to the invaluable help that she got from Number 3 in the simulation. “Balance!” said another participant, one of the Number 5s who did not finish because she was focusing more on responding to everyone else than on collecting the resources she needed. A professor in whose Organization Behavior and Communication undergraduate class I conducted this exercise reflected after the class was over: “This simulation enabled students to self-discover key strategies in networking, and did so in such a compelling way that students referred back to it throughout the rest of the semester.”

Learning Regarding the Second Learning Objective: Changing Perceptions About Networking

The simulation brings relief to those participants who fear networking because they envision having to “work the room” at a reception if they are to be good at networking. As expectancy theory would suggest (Vroom, 1964), once a more achievable goal of creating meaningful connections with a few people is established, participants report feeling more motivated to pursue it. Similarly, participants develop an increased awareness of the reciprocity that takes place in networks—while direct reciprocity is not always possible, the concept of paying it forward applies well to the simulation. The point that

everyone has something valuable to offer is reinforced by the setup in which everyone needs to share what they have in order for others to be able to find what they are looking for. Participants also experience the connection between their own benefits and benefits for their networks more broadly, which parallels research findings about organizational benefits of effective networking (e.g., Kleinbaum, 2012). A professor who observed the implementation in an executive classroom noted that “participants’ ‘aha!’ moments were widespread and meaningful.” One executive specified, “I never thought of networking as doing favors. That’s much nicer than what ‘networking’ sounds like.” And a part-time MBA student reported,

I’ll ask my boss to present the turnover part at the next quarterly meeting instead of him. He hates that stuff! It will take something off his plate but I’ll also meet his boss (and impress him with my brilliance)!

Conclusion

This relatively simple and low-tech simulation provides an opportunity for participants to improve their networks not by learning *how* to network but by giving them tools to evaluate *who* to network with. The benefits that can accrue to those with high-quality networks behoove us, as educators, to help our students to think strategically about their networks. Furthermore, in my experience, participants enjoy the process and appreciate the results.

Appendix A

Handout

Networking Simulation: Handout. You are a member of a network. You know who you are connected to and whether the people you know are connected among themselves but you don’t know who their other connections are.

Your goal is to get the resources you need as quickly as possible. You start with some resources—they may be what you need or not, in which case you may use them to get what you need.

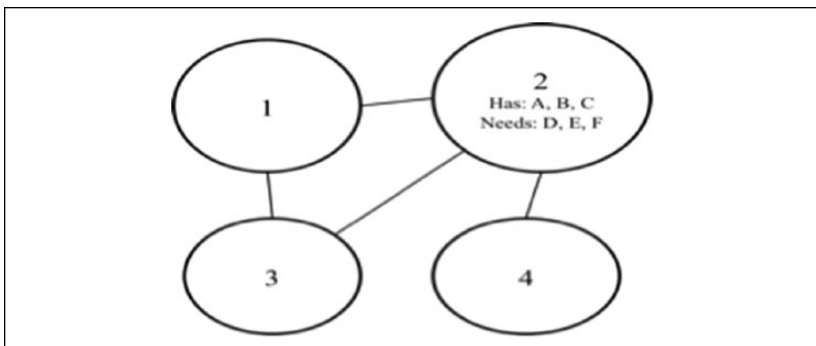
Your network information (network members that you are connected to), the resources you are starting with, and the resources you need to obtain are listed on your individual sheet inside your envelope.

Rules:

1. Wear your number in a visible place at all times throughout the simulation.

2. Keep your letters in the envelope until you are ready to exchange them.
3. Your goal is to get the resources that you need (listed on your sheet) as quickly as possible.
4. To get resources, you can reach out to others who may help you.
5. You can only communicate with people with whom you have direct ties, but they can communicate with others on your behalf.
6. You can only communicate in written form. You can write down anything you'd like and pass it on to anyone with whom you have a direct tie—but to no one else. You will be excluded from your network for 2 minutes if you violate this rule.
7. Note that it may not always be in your interest to share information with others. Fold your note as you pass it on so that only the person for whom the information is intended can see it.
8. To gather resources, you need to get cards with appropriate letters in your possession. To share resources, you pass your cards on to others.
9. Once you have the resources you need (if you have some that you don't need in addition to what you do need, that's OK), walk to the board, record your number and the time at which you completed the task, and turn in the resources that you needed to collect.
10. After that, you may (but don't have to) continue to participate in the simulation by communicating with your direct ties and passing on messages and resources.

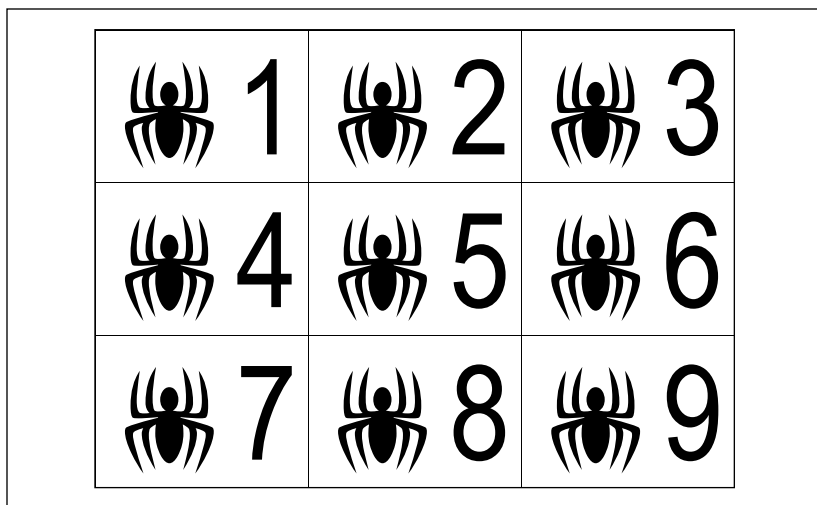
Number 2's network (example for illustrative purposes—it does not represent Number 2's actual network):



Appendix B

Name Tags

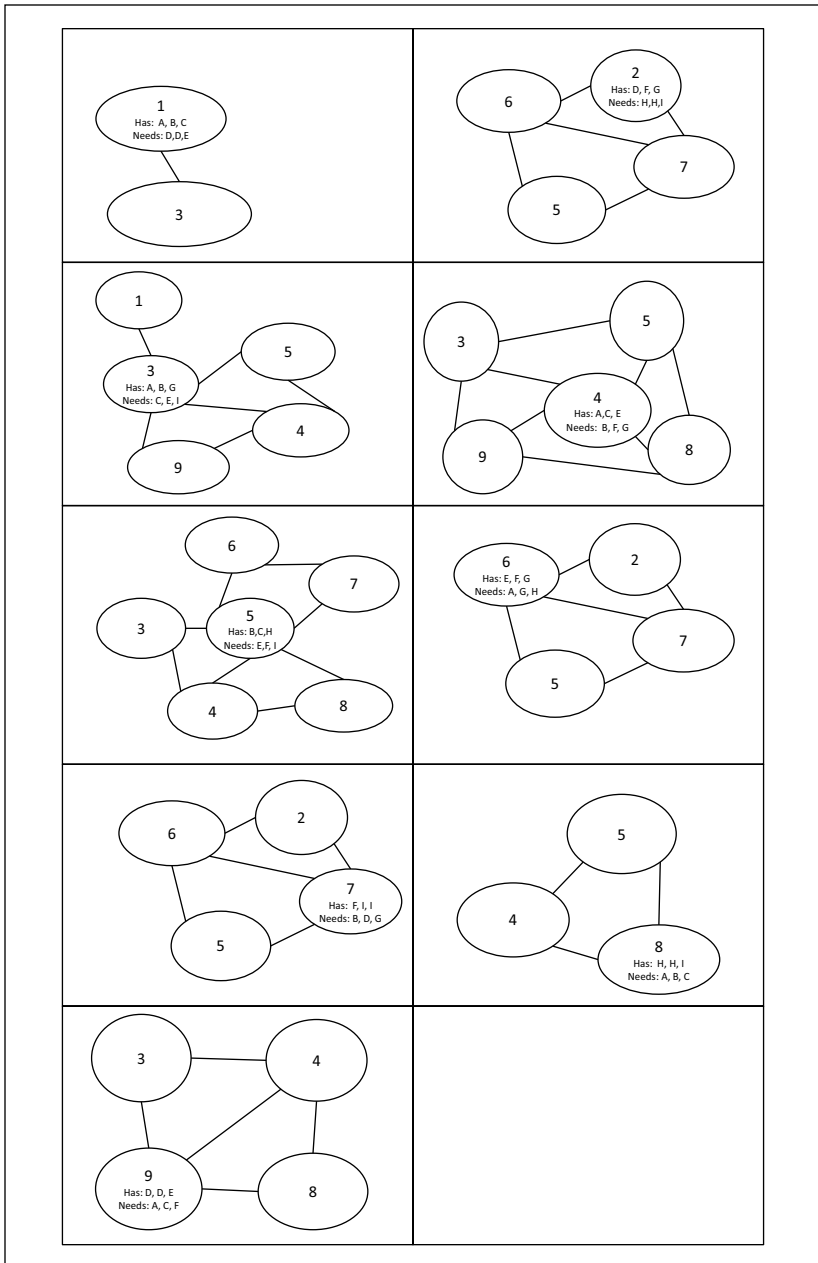
I use these “name tags” for participants and for their envelopes. If I have multiple groups, I designate each with a symbol, such as a spider, a spider web, or a star, so that their members are clearly marked and can easily only play with members of the same network. Below is one example. Several are available as supplemental materials in a form suitable for printing on self-adhesive labels.



Appendix C

Ego Networks for Members of Nine-Person Network

Each network member gets the appropriate individual worksheet—the one that shows his or her position with the available resources and the resources needed, as well as all his or her network connections.



Appendix D

Resources

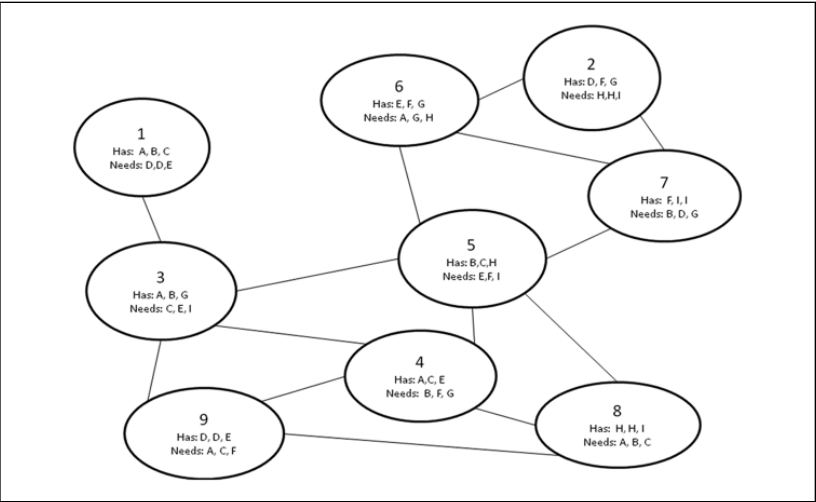
You will need to print three copies of these letters and use all of them for a nine-person network, or leave out the “I” for an eight-person network or “H” and “I” for a seven-person network.

| | | |
|---|---|---|
| A | B | C |
| D | E | F |
| G | H | I |

Appendix E

Nine-Person Network: Complete Network


This is a picture of the complete nine-person network. I display it in the debrief session to clarify the relative positions of each of the members.



Appendix F

Board or Flip Chart Plan

Prepare boards or flipcharts for each group (i.e., network) to record their progress.

| | |
|---------------|---|
| Network |  |
| Member Number | Time at completion |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

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Note

1. An ego network can be defined as a network consisting of an individual (ego) together with all the individuals that ego is connected to (alters) and all the connections among those alters.

Supplemental Material

The online supplements are available at <http://jme.sagepub.com/supplemental>.

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