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The Integration of People and Networks

Martin Kilduff[1] and Jung Won Lee[2]

[1]School of Management, UCL, London E14 5AB, United Kingdom; email: m.kilduff@ucl.ac.uk

[2]ESSEC Business School, 95021 Cergy-Pontoise Cedex, France; email: jwl.mngmt@gmail.com

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Abstract

Social networks involve ties (and their absence) between people in social settings such as organizations. Yet much social network research, given its roots in sociology, ignores the individuality of people in emphasizing the constraints of the structural positions that people occupy. A recent movement to bring people back into social network research draws on the rich history of social psychological research to show that (*a*) personality (i.e., self-monitoring) is key to understanding individuals' occupation of social network positions, (*b*) individuals' perceptions of social networks relate to important outcomes, and (*c*) relational energy is transmitted through social network connections. Research at different levels of analysis includes the network around the individual (the ego network), dyadic ties, triadic structures, and whole networks of interacting individuals. We call for future research concerning personality and structure, social network change, perceptions of networks, and cross-cultural differences in how social network connections are understood.

INTRODUCTION

Embeddedness: the overlap between social ties and economic ties or nesting of social ties within other social ties

Clique: everyone inside is tied to everyone else, and there is no one outside to whom everyone has a tie

Social network research in organization studies covers a wide spectrum of topics and levels of analysis, and has engendered a clutch of recent reviews aimed at making sense of burgeoning and dynamic research programs (e.g., Borgatti et al. 2009, Brands 2013, Burt et al. 2013, Carter et al. 2015, Fang et al. 2015). Despite the diversity of topics exhibited in the various social network literatures, there is no doubt that interpersonal exchange continues to be the basis on which networks are formed. Thus, even at the interorganizational level of analysis, conversations, meetings, and the development of trust between individuals from separate organizations over time form the basis of alliances (Larson 1992). Abstract network concepts such as the embeddedness of exchange relationships between organizations (Granovetter 1985) are best approached in terms of the personal relationships between organizational owners (Uzzi 1997). But this focus on interpersonal exchange is often obscured in social network research by an emphasis on the complexities of network analysis and the invocation of a structural perspective that eliminates consideration of people as active agents.

The call for social network research to pay attention to people in terms of their cognitions and personalities has been sounded several times (e.g., Kilduff & Krackhardt 1994, Kilduff & Tsai 2003) but the integration of people and social networks involves not just single individuals, but also dyads, triads, cliques, and organizational-level webs of connections. Thus, when we speak of integration we trace action and interaction back to individuals (in their heterogeneity), but we build from the individual level to progressively higher levels of social interaction. In this review, we examine the integration of people and networks across research traditions, theoretical debates, and levels of analysis. Our aim is to invigorate research at the nexus of organizational behavior, social psychology, and social networks.

The integration of people and social networks is visible across various organizational behavior indicators including gaining employment (e.g., Fernandez & Weinberg 1997), performance outcomes in organizations (Burt et al. 2013), and overall career progress (Fang et al. 2015). A focus on performance and career outcomes emerged from the early and still influential research of social psychology pioneers. In the work of Lewin (1936), there was a prescient emphasis on a dynamic and mathematical approach to how individuals perceived the whole field of social interaction. Moreno (1934) initiated the idea that decisions made by individuals can be understood on the basis of both individual predispositions and social network connections. Georg Simmel (1950) presciently called for a geometry of social relations and emphasized how a relationship between two people is different if the dyad is embedded in relations with a third person rather than being a stand-alone dyad. Fritz Heider, the cotranslator of Lewin's (1936) book, went on to develop the parallels between mathematical representation and social interactions in his balance theory (Heider 1958). From Heider's perspective, individuals who perceive their friendship relations as unrequited, or who perceive that their friends are not connected to each other, experience a strain toward balance—a tendency to correct these imbalanced relationships.

These advances by leading social psychologists have influenced the development of organizational social network research in terms of theory, topics, and methods (**Figure 1**). Lewin's emphasis on topology and a mathematical approach to social relations continues in the graph-theoretic basis of contemporary social network analysis that situates the network positions individuals occupy within the complete field of influences that constitute the network (e.g., Brass 1985). Moreno's deployment of social network diagrams (sociograms) to depict and clarify patterns of interaction and influence has become a leading tool to explain patterns of formal and informal interactions among individuals, groups, and organizations. An early use of sociograms in applied psychology examined the relationship between the formal organization and informal patterns of relationships

Foundations   **Contemporary social network research**

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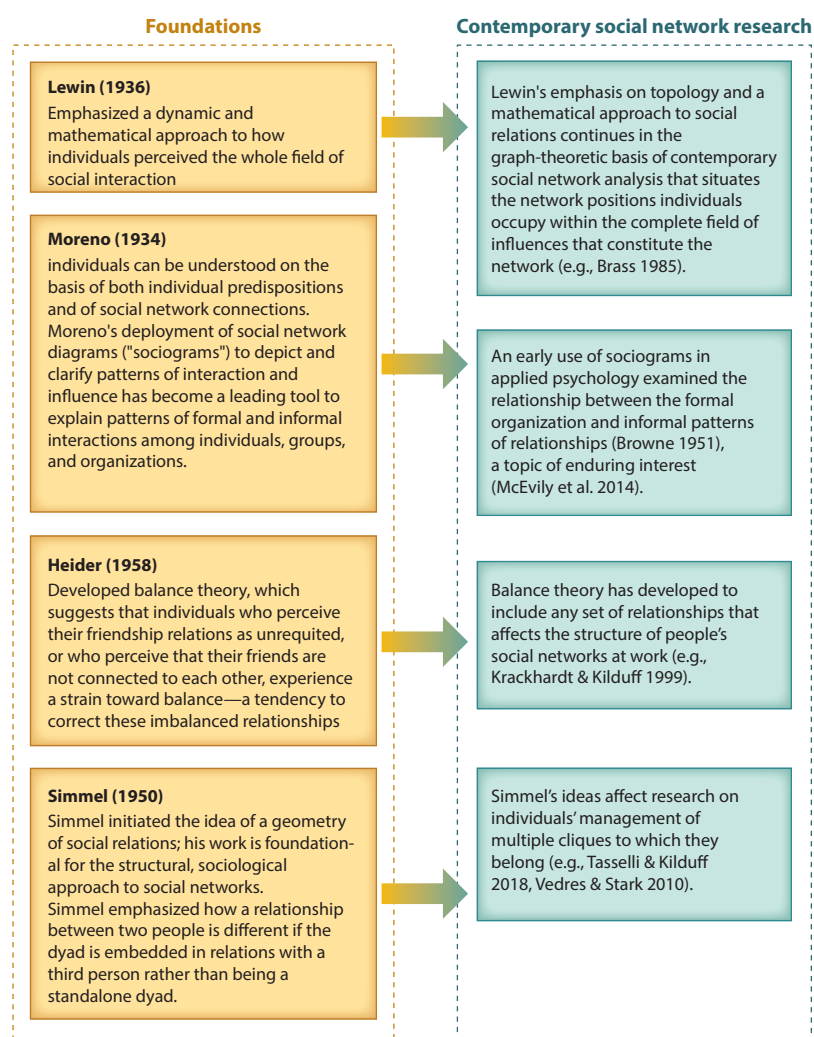An early use of sociograms in applied psychology examined the relationship between the formal organization and informal patterns of relationships (Browne 1951), a topic of enduring interest (McEvily et al. 2014).

Heider (1958)
Developed balance theory, which suggests that individuals who perceive their friendship relations as unrequited, or who perceive that their friends are not connected to each other, experience a strain toward balance—a tendency to correct these imbalanced relationships

Balance theory has developed to include any set of relationships that affects the structure of people's social networks at work (e.g., Krackhardt & Kilduff 1999).

Simmel (1950)
Simmel initiated the idea of a geometry of social relations; his work is foundational for the structural, sociological approach to social networks. Simmel emphasized how a relationship between two people is different if the dyad is embedded in relations with a third person rather than being a standalone dyad.

Simmel's ideas affect research on individuals' management of multiple cliques to which they belong (e.g., Tasselli & Kilduff 2018, Vedres & Stark 2010).

Figure 1

Social network research foundations in the work of Lewin, Moreno, Heider, and Simmel together with contemporary applications.

(Browne 1951), a topic of enduring interest (McEvily et al. 2014). Balance theory has developed to include not just the cognitive perceptual field envisaged by Heider but also to include any set of relationships that affects the structure of people's social networks at work (e.g., Krackhardt & Kilduff 1999). Simmel's work has led to a burgeoning interest in how relationships within and between three-person groups are managed (e.g., Tasselli & Kilduff 2018, Vedres & Stark 2010).

Current emphases in social network research include network change (e.g., Burt & Merluzzi 2016, Sasovova et al. 2010, Tröster et al. 2019) and the ways in which individuals are bound to each other across multiple network relationships [i.e., multiplex networks (Ibarra 1992)]. The study of network change was pioneered by Newcomb (1961) in a study of how university transfer students developed ties with each other over the course of their first semester in a shared dwelling, as well

as in Sampson's (1969) account of how relationships in an upstate New York monastery fractured under the influence of individual leaders. Network change was also a pioneering initiative of the influential Manchester School that developed a series of studies of African factories and other settings notable in locating individuals in their social network contexts, and showing how these contexts—and the network relations within them—changed over time (e.g., Kapferer 1972; see Mitchell 1974 for a review). As our future research section indicates, network change is a topic of continuing interest.

The term multiplex was initiated by Max Gluckman (1955), the founder of the Manchester School, in his studies of the Barotse people of Southern Africa whose society was arranged around multiplex status relationships. Earlier, however, a team at Harvard University, under the direction of Elton Mayo, explored social networks of friendship, games, antagonism, and other relationships among a group of factory workers (Roethlisberger & Dickson 1939). This research showed the effects of social networks on individuals in the workplace across various interaction contexts (see Ibarra 1992 for a more recent example of multiplex analysis).

TWO APPROACHES TO INTEGRATION

Emerging from these diverse sources, social network research in sociology, economics, anthropology, social psychology, and organizational behavior has surged in popularity with numerous applications across the social sciences. Employing similar methods and theoretical approaches, there are nevertheless two distinctive traditions that differ in their assumptions concerning the integration of people in networks, one tradition emphasizing structural determinism and the other tradition emphasizing individual distinctiveness. Given its prevalence, we present the structural perspective first.

Structure Dominates

Much social network research emphasizes that the structure of networks affects and shapes people's identities and outcomes in ways that are beyond individuals' control. People are integrated into networks without the necessity of their volition. The effects of structure on individuals are captured through three different lenses: (*a*) network positions occupied, (*b*) embeddedness of ties, and (*c*) location in larger systems of connections.

A fundamental axiom of network theory and research is that individuals who occupy central positions in social networks are likely to benefit from enhanced communication and timeliness of information and resource flow. Such is the importance of the centrality concept in social network research that several different kinds of centrality measurement have been developed to represent different ideas concerning centrality advantage (see **Table 1** for a selection). Centrality, however, can derive from such accidental features of organization as the location of the individual's office relative to the flow of interactions, or that the individual has been transferred from one department to another thereby serving as a vital link between two otherwise separated units. The individual concerned might be unaware of the centrality of the position occupied, even though benefitting from enhanced advantages.

People can also be integrated into social networks because their pattern of connections resemble those exhibited by others (see **Figure 2**) (Galaskiewicz & Burt 1991, Krackhardt & Porter 1986). If Person A and Person B are connected to exactly the same other people but not necessarily to each other, then they are structurally equivalent (e.g., Kilduff 1990). Relatedly, two people may be role equivalent in that they are connected to different people, but these different people happen to occupy equivalent roles (e.g., Krackhardt & Porter 1986). People in equivalent roles

Table 1 Centrality measures and empirical findings related to organizational outcomes

Measure	Definition	Organizational outcomes
Degree centrality	A count of the number of links to others in the network	Advice, support, career success (e.g., Fang et al. 2015)
Betweenness centrality	The extent to which the individual is situated on the shortest paths between other people in the network who are themselves not directly connected	Access to diverse ideas; creative performance (Mehra et al. 2001)
Eigenvector centrality	The extent to which the individual is linked to other people who themselves have many links	Status and reputation (Mehra et al. 2006)
Constraint	Combination of the number of connections an individual has to others, the extent to which those others are connected to each other, and the extent to which one or more of those others rivals the individual in terms of connecting between those who are not connected	Good ideas (Burt 2004) Promotions (Burt 1992) Financial bonuses (Burt 2007)

are likely to be subjected to the same or similar sets of interpersonal influences even if they are not aware of their structural or role equivalence.

People are also integrated in social networks through a set of processes summarized by the term embeddedness, which represents a core principle of organizational social network research
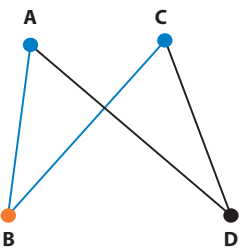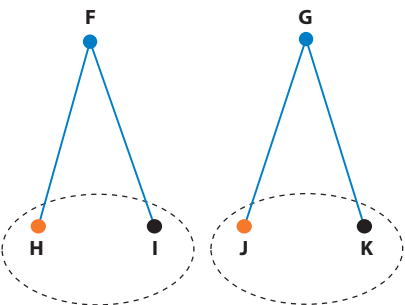
Concept	Definition	Examples of outcomes
Structural equivalence	Persons **A** and **C** are connected to exactly the same other people (e.g., **B**) but not necessarily to each other.	Structurally equivalent corporate officers made similar evaluations of nonprofit organizations (Galaskiewicz & Burt 1991).
Role equivalence	Persons **F** and **G** are connected to different people but these different people occupy equivalent roles.	Role-equivalent workers tended to affect each other's turnover decisions (Krackhardt & Porter 1986).

Figure 2

Structural equivalence, role equivalence, and organizational outcomes.

Simmelian tie: a tie between two people that is embedded within a clique

Small world: a network that exhibits high local clustering and short average path lengths

Homophily: the tendency for people to interact with others similar to themselves on dimensions such as gender, age, and education

(Kilduff & Brass 2010). Embeddedness is the tendency for social ties to be forged, renewed, and extended through the community of existing ties, and the extent to which a tie between two people is within a clique. To the extent that a tie between two people is part of a three-person clique such that each of the two people has a mutual tie to a third person, the third person has influence over the tie. Each member of the dyad is constrained in their abilities to sever relations because severance would affect the relationship with the third person. Ties embedded in three-person cliques, referred to as Simmelian ties, are likely to be more stable than stand-alone ties (Krackhardt 1998) and more likely to produce agreement between people through pressures to conform (Krackhardt & Kilduff 2002).

Individuals in organizations are likely to be influenced by even larger structures of which they may be unaware. For example, the social network across the whole organization may resemble a small world that exhibits clustering and connectivity. People are clustered together due to what networkers refer to as homophily—the tendency to mix with others who are similar in terms of proximity, common interests, specialism, gender, ethnicity, or other salient factors (McPherson et al. 2001); additionally, people can reach others through relatively short chains of communication. A small-world structure thus exhibits two properties that are normally divergent—high local clustering and short average path lengths (Watts & Strogatz 1998). Small worlds can foster clusters of local knowledge development, together with ease of access across the clusters (e.g., Uzzi & Spiro 2005). But if people are clustered in homophilous groups with few or no connections, they may experience local cohesion with similar others even though the larger picture shows a pattern of disconnected clusters that leaves the organization vulnerable to fragmentation (Granovetter 1973). Furthermore, although the intuitively appealing notion that social relations are conveniently arranged in small worlds has captured people's imaginations, there is evidence that small worlds may be more prevalent in people's cognitions than in reality. People in organizations striving to understand the complex web of connections within which they are embedded have recourse to a small-world cognitive heuristic that makes even distant strangers seem relatively accessible (Kilduff et al. 2008).

Network research is often termed structural research because of the emphasis on how the structure of relationships affects people's outcomes without their volition. Properties of social networks such as centralization, small worldedness, and core-periphery structures are not within the control of any single individual. Structural network research tends to view individuals' positions in social networks as determined by network processes that involve little or no individual agency. Thus, people end up connected in clusters of similar others with strongly defined tastes, not because they make active choices but because homophily is induced through such processes as the tendency to reciprocate ties and to connect to friends of friends (DellaPosta et al. 2015), and because homophily pressures are strong when salient bases of identity such as gender are in the minority (Mehra et al. 1998). Social network research from a psychological perspective challenges this structural determinist view.

Bringing People Back In

Social networks involve ties between interacting individuals. Yet it is this emphasis on individual people that the structuralist perspective, summarized above, has sought to deny (Kilduff & Krackhardt 1994). Research that incorporates attributes of individuals has long been demonized as a "dead end" (Mayhew 1980, p. 335) because network patterns are assumed to derive from social structure rather than human agency. Thus, structuralists "shun the 'person' construct as polluting" in their search for an individual-free science of networks (White 1992, p. 3). In practice, this has opened the door for organizational social network researchers to explore how individuals'

personality (e.g., Sasovova et al. 2010), cognitions (e.g., Brands 2013), and emotions (e.g., Casciaro et al. 2014) relate to social network patterns and outcomes. Unburdened by the structural networkers' rejection of individuals' intrinsic characteristics, intentions, and attributes, organizational researchers have explored the microfoundations of social networks (Tasselli et al. 2015).

Looking first at individual differences, we note that the early social network research in organizational settings tended to focus on demographic differences that fit well within the structuralist tradition. Thus we learned that men and women employees tend to segregate into different networks and that people central in social networks tend to get promoted (Brass 1985). There is debate concerning whether homophily—i.e., associating with others of the same demographic category—is stronger for women and ethnic minorities relative to men and ethnic majorities, once availability is controlled for (for evidence of lower homophily for minorities, see Ibarra 1992; for evidence of higher homophily for minorities, see Mehra et al. 1998). Interestingly, however, the relation between homophilous choice and outcomes for individuals seems to depend on the position of the individual in the formal or informal hierarchy. Bankers who chose to form instrumental ties with colleagues of the same nationality or gender received smaller bonuses only if they occupied the upper echelons of the organization (Ertug et al. 2018). Homophily research is still within the bounds of structuralist determinism because homophily may be induced by pressures on individuals rather than being chosen, and because homophily research typically addresses sociological variables such as gender and nationality.

Personality. Personality research clearly departs from the structuralist ethos. Does the individual's personality affect whether the individual occupies a central or brokerage position in an organizational social network (Burt 2012)? These are novel questions to ask within social network research, given that the network paradigm eschews any dealings with so-called essentialist explanations of human behavior (e.g., Berkowitz 1982). But it is insufficient to just add personality variables to network research if the social network research program is to be challenged and extended. Personality research must engage with the social network research agenda concerning, for example, the large variance in career outcomes for people who occupy advantageous social network positions (Burt et al. 2013). Personality research in social network contexts benefits from the critique of individualist research that structuralists (e.g., Mayhew 1980) have put forward.

Chief among the objections that structuralists make against psychological research is that it suffers from tautology. Thus, research showing that cooperative, compliant, generous, kind, and trusting individuals (i.e., people high in agreeableness) tend to make friends whereas anxious, insecure, hostile, and irritable people (i.e., people high in neuroticism) do not (Klein et al. 2004) may tend to confirm the view that personality research as applied to network contexts is no different than "saying that people do things because they do things" (Mayhew 1980, p. 335). The personality predictors (agreeableness and neuroticism) and the social network outcome (the number of friends) may appear to be aspects of the same underlying variable—the extent to which the individual is friendly.

What is needed is a personality approach that seizes important research possibilities within the social network research program and that simultaneously engages with important research currents in organizational behavior. A strong candidate for such an approach is offered by self-monitoring theory and research. From its inception, self-monitoring theory has contrasted two types of prototypical people, the low self-monitor who is relatively unresponsive to situational pressures for behavioral and attitudinal appropriateness, tending to look within for cues for how to act in accordance with personal beliefs and values, and the high self-monitor who looks to the social situation and strives to present the appropriate response (see review in Snyder 1987; for recent research see Tasselli & Kilduff 2018). These two prototypes resemble two types of social

Brokerage: spanning between the unconnected to benefit from their disunion (*tertius gaudens*) or to bring people together (*tertius iungens*)

personalities highlighted in sociological theory: the undersocialized person who evaluates and acts without reference to other actors, and the oversocialized person who has inculcated collective values and beliefs (Granovetter 1985).

Social network research attempts to move beyond these two polarities toward models of action that take into account the embeddedness of behavior in social relations. Self-monitoring research puts forward the possibility that engagement in social relations is different depending on whether the individual tends toward under- or oversocialization. There is, therefore, validity to the claim that self-monitoring, as a theory of personality, has special relevance for social network research. A meta-analysis of 138 independent social network and personality studies showed the dominance of self-monitoring relative to the Big Five personality variables in predicting centrality in organizational social networks. Specifically, controlling for the Big Five, self-monitoring predicted the number of people choosing the individual (i.e., indegree) across both expressive networks (e.g., friendship) and instrumental networks (e.g., advice); self-monitoring also predicted brokerage (i.e., betweenness centrality or reverse-scored constraint) in expressive networks (Fang et al. 2015). Intriguingly, it was indegree centrality in both expressive and instrumental networks that was found to predict work performance, with brokerage nonsignificant. Brokerage is likely to be efficacious for upper echelon managers rather than those lower in the hierarchy (Burt 1992). The personality and social network meta-analysis concluded that "self-monitoring emerges as an especially relevant personality variable in the prediction of networking behavior and individual success" (Fang et al. 2015, p. 1253).

Cognition. One of the advantages of a high self-monitoring personality style is greater acuity in perceiving social network relationships, particularly those status-enabling relationships entailing the giving and receiving of help (Flynn et al. 2006). There is a long history of research on how people perceive network ties (see Brands 2013 for a review). The research shows that people tend to bias their perceptions toward greater cognitive simplicity, relying on heuristics to make sense of both their own social network relationships and those of others. Thus, individuals in organizations perceive their friendship ties with others as more reciprocated than they actually are. This bias helps individuals avoid feelings of unrequited affection among people they see daily, and individuals prefer to see their friends as friends of each other to avoid the cognitive tension that derives from unbalanced relationships. But this balance heuristic (Heider 1958) also is imposed on the friendship relationships of relative strangers far removed from the perceiver—these strangers are also seen as involved in reciprocated friendship ties with people who are friends with each other. In this way, individuals are able to keep track of the complexity of social relationships in organizational settings (Krackhardt & Kilduff 1999). Clustering people into groups based around perceivedly popular people who connect across the groups also helps organize messy social networks into cognitively simple ones (Kilduff et al. 2008). This imposition of clustering and connectivity helps organize individuals' cognitive maps and is theorized to facilitate individuals' negotiation of interpersonal interactions.

What is missing from much of this cognitive social network research is any sense of what the outcomes might be of either acuity or its absence. Pioneering work showed that individuals with experience with structural holes in their networks are particularly good at spotting these holes in new networks, with subsequent advantages in putting people together across fault lines for negotiations (Janicik & Larrick 2005). Other research showed that work groups that accurately perceived the brokerage positions of the women in their groups tended to perform poorly even though the women brokers in these teams performed highly on individual tasks (Brands & Kilduff 2014). And, faced with a threat to their jobs, people of low status, relative to those of high status, tend to bring to mind a restricted set of social network contacts (Smith et al. 2012). But high power

Indegree: for each individual, the number of incoming network ties (e.g., the number of people asking the individual for advice)

Structural hole: a gap between two people or two clusters of people that can be spanned by another person

people, relative to those of low power, tend not to see the structural hole opportunities in social networks, even though the experience of power makes them more willing to pursue these opportunities (Landis et al. 2018). This kind of outcome-based research is still relatively rare among the plethora of work on cognitive social networks, but this is clearly where this program of research is headed.

Emotions. Relative to research on personality and networks, or perceptions of social networks, work on specific emotions and social networks is relatively sparse. We know that people transmit emotions, such as happiness, through their friendship contacts, but that simply being around happy coworkers does not affect the individual's happiness in the absence of friendship relations (Fowler & Christakis 2008). More than this, however, researchers have studied relationships based on both negative affect (e.g., dislike) and positive affect (e.g., friendship), from the beginnings of network research. For example, Moreno (1934) showed that a puzzling spate of runaways from a girls' custodial institution could be explained by examining the pattern of affective ties that connected the girls. The Hawthorne researchers showed the importance of friendship cliques in relation to restricting output (Roethlisberger & Dickson 1939). Workplace friendships facilitate productivity, employee retention, team cohesion (Balkundi & Harrison 2006), and personal growth (Colbert et al. 2016). Friendship also facilitates difficult decision making, particularly for high self-monitors (Kilduff 1992), to the extent that people in organizations are likely to forgo expert help in favor of inexpert help from their friends (Casciaro & Lobo 2008). On the negative side, friendship in the workplace puts the individual under competing pressures to fulfil friendship obligations such as favoritism while observing organizational principles of efficiency and rationality. Establishing and maintaining friendships in the workplace requires investments of support and attention that can prove fatiguing (Methot et al. 2016).

Perhaps the most compelling recent approach to emotions and social networks examines the relational energy that some people transmit to others in the workplace. The more people an individual energizes, the higher the individual's job performance: The energized reward energizers with information, resources, and discretionary attention (Baker et al. 2003). Energy flows in organizations can be depicted in social network graphs that show the direction of either energizing relations or de-energizing relations, but major studies of the effects of energy flows are still to be undertaken (Baker 2019).

Combining elements of both the structural and the individual traditions, some influential work builds from structuration theory (Giddens 1984) and related approaches to suggest that individuals shape and change the very networks that facilitate and control relationships (e.g., Barley 1986). And, indeed, there is the possibility that people's identities and personalities are changed by the occupation of network positions (Tasselli et al. 2018).

DEBATES

Given its diverse origins, social network research is a contested field of differing ideas and competing perspectives. Across the different theoretical viewpoints, major debates concern the extent to which organizational outcomes are determined by the individual's strength of ties (i.e., weak versus strong), and the extent to which organizational outcomes are determined by the individual's network position (in open versus closed networks).

Strength of Ties

Tie strength was brought to the attention of network researchers with the publication of Granovetter's (1973) suggestion that an individual's weak ties (i.e., with acquaintances rather than

Closed network: there are many connections among members that reinforce cohesion, trust, mutual monitoring, and social support

friends) were likely to bridge across gaps in social structure and thereby provide the individual with access to novel ideas and opportunities. Weak ties, according to this treatment, were likely to benefit both the individuals involved and the overall community connectedness. The argument was based on the idea that strong ties, such as friendship, drew people together in tight clusters (Heider 1958), thus limiting the extent to which individuals forged connections outside of their cohesive groups. Weak ties, such as acquaintanceship, were not subject to the same cohesive pressures as strong ties. Follow-up research supported the idea that the individual's weak ties provided access to a wide range of opportunities leading to increased occupational choice, high status jobs, and high salaries (Lin 2001).

Weak ties are those characterized by infrequent interaction, short history, and limited (emotional) closeness (Granovetter 1973). As a recent article explored, weak ties are "ideal vehicles for access and exposure to very different thought worlds—perspectives and approaches that are not only new to the actor but that are fundamentally different from each other" (Baer 2010, pp. 592–93). In the weak-tie approach (Granovetter 1973, 1983), the emphasis is on bridging to distant clusters rather than on cementing relations with close friends or kin. To break out of the comforting entrapment of one's close circle of friends and family requires contact with a quite different social circle, contact that is unlikely to derive from a strong tie given that those with whom we maintain strong ties are likely to know the same people as ourselves. It is through weak ties (such as fleeting encounters between two people in the supply chain) that novel opportunities and resources are likely to become available.

Weak-tie theory therefore emphasizes that connections across otherwise disconnected clusters of people are likely to involve ties that are weak rather than strong. A tie may represent the only bridge from one part of an organization to another, thus placing two clusters of people in contact. But even if a tie is not the only connection across a social gap, to the extent that its removal would lead to a long chain of intermediaries between two organizational units, then the tie can be considered an important bridging connection, helping to integrate different clusters of people into the community of interconnected interests that constitutes the firm. Overall, weak-tie theory emphasizes that weak ties are "indispensable to individuals' opportunities and to their integration into communities," whereas strong ties "breeding local cohesion, lead to overall fragmentation" (Granovetter 1973, p. 1378).

Weak ties are therefore instrumental in reaching people distant from ourselves. Weak ties connect to people who work in other countries, who occupy hierarchical levels remote from our own, and who engage in quite different tasks. These distant individuals (who may be employees of the same organization as ourselves or who may function in parts of the supply chain critical to our own efforts) are likely to socialize in circles that are beyond our own. But to the extent that we are able to connect with them across boundaries and distances, they are likely to serve as "channels through which ideas, influences, or information socially distant from ego may reach" (Granovetter 1973, pp. 1370–71). Studies have shown that weak ties help people gain access to those of higher social status, higher occupational prestige (Lin 2001), different departments (Seibert et al. 2001), and randomly selected targets (Dodds et al. 2003).

Given the emphasis on weak ties as bridging social distance, weak-tie theory also highlights the extent to which the social capital outcomes of individual workers are typically beyond their control: "The personal experience of individuals is closely bound up with large-scale aspects of social structure, well beyond the purview or control of particular individuals" (Granovetter 1973, p. 1377). There is less emphasis on individuals being aware of the structure of social networks in which they are embedded, an awareness that would be required for any manipulation or control of networks. New pieces of information—such as news about job openings, market opportunities, and resource constraints—arrive rather serendipitously through chance meetings, such as with

prior colleagues that one may have forgotten about. If serendipitous encounters are important to how one accesses news or influence, then another related advantage of weak ties is that they require lower time commitments relative to strong ties, and, thus, increase the occurrence of serendipitous encounters (for which there is more time, and concerning which there is more likelihood).

A separate approach (which we can designate as strong-tie theory) emphasizes the importance of strong bonds of affect and trust for understanding why people help each other and provide resources and assistance, especially under conditions of uncertainty and change (Krackhardt 1992). Indeed, there is evidence that strong relationships enhance knowledge transfer (e.g., Reagans & McEvily 2003) although extended time with the same exchange partners can eventually reduce knowledge creation (McFadyen & Cannella 2004).

Individuals who predominantly build networks of strong ties tend to be embedded in cohesive clusters. And, zooming out from these clusters to survey the whole community of interests, there will be damage to the integration across interests, divisions, and business units if individuals pursue a strong-tie attachment policy because local bridges will be less likely to be developed and maintained. There will be local cohesion and clustering among those who are colocated in the same buildings, but the bridging ties across clusters, across virtual but necessary coordinating links, will be less likely to develop.

Recent theory draws attention to dormant ties, defined as former ties that have fallen into disuse. Results show that reconnecting previously strong ties can provide the individual with the efficiency and novelty of weak ties together with the trust and shared perspective of strong ties (Levin et al. 2011). Executives, however, often miss out on reconnecting with the most valuable of their lapsed ties—those with higher status with whom they spent little time in the past—preferring the comfort of connecting to those more familiar figures with whom they spent a lot of time in the past (Walter et al. 2015).

Open versus Closed Networks

Just as researchers debate the importance of weak versus strong ties, there is debate concerning whether individuals are best served by occupying positions in open versus closed networks. Structural hole theory (Burt 1992) makes the argument for career rewards flowing to those who occupy positions in an open network that permit various strategic actions including serving as an intermediary between others seeking to transact (i.e., brokerage), coordinating between disconnected others who may have no desire to transact (i.e., network leadership), and controlling the flow of information between disparate groups (i.e., network bridging). There is a developing emphasis on differences among individuals' ability to recognize and take advantage of such open network positions (Burt 2005, p. 23). Achievement is determined by the individual's role experience and the individual's role-specific network (Burt 2012). Note, however, that despite this developing emphasis on individualism, structural hole theory envisages companies benefiting from the activities of individuals who span across structural holes in the social fabric of the organization. These network brokers are "highly mobile relative to the bureaucracy" in providing faster and better solutions (Burt 1992, p. 116).

Structural hole theory is similar to weak-tie theory in its emphasis on the importance to the individual of ties that bridge across contacts who themselves are disconnected. The emphasis is on individuals bridging across gaps among immediate, direct contacts in the workplace (Burt 2007). Structural holes—defined as the absence of ties among direct contacts—give rise to opportunities for the brokerage of information or resources across the holes. By connecting those who are not themselves connected, brokers can strategically access and control information flow (Burt 1992). To the extent that the individual builds strong, trustworthy ties to nonredundant contacts, then

Dormant tie:
a relationship between two people who have not communicated with each other for a long time

Open network: few connections among members, providing opportunities for brokerage across disconnected people

the individual is likely to gain access to diverse and timely information that, in markets where information tends to be hoarded, is likely to facilitate the race to get ahead (Burt 1992). The strength of the relationship with each contact is emphasized to be strong in this approach, with weak ties regarded as ephemeral (Burt 1992, 2010).

There is an emphasis on strategic control of social capital in the conceptualization of structural hole theory: "The *tertius* plays conflicting demands and preferences against one another and builds value from their disunion" (Burt 1992, p. 34). The *tertius gaudens* strategy involves a broker controlling the flow of information among two or more unconnected contacts, thus exploiting the conditions of uncertainty for personal advantages. Empirical research has shown that spanning across structural holes fosters early promotion and higher earnings (Burt 1992, Podolny & Baron 1997, Seibert et al. 2001). Relatedly, experiments and simulations of social exchange networks demonstrate the advantages that result from brokerage positions (Cook & Yamagishi 1992). More recent applications of structural hole theory have underscored its information access advantage for creativity. By mediating between unconnected contacts, brokers not only access diverse information but also enjoy the opportunity to create novel ideas from this diversity (e.g., Burt 2004).

Structural hole theory posits that when information is moved beyond an individual's local network, the information can lose its meaning and become misunderstood or miscommunicated (Burt 2010). Due to the characteristics of the information (e.g., tacit nature) or characteristics of the people processing the information (e.g., lack of shared understanding), information can be sticky to move (von Hippel 1994). Brokerage is argued to be less successful once information has to be moved beyond the immediate circle of contacts in the workplace around the individual because an individual is less likely to share vocabularies, taken-for-granted understandings or routines with socially distant contacts. Secondhand brokerage—movement of information across the disconnected contacts of alters—has a negligible association with individual performance over and above the association of direct brokerage (Burt 2007).
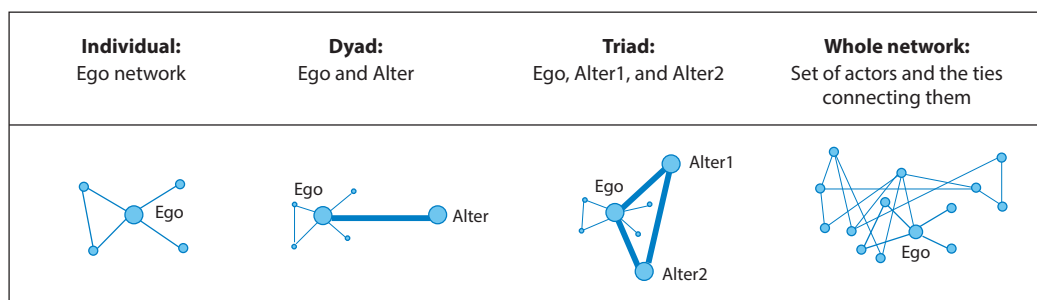
The benefits for individuals who occupy relatively closed network positions (in which their contacts are themselves connected to each other) are emphasized in the cohesion perspective (e.g., Coleman 1988). Managers, for example, risk reputational damage if the important people in their buy-in network are disconnected from each other (e.g., Podolny & Baron 1997). Being embedded within a supportive network positively affects others' willingness and motivation to invest time, energy, and effort in sharing knowledge (Reagans & McEvily 2003). In collectivist cultures, career rewards tend to be higher for those who occupy cohesive social networks relative to those whose networks span structural holes (Xiao & Tsui 2007). For those employees embedded within cohesive friendship cliques, trust is maintained to the extent that the individual combines the personality traits of low self-monitoring and verbal effusiveness (i.e., blirtatiousness) rather than a diplomatic personality style appropriate for a broker between cliques (Tasselli & Kilduff 2018).

Recently, there have been efforts to reconcile the opposing ideas of the benefits of open and closed networks for individuals. Brokers who move in and out of closed networks over time achieve higher organizational performances (Burt & Merluzzi 2016) because periodic engagement in trust-building within cohesive groups can be critical for extracting the value buried in structural holes. Brokers may need to rebuild reputational capital within cohesive social networks before launching themselves into brokerage activity that requires skill and acuity in managing rapidly changing network landscapes (Burt 2002).

LEVELS OF ANALYSIS

Social network theory and research is unusual in that it ranges across levels from the individual up to and including world systems. For organizational research, the most relevant levels include the

Individual: Ego network	**Dyad:** Ego and Alter	**Triad:** Ego, Alter1, and Alter2	**Whole network:** Set of actors and the ties connecting them

Figure 3

The individual, dyadic, triadic, and network levels of analysis.

individual, dyadic, triadic, and network levels of analysis. Although the theoretical drivers of research, such as strength of tie theory and structural hole theory, are similar across levels, constructs and outcomes are different, as **Figure 3** shows.

Individual Level

This concerns the social network around the individual (referred to as "ego"). With the recent emphasis within structural hole theory on how the pattern of connections within the ego network determines outcomes (e.g., Burt 2007), this level of analysis has taken on particular importance. People who are connected to many others who themselves are disconnected from each other tend to produce creative ideas (i.e., ones that are both novel and useful). But it is individuals within relatively closed networks who are able to facilitate adoption of ideas (Obstfeld 2005).

Overall, there are career benefits to those whose ties span across structural holes (Burt 1992). But there is much variance among occupants of such brokerage positions: Some people, much more than others, profit from structural advantage (Burt et al. 2013). At this level, the characteristics of individuals (such as self-monitoring personality) take on particular interest. The individual's personality contributes explanatory power for understanding who occupies advantageous network positions (e.g., Sasovova et al. 2010) and who benefits from the occupation of these positions (Fang et al. 2015). What is less clear is whether the structural pressure on the individual facilitates personality change in the direction of better fit with situational demands, as suggested by recent work (Tasselli et al. 2018).

How the individual perceives the network (e.g., Janicik & Larrick 2005) and how others use networks to appraise individuals (Kilduff & Krackhardt 1994) have implications for individual performance (e.g., Brands & Kilduff 2014). Given the emphasis on how individuals rely on heuristics to navigate the complexities of social network relationships (see Brands 2013 for a review), the question arises as to the effects of these cognitive patterns on social network change. If people perceive situations as real, will they not be real in their consequences (Thomas & Thomas 1928)?

Dyad Level

A distinguishing feature of network analysis is that it enables a treatment of dyadic relationships (Kilduff & Brass 2010). Key features of these dyads include the importance of reciprocity for mutual gains (e.g., Uzzi 1997), the extent to which multiplex ties affect job performance (e.g., Methot et al. 2016), and the extent to which dyadic relations embedded in larger network structures benefit from increased knowledge flow (Tortoriello & Krackhardt 2010).

Although much social network research considers processes of tie formation, persistence, and decay between dyads (see Rivera et al. 2010 for a review), the dyad as the unit of analysis remains relatively unusual. Each individual is likely to have numerous dyadic interactions with colleagues. Rather than pursue analysis at the dyadic level, which involves specialized statistical procedures (e.g., Kilduff 1990, Kilduff & Krackhardt 1994), a standard solution is to represent types of ties at the individual level through counts of, for example, strong ties, Simmelian ties, and bridging ties (e.g., Tortoriello & Krackhardt 2010).

A dyadic analysis, by contrast, asks questions at the dyadic level, such as the following: Do informal dyadic relations overlap with formal dyadic relations (McEvily et al. 2014). What influences similarity of important decisions—dyadic friendship, perceived similarity, or similarity in structural positions (Kilduff 1990)? Which dyadic interactions are likely to trigger creative ideas? The results of a recent dyadic analysis study showed that pairs who enjoyed working together above and beyond work requirements were likely to generate creative ideas from their interactions, but that simple frequency of interaction had no effect (Sosa 2011).

Triad Level

Triads are fundamental to research on social networks from both sociological (e.g., Simmel 1950) and psychological approaches (e.g., Heider 1958). From a sociological perspective, the triad introduces mediation of a third person between two potentially conflicting others (e.g., Burt 1992) and provides the opportunity to study majority versus minority influence (e.g., Ody-Brasier & Fernandez-Mateo 2017). Individuals involved in triadic relationships, such as agency employees who work alongside company employees, have to manage two relationships, one of which is with their employer, the agency, and the other of which is with their employment host, the company. There are challenges and constraints in such triadic arrangements that are absent from dyadic exchanges.

Triads constrain actions because they form mini societies in which norms and values arise. Membership in two or more cohesive triads has variously been described as paralyzing for individuality (Krackhardt 1999) or liberating for the insiders who navigate across group boundaries (Vedres & Stark 2010) and who can, therefore, enjoy structural advantages. Membership in one or more cohesive clique stimulates the expression of trait-related behavior to meet the demands of these challenging interpersonal situations (Tasselli & Kilduff 2018).

From a psychology perspective, the triad is key to understanding pressures toward transitive balance in friendship networks with outcomes including job search: To the extent that the individual is embedded in closed friendship triads, new information in imperfect job markets is unlikely to be accessed (e.g., Granovetter 1973). Triadic closure—the tendency for friends of an individual to become friends themselves—is one of the fundamental dynamic principles in multiplex social network formation. People, even when motivated to seek out strangers for instrumental reasons, tend to resort to closure (Ingram & Morris 2007).

Network Level

Network-level analysis of organizational social networks involves investigating system properties that are beyond individual, dyadic, or triadic approaches. For example, at the system level, people's outcomes are affected by the extent to which social networks are centralized around a few individuals (e.g., Brands et al. 2015), the extent to which the network resembles a small world characterized by sparse relationships dominated by clusters that enable short connections between people (e.g.,

Uzzi & Spiro 2005), and the extent to which the network exhibits a dense set of relationships (e.g., Balkundi & Harrison 2006).

Thus the network level of analysis zooms out to locate network individuals in the force field of influence, which affects many intimate aspects of people's lives such as happiness (e.g., Fowler & Christakis 2008). Even though people may feel responsible for the outcomes they experience, the network level of analysis reminds us that we are all subject to social influences from near and far. The extent to which people embedded in chains of influence recognize where ideas and influences derive from is worthy of greater study.

Analytical Procedures for Levels of Analysis

The integration of people into social networks requires taking into account multiple dependencies in social network data. Fortunately, exponential random graph models (ERGMs) (Harris 2014) provide rigorous ways to represent networks of interconnected tie variables (Lusher et al. 2012). ERGMs model any given network in terms of local structures such as reciprocated ties and triads. ERGMs capture both structure and randomness in social networks, and researchers can specify and estimate specific sources of dependence. ERGM approaches allow researchers to model simultaneously the effects of actor attributes and dyadic covariates (Robins & Daraganova 2013), to examine ties across multiple networks (Wang 2013) and multiple levels (Wang et al. 2013), to deal with network dependencies (Daraganova & Robins 2013), and to model longitudinal network data (Snijders & Koskinen 2013).

FUTURE RESEARCH

Personality and Structure

As this review has indicated, the integration of people into social network research is facilitated by considering how individual dispositions toward the self or the social situation affect social network outcomes such as centrality. Whereas the structural perspective suggests that personality may be an epiphenomenon of social networks (e.g., Burt 1992), from a personality perspective, it is the individual's personality that is likely to shape social networks (Tasselli et al. 2015). There remains the possibility, as yet unresearched, that occupation of social network positions facilitates personality change by opening aspects of the self that were hitherto unrecognized, or by pressuring the self into new behavioral routines that aggregate into trait-level change (Tasselli et al. 2018).

And the question of what personality approach to use in conjunction with social network research is still unanswered, given the weak effects of Big Five personality variables on network outcomes (Klein et al. 2004). Self-monitoring has been the reliable predictor of individuals' network centralities (Fang et al. 2015) and has recently been joined by blirtatiousness—the extent to which the individual self-reveals through verbal effusiveness (Tasselli & Kilduff 2018). What is missing is a more intrapsychic approach that might permit the detection of personality change in relation to social network roles. For this new research direction, a personality theory such as George Kelly's (1955) personal construct approach, would be suitable because it focuses on role relationships (e.g., Krackhardt & Kilduff 1990); additionally, consistent with the evidence (reviewed in Tasselli et al. 2018), personal construct theory incorporates personality change as entirely to be expected.

The integration of people and social networks is also likely to be advanced along the lines of person/social network fit. Recent research investigates the effects of fit between network positions and individuals' cognitive styles (Carnabuci & Dioszegi 2015) and the fit between personality and

outcomes (Soda et al. 2018). Social network positions are strong situations that are likely to elicit the individual's available personality resources rather than stifle them (Tasselli & Kilduff 2018).

Network Change

Despite numerous calls to investigate network dynamics, social network research tends to rely on and emphasize stable social network ties. It is these stable ties that affect important outcomes in everyday life. But people in organizational settings achieve promotions, switch jobs, move from one department to another department, and engage in adding and dropping individuals, thereby creating churn in their active networks (Sasovova et al. 2010). We need new theory to capture the benefits and drawbacks of network change in organizations, building on ideas such as the benefits of oscillating between open and closed networks (Burt & Merluzzi 2016) and the benefits of reconnecting with dormant ties (Levin et al. 2011). The data are available, as shown by recent advances. For example, to capture the transient nature of social network connections on a year-to-year basis, researchers drew on company-mandated behavioral reports concerning the quality of interaction with individuals each person worked closely with during the preceding year (e.g., Burt & Merluzzi 2016). In addition, a recent study captured the coevolution of network position and individual attitudes across three time points (Tröster et al. 2019). For even more fine-grained evidence of network churn, researchers can analyze digital data (e.g., email, twitter) for time-stamped information concerning social interactions (Lazer et al. 2009, Quintane & Carnabuci 2016).

Detecting Structural Opportunities

To benefit from a position of structural advantage in a social network, individuals need to accurately detect the network structure within which they are embedded (Balkundi & Kilduff 2006). Some people are more accurate than others in detecting brokerage opportunities in social networks (Janicik & Larrick 2005). For example, low power people, relative to high power people, are alert to such opportunities (Landis et al. 2018). But research has yet to examine whether individuals with biased perceptions of the importance of their positions in social networks might gain advantages in enacting network change. We need more research examining the positive and negative consequences of biased perceptions of social networks for both perceivers and targets of perceptions (e.g., Brands & Kilduff 2014).

One neglected but important set of questions concerns whether motivation and emotion distort or improve the perception of network relationships with consequences for action. Do status-motivated people systematically underestimate how much they depend on others for help and advice? Does the feeling of intense rivalry sharpen ego's perception of the rival's set of dependencies? What motivates some people to churn through their networks whereas other people retain connections for decades? Are people motivated to occupy brokerage positions, or is it that the occupation of these positions motivates keener awareness of network opportunities? These kinds of questions bring individuals in their heterogeneity into the mainstream of social network research.

Cross-Cultural Differences

Most social network research is conducted in Western contexts of open markets, free competition, and individualism. But there are challenges to the universality of these social network findings. Brokerage, as an interpersonal style, may be less effective in collectivist relative to individualist cultures (Xiao & Tsui 2007) . In the Chinese context, social capital is often summarized in

terms, not of brokerage, but of *guanxi*. *Guanxi* relationships consist of friendships that are instrumental and reciprocal in facilitating favors and resources (Xin & Pearce 1996). However, recent evidence shows, for a large sample of Chinese entrepreneurs, that business success is associated with networks rich in structural holes, a finding in line with prior research in Western contexts: "access to structural holes is a competitive advantage in China as in the West" (Burt & Burzynska 2017, p. 238). The authors also note that if a *guanxi* tie is defined as one in which trust is high and relatively independent of social structure around the relationship, then two-thirds of the Chinese entrepreneurs' key contacts qualify as *guanxi* ties compared to only one-tenth of a sample of bankers and analysts in the United States (Burt & Burzynska 2017, p. 240). There are differences, therefore, in Chinese relative to US social networks, but the evidence suggests that brokerage and closure operate similarly in the two contexts.

Guanxi ties are not the only distinctive cultural forms of social capital. For example, in Korea the emphasis is on *yongo* relationships that derive from attendance at the same educational institution, membership in the same family, or origin in the same hometown. These bases of solidarity provide for lifelong relationships of trust and obligation: "Within a *yongo* network, the behavioral norm is that everyone is obliged to cooperate and shares the commitment to do so" (Horak & Taube 2016, p. 601). We need more research examining the effectiveness, in cultural contexts that include Asia, Africa, and South America, of ties of obligation relative to ties, such as friendship, that derive from personal choices.

One distinctive piece of evidence concerning the efficacy of ties that cross rather than stay within national contexts relates to returnees to China and other countries who had been trained in the United States in corporations such as Google and Merrill Lynch. Some returnees succeeded more than others in implementing knowledge change (e.g., changes to routines) in their home-country employing organizations on their return home. Successful knowledge transfer was facilitated if the returnees had been embedded (e.g., completed a degree) in both the US and the home country. But high xenophobia in the home country diminished the positive effect of host country embeddedness while increasing the positive effect of home country embeddedness (Wang 2015).

Relatedly, the question arises as to the generalizability of weak-tie theory given disparate results showing that people find jobs through weak ties in the United States (Granovetter 1983) but through strong ties in China (Bian 1997). There is substantial variation in how effective weak ties are in facilitating job search (Gee et al. 2017). One possibility is that weak ties are effective in individualist cultures such as the United States where people are prepared to trust relative strangers, whereas strong ties are essential in more collectivist cultures where trust is restricted to kinship and friendship circles (Yamagishi & Yamagishi 1994).

PRACTICAL IMPLICATIONS

People's integration into social networks affects every aspect of our lives. To extract practical implications, it is helpful to summarize key evidence concerning benefits and drawbacks. Social support networks are linked to various health benefits (see Smith & Christakis 2008 for a review), including well-being, reduced mortality, and avoidance of illness. The practical message seems clear: Social isolation is deadly. But, paradoxically, it is also through social network connections that negative as well as positive contagion is transmitted. Thus, a variety of unhealthy lifestyle choices are transmitted to individuals through their networks of connections (Smith & Christakis 2008).

In terms of career success, being popular in friendship and advice networks helps people get ahead (Fang et al. 2015). But the value of some connections varies over time: A high-reputation connection boosts the individual's chances of getting a job but may have negative effects on

promotion prospects later on (Kilduff et al. 2016). Embeddedness in social networks is therefore no panacea for individuals seeking success: You can be trapped in your own network of connections (Uzzi 1997).

Evidence also suggests you are judged on the company you currently are perceived to keep (e.g., Kilduff & Krackhardt 1994); however, the company you used to keep represents a knowledge resource that can be drawn on to foster better outcomes in organizational settings (e.g., Levin et al. 2011). Social capital, as with other kinds of capital, represents a competitive advantage for some people relative to others. People who have connections within corporations benefit greatly from inside information concerning each step of the hiring process (Fernandez & Weinberg 1997). Recruitment through referrals from existing employees generally benefits companies (Fernandez et al. 2000) except in cases where human resource departments are unaware of the patterns of recruitment through kinship and friendship (e.g., Burt & Ronchi 1990). Additionally, referrals from current employees can disadvantage minorities (e.g., Petersen et al. 2000) and women (Fernandez & Sosa 2005) who may lack social connections within the employing organizations.

Implications for leadership are also evident in recent research (Carter et al. 2015). Formally appointed leaders can enhance their effectiveness through a boost to their attributed charisma if they first win a central position in team advice networks, providing advice to many of their colleagues (Balkundi et al. 2011). But this charisma boost from centrality is likely to be limited to men. Women tend to be attributed with charisma to the extent that they are seen to occupy positions in cohesive team structures (Brands et al. 2015).

Overall, the positive implications for individuals concerning social networks outweigh the negative, but the management of social relationships is key. To achieve career success, the individual must manage social network connections so that key people are kept close to provide the social support and resources (Podolny & Baron 1997) necessary for health and well-being. The friendship network is a decision-making resource (Kilduff 1992) as well as a social support mechanism. At the same time, the individual should seek diversity in social connections beyond the inner circle to gain timely information, to foster creativity through weak ties (e.g., Baer 2010, Perry-Smith 2006) and through spanning across the gaps in social structure (e.g., Burt 2004). Instrumental ties with powerful and high-status people are useful in facilitating career success and performance in organizations (Lin 2001). Individuals should overcome feelings of disquiet to benefit from such connections (Casciaro et al. 2014), but not all individuals have the personality resources (Mehra et al. 2001) or the legitimacy (Burt 1992) to be brokers across cohesive groups. Individuals can succeed by matching their attributes to the network opportunities available (Tasselli & Kilduff 2018).

CONCLUSION

Research on social networks thrives on investigations concerning the integration of people into social networks. The claim that social network research represents an approach alien to research on individuals (e.g., Mayhew 1980) makes no sense in organizational behavior. The major social network theories focus on people and their network contacts. Thus structural hole theory concerns the individual's position in his or her network of direct contacts (Burt 2007). Weak-tie theory concerns how individuals' weak ties offer potentially serendipitous interactions that can also knit communities together (Granovetter 1973). Dormant-tie theory shows how individuals can gain the benefits of strong-tie trust and weak-tie innovation by accessing contacts that have been neglected (Levin et al. 2011).

Thus, network research, far from being a revolution that overthrows traditional approaches in its endeavor to form a new science (cf. Berkowitz 1982), has emerged instead as a research

program that brings new energy to traditional topic areas in organizational behavior. Bringing personality into social network research provides a prominent example of individual/social network integration (Landis 2016). Individuals' cognitions concerning their embeddedness in social networks offers another research avenue for integration (Brands 2013). Although there is as yet little research on how individuals' emotions affect social network outcomes, we do know that emotions are transmitted through social networks (Fowler & Christakis 2008). The search for the microfoundations of social network structures is well under way (e.g., Tasselli et al. 2015), as is research on the effects of individuals' networks on firm-level outcomes (Kleinbaum & Stuart 2014). In conclusion, the network perspective in organizational research brings people and their social contacts into focus in order to advance our understanding of all aspects of work in organizations. Integrating people and social networks moves research beyond the models of isolated individuals that once dominated research in decision making, leadership, and motivation. Individuals are connected to each other in webs of influence and support. To understand the antecedents and outcomes of these connections is to capture what is truly human in organizational behavior.

SUMMARY POINTS

1. Social network research has deep roots in the interpersonal psychology of Kurt Lewin, Fritz Heider, Theodore Newcomb, and other pioneering social psychologists.

2. The modern development of social network research has emphasized the sociological approach that has tended to deny human agency, in pursuit of a structural determinism.

3. But recent organizational behavior research has brought people back into the social network arena with emphases on, for example, individuals' self-monitoring personality and the importance of individuals' cognitive social networks.

4. Ongoing debates relate to whether individuals' careers and outcomes are best served by strong versus weak ties, and by open versus closed networks.

5. The integration of people into social networks takes place across various levels, including ego networks, dyads, triads, and whole networks. These different levels of analysis provide contrasting perspectives on how positions in social networks affect outcomes.

FUTURE ISSUES

1. An unresolved question relates to network structure and individual personality: To what extent, if at all, does a change in the individual's network position affect the individual's personality?

2. Although there is much work ongoing concerning network change, there are unresolved issues relating to the transient nature of many social network connections. Do these fleeting ties have lasting or ephemeral effects on individuals' outcomes?

3. How people detect the opportunities for brokerage is a vital question that requires research on motivated cognition, the effects of emotions on network perception, and the ways that the occupation of network positions changes motivation, emotions, and perceptions.

4. Although we have lots of research in North American contexts and, to a lesser extent, in Chinese contexts, we lack research in many other cultural contexts. Future research can examine whether and to what extent variations in how social network connections are understood in different cultural contexts affect individuals' outcomes.

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