This article describes the network approach to small groups. First, the core constructs that compose social network research are explained. The primary theories that provide the intellectual underpinning of the network approach are described, including theories of self-interest, theories of social exchange or dependency, theories of mutual or collective interest, cognitive theories, and theories of homophily. Highlights of the empirical work examining the internal and external networks of small groups is summarized. Finally, the primary challenges researchers face when applying the network perspective to small groups, and the primary benefits that can accrue to researchers who adopt that perspective, are enumerated.

Keywords: groups; teams; networks; theory

The last decade has seen a tremendous surge in research on social networks and research on small groups. A relatively small but growing body of work embraces both these foci. Indeed, research on the networks of small groups is fast emerging as an area of study (Lazer & Katz, 2003b). This article provides an overview of the network approach to small groups. The intended audience is small group researchers who are curious about how network ideas and methods can enhance their understanding of small group phenomena.
The article is organized into five sections. The first section is an introduction to the network perspective. Basic questions are addressed: What is a network? What are the essential dimensions along which networks meaningfully vary? How are networks measured? And, What is the definition of a small group, from the network perspective? The second section is an overview of the central principles and the theoretical underpinnings of the network perspective. The third section traces the history of empirical research on the networks of small groups. The fourth section describes the benefits that result from adopting a network perspective when studying small groups. The final section is a discussion of the primary challenges now facing researchers who apply the network perspective to small groups.

INTRODUCTION TO THE NETWORK PERSPECTIVE

What is a network? A social network consists of a set of actors (“nodes”) and the relations (“ties” or “edges”) between these actors (Wasserman & Faust, 1994). The nodes may be individuals, groups, organizations, or societies. The ties may fall within a level of analysis (e.g., individual-to-individual ties) or may cross levels of analysis (e.g., individual-to-group ties).

What are the essential dimensions along which networks vary? Network researchers have examined a broad range of types of ties. These include communication ties (such as who talks to whom, or who gives information or advice to whom), formal ties (such as who reports to whom), affective ties (such as who likes whom, or who trusts whom), material or work flow ties (such as who gives money or other resources to whom), proximity ties (who is spatially or electronically close to whom), and cognitive ties (such as who knows who knows whom). Networks are typically multiplex, that is, actors share more than one type of tie. For example, two academic colleagues might have a formal tie (one is an assistant professor and reports to the other, who is the department chairperson)
and an affective tie (they are friends) and a proximity tie (their offices are two doors away).

Network researchers have distinguished between strong ties (such as family and friends) and weak ties (such as acquaintances) (Granovetter, 1973, 1982). This distinction can involve a multitude of facets, including affect, mutual obligations, reciprocity, and intensity. Strong ties are particularly valuable when an individual seeks socioemotional support and often entail a high level of trust. Weak ties are more valuable when individuals are seeking diverse or unique information from someone outside their regular frequent contacts. This information could include new job or market opportunities.

Ties may be nondirectional (Joe attends a meeting with Jane) or vary in direction (Joe gives advice to Jane vs. Joe gets advice from Jane). They may also vary in content (Joe talks to Jack about the weather and to Jane about sports), frequency (daily, weekly, monthly, etc.), and medium (face-to-face conversation, written memos, e-mail, instant messaging, etc.). Finally, ties may vary in sign, ranging from positive (Joe likes Jane) to negative (Joe dislikes Jane).

How are networks measured? In one common type of network study, every member of an organization is presented with a list of every other member of the organization. Respondents are asked to put a checkmark next to every person on the list with whom they have contact. Respondents might also be asked to indicate how often they have contact, or the substance of those interactions. These self-report data are translated into a sociogram using visualization software such as NetDraw (Borgatti, 2003), NetVis (Cummings, 2004), and Pajek (Batagelj & Mrvar, 2003). A sociogram is a visual display of all of the nodes and ties in a network. A sociogram can use a variety of algorithms to organize the layout of the nodes on the network visualization. Common layouts include random assignments, placing the nodes in a circle, arranging them based on certain attributes of the nodes (putting all females or all managers close to one another), or “annealing” the network, where nodes that are tied (or more strongly tied) to one
relax the balance theory–inspired requirement of complete transitivity among all within-group relations. Freeman (1992) has tackled this problem by applying the distinction between strong and weak ties to distinguish subgroups within a larger network of ties in which they are embedded.

The second definition of a group is an exogenously determined category or boundary around a set of people (e.g., a corporation, a political party, or students in a class). In this context, network analysis is typically used to compare patterns of intra-versus inter-category communication. For example, in landmark works on social capital in communities (Bourdieu, 1985; Coleman, 1990; Putnam, 2000), group boundaries such as social class played a key role in creating denser subsidiary networks within classes. These dense networks facilitated both the spread and enforcement of norms through the diffusion of reputations, iterated relationships, and threat of sanctions. The analog in the small group arena would be groups with clearly defined boundaries and membership. Members are viewed as belonging to one particular group (just as people are thought of as belonging to a particular social class or category), not as belonging to multiple overlapping groups.

CORE PRINCIPLES OF THE NETWORK PERSPECTIVE

The network approach spans a broad range of disciplines, including sociology, social psychology, mathematics, political science, communication, anthropology, economics, and epidemiology. There is no single formal statement of the network perspective. Yet, there are certain core ideas that all or most network scholars would likely endorse. Barry Wellman (1988) has identified five fundamental principles that provide some “underlying intellectual unity” to the network approach.

First, people’s behavior is best predicted by examining not their drives, attitudes, or demographic characteristics, but rather the web of relationships in which they are embedded. That web of relationships presents opportunities and imposes constraints on people’s
behavior. If two people behave in a similar fashion, it is likely because they are situated in comparable locations in their social networks, rather than because they both belong to the same category (e.g., both are White women).

Second, the focus of analysis should be the relationships between units, rather than the units themselves or their intrinsic characteristics. Nothing can be properly understood in isolation or in a segmented fashion.

Third, analytic methods must not hinge on the conventional assumption of independence. A population or sample is defined relationally rather than categorically. Therefore, interdependence among units is assumed.

Fourth, understanding a social system requires more than merely aggregating the dyadic ties. The flow of information and resources between two people depends not simply on their relationship to each other but on their relationships to everybody else. For example, it matters whether two people who communicate with one another are embedded within a cluster of individuals who also talk to one another, versus embedded within two separate clusters that otherwise do not communicate at all (Burt, 1992).

Fifth, groups sometimes have fuzzy rather than firm boundaries. The building blocks of organizations are not discrete groups but rather overlapping networks. Individuals generally have cross-cutting relationships to a multitude of groups. Applying these five principles to small groups, a network study focuses on relationships between components in the group system—individual-to-individual ties within a group, individual-to-group ties, or group-to-environment ties—rather than on features of these components.

THEORETICAL ROOTS OF THE NETWORK PERSPECTIVE

How do network scholars explain why people create, maintain, dissolve, and possibly reconstitute network ties, and who is likely to form ties with whom? There are multiple schools of thought or “families of theories” (Monge & Contractor, 2003) within the net-