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Personality and Social Networks in Organizations: A Review and Future Directions

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Author Biography

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Abstract

Recent research linking individuals' personality characteristics to their social networks has brought new understanding of how individual patterns of behavior affect networks in organizations. This review summarizes the major advancements in three areas of social network research relevant to organizational behavior: (a) brokerage and structural holes, (b) network centrality and network size, and (c) strength of ties. This review also provides an agenda outlining three key opportunities for future research. These opportunities involve personality and social network change, bidirectional and dyadic processes, and the potential effect of network position on personality expression.

Keywords: personality, social networks, social capital, individual differences

Individuals' social networks have important consequences for their short- and long-term success in organizations. From knowledge sharing (e.g., Tortoriello, Reagans, & McEvily, 2011) and creativity (e.g., Burt, 2004) to performance (e.g., Mehra, Kilduff, & Brass, 2001) and promotions (e.g., Brass, 1984), there are few aspects of organizational behavior left untouched by social network ties. Personality seems relevant to social networks because networks are inherently interpersonal phenomena. But how does personality affect a person's social network at work? Recent links between personality psychology and social network research have brought new theory and evidence bearing on this important question. In general, interest in social networks is on the rise (Borgatti & Halgin, 2011) and research featuring personality psychology constitutes an important part of this trend. Indeed, to study the bridge between personality and networks is to engage with an array of fundamental questions concerning the links between who we are and the company we keep.

The purpose of this review is to summarize the major advancements in studies of personality and social networks that are relevant to organizational behavior. I focus on three key features of social networks: (a) brokerage and structural holes, (b) network centrality, and (c) weak ties. These features represent commonly studied aspects of social networks in relation to personality and are the focus of the review. In introducing readers to what we know about how personality shapes each of these features of a person's network, I also briefly highlight why these features are important and show how these aspects of social networks are measured. Thus, readers should come away with a general understanding of how scholars conduct personality and social network research in organizations. In the last section, I discuss three key opportunities for future research.

The Post-Structural Tradition in Network Research

On the surface, it would appear that personality and social network approaches to understanding organizational behavior would complement each other. Personality psychology

emphasizes the "stable core" within each person that guides his or her behavior (Hogan, 2005), whereas social network research considers how ties among people influence behavior. Each approach offers something that the other does not—an emphasis on individual patterns of behavior or an emphasis on social ties between people. However, these two distinctive approaches have historically been at odds with one another, and their current union is an unlikely one.

One of the obstacles to linking personality and networks concerned the idea that researchers did not necessarily need to know individuals' personality characteristics in order to understand their behavior. Scholars termed this sentiment the *anticategorical imperative* (Emirbayer & Goodwin, 1994, p. 1414): "This imperative rejects all attempts to explain human behavior or social processes solely in terms of the categorical attributes of actors, whether individual or collective." In its subtle or explicit forms, this philosophical stance downplays or sets aside altogether the issue of personality. Instead, the research emphasis is on the structure of ties among individuals, an "approach that deliberately disavows the identification of personality types" (Breiger & Ennis, 1979, p. 262).

Given this strong focus on the structure of relations among people *instead of* the characteristics of people themselves, research in the anticategorical tradition might be seen as a clear signal of discouragement to personality researchers. As Kilduff and Tsai (2003, p. 79) observed, "To speak of personality and social structure in the same breath is as close as one can get to heresy against the established social network paradigm." However, more recently, there has been growing recognition that individualist and structuralist traditions can complement each other. For example, research suggests that personality can influence changes in relationships (e.g., Asendorpf & Wilpers, 1998; Mund & Neyer, 2014). Scholars have called for research in this "post-structural tradition" that emphasizes both the characteristics of individuals and the characteristics of their networks (Kilduff & Tsai, 2003).

This approach promises to bring new insight into organizational behavior by focusing on the structure of relations among people *in addition to* the characteristics of people. It also answers longstanding calls for research that integrates the person and the situation as reflected in the social network context (cf. Swann & Seyle, 2005).

In what follows, I describe the major works and advancements that have occurred within this post-structural tradition. I should note that my emphasis is not on estimating the strength and direction of personality-network relations under different conditions (to which a meta-analysis would be better suited). Rather, my focus here is on the theoretical and empirical advancements that have thus far characterized major research in the area of personality and social networks.

Review of Personality and Social Network Research

Literature Review

The task of identifying and reviewing studies examining personality and social networks required casting a wide net in the initial search for research. Studies of the association between personality variables and social network features are found in journals across psychology, sociology, management, and specialty outlets. In the initial search of identifying relevant studies, I searched electronic databases such as PsycINFO, EBSCO, Web of Science, and Google Scholar for terms pertaining to personality and social networks. The searches featured personality terms such as the Big Five, personality, traits, individual differences, self-monitoring, and network terms such as centrality, brokerage, weak ties, and related words. I also conducted keyword and manual searches of the following journals that have published empirical research on personality and/or social networks: *American Journal of Sociology, Administrative Science Quarterly, Organization Science, Academy of Management Journal, Journal of Organizational Behavior, Personnel Psychology, Journal of Applied Psychology, Journal of Personality and Social Psychology,* and *Social Networks.* In

addition, I examined the reference lists in articles found in these journals for other research on personality and social networks, and conducted ancestry and descendancy searches to see if articles citing or being cited by a given article would reveal further studies. Finally, I contacted researchers who had published research in this area for their help in identifying studies.

Selection of Studies

I narrowed the resulting pool of studies by applying the following criteria. First, I focused only on studies that reported an empirical investigation (quantitative or qualitative) of personality and social networks. Studies that did not examine both personality and social networks were excluded. Second, the study had to focus on an adult sample. This criterion excluded a sizable literature on child and adolescent social support networks, but helped sharpen the focus of the review on research germane to behavior in organizations. Third, the majority of studies examined personality and social networks in organizations, but some studies that were not conducted in the workplace were retained when their theory or findings seemed especially relevant to organizational behavior (e.g., Pollet, Roberts, & Dunbar, 2011, on research pertaining to extraversion, network size, and strength of ties). This criterion is inherently subjective, and therefore may exclude some studies conducted outside of organizations but concern personality and social networks more generally. Finally, studies of network concepts, such as tie strength, that were examined in a comparable fashion under another conceptual label (such as "relationship closeness") were included to avoid the jangle fallacy (i.e., assuming that two variables are different because they do not have the same label).

Organizing Framework: Brokerage, Centrality, and Tie Strength

The aforementioned approach yielded 23 articles in total, which are summarized in Table 1. These brief article summaries pertain only to aspects of the studies that capture links

between personality variables and network variables. As can be seen, the majority of studies examined structural positions in networks, such as whether someone occupies a central position or is able to broker between people who are not in direct contact. Fewer articles focused on tie strength or relationship closeness. Given that brokerage, network centrality, and tie strength are each substantive areas of theoretical and empirical research in the network domain, I have organized the following review in terms of how personality variables relate to these three well-studied network features. The following literature review may also provide guidance to researchers interested in identifying relevant variables linked to these three important network features.

Insert Table 1 about Here

Brokerage and Structural Holes

One of the most significant ideas to galvanize social network research concerns brokerage, a position in the network that presents opportunities to move information, ideas, or advice across "structural holes" between people not directly connected (Burt, 2005). Individuals in brokerage positions in organizations tend to receive high performance ratings (Mehra et al., 2001), come up with useful ideas (Burt, 2004), and attain faster promotions (Brass, 1984). Brokerage carries certain costs as well. Trust and cooperation tends to be stronger in "closed" networks where individuals' network contacts are also connected with each other (Burt, 2005), and the performance benefits associated with brokerage tend to be diminished in cultures that value cohesion and collectivity (Xiao & Tsui, 2007).

There are three common ways to measure brokerage (or closure around a person): (a) betweenness centrality (Freeman, 1977), (b) constraint (Burt, 2005), and (c) effective size (Wasserman & Faust, 1994). Betweenness centrality is the number of times a person falls between other individuals on the shortest paths connecting them. Constraint can be

conceptualized as the extent to which the network acts as a "social straightjacket" affecting access to different pockets of the social world (Burt, 2005). Constraint varies as a function of network size, density, and hierarchy, and brokers are individuals with low scores on constraint. Betweenness is a global measure of brokerage because it involves both direct and indirect ties, whereas constraint is a local measure of brokerage because it primarily captures the direct ties in the immediate network around a person. Effective size is the number of network contacts minus the average number of network contacts each contact has to others. In Figure 1, Jessie and Walter occupy different positions at opposite ends of the brokerage and closure spectrum.

Insert Figure 1 about Here

An early investigation examining the personality characteristics of brokers involved asking people to answer a diverse pool of personality questions (capturing various behavioral tendencies) and correlating their responses with the extent to which they were a broker in their social networks (Burt, Jannotta, & Mahoney, 1998). Brokers tended to endorse items such as, "When evaluating opportunities, I am likely to look for a chance to be in a position of authority," and, "In evaluating my aims in my career, I probably put more emphasis on my ability to create an aura for excitement." These findings suggest that occupying brokerage positions in social networks is associated with an entrepreneurial, authoritative personality.

Although these results provide initial insight into the qualities of people in brokerage positions, an intriguing question is how these personality items map onto existing personality constructs, such as extraversion (Digman, 1990) or sense of power (Anderson, John, & Keltner, 2011). Do these items reflect extraversion, a sense of power, or another personality trait entirely? Identifying the core personality characteristics associated with people in brokerage positions has been a challenge taken up by many researchers in this area.

Research suggests that people tend to be consistent in the kinds of social networks they create from one situation to the next (Burt, 2012). Evidence from a study of individuals who created multiple characters in an online virtual world indicates that if an individual created a network with many structural holes in one character, he or she was likely to create a network with many structural holes in other characters (Burt, 2012). This work makes an important contribution to our knowledge of the consistency with which people create (and recreate) their social worlds. If there were no effect of personality, we would expect that the network that develops around one character would bear little or no resemblance to the network that develops around another character (both played by the same person). But when people created new characters, these characters came to inhabit social network structures that looked remarkably similar to the other characters played by the same person. This work involves data from an online virtual world, but its arguments are central to the issue of whether personality underpins the formation of social structures. One caveat is that Burt (2012) measured only the consistency with which the same person built similar social networks across the characters he or she played. The exact personality variables that affect this consistency remain an open question.

One such variable seems to be self-monitoring. The theory of self-monitoring suggests that there are stable individual differences in the degree to which individuals monitor and rely on cues in the situation in deciding how to behave (Snyder, 1987). At its core, self-monitoring is a theory of expressive control in which high self-monitors appear more chameleon-like and adaptive to social situations, whereas low self-monitors seem more true to themselves and more likely to stick to their own opinions, values, and attitudes.

Brokerage entails interacting with people in different social groups. Is it therefore the case that those who are inclined to self-monitor are more successful in formal organizational roles that require adjusting their behavior to fit different social situations? In a test of self-

monitoring and the performance of individuals in a boundary spanning role (i.e., being an intermediary between franchises and the corporate office), early work found that high self-monitors had higher performance in this job role requiring broker behavior (Caldwell & O'Reilly, 1982). This study did not explicitly capture brokerage from a network perspective, but suggested that self-monitoring may play a critical role in performing well in formal, boundary-spanning positions.

Research has since extended self-monitoring theory to brokerage in informal networks. Researchers reasoned that high self-monitors, being more chameleon-like in their approach to workplace interactions, would be absorbed into different social pockets of the professional environment relative to their low self-monitor counterparts (Mehra et al., 2001). Results supported this prediction, such that high self-monitors were more likely than low self-monitors to be brokers in the friendship network of a high-technology firm. In addition, this effect became more pronounced among high self-monitors with longer tenure in the firm. Given that strong-tie networks (e.g., friendship) may take time to develop, high self-monitors were more likely to emerge as brokers in the friendship network when they had longer tenure and therefore more time to develop strong bonds with colleagues.

Other research built from this reasoning about the nature of self-monitors in social networks to show how entrepreneurs structure their social worlds (Oh & Kilduff, 2008). In small, bounded organizational settings, it is less likely that individuals have colleagues that do not know each other. However, in large communities of entrepreneurs, people may have more opportunity to develop networks where their acquaintances are unacquainted with each other. In these circumstances, do high self-monitors develop ties to different pockets of the social world, such that even their acquaintances (and the acquaintances of their acquaintances) remain unconnected with each other? Controlling for marked differences between individuals in the size of their networks, evidence suggests that high self-monitors

were not only brokers in their immediate network, such that their acquaintances were unacquainted, but also had networks featuring segregation two degrees away, such that the acquaintances of their acquaintances were more likely to be unacquainted with each other. Interestingly, in weak-tie networks, the interaction between self-monitoring and tenure was different than in strong-tie networks (i.e., Mehra et al., 2001). In acquaintance networks, high self-monitors, relative to low self-monitors, were most likely to occupy brokerage positions at the *early* stages of their tenure in the community (when the pressure to form professional contacts was strongest). Thus, an important point about how self-monitoring influences brokerage dynamics across the span of organizational tenure concerns the type of network being examined (weak ties such as acquaintances or strong ties such as friendship).

Although these studies examined self-monitoring and brokerage in employees who differed in the amount of time they had been with an organization, a direct investigation of brokerage dynamics would involve the use of data collected across time. Using data on friendship networks in a radiology department collected at two points in time, researchers found that high self-monitors were more likely than low self-monitors to develop friendships with outsiders (i.e., people unconnected to their current set of friends) and those in different functions over time (Sasovova, Mehra, Borgatti, & Schippers, 2010). High self-monitors' friendship networks in the workplace were more likely to be characterized by an efficient increase in the number of structural holes (or brokerage opportunities) when compared to their low self-monitoring counterparts. These findings provide insight into how high self-monitors create new opportunities to broker over time.

Brokerage has also been incorporated in theory on the strength of ties between people (Kalish & Robins, 2006). When a person has strong ties to two people who do not share a tie, these two people are more likely to develop a tie to one another (Granovetter, 1973). Given this pressure towards closure (i.e., two close friends becoming connected) in strong-tie triads,

researchers incorporating brokerage and weak ties have asked: What are the personality characteristics of people who resist this pressure (i.e., by having strong ties to two people who do not share a tie), or who seem to embrace it (i.e., by bringing their friends together)?

Kalish and Robins (2006) approached this question by decomposing social networks into different types of three-person configurations via a triad census (see Wasserman & Faust, 1994, for more information). This kind of analysis helps us understand the specific network configurations that personality characteristics are believed to influence. Their results revealed important information about the role of personality as captured in values, beliefs, and traits. First, people who felt that external forces largely control what happens to them in life tended to inhabit closed networks with many weak ties. Second, people who had a strong individual focus (those who emphasized being different from others) tended to resist pressures toward closure and had many strong-tie connections to people who were not connected to each other. Finally, extraverted individuals and those who saw their social groups as important to them tended to bring their friends together (i.e., have fewer strong-tie structural holes). This work is distinctive in the sense that it integrates tie strength and network structure as focal parts of the investigation.

In a similar analysis, Kalish (2008) found support for the personality characteristics associated with network brokerage described by Burt and colleagues (1998), such as the tendency to value power and a belief in personal control. Findings also showed that individuals who were conformist and traditional were also more likely to span structural holes. Being less independent was associated with having networks with structural holes between dissimilar individuals. The picture emerging from these two studies is that not only do characteristic ways of behaving influence brokerage, but so do the beliefs and values one holds.

Finally, becoming a broker in organizations appears to be tied to a desire to have new, original experiences (Baer, 2010). Open individuals tended to have more diverse networks in terms of their contacts coming from different functional areas of the company. In addition, openness to experience tended to play a role in enhancing creativity when people had networks with weak ties, high diversity, and of an optimal size (Baer, 2010). Thus, there appears to be a tendency for openness to be involved in the process of forming connections to people in disparate professional groups, with the added benefit of enhancing the value of networks for creativity. How personality characteristics interact with features of the network to influence important outcomes, such as creativity, is illustrative of how personality approaches can be easily integrated in more complex frameworks.

Network Size and Centrality

People have networks of different sizes. Cognitive network research suggests people have an upper limit on the number of social ties they can monitor and maintain at any one time (Roberts & Dunbar, 2011), but there are considerable differences between people in terms of the number of social ties each person has. Network size is also discussed in terms of centrality (Wasserman & Faust, 1994). People with a large number of contacts in a network are regarded as central, and those with few contacts are regarded as peripheral. The measure often used for centrality is a simple count of the number of network contacts, called degree centrality, which can be further decomposed into out-degree (the number of connections a person claims to others) and in-degree (the number of people who claim a connection to someone). Networks can be symmetrized so that ties exist when both people claim a connection to each other (which is often the case with affective ties, such as friendship), or left asymmetrized so that unrequited or one-sided ties exist (which is often the case in instrumental networks where one-sided relations are important to preserve in the data, such as advice relations).

One important consideration in studies of network centrality is that maintaining a large network requires an investment of time and energy. Therefore, individuals who are predisposed to behaving in an outgoing, sociable manner (i.e., extraverts) may naturally attract friends on account of finding it easy to participate in social interactions. Surprisingly, support for this idea is not as strong as one might think, although there is indeed evidence supporting this claim. For instance, when researchers examined personality characteristics in relation to the number of contacts in individuals' peer networks at regular, three-month intervals for 18 months, the number of new peers in one's network was significantly associated with extraversion and its components (Asendorpf & Wilpers, 1998). In addition, for shyness (a component of extraversion), the trend was so pronounced that those who were very shy reported half as many new peers in their network after one year, relative to those who were less shy.

In a similar vein, Casciaro (1998) found that extraverted people tended to occupy central positions in friendship networks. Pollet, Roberts, and Dunbar (2011) found that extraverts had larger networks at every network layer (support, sympathy, and outer). Further, in a model examining the link between personality and intentions, Totterdell, Wall, Holman, and Diamond (2008) found that extraversion related to the propensity to connect to others, which, in turn, affected network size. Their model emphasizes that personality characteristics influence intentions, a more proximal antecedent of network behavior.

However, not all research has found support for the hypothesis that extraversion relates to centrality. One study (Klein, Lim, Saltz, & Mayer, 2004) examined team networks and found that extraverts were no more or less likely to occupy central positions in friendship or advice networks than their introverted peers. One possibility for this result is that team members were limited by the range of people with whom they could exchange advice or develop friendships. They examined team advice networks where the number of possible

connections was constrained by the team boundary (teams ranged in size from 9 to 12). A similar study in which extraversion was significantly related to centrality in the team network did not appear to have this range restriction problem (Neubert & Taggar, 2004). Thus, in examining how personality influences the tendency for individuals to move into central positions in their network, it may be important to take into account the number of people with whom an individual can form connections. Another important consideration appears to be aspects of individuals that covary with personality traits, such as age. Roberts, Wilson, Fedurek, and Dunbar (2008) found that the relationship between network size and extraversion was non-significant once they controlled for age. Indeed, range restriction and confounding variables present important challenges for researchers aiming to uncover the links between personality and social structure.

Another stream of research has focused on a couple subtleties in self-monitoring theory applied to how people perceive and navigate the social landscape. For example, Fang and Shaw (2009) found that high self-monitors, being more other-focused, were more likely than low self-monitors to seek, accept, and provide information about workplace justice when their coworkers had large networks. This result suggests that high self-monitors tend to be conscious of their coworkers' network size.

Not only are high self-monitors more conscious of the networks of their colleagues, but they also appear sensitive to status dynamics in organizations (Flynn, Reagans, Amanatullah, & Ames, 2006). In this study, high self-monitors reported a higher need for status and tended to form accurate perceptions of who helps whom in both fictitious and actual networks. To bolster their status, they tended to foster reputations of themselves as generous providers of advice (an indicator of high status), but refrained from asking for help. This pattern of providing advice but refraining from asking for it is one of the ways in which personality theory has been applied to network dynamics in explaining how people work their

way into central network positions. High self-monitors "help their way to the top" (Flynn et al., 2006).

Further work has shown that high self-monitoring managers were likely to be central emotional helpers in organizations (Toegel, Anand, & Kilduff, 2007). These studies of self-monitoring are significant in the sense that they incorporate an element of cognitive awareness (e.g., being aware of status dynamics, coworkers' network size, or the pain and emotional suffering of others) in their explanations of how individuals behave within their networks, and ultimately attain central network positions.

Research has also explored other aspects of the five-factor model in predicting who attains central positions. Klein and colleagues (2004) provided an overall test within team networks and found that team members with high neuroticism were likely to be on the periphery of the network (i.e., have few network connections across friendship and advice networks). Other research has linked negative affectivity to peripheral network positions (Venkataramani, Green, & Schleicher, 2010). Conscientiousness has also been linked to attaining a central position in friendship (Lee, Yang, Wan, & Chen, 2010) and advice (Liu & Ipe, 2010) networks. Conscientiousness is characterized by dependability and achievement, so people who are highly dependable and hardworking may emerge as attractive friends and advice partners.

In a departure from focusing on personality characteristics that capture normal aspects of behavior, scholars have also examined how personality disorders relate to the positions that individuals occupy in their networks (Clifton, Turkheimer, & Oltmanns, 2009). People were less likely to be central when they had high scores on schizoid (emotional coldness and social isolation), schizotypal (eccentric behavior and social withdrawal), and avoidant (social inhibition and extreme shyness) personality disorder measures. High scores on avoidant measures were also associated with being less likely to be a broker, as were high scores on

histrionic (attention seeking) and narcissistic (grandiosity and feelings of entitlement). Patterns of tie formation and dissolution may be affected not only by normal aspects of personality, but dysfunctional interpersonal tendencies as well.

Strength of Ties

Tie strength is one of the foundational elements of network research (Borgatti, Mehra, Brass, & Labianca, 2009; Marsden, 1990). The strength of ties between people in organizations implies something about the amount of investment needed to maintain the tie, and the type of knowledge, information, and advice that pass between two people sharing a tie (Granovetter, 1973; Hansen, 1999; Tortoriello et al., 2011). For example, weak ties are useful for transferring basic information and knowledge, whereas strong ties are useful for transferring complex information and knowledge (Hansen, 1999).

Granovetter (1973) defined tie strength in terms of the amount of time spent, emotional closeness, mutual finding, and reciprocity. Research suggests emotional closeness is most strongly related to overall tie strength (Marsden & Campbell, 1984). Of the network phenomena reviewed here, research focusing on personality and tie strength is the least prevalent. However, a few studies have made significant strides in alerting us to the distinctive patterns of behavior associated with weak ties.

In a rare examination of intra-individual variability (as opposed to the inter-individual variability examined in the aforementioned studies of individual differences in traits), researchers examined how people varied across time and situations on an interpersonal circumplex that features a dominant-submissive dimension and an agreeable-quarrelsome dimension (Côté, Moskowitz, & Zuroff, 2012). This variability within persons, termed "spin," captures the extent to which people show the same (or different) behavior across situations. For example, a person with high spin is likely to be dominant in one situation,

agreeable in another, and neither especially dominant nor agreeable in a third situation. A person with low spin is likely to be agreeable in all three situations.

People like to categorize others in terms of predictable behavioral patterns, and choosing how to respond to people who behave differently across situations presents certain challenges, so individuals with high spin (more variability across time and situations) may be more likely to have weak ties in the workplace (Côté et al., 2012). In support of this idea, results showed that high spinners felt their workplace contacts were more distant. In addition, the colleagues of high spinners were less satisfied and less engaged during pleasant activities with high spinners, and also experienced more negative affect while interacting with them, leading them to avoid high spinners with whom they were well acquainted.

Extraversion and two narrow facets, sociability and shyness, are also related to an element of tie strength, the frequency of interaction, a person has with others. Extraverts (those who were less shy, more sociable) tended to interact more frequently with their peers across time (Asendorpf & Wilpers, 1998). However, although extraverts interacted more frequently with their colleagues, these interactions did not seem to influence relationship closeness (another aspect of tie strength). Extraverts may build larger networks at each layer but do not appear to be more strongly connected to individuals at any layer (Pollet et al., 2011). The picture suggested by these results is one where extraverts may interact more often with others in the workplace, and even build larger networks as a result of these interactions, but do not necessarily become emotionally closer to their network contacts than their introverted peers (Asendorpf & Wilpers, 1998; Pollet et al., 2011).

Developing strong connections to others in the workplace also seems to be associated with those who place an emphasis on accepted behavior and conventional practices. Those who value conformism tend to be more likely to develop strong ties (Zhou, Shin, Brass, Choi, & Zhang, 2009). Future work is needed to understand the implications of this relationship

between conformism and strong ties. Do strong ties develop from individuals' willingness to conform and 'go along to get along'? Other research has examined the influence of being open to new experiences on tie strength, but has yielded little empirical support. Although openness to experience was a significant interaction variable in strengthening the relationships among network size, network diversity, and tie strength for improvements in creativity, people who were open to new experiences were not significantly more likely to have weak ties (Baer, 2010).

Key Opportunities for Future Research

Organizations are places where people act, interact, and connect. Personality psychology and network research help us make sense of these interactions and connections, and in particular the distinctive patterns of behavior that underpin the formation, maintenance and dissolution of social ties we know to be important for a wide range of outcomes in organizations (Burt, Kilduff, & Tasselli, 2013; Kilduff & Brass, 2010). But as our knowledge base deepens, it can be useful to focus on a number of areas that build on the personality and network advancements reviewed here. The following agenda highlights three key opportunities for future research: (a) personality and network change, (b) bidirectional and dyadic processes, and (c) the potential effects of network position on personality expression.

Personality and Social Network Change

One area ripe for future research is how personality influences social network change. How does personality affect the formation of new ties and the dissolution of old ties over time? Pioneering work in this vein shows that high self-monitors tend to attract new friends over time (Sasovova et al., 2010), but intriguing questions remain concerning how personality relates to changes in different types of networks, such as advice, trust, and dislike. Is it possible, for example, that some individuals approach new people for advice over time, while others prefer the company of a few trusted advisors? Is personality involved in the

tendency to place trust in new people, or lose trust in existing colleagues? Scholars may also benefit from moving beyond investigations of change in positive-tie networks such as advice and trust to change in negative-tie networks such as dislike, promoting greater balance in the "social ledger" between research on positive and negative relationships at work (Labianca & Brass, 2006).

Personality approaches to social network change could also focus on the positions that individuals occupy within their social worlds at work. People dissolve old ties and form new ties, and these changes in tie formation and dissolution have implications for the positions that people hold in their networks, such as being able to broker information or ideas between people who are not in direct connection. Data show that structural holes between people tend to disappear rapidly over time, suggesting that brokers need to form connections with new people who are not directly connected to their current network contacts in order to maintain the structural advantages associated with being a broker (Burt, 2005; Burt et al., 2013). Few studies have examined how such changes in one's network position may reflect underlying personality patterns.

The question of social network change can also be approached from the perspective that individuals change their behavior over time. This approach would emphasize *intra*-individual variability—the tendency for people to vary their behavior across time and situations. These changes in individual behavior across time and situations are predictable from trait information (Fleeson & Gallagher, 2009), but an emphasis on intra-individual variability would explore how fluctuations in individuals' behavior relate to changes in network features. This emphasis on differences *within* individuals would represent a notable departure from much of the trait research in personality psychology that examines differences *between* individuals in terms of their standing on a particular trait. The correlational, cross-sectional approach to research where scholars associate a personality trait with an aspect of a

person's social network is emblematic of a familiar routine in psychology (Hogan & Nicholson, 1988). Indeed, the trait approach has generated nearly all of the theory and evidence reviewed here. However, a basic observation of behavior in organizations is that it is not static—people have distinctive interpersonal styles that arise in interactions with different people and in different situations. Thus, emphasizing personality patterns in intra-individual variability would embrace the possibility that the distinctive interpersonal styles that unfold over time are relevant to understanding changes in individuals' social networks.

Bidirectional and Dyadic Processes

The second key opportunity concerns addressing the bidirectional and dyadic processes that characterize network relations. Personality may affect an individual's tendency to interact with others, or it may affect how others interact with a particular individual. The direction of these effects is reflected in network measures such as in-degree centrality, which captures the number of people who claim a tie to a particular person, and out-degree centrality, which captures the number of ties a person claims to others. These processes may also be more likely to emerge when the network is measured from the responses of everyone in the network as opposed to egocentric approaches that construct the network from one person's point of view. Research tends to treat these differences as methodological matters instead of engaging with them as focal aspects of personality theory. In addition to these actor and target effects, there is also potential for dyadic effects. In other words, whether two people connect may depend upon both of their personalities. These complexities represent an exciting new frontier for personality and network research.

Some existing work acknowledges the potential for these differences in the direction of ties to illuminate important interpersonal tendencies. One such tendency is claiming ties to individuals who do not reciprocate the tie. For example, people with narcissistic personality disorder tend to overestimate social connections (Clifton et al., 2009). Other work has

examined how patterns of providing and receiving advice relate to navigating status hierarchies. That is, high self-monitors tend to provide advice and help to others, but refrain from asking for advice and help on account of the status implications of asking others for advice (Flynn et al., 2006). This kind of work also resonates with recent discussions of giving and taking (Grant, 2013). The personality characteristics that define those who give more than they receive (and vice versa) present a key opportunity for future research. Overall, research would benefit from a greater theory-driven focus on the direction of ties as a means for understanding, for example, who overestimates social connections (e.g., Clifton et al., 2009), or who adopts a high-status style of helping and asking for help (e.g., Flynn et al., 2006).

Linking Network Position to Personality Expression

The third key area for future work concerns the possibility that the *positions* that individuals occupy in their social networks affect the degree to which they express certain traits. Central positions in networks can reflect power (Brass, 1993), such as the ability to coordinate and limit the flow of information between people who are not in direct contact (Cook & Whitmeyer, 1992; Yamagishi, Gillmore, & Cook, 1988), or the availability of alternative advice contacts afforded by having many connections to others in the workplace. Power can reduce the "press" of the situation and increase the likelihood that personality expression occurs (Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008). For people who are brokers or central actors in a network, the power inherent in these structural positions may encourage personality expression. Similarly, the lack of power inherent in peripheral network positions may constraint personality expression.

For instance, research has shown that as people who take on more managerial responsibility, self-monitoring and positive affectivity are more likely to influence discretionary emotional helping behaviors, and thus managers' centrality in the emotion

helping network (Toegel et al., 2007). This work suggests that managerial responsibility enhances the likelihood that personality will be expressed freely. Similarly, evidence also supports the idea that as leaders move into central positions in team networks, they are seen as more charismatic, as opposed to charisma affecting their attainment of central network positions (Balkundi, Kilduff, & Harrison, 2011). These studies are increasingly pointing to the possibility that network positions may affect the expression of personality characteristics. Future work could build from these studies by considering how different positions in the network may act as strong or weak situations that constrain or facilitate the activation of certain traits (cf. Tett & Burnett, 2003).

Conclusion

Personality psychology offers key insights for understanding the social networks we know to be important for a host of important outcomes in life and organizations. The overall picture suggested by the results reviewed here is one in which personality underpins many of the major aspects of our social networks at work. As scholars seek to deepen our knowledge of the links between personality psychology and networks, there remain a number of significant and exciting opportunities in the areas of social network change, bidirectional and dyadic processes, and the potential effect of network position on personality expression.

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Table 1
Summary of Personality and Social Network Research

Study	Personality variable(s)	Type of network(s)	Main finding(s)
Asendorpf & Wilpers (1998)	Extraversion Shyness Sociability Agreeableness Conscientiousness	Peer network	Extraversion, sociability, and shyness predicted peer network size and tie strength
Anderson (2008)	Need for cognition	Information network	Need for cognition was marginally related to centrality in the information network
Bear (2010)	Openness to experience	Idea network	Openness to experience was positively related to idea network diversity
Burt (2012)	"Network-relevant personality"	Character networks	32-38% of the variance in the number of nonredundant contacts and network constraint across characters was attributable to the person playing the character
Casciaro (1998)	Need for achievement Need for affiliation Extraversion Self-monitoring	Friendship and advice networks	Extraversion was marginally related to centrality in the friendship network
Clifton, Turkheimer, & Oltmanns (2009)	Paranoid Schizotypal Schizoid Antisocial Borderline Histrionic Narcissistic Avoidant Dependent Obsessive-compulsive	Peer network	Histrionic and narcissistic personality disorders were positively related to brokerage, whereas avoidant personality disorder was negatively related; schizoid, schizotypal, avoidant, and obsessive-compulsive personality disorders were negatively related to centrality

Fang & Shaw (2009)	Self-monitoring	Friendship and workflow networks	Self-monitoring was not significantly related to network size or betweenness centrality in either network
Flynn, Reagans, Amanatullah, & Ames (2006)	Self-monitoring	Advice networks	Self-monitoring was significantly related to providing advice, but not asking for it
Kalish & Robins (2006)	Extraversion Neuroticism Self-monitoring Locus of control Group focus Individual focus	Peer network	External locus of control was positively related to having closed networks with weak ties; internal locus of control, individual focus, and high neuroticism was positively related to having open networks (many structural holes) with strong ties
Kalish (2008)	Extraversion Neuroticism Locus of control Group focus Individual focus Independence Conformism Traditionalism Benevolence Universalism Self-direction Stimulation Hedonism Achievement Power Security	Friendship network	Internal locus of control, conformism, and power was positively related to having networks with structural holes between similar individuals, whereas valuing benevolence and universalism was negatively related; independence was negatively related to having networks with structural holes between dissimilar individuals
Klein, Lim, Saltz, & Mayer (2004)	Hedonism Tradition Conscientiousness Extraversion Neuroticism Agreeableness Openness to experience	Advice, friendship, and adversarial networks	Neuroticism was negatively related to centrality in advice and friendship networks, and positively related to centrality in adversarial networks
Lee, Yang, Wan (2010)	Conscientiousness	Friendship network	Conscientiousness was positively related

			to centrality in the friendship network
Liu & Ipe (2010)	Conscientiousness	Advice network	Conscientiousness was positively related to centrality in the advice network
Mehra, Kilduff, & Brass (2001)	Self-monitoring	Workflow and friendship networks	Self-monitoring was positively related to network size in the workflow network, and positively related to betweenness centrality (brokerage) in the friendship network
Neubert & Taggar (2004)	Agreeableness Emotional stability Extraversion Conscientiousness Openness to experience	Advice network	Extraversion and openness to experience were positively related to centrality in the advice network
Oh & Kilduff (2008)	Self-monitoring	Acquaintance network	Self-monitoring was positively related to direct and indirect brokerage (being acquainted with people whose acquaintances are unconnected with each other)
Roberts, Wilson, Fedurek, & Dunbar (2008)	Extraversion Neuroticism	Mixed network	Extraversion was positively related to the size of the support clique, but the effect became non-significant when controlling for age
Pollet, Roberts, & Dunbar (2011)	Extraversion	Mixed network	Extraversion was positively related to network size at multiple layers (support clique, sympathy group, outer layer)

Sasovova, Mehra, Borgatti, & Schippers (2010)	Self-monitoring	Friendship network	Self-monitoring was positively related to accruing new network ties and efficient increases in structural holes over time
Toegel, Anand, & Kilduff (2007)	Positive affectivity Self-monitoring	Friendship and workflow networks	Self-monitoring was positively related to centrality in the friendship network; positive affectivity was positively related to centrality in the workflow network
Totterdell, Holman, & Hukin (2008)	Extraversion Agreeableness Conscientiousness Emotional stability Openness to experience	Friendship network	Personality variables were not significantly related to friendship network size
Totterdell, Wall, Holman, & Diamond (2004)	Calm (positive affect) Anxious (negative affect) Gloomy (negative affect) Enthusiastic (positive affect)	Workflow network	Being anxious was positively related to network size and negatively related to network density; being gloomy was negatively related to network density; being enthusiastic positively related to network size
Venkataramani, Green, & Schleicher (2010)	Positive affectivity Negative affectivity Self-monitoring (only among leaders)	Advice network	Negative affectivity was negatively related to advice network centrality
Zhou, Shin, Brass, Choi, & Zhang (2009)	Conformity	Advice network	Conformity was positively related to having strong ties

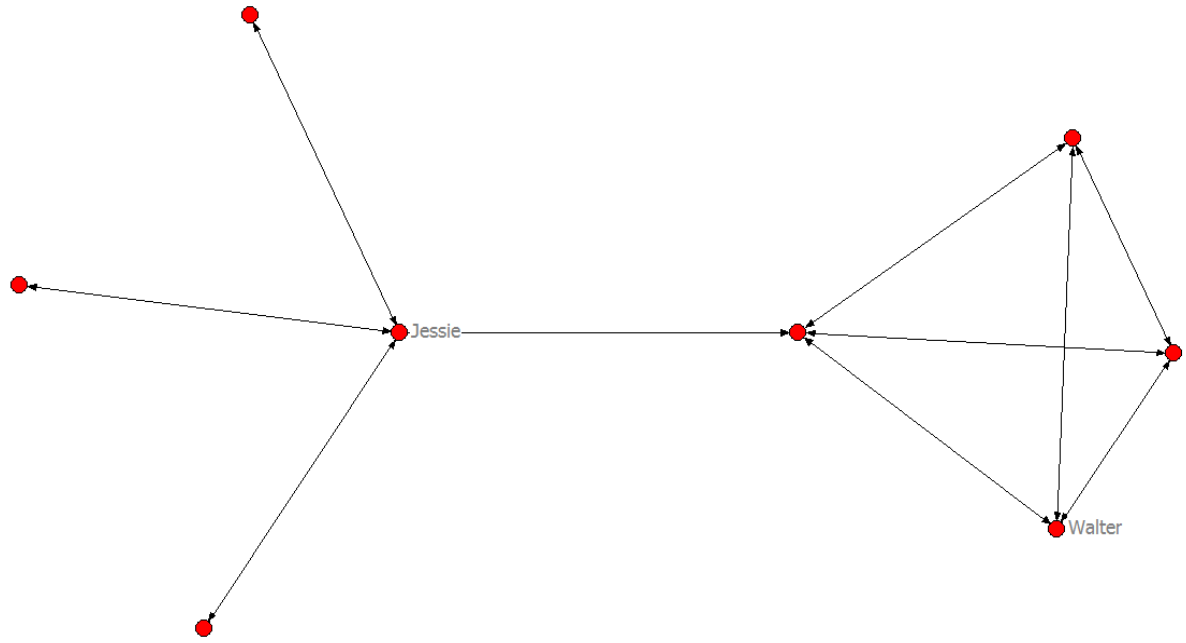

Figure 1. Network diagram showing differences between people in terms of network brokerage and closure. Jessie is able to serve as a go-between or broker between people not directly connected, whereas Walter is not afforded such opportunities by the network of relations around him.