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MEASURING MEDIATION AND SEPARATION BROKERAGE ORIENTATIONS: A FURTHER STEP TOWARD STUDYING THE SOCIAL NETWORK BROKERAGE PROCESS

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Abstract

Brokerage has assumed an increasingly important role in social network research and organizing more generally. Social network research has traditionally defined brokerage in structural terms as a broker who stands between two disconnected parties. Alongside this structural definition, network research has generally made assumptions about, but rarely measured, the brokerage processes engaged when individuals inhabit such network positions. More recent work argues for explicitly addressing brokerage behavior, principally in the form of three brokerage action orientations that focus on distinct brokerage action: joining network contacts (or *tertius iungens*), mediating between network contacts, and separating network contacts. We advance this emerging research stream by developing measures of the mediation and separation brokerage orientations. These two measures, alongside the pre-established *tertius iungens* measure (Obstfeld, 2005), present the opportunity to study the role of multiple brokerage orientations and social network structure together. In Studies 1, 2 and 3, we provide evidence for the convergent and discriminant validity of each measure. In Study 4 we establish criterion-related validity by demonstrating the importance of each measure on network structure and innovation outcomes. In so doing, we lay the groundwork for future research to explore how brokerage behavior orientations influence additional organizational phenomena.

Keywords: brokerage, social networks, employee innovation, construct development

Social network research has long recognized the importance of brokerage, which has been defined as a system of relationships "in which one actor mediates the flow of resources or information between two other actors who are not directly linked" (Fernandez & Gould, 1994: 1457). Brokerage plays an increasingly important role in organizations because, as technological complexity and diversity continue to increase, brokerage is often the means by which knowledge is transferred across boundaries, conflict is managed, and coordination is fostered (e.g., Carlile, 2004; Kellogg, 2014; Reagans & McEvily, 2003; Stovel & Shaw, 2012). As the foregoing definition suggests, brokerage has typically been thought of in structural terms and has been measured by looking at the pattern of ties in an individual's social network. Network positions indicating that an individual bridges between other actors who are themselves disconnected are assumed to equate to brokerage. Organizational studies examining brokerage have largely reflected this focus on structure, with various network analytic measures including constraint (Burt, 1992; Cattani & Ferriani, 2008), ego-network density (McFadyen, Semadeni, and Cannella, 2009; Fleming, Mingo, & Chen, 2007; Grosser, Venkataramani, Labianca, 2017), and betweenness centrality (Mehra, Kilduff, Brass, 2001; Perry-Smith, 2006) being used as measures of brokerage. Recent meta-analytic (Fang, Landis, Zhang, Anderson, Shaw, & Kilduff, 2015) and conceptual (Burt, Kilduff, Tasselli, 2013) reviews confirm that brokerage is typically treated as a structural construct.

In contrast to this traditional view of brokerage as a purely structural phenomenon, an emerging research stream argues that operationalizing brokerage by measuring the structure of individuals' social networks alone fails to capture the processual dimension of brokerage. This line of research argues that brokerage is better understood as a set of social behaviors (Obstfeld et al., 2014). This view acknowledges that network structure defines the context in which

brokerage occurs but it doesn't capture the critical aspect of brokerage: the behavior one enacts when in a position to broker. While certain network structures (e.g., networks rich in structural holes) readily lend themselves to brokerage opportunities, theorists contend that several very different forms of brokerage behavior can be enacted regardless of the network structure in which one is embedded (Obstfeld et al., 2014). Thus, this perspective on brokerage posits that, while network structure may indicate the prevalence of opportunities one has to engage in brokerage, structural operationalizations overlook what an individual actually does given such opportunity. Measuring brokerage behavior is therefore a more direct way in which to operationalize brokerage. The contention here is that brokerage actions, as opposed to network structure, are largely responsible for the beneficial outcomes often associated with brokerage. If this line of thinking is correct, the brokerage behavior of individuals is likely to be predictive of advantage above and beyond the structural effects that have been demonstrated in prior studies.

Recent research has suggested that there are multiple distinct classes of brokerage behavior (Obstfeld, 2017; Spiro, Acton, & Butts, 2013; Quintane & Carnabuci, 2016), and an individual's tendency to engage in a certain type of brokerage has been referred to as a *brokerage orientation*. Research has begun to explore how orientations toward these three forms of brokerage affect social phenomena (Kellogg, 2014; Lingo and O'Mahony, 2010; Obstfeld et al., 2014; Soda, Tortoriello, & Iorio, 2017; Sgourev, 2015). In this vein, Obstfeld (2005) introduced a measure of an individual's *tertius iungens* orientation, which is a strategic behavioral orientation to introduce previously unacquainted network contacts to one another or to stimulate new types of interaction between previously acquainted contacts. Research using measures like the *tertius iungens* orientation scale can offer unique empirical insights that

structural measures alone don't provide, such as the way in which actors tend to engage with their network contacts.

The purpose of the four studies reported here is to develop and validate the Disjunct Brokerage Orientation Scale (DBOS), which captures two brokerage orientations that have thus far been neglected empirically. The disjunct brokerage orientation is a strategic behavioral orientation toward either functioning as an intermediary between parties who cannot, or prefer not to, interact with each other (referred to as *mediation brokerage*), or toward maintaining separation among one's social network contacts (referred to as *separation brokerage*). Our studies confirm the factor structure of the DBOS, compare it to the *tertius iungens* orientation, and provide evidence for convergent, discriminant, and criterion-related validity.

Establishing a valid measure for the mediation and separation brokerage orientations will allow researchers to examine questions that have thus far not been difficult to address quantitatively. First, the DBOS facilitates the examination of how mediation and separation brokerage orientations affect innovation processes in organizations. Although prior research suggests that the *tertius iungens* orientation affects innovation (Obstfeld, 2005), there is also reason to think that mediation and separation orientations are important in certain aspects of the innovation process. This study provides a first step in this line of research by showing that both mediation and separation orientations uniquely relate to innovation behavior. Second, these measures will allow researchers to address the relative effects of brokerage opportunity—represented by network structure—and behavioral orientation toward brokerage. An ongoing debate in the organizational literature exists concerning the importance of network structure versus individual agency (c.f., Tasselli, Kilduff, & Menges, 2015), with some researchers contending that network structure alone drives outcomes and others arguing that the behavioral

tendencies of individuals in those structures are also important to consider. The mediation and separation brokerage orientation measures will provide empirical insight to advance this debate. Finally, these measures will enable scholars to test the proposition that various brokerage orientations work synergistically in combination with one another (Obstfeld, 2017; Obstfeld et al., 2014). In short, the two brokerage orientation measures of the DBOS will facilitate the testing of theory and the further development of research on social networks in organizations.

THEORETICAL OVERVIEW OF BROKERAGE

Early Theorizing

Simmel (1950) argues that the triadic social configuration (i.e., the relationships among a set of three individuals) is an important sociological phenomenon because the triad introduces the possibility of one party brokering between two other parties. Simmel argues that triads can operate in three distinct ways. Each of these ways is based on a focal individual in the triad taking a specific role. The first role is that of the *non-partisan*, who functions in one of two ways. First, he or she brings about the reconciliation or accord of two disconnected or disagreeing parties by drawing them together and creating contact between them, whereupon he or she then withdraws. Second, he or she acts as an on-going mediator who assists in facilitating interaction between parties that have a strained relationship. By virtue of functioning as an enduring intermediary between two disagreeing parties, the mediator is in a position to mitigate the negative affect that is likely to derail the attempts of the two parties to interact directly.

The second role specified by Simmel is termed the *tertius gaudens*. This role describes the broker who derives benefit from the discord between two parties and can take one of two forms. The first is the more passive form of *tertius gaudens* where a third party (i.e., *tertius*) gains an advantage due to separation between other parties in the triad. Simmel, however,

focuses more upon the second, active, form of *tertius gaudens* behavior. This form occurs when *tertius* attains advantage through more direct action. This is the form of *tertius gaudens* that is more strategic and involves the conscious maintenance of separation between the other parties of the triad. The third and final role set out by Simmel is the *divide et impera*, or "divide and conquer" triadic configuration. This role resembles the *tertius gaudens* role, with one minor difference. In this form the third party produces conflict between the two parties to obtain an advantage.

Brokerage as Structure

Burt (1992) adopts Simmel's *tertius gaudens* terminology but with a decidedly structural view of brokerage. Burt's view of a broker is one who spans a structural hole. A structural hole is defined as the separation between disconnected contacts and exists when a third party is connected to two parties who are themselves not connected (Burt, 1992). As Burt describes at length, considerable informational and control benefits are thought to accrue as a result of the disconnection of actors in *tertius*'s network. These benefits are a result of the brokerage opportunities that arise from the lack of connection between two network contacts (Burt, 1992). An actor with a network rich in structural holes derives information benefits due in part to the potential diversity of his or her network. Having many structural holes equates to having many nonredundant connections, which exposes *tertius* to a more diverse pool of information. Structural holes also provide the potential for control. Burt (1992) points out that control can come from leveraging competition between parties, but his main focus is on the control benefits that arise simply from alters who lack direct access to one another. The control benefits enjoyed by *tertius* thus stem from his or her potential to play two disconnected parties against one

another. Being able to strategically distribute information between two disconnected parties is the basis of the control benefit enjoyed by a broker.

Brokerage as Process

In reaction to the predominantly structuralist approach to brokerage, scholars have begun to emphasize brokerage as social behavior (Lingo & O'Mahony, 2010; Obstfeld, 2017; Obstfeld et al., 2014; Quintane & Carnabuci, 2016; Soda et al., 2017). In this view, both the structure of a broker's social network and how he or she tends to engage with the network are important, yet distinct, phenomena. While network structure reflects the opportunities and social resources available to ego, it is not necessarily determinative of the brokerage behaviors ego will enact. As Obstfeld and colleagues have argued, there are a number of ways in which a broker can engage alters. Elaborating on prior work (i.e., Baker & Obstfeld, 1999), Obstfeld (2005) developed a typology of brokerage behaviors that include four possible strategies. The four strategies a broker can pursue are to: "(1) coordinate action or information between distant parties who have no immediate prospect for direct introduction or connection (mediation), (2) actively maintain and exploit the separation between parties (*tertius gaudens*), (3) introduce or facilitate preexisting ties between parties such that the coordinative role of *tertius iungens* subsequently recedes in importance (brief *iungens*), and (4) introduce or facilitate interaction between parties while maintaining an essential coordinative role over time (sustained *iungens*)" (Obstfeld, 2005: 104). Obstfeld (2005) developed a measure for the *tertius iungens* orientation and noted that it addresses the latter two strategies in his typology. Although Obstfeld (2005) established construct and predictive validity for his measure of the *tertius iungens* orientation, he did not empirically establish a comparable measure to represent the first two strategies. As such, the *tertius iungens* scale accounts for two of the four brokerage strategies in his typology.

Content Validity and Dimensionality of the Disjunct Brokerage Orientation Scale

As the foregoing overview suggests, measures capturing orientations toward two of the four strategies outlined by Obstfeld (2005) have thus far not been developed. In contrast to the *tertius iungens* strategy, these strategies are not focused on joining social network contacts, but rather are focused on brokering contacts that remain disjunct, or disconnected, in some way (i.e., completely unacquainted, uncoordinated, or "disconnected" in the sense of having a negative tie to one another). The first of the two strategies is focused on functioning as an intermediary for individuals who are not connected, while the second strategy is concerned with actively maintaining separation between network contacts. Because these two strategies each tend to be concerned with brokering network contacts that do not interact, we term this general form of brokerage "disjunct brokerage." Prior research has broadly addressed the distinction between *tertius iungens* and *tertius gaudens* brokerage. While this research has been quite helpful in illustrating the importance of distinguishing among different forms of brokerage behavior, the distinctions it made were fairly broad. The conceptualization offered here provides a more nuanced perspective on what is sometimes broadly been referred to as *tertius gaudens* brokerage by differentiating between two distinct brokerage behaviors associated with disconnected alters. While separation and mediation brokerage share a common overriding focus, they are theoretically distinct in that separation reflects an active focus on maintaining a disconnection, while mediation reflects the tendency to mediate relationships that are inherently disconnected. Thus, the focus of the separation broker is to maintain an advantageous disconnection among alters, while the focus of the mediation broker is to provide a connection between parties that would otherwise be even less connected. The differences between these two forms of brokerage generally reflect Simmel's (1950) differentiation between a *non-partisan*, who doesn't actively

manipulate the tie between alters, and Simmel's version of the active *tertius gaudens* broker who proactively keeps alters apart from one another. This theoretical distinction is likely to yield substantively different outcomes in practice so being able to empirically distinguish between them is valuable for the further development of brokerage research.

Following Obstfeld (2005), we conceive of the two brokerage orientations comprising the DBOS as constructs of medium specificity, existing between attitudes, which are relatively narrow and malleable, and personality traits, which are relatively broad and stable. Figure 1, which draws on the typologies set forth by prior brokerage researchers (e.g., Obstfeld, 2005; Obstfeld et al., 2014), summarizes the brokerage behaviors that comprise both disjunct brokerage as well as *tertius iungens* brokerage. The two dimensions associated with the DBOS are described in more detail below.

Insert Figure 1 about here

Mediation Brokerage

The actor who engages in mediation brokerage functions as an intermediary between parties (e.g., individuals, groups, departments) who do not interact with one another, or who do not interact constructively with one another. The reason for the lack of interaction may be due to the absence of a preexisting relationship, a strained relationship (e.g., lack of trust, a history of conflict), or it may be due to a barrier that prevents the parties from effectively interacting (e.g., physical separation or diverse backgrounds that inhibit the effective sharing of knowledge). The actor who engages in mediation brokerage therefore acts as a link between parties that are either completely disconnected or who are connected only by a negative tie. Mediation brokers assist in the transfer of information between parties, and they facilitate coordination that may otherwise be impossible. Mediation brokerage is theoretically similar to Obstfeld et al.'s (2014) conduit

brokerage, which specifically focuses on the transfer of information between parties. The mediation orientation sub-scale of the DBOS therefore captures the extent to which an employee tends to engage in this type of brokerage behavior in the workplace.

Mediation brokerage can take a number of forms that range from a single one-off interaction to long-term coordination efforts. An example of the former would be an employee relaying information from a meeting to a colleague who was not invited to or chose not to attend the meeting. An example of the latter would be an employee who consistently functions as a liaison between two individuals in different functions who have fundamentally differing agendas and therefore tend not to interact constructively with one another. Thus, the mediation broker coordinates between parties for whom a direct link would be financially, emotionally, or temporally costly to establish or maintain.

Individuals are likely to obtain status and other rewards for engaging in mediation brokerage to the extent that their service is unique and valued, and such benefits are likely to motivate this form of brokerage. For example, Hargadon & Sutton (1997) illustrate how advantage can accrue to individuals who transfer unique knowledge from one domain to a second, disconnected domain. Given their need to navigate complex, and sometimes tense, social situations, effective mediation brokers must have appropriate social skills, including the ability to accurately assess social situations and to engage in strategic self-presentation.

Separation Brokerage

The separation broker, in contrast, sees advantage in having disconnected alters and works to maintain separation between certain alters in his or her network. This brokerage orientation reflects Simmel's (1950) description of the active *tertius gaudens* and his/her pursuit of advantage via disconnected alters. As Burt (1992) argues, there are information and control

benefits associated with disconnected alters, and the separation broker is focused on maintaining that disconnection (see also Baker and Obstfeld's (1999) disunion strategy). An individual who engages in separation brokerage may charge rents or gain status by conveying information between two parties who are unknown to each other. Separation brokerage is at play when an individual is at risk of losing his or her position as a "middle man" between two parties who could otherwise coordinate directly with one another more efficiently.

An individual may also seek to maintain separation between parties in order to exercise control in a situation. A separation broker can choose to block or alter the information passed between disconnected parties to suit his or her goals. Such control could not easily be exercised if the two parties had a direct connection. A separation broker may also seek to keep alters disconnected so as to prevent a coalition from forming against him or her. For example, consider a manager who is attempting to implement a controversial process innovation within a firm. If this manager knows that two disconnected alters both oppose the project, the manager would seek to maintain that separation so as to prevent them from uniting in their opposition to the innovation. Separation brokerage can therefore have a manipulative component, though it is not necessarily pursued for such an advantage. Separation brokerage also involves navigating complex social situations that rely on strategic separation of certain parties to succeed, so the same social skills needed for mediation brokerage also apply.

In summary, individuals can derive benefit from the disconnection of alters by pursuing either mediation or separation brokerage. Importantly, mediation brokerage differs from separation brokerage in that the mediation broker benefits from the inherent disconnection between alters, whereas the separation broker benefits by proactively maintaining an advantageous disconnection. That is, mediation brokerage entails a minimal amount of

interference in the alter-to-alter relationship while separation brokerage entails the agentic manipulation of alter-to-alter separation.

CONVERGENT AND DISCRIMINANT VALIDITY

Establishing the convergent and discriminant validity of a new construct is an essential step in the scale development process (Hoyle, Harris, & Judd, 2002). Demonstrating convergent and discriminant validity establishes that a measure fits as expected in a theoretically-derived framework and generally, "'Behaves' like the variable it is supposed to measure" (DeVellis, 2003:53). In the following section, we discuss constructs that should and should not correlate with the mediation and separation brokerage orientation sub-scales. Specifically, we address the relationship between our brokerage orientation sub-scales and the *tertius iungens* orientation, social astuteness, coalition building, self-monitoring, Machiavellianism, extraversion, and core self-evaluations. Below we outline a set of hunches pertaining to how we believe the sub-scales will relate to these constructs.

Tertius Iungens Brokerage Orientation

Given that the *tertius iungens*-oriented broker is concerned with bringing others together while the broker oriented toward separation behavior is concerned with keeping others apart, one might expect there to be a negative relationship between these two constructs. These two brokerage orientations, however, are not necessarily mutually exclusive. Indeed, it is conceivable that an individual might engage in both *tertius iungens* and separation brokerage behavior depending on situational circumstances, nor does the absence of *tertius iungens* behavior automatically equate to high levels of separation brokerage (and vice versa). For example, an individual could engage in both *tertius iungens* and separation brokerage simultaneously by organizing a meeting that brings two unacquainted alters together while also consciously

choosing to exclude a third alter from the meeting. Alternatively, a broker may engage in *tertius iungens* and separation brokerage towards an individual at different points in time (Lingo & O'Mahony, 2010; Obstfeld, 2017); for example, a broker may choose to introduce a colleague to certain customers at one point in time but not to others at a later point. It is also possible that an individual may engage in *tertius iungens* with certain parts of his/her network and separation with other parts (Quintane & Carnabuci, 2016). Given recent empirical evidence, which suggests that individuals who actively engage in brokerage tend to engage in both separation and *iungens* behaviors (Lingo & O'Mahony, 2010; Quintane & Carnabuci, 2016), we expect a positive relationship between these two orientations.

Although the *tertius iungens* orientation is theoretically distinct from the mediation brokerage orientation, both share a fundamental concern with coordinating interactions among third parties. In the case of the *tertius iungens* broker, interaction is coordinated through facilitating direct interaction among third parties. When third parties cannot interact directly due to a negative tie or another obstacle preventing interaction, coordination can only be achieved indirectly via an intermediary. Thus, although distinct, the *tertius iungens* broker and the mediation broker both—in their own way—facilitate the coordination of two parties who would not otherwise interact. For this reason, we expect a positive relationship between *tertius iungens* brokerage and mediation brokerage.

Social Astuteness

There are a number of biases that prevent individuals from forming an accurate understanding of their social world (e.g., Kumbasar, Romney, Batchelder, 1994; Krackhardt & Kilduff, 1999). One must, however, have a keen understanding of the social environment in order to effectively function in a brokerage position. The broker often gains benefit by

transferring—and perhaps altering or manipulating—information across gaps in the social structure (e.g., Burt, 1992; Hargadon & Sutton, 1997). To receive such benefits from disjunct brokerage, whether the brokerage strategy is that of separation or mediation, one must be able to identify the most advantageous social cleavages to broker across. This requires observational skill and attention to the social interactions of others. Furthermore, because brokers often operate between dissimilar parties (Burt, 1992), they must also be comfortable adapting their self-presentation performances to diverse audiences. The social astuteness construct, as conceived by Ferris et al. (2005), includes these essential social abilities that one would expect a broker to exercise. Individuals high in social astuteness are keen observers of diverse social situations and the individuals who inhabit them. These individuals tend to have an accurate understanding of the social interactions that take place around them. Moreover, socially astute individuals have confidence in their ability to effectively present themselves to others. Because having an accurate understanding of the social environment is of critical importance to a broker's success, it is reasonable to conclude that individuals high in both the separation and mediation brokerage orientations will also be high in social astuteness.

Coalition Building

A coalition can be defined as "a subset of a group that pools its resources or unites as a single voice to determine a decision for the entire group" (Murnighan & Brass, 1991: 285). Building a coalition involves uniting a group of individuals to function as a group in order to achieve a defined goal. Coalition building sometimes involves coordinating interactions and bringing individuals together. It also involves a significant amount of mediation among individuals who don't directly interact. As Murnighan and Brass (1991) explain, it is often best to work in secret when forming a coalition so as to avoid detection. Being detected by

adversaries could cause counter-coalitions to be formed. Such detection early in a coalition's lifecycle could be disastrous. As a result, coalitions often avoid meeting as a group. These conditions cause a coalition builder to take part in many meetings with small sub-groups of coalition members, which leads to the coalition builder often functioning as a mediator between different sub-groups of the coalition. Because coalition building involves a substantial amount of mediation, we expect it to be positively related to the mediation brokerage orientation. In contrast, although coalition builders often have to know who to avoid when recruiting members for their cause, there is no evidence to suggest that coalition builders will often have to actively maintain separation between individuals. Thus, we do not expect the relationship between coalition building to correlate significantly with the separation brokerage orientation.

Self-Monitoring

The self-monitoring personality construct refers to the extent to which individuals observe, regulate, and control the self-image that they present in social settings (Lennox & Wolfe, 1984; Snyder, 1987). Individuals high in self-monitoring take cues from their social environment to regulate their behavior in ways that are situationally appropriate (Snyder & Gangestad, 1982). High self-monitors therefore tend to engage in more impression management and are comfortable playing different social roles as circumstances dictate. The ability to monitor social situations and engage in impression management is often a necessary skill for effective social coordination, so self-monitoring is likely to be related to brokerage behavior (Oh & Kilduff, 2008). Self-monitoring has been linked to the maintenance of boundary spanning network positions (Sasovova, et al. 2010) as well as to conflict resolution (Baron, 1989), suggesting that it is positively associated with the separation brokerage orientation and the mediation brokerage orientation, respectively.

Machiavellianism

Machiavellianism is a construct based on the writings of Machiavelli that pertains to a manipulative personality type (cf. Christie & Geis, 1970). Individuals high in Machiavellianism have been shown to be more effective liars (Geis & Moon, 1981), to be more apt to defect in trust-based bargaining games (Gunnthorsdottir, McCabe, & Smith, 2002), and to behave in a more manipulative fashion in lab studies (Christie & Geis, 1970). Brokerage behavior is often enacted in order to benefit the broker, and this self-interest can potentially lead to the manipulation of others. This seems to be more relevant to separation brokerage than to mediation brokerage. At most, the mediation broker is doing nothing more than benefitting from the dislike / distrust between two parties, which doesn't ostensibly involve manipulation. Separation brokerage, however, entails actively maintaining the separation of two parties with the knowledge that this action can result in personal advantage. Such behavior has a manipulative element to it. We therefore expect Machiavellianism to be unrelated to the mediation brokerage orientation and positively related to the separation brokerage orientation.

Extraversion

One of the core components of extraversion is affiliation, or the enjoyment of close personal bonds (Depue & Collins, 1999). Extraverts tend to display feelings of warmth and enjoy social interactions (Watson & Clark, 1997). Because extraversion is a personality construct related to social interaction, it is important to establish that measures of the mediation and separation orientations are not subsumed by this more general tendency toward social interaction. The general tendency to enjoy social interactions is markedly distinct from behavioral orientations toward either mediation or separation brokerage. Extraversion refers to the natural predilection to enjoy socializing, whereas both mediation and separation brokerage

refer to narrow social behaviors that may be pursued for instrumental reasons. Extraversion is specified at a generalized level, while mediation and separation brokerage measures are relatively narrow in their specification. Prior empirical work also suggests that extraversion is not related to brokerage orientations. Obstfeld (2005) found the *tertius iungens* orientation to be distinct from extraversion and other Big Five personality measures, suggesting that extraversion and brokerage orientation are different social constructs. We therefore expect extraversion to be distinct from the mediation and separation brokerage orientations.

Core Self-Evaluations

Given that the DBOS sub-scales we propose are based upon self-reports, it is important to demonstrate that these measures are not merely capturing an individual's underlying self-concept. Core self-evaluations is an often-used construct that reflects one's positive self-concept. There are four underlying dimensions that make up this higher-order construct: self-esteem, generalized self-efficacy, locus of control, and emotional stability (Judge, Locke, Durham, & Kluger, 1998). We expect core self-evaluations to be distinct from the mediation and separation brokerage orientations.

Following previous scale development research (e.g., Dahling, Whitaker, & Levy, 2009), we test for discriminant validity by comparing nested models using structural equation modeling. We compare the differences in chi-square scores between: 1) a model in which the two constructs' covariance is fixed to be one (i.e., the unitary model); and, 2) a model in which the covariance is allowed to freely co-vary (e.g., the two constructs are treated as distinct). Evidence for discriminant validity is provided when the model that is allowed to freely co-vary demonstrates a better model fit than the unitary model (Bagozzi, Yi, Phillips, 1991).

CRITERION-RELATED VALIDITY

Criterion-related validity reflects the extent to which a measure has a relationship to some criterion, or variable to which it is expected to relate (DeVellis, 2003). Establishing criterion-related validity for a new measure further develops the nomological network in which the measure is expected to fit (Hinkin, 1998). Little work has been done on disjunct brokerage behaviors, but that which has been done is primarily related to employee innovation (e.g., Ancona & Caldwell, 1990; Galbraith, 1982; Tushman & Nadler, 1986). We therefore focus on innovation as an outcome. In the sprit of generative discovery, we explore how brokerage orientations relate to different forms of innovation involvement.

STUDY 1: ITEM ANALYSIS AND INITIAL VALIDATION

Study 1 Sample

This sample comprises employees of a product development firm headquartered in the Southeastern United States. Knowledge workers that play a role in the company's product development process were invited to participate in the web-based survey. Of the 185 distributed, 144 usable surveys were returned (for a 78% response rate). The average tenure of respondents was 63.2 months (*SD* = 50.3), and the average age was 43.5 years (*SD* = 8.8 years). Forty three percent (43%) of the employees in the sample were in a managerial position, 71% were male, 87% were Caucasian, and 80% of them had completed at least a bachelor's degree. All measures were based on a 7-point scale.

Measures

DBOS items. We generated eight items to represent the separation and mediation brokerage orientation dimensions. Items were generated by reviewing the literature on social networks, especially work pertaining to individual brokerage and/or agency in the context of

social networks (e.g., Baker & Obstfeld, 1999; Burt, 1992; Gould & Fernandez, 1989; Marsden, 1982; Simmel, 1950). We wrote items to representatively reflect the separation and mediation dimensions of disjunct brokerage. In doing so, our approach conformed to the "logical partitioning" approach to deductive scale development (Hinkin, 1995), whereby a theoretically-derived definition and classification typology are used to guide item development (Schwab, 1980).

Results

Item analyses. We began our analysis by conducting an exploratory factor analysis (EFA) following procedures for exploratory factor analysis outlined by Conway and Huffcutt (2003). We used the maximum likelihood extraction method and oblique, direct oblimin factor rotation in keeping with EFA best practices for the social sciences (Costello & Osborne, 2005). The results of the EFA on these initial items are found in Table 1. Two factors emerged corresponding to the two DBOS sub-dimensions, with no evidence of item cross-loading. Following Hair, Thatham, Anderson, and Black (1998), we considered items with factor loadings greater than .50 to be significant given the size of our sample; we therefore only retained items that met this threshold. This item reduction process resulted in six final items.

Scale dimensionality. To assess the factor structure of the final six items, we conducted a second exploratory factor analysis using the same approach described above (see Table 1) Two factors emerged with eigenvalues greater than the Kaiser-Guttmen criterion of 1.0. The eigenvalues of the two factors were 2.58 and 1.81. These two factors explained 73.25% of the total variance. Factor 1, which represents the mediation brokerage orientation, accounted for 43.05% of variance explained. Factor 2, which represents the separation brokerage orientation, accounted for 30.20% of variance explained.

Insert Table 1 about here

Reliability and factor correlations. The Cronbach's alpha for the mediation orientation dimension was .87, and it was .75 for the separation orientation dimension. The coefficient alpha for the combined DBOS scale was .72. These results suggest that the scales demonstrate acceptable internal reliability (Nunnally & Bernstein, 1994). The correlation between the two factors was 0.19.

STUDY 2: FACTOR STRUCTURE CONFIRMATION AND CONVERGENT VALIDITY

The purpose of Study 2 was twofold: (1) to confirm the factor structure derived in Study 1, and (2) to explore evidence for the convergent validity of the DBOS sub-scales. Specifically, we examine the relationship between the DBOS sub-scales and (1) the *tertius iungens* orientation, (2) social astuteness, (3) coalition building, (4) self-monitoring, and (5) Machiavellianism.

Study 2 Sample

This sample comprises professional working adults in the United States recruited online via a research panel firm. Respondents received monetary compensation (approximately $1) for their participation in the study. Surveys were completed by 373 respondents, with 355 surveys yielding usable data. All respondents held at least a high school education, and 63.6% held a Bachelor's degree or more. Respondents were, on average, 51.6 years of age and had an average of 25 years of work experience. The majority of respondents were Caucasian (88%). Respondents held professional positions in a wide variety of industries, the most popular being

healthcare (12.4%), government (10.4%), education (9.9%) and finance / insurance (5.9%). All items were based on a 7-point scale unless otherwise noted.

Measures

Disjunct brokerage orientation scale. We used the same 6 items identified in Study 1 to capture the mediation brokerage and separation brokerage orientation sub-scales. Coefficient alphas were .88 and .77 for the mediation brokerage sub-scale and the separation brokerage sub-scale, respectively. The coefficient alpha for the combined scale was .79.

Tertius iungens brokerage orientation. This construct was measured with the 6-item *tertius iungens* scale developed by Obstfeld (2005). An example item is: "I introduce two people when I think they might benefit from becoming acquainted at work" ($\alpha = .91$).

Social astuteness. The extent to which an individual is adept at understanding social interactions and can astutely interpret the behavior of others was assessed with the 5-item social astuteness sub-scale developed for the Political Skill Inventory (Ferris et al., 2005). An example item is: "I pay close attention to people's facial expressions" ($\alpha = .86$).

Coalition building. Coalition building as an influence tactic at work was assessed with the 3-item coalition building sub-scale validated by Schriesheim and Hinkin (1990). Respondents were asked how often they used coalition building tactics to influence organizational decisions in the preceding six months. An example item is: "I mobilized other people in the organization to help me in influence a decision" ($\alpha = .92$).

Self-monitoring. We measured self-monitoring using a 13-item version of the self-monitoring scale (Lennox & Wolfe, 1984). We provided respondents with a six-point scale (0 = *always false*; 5 = *always true*) on which to indicate how true or false they believe each statement

to be. Items included such statements as: “when I feel that the image I am portraying isn't working, I can readily change it to something that does” (α = .86).

Machiavellianism. Individuals scoring highly in Machiavellianism exhibit manipulative behaviors towards others in order to further their own self-interests (Christie & Geis, 1970). Machiavellianism was measured with the 16-item Machiavellian Personality Scale (Dahling, Whitaker, & Levy, 2009). An example item is: “I believe that lying is necessary to maintain a competitive advantage over others” (α = .84).

Results

Confirmation of dimensionality. We conducted a confirmatory factor analysis to verify that the DBOS is composed of two dimensions. We used Mplus 7.1 (Muthén & Muthén, 2013) to evaluate three models: a null model in which each item is its own latent construct, a common factor model in which all six items load on a single factor, and the proposed two factor model. Goodness of fit was evaluated by using several recommended measures, including: standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), comparative fit index (CFI), and the Tucker-Lewis index (TLI). Guided by suggested guidelines for model fit (Hu & Bentler, 1999), acceptable model fit was defined by the following criteria: SRMR (≤ .08), RMSEA (≤ .06), CFI (≥ .95), and TLI (≥ .95).

The results of these analyses are presented in Table 2 and suggest that the two factor solution is superior to both the null model and the common factor model. The two factor model demonstrated excellent fit with the SRMR = .02, RMSEA = .00, CLI = 1.00, and TLI = 1.00. These results therefore provide additional evidence for the proposed bi-dimensionality of the DBOS.

Insert Table 2 about here

Convergent validity. Table 3 contains the Study 2 means, standard deviations, and bivariate correlations among *tertius iungens*, social astuteness, coalition building, self-monitoring, Machiavellianism, and the two DBOS sub-dimensions. In support of our expectations outlined above, the mediation sub-scale was positively and significantly correlated with the *tertius iungens* orientation ($r = .66$, $p < .001$), social astuteness ($r = .35$, $p < .001$), coalition building ($r = .42$, $p < .001$), and self-monitoring ($r = .31$, $p < .001$). Unexpectedly, there was also a significant positive correlation between the mediation sub-scale and Machiavellianism ($r = .21$, $p < .001$). This pattern of results demonstrates that the mediation sub-scale generally fits into the proposed nomological network.

The separation sub-scale was positively and significantly correlated with the *tertius iungens* orientation ($r = .21$, $p < .001$), social astuteness ($r = .13$, $p < .05$), self-monitoring ($r = .11$, $p < .05$), and Machiavellianism ($r = .25$, $p < .001$). As expected, the relationship between the separation sub-scale and coalition building did not significantly differ from zero ($r = .07$, *ns*). This pattern of relationships conforms to our hunches outlined above and confirms the expected nomological network for this sub-scale.

In order to further explore the unexpected relationship between the mediation sub-scale and Machiavellianism, we sought to conduct a more fine-grained examination of how the DBOS sub-scales relate to this construct. Specifically, we analyzed the correlations among the DBOS sub-scales and the four constituent dimensions of the Machiavellianism Personality Scale: distrust of others, desire for status, desire for control, and amoral manipulation. As seen in Table 4, the results of this analysis indicate that the mediation sub-scale is significantly related to distrust of others ($r = .15$, $p < .01$), desire for status ($r = .14$, $p < .05$), and desire for control ($r =$

.31, $p < .001$). In contrast, the separation sub-scale is significantly related to distrust of others ($r = .25$, $p < .001$), desire for control ($r = .15$, $p < .01$), and amoral manipulation ($r = .17$, $p < .01$).

Insert Tables 3 and 4 about here

Taken together, the results of Study 2 add support to the notion that the DBOS is a reliable and valid measure of mediation and separation brokerage orientations. A confirmatory factor analysis replicated its two-factor structure using a diverse sample of working professionals. In addition, the relationships between the DBOS sub-scales and the *tertius iungens* orientation, social astuteness, coalition building, self-monitoring, and Machiavellianism provide evidence of the scale's convergent validity.

STUDY 3: DISCRIMINANT VALIDITY

Study 3 Sample

This sample is composed of working adults in the United States recruited online via Amazon Mechanical Turk. Respondents received monetary compensation ($1.50) for their participation in the study. Surveys were completed by 500 respondents, with 486 surveys yielding usable data. All respondents held at least a high school education, and 63.8% held a Bachelor's degree or more. Respondents averaged 39 years of age and had an average of 18.7 years of work experience. The majority of respondents were Caucasian (78%). Respondents held positions in a wide variety of industries, the most popular being healthcare (11.9%), education (11.9%), retail (8.8%), manufacturing (8.2%), government (7.4%), and finance / insurance (6.6%). All items were based on a 7-point scale.

Measures

Disjunct brokerage orientation scale. We used the 6 item DBOS to capture the mediation brokerage orientation ($\alpha = .83$) and separation brokerage orientation ($\alpha = .78$).

Extraversion. Extraversion pertains to how gregarious one is and how much one enjoys social stimulation (McCrae & Costa, 1999). This construct was measured with the 10-item extraversion scale from the International Personality Item Pool (IPIP; Goldberg, 1999). An example item is: "I am the life of the party" ($\alpha = .91$).

Core self-evaluations. Core self-evaluations pertain to one's appraisal of their worthiness, effectiveness, and capability as a person. We measured this construct using the 12-item core self-evaluations scale (CSES; Judge, Erez, Bono, & Thoresen, 2003). An example item is: "when I try, I generally succeed" ($\alpha = .89$).

Results

In order to demonstrate discriminant validity between each sub-scale and both extraversion and core self-evaluations, we followed the method of Bagozzi et al. (1991) for comparing nested models. The results of these analyses are seen in Table 5. The results demonstrate that the model with the freely estimated covariance between the mediation orientation and extraversion fit significantly better than the model where the variance was fixed to one ($\Delta\chi2(1) = 182.01$, $p < .001$). Similarly, the model with the freely estimated covariance between the separation orientation and extraversion fit significantly better than the unitary model ($\Delta\chi2(1) = 391.83$, $p < .001$). We can therefore conclude that both brokerage sub-dimensions are distinct from extraversion. The results reported in Table 5 also suggest that each brokerage sub-dimension is distinct from core self-evaluations. The model with freely estimated covariance between the mediation orientation and core self-evaluations fit better than the unitary model ($\Delta\chi2(1) = 199.16$, $p < .001$). Likewise, the discriminant model for the separation orientation and

core self-evaluations fit better than the model where the variance was fixed to one ($\Delta\chi2(1) = 382.23$, $p < .001$).

Insert Table 5 about here

STUDY 4: CRITERION-RELATED VALIDITY

Study 4's purpose was to demonstrate the criterion-related validity of the DBOS sub-scales. Specifically, we examine how the mediation and separation brokerage orientations uniquely relate to involvement in organizational innovation. Individuals may play a number of different roles related to facilitating organizational innovation, ranging from playing a minor role in supporting the evolution of the innovation to playing a primary initiating role in developing a new idea. We conduct an exploratory analysis of how the DBOS sub-scales relate to different levels of employee involvement in innovation. Specifically, we examine how the mediation and separation orientations relate to: (1) playing a minor supporting role in innovation, (2) playing a major supporting role in innovation, and (3) playing a primary role in initiating innovation.

Study 4 Sample

The sample consists of 114 employees working within one division of a large organization in the semi-conductor industry. All respondents were responsible for generating technological innovations. Most respondents (73%) were in a technical role, meaning that their job responsibilities were focused predominantly on technical rather than administrative or managerial work. The majority of respondents were male (82%). Twenty-seven percent (27%) were in a managerial position, and 24% had a PhD degree.

Procedure

The study was conducted in two phases. In phase 1 we conducted a series of 22 semi-structured interviews with division managers and senior division engineers in order to exhaustively catalog all of the significant changes to product or process that had occurred within the division during the preceding 3 years. We identified a total of 146 innovations, each of which involved a new or significant change to product or process. Each department manager reviewed the innovations associated with his or her unit to ensure completeness and to verify that each item warranted inclusion on the list. The unit managers reduced the list to 140 innovations.

In phase 2, an online survey was sent to 523 employees within the division. Usable surveys were returned by 114 employees for a 22% response rate. No significant differences between respondents and non-respondents were found on the basis of gender ($\chi^2 = .81$, $p = .37$) or performance ($\chi^2 = .72$, $p = .40$). Those in managerial positions, however, were found to be more likely to be respondents ($\chi^2 = 4.41$, $p < .05$). The survey consisted of two sections. In the first section, employees rated their level of involvement in each of the 140 innovation projects that occurred over the preceding three years. The second part of the survey elicited egocentric social network data and measured brokerage orientations.

Measures

Innovation involvement (dependent variables). Following prior innovation studies (e.g., Ibarra, 1993; Obstfeld, 2005), we measured innovation involvement by asking respondents to rate the role they played in each of the division's 140 innovations. Respondents reported their involvement in each innovation based upon 4 categories. The question stem and category choices were worded in the following way:

> On the next page you will find a list of innovations that occurred during the last three years. Please look at the list and indicate the extent of your involvement in each innovation. Choose "initiator" if you, along with or in conjunction with others, were the initiator of the innovation--that is, if its introduction and use was in large portion your idea. This is the option to choose if the innovation would not have happened without you. (It is expected that initiators will be very rare). Choose "major role" if you were not the initiator but

> played a major role in the development of the innovation as a whole. This is the option to choose if you played an important role in shaping the innovation--it would not exist in its present form without your contribution. Choose "minor role" if you were associated with the development of the innovation in a more limited capacity, for example, providing advice to the initiator on specific aspects of the innovation. This is the option to choose if you played a minor role in bringing the innovation to the organization. Choose "Don't recognize / Not involved" if it is an innovation you know nothing about and/or were not involved with at all. This will be the default answer for each innovation.

To measure *minor innovation support*, *major innovation support*, and *innovation initiation*, we summed the number of times each respondent indicated that they played a "minor role," "major role," and "initiator" role in the listed innovations, respectively. On average, respondents reported playing a minor role in 2.74 (SD = 3.50) innovations, a major role in 1.02 (SD = 1.36) innovations, and an initiator role in .62 (SD = 1.16) innovations.

Mediation brokerage orientation. We used the 3-item mediation brokerage sub-scale from the DBOS developed in Study 1 ($\alpha = .82$).

Separation *brokerage orientation*. We assessed separation brokerage with the 3-item separation brokerage sub-scale from the DBOS ($\alpha = .77$).

Tertius iungens orientation. Obstfeld's (2005) 6-item measure was used to measure this construct ($\alpha = .90$).

Controls. The following variables were entered into all regression models as control variables: *rank* (0 = non-manager, 1 = manager), *gender* (0 = female, 1 = male), *education* (0 = non-PhD, 1 = PhD), and *functional role* (0 = non-technical role, 1 = technical role). Data for these control variables—with the exception of education—was obtained through archival records provided by the firm's human resources department. Data on education was collected via the survey. To control for each individual's social network structure, we calculated *network constraint* using the egocentric (or "personal") social network data that were collected via the survey. We captured each respondent's idea exchange network by asking them to name who in the company was a "source of technical information." We then asked respondents to indicate

whether the contacts they named were positively connected to each other. Network constraint was calculated using Burt's (1992) measure of network constraint. Constraint ranges from 0 to 1.0, with a larger number indicating a higher number of ties among a respondent's network contacts (i.e., few structural holes in the focal individual's network). Because intrinsic motivation has been shown to affect innovation outcomes (Amabile, 1988), we controlled for *intrinsic motivation*. This was measured with four items adapted by Grant and Berry (2011). Respondents were asked to rate how much they agreed with the following reasons for why they do their work: "because I enjoy the work itself," "because I find the work engaging," "because it's fun," and "because I enjoy it" ($\alpha = 0.91$).

Analysis

We used negative binomial regression analysis since each of our dependent variables were based on a count. We used negative binomial regression over Poisson regression due to evidence of over-dispersion in our data (Cohen, Cohen, West, & Aiken, 2003). Missing data reduced the final number of observations to 105.

Results

Table 6 contains the means, standard deviations, and correlation coefficients for the variables in this study. Table 7 summarizes the negative binomial regression results. Model 2 of Table 7 shows that there is a positive and significant relationship between the mediation orientation and minor innovation support ($\beta = .22$, $\chi^2 = 3.69$, $p < .05$), while there is a negative relationship between the separation orientation and minor innovation support ($\beta = -.23$, $\chi^2 = 3.72$, $p < .05$). Model 4 of Table 7 indicates that there is a positive and significant relationship between the mediation orientation and major innovation support ($\beta = .29$, $\chi^2 = 3.41$, $p < .05$), while the relationship between this outcome and both *tertius iungens* and separation orientations does not

significantly differ from zero. Model 6 of Table 7 depicts a positive and significant relationship between the *tertius iungens* orientation and innovation initiation ($\beta = .59$, $\chi^2 = 7.35$, $p < .01$), while the mediation and separation orientations do not have a statistically significant relationship with this outcome.

Insert Tables 6 and 7 about here

DISCUSSION

Recent work on brokerage processes suggests that there are three distinct approaches taken by brokers: joining contacts (*tertius iungens*), mediating between contacts, and maintaining separation between contacts (Obstfeld et al. 2014; Spiro et al. 2013). Although a measure for an orientation toward *tertius iungens* brokerage has been previously established, scale measures for separation and mediation brokerage orientations have yet to be developed. The results of the four studies reported here address this gap by providing support for the psychometric properties of the 6-item DBOS, which comprises the mediation brokerage and separation brokerage orientation sub-scales. The underlying two-factor dimensionality and internal reliability of the scale was established in Study 1 and again confirmed in Study 2. Studies 2 and 3 established the convergent and discriminant validity of the scale, respectively. Study 4 reported the criterion-related validity of the DBOS sub-scales, demonstrating that each form of brokerage orientation (i.e., mediation, separation, and *tertius iungens*) is uniquely predictive of innovation behavior at the individual level for a sample of professional employees.

The pattern of results we found in the exploratory analyses of Study 4 extends prior research on brokerage and innovation by providing an initial indication as to how the DBOS sub-scales associate with various roles played in the innovation process. That is, while our results

corroborate the notion that the joining action of the *tertius iungens* broker is important for the innovation initiator (Obstfeld, 2005), our findings also suggest that the DBOS brokerage orientations are most relevant to those who play a supporting role in innovation. Specifically, we find that the mediation orientation is significantly related to involvement in both minor and major innovation roles, while the separation orientation is negatively related to involvement in minor innovation roles. Below we speculate as to why we found this particular pattern of results.

We first consider why the mediation orientation is positively related to innovation support roles, which are roles often associated with helping to get innovations adopted and implemented once they have been conceived (Howell, Shea, & Higgins, 2005). Innovation processes generally involve the coordination and merging of diverse interests and the associated navigation of the politics, uncertainty, and potential conflict involved with the introduction of new technologies and processes (Grosser et al., 2018; Markham, 2000). Innovations inherently affect the status quo within organizations and, as a result, frequently have detractors who have to be negotiated with or otherwise circumvented if the innovation is to be successfully implemented (Baer, 2012). Individuals in innovation supporting roles are often engaged in mediation brokerage in order to successfully navigate this environment fraught with opponents and political detractors. Kanter (1988: 193) speaks of "sending emissaries to smooth the way and plead the case" when innovation advocates encounter opposition. This is very much a mediation brokerage process in that the emissary is acting as an intermediary between two parties with unaligned or even opposing interests. In discussing observations derived from their Minnesota Innovation Research Program studies, Schroeder, Van de Ven, Scudder, and Polley (1986: 518) discuss how innovation supporters—typically in managerial positions—would "run interference" for innovators in order to counteract forces that might block an innovation's adoption. This language

is again evocative of a mediation broker, who acts as a liaison between two parties who are unable or unwilling to interact with one another. Similarly, Tushman and Nadler (1986) note the importance of gatekeepers or boundary spanners in innovation advocacy.

Given the complex and competitive nature of the process of innovation implementation within organizations, mediation brokerage is an important social behavior. Mediation brokers manage the boundaries around a given group of innovators by controlling the information and resources flowing in and out of the group, and by managing the pressures and threats of rivals. Importantly, it is typically individuals in supporting roles who engage in such mediation brokerage, leaving the initiators of the innovation to engage in technical tasks and to coordinate others directly involved in the innovation group. Innovation supporters have been identified by various names such as “orchestrator” (Galbraith, 1982) or “champion” (e.g., Howell & Higgins, 1990), and they tend to play an important function managing the boundaries around innovative groups (e.g., Ancona & Caldwell, 1990). It is the need for boundary management that makes mediation brokerage important for supporters of innovation. The results of Study 4 therefore corroborate the work of theorists who have emphasized the important role that mediation brokerage plays in supporting organizational innovation (cf. Ancona & Caldwell, 1990; Galbraith, 1982; Tushman & Nadler, 1986).

A potential explanation for the negative relationship between the separation orientation and minor innovation support is that minor innovation support roles often entail activities such as providing advice to innovation initiators, which could be considered an extra-role work behavior (Sparrowe, Liden, Wayne, Kraimer, 2001). For example, minor innovation support might involve providing others with help on technical questions. This type of interpersonal assistance is rarely recognized formally by the organization, so it is not likely to be pursued by those with a

separation orientation, which has been described in self-serving terms (Burt, 1992). Given that this orientation has a significant relationship to the *distrust of others* dimension of Machiavellianism (see Table 4), it is possible that those high in separation brokerage avoid minor innovation roles due to their aversion to engaging in voluntary acts of interpersonal citizenship behavior that are unlikely to be rewarded by the organization.

As alluded to above, we examined the relationship between each DBOS sub-scale and the four sub-dimensions of the Machiavellianism scale identified by Dahling et al. (2009). This analysis yielded a pattern of results suggesting that mediation orientation is most strongly correlated with a desire for control, while the separation orientation is most strongly correlated with distrust for others. These results are somewhat surprising given that control is often strongly associated with separation brokerage. These findings suggest that the motivations for both mediation brokerage and separation brokerage are complex and unique, but that there are elements of self-interest that appear to, at least in part, drive each form of DBOS brokerage. We hope this initial analysis serves as a basis for further theorizing about the motivations that underlie the various brokerage orientations.

It is also worth noting that none of the three brokerage orientations examined in Study 4 was significantly related to social network structure. As seen in Table 6, the mediation, separation, and *tertius iungens* orientations all failed to correlate significantly with network constraint. Thus, an actor may occupy a structurally advantageous position (e.g., many structural holes) but may or may not benefit from it depending on their disposition. Furthermore, an actor may broker two alters who have a connection. For example, one could engage in mediation brokerage despite the fact that each of the broker's alters has a positive tie with one another (e.g., when a broker fills a colleague in on gossip heard from a mutual friend). Similarly, separation

brokerage can occur between alters who are connected (e.g., when a broker chooses to selectively exclude alter A from a brainstorming session at which alter B—who knows alter A—will be present). The null correlations that we find between network constraint and the DBOS sub-scales serve as a confirmation that our DBOS measures are tapping into brokerage behaviors that cross-sectional network measures alone cannot assess.

In sum, the studies presented here support the notion that network structure and brokerage behavior are independent from one another. Although network structure affects the potential resources and opportunities available to ego, it is not necessarily indicative of how an individual will enact brokerage behavior. In contrast, the brokerage orientation measures in the DBOS reflect the behavioral tendencies an individual has toward brokerage. On one hand, structural network measures are important and valuable constructs if one is interested in examining the social resources available to an individual or a group. On the other hand, the behavioral orientations captured by the DBOS are useful if one is interested in examining the underlying brokerage tendencies an individual has toward brokering behavior. Although either of these phenomena can be studied independently, we assert that combining structural network measures (e.g., structural hole measures; Burt et al., 2013) along with brokerage orientation measures presents an especially powerful approach that addresses both the opportunities available by virtue of one's network position as well as the behavioral manner in which an individual tends to engage with his or her network.

Limitations and Future Directions

As with any study, this research is not without its limitations. One limitation stems from the fact that—although a minority of respondents in samples 1 and 4 are located outside of the U.S.—most of the respondents in our studies are from the United States. The generalizability of

the results reported here to other cultures is therefore an open question. Given that attitudes and approaches toward social networking differ across cultures (e.g., Burt, Hogarth, & Michaud, 2000; Xiao & Tsui, 2007), additional research on the DBOS outside of the U.S. will be necessary in order to establish its cross-cultural generalizability. Another limitation is based on the fact that the innovation outcomes reported in Study 4 are based on self-reported data. Although innovation scholars have argued for the validity of innovation self-reports given that employees know the most about their own subtle innovation behavior that may be difficult for others to rate (Janssen, 2000), it is possible that self-reports of innovation behavior—which is typically thought of positively—can be inflated or understated. Others, however, have found relatively high correlations (r = .62) between self-reports and supervisor reports of innovation (Axtell, Holman, & Unsworth, 2000), which suggests that self-reports are a reasonable method by which to assess individual innovation. Nonetheless, additional research that examines the relationship between DBOS dimensions and innovation outcomes would be well-served to assess innovation outcomes via supervisor or peer evaluations or via more objective measures, such as patent counts.

The studies reported here are cross-sectional, so causal inferences cannot be reliably made. In order for causality to be inferred, potential threats to internal validity would need to be eliminated through alternative research designs. Although it is theoretically possible that innovation support involvement in fact predicts brokerage orientation, prior ethnographic work concerning brokerage and innovation indicates that this is not the causal order (e.g., Lingo & O'Mahony, 2010; Obstfeld, 2005). Moreover, the purpose of this research was to create a valid and reliable measure of the disjunct brokerage orientations. Causality is therefore less of a

concern in this case, since criterion-related validity is demonstrated simply by establishing a relationship between the DBOS sub-scales and the constructs to which they should relate.

An additional limitation of the DBOS measures has to do with the fact that they are not well-suited to examining how brokers broker with specific others. That is, these measures assess general behavioral orientations, but they are less indicative of intra-personal behavioral variation in brokerage behavior. For example, it may be that certain individuals engage in mediation brokerage with certain parts of their social network and separation brokerage with other parts. Recent studies employing longitudinal social network analysis provide models for how dynamic intrapersonal brokerage variation of this nature can be assessed (e.g., Burt & Merluzzi, 2016; Spiro et al., 2013; Quintane & Carnabuci, 2016).

The development and validation of the DBOS opens up new possibilities for theoretical development and empirical work in organization science. For example, the DBOS will allow researchers to gain a better understanding of how social network structure and various brokerage orientations interact. Although social network structure has been shown to associate with a number of organizational outcomes such as employee performance, creativity, and innovation (e.g., Burt, 1992; Hirst, van Knippenberg, Zhou, Quintane, & Zhu, 2015; Rodan, 2010), and some have noted that the inclusion of psychological factors does not add significantly to the variance explained (Burt, 2012), an increasing number of scholars argue that the psychological orientations of individuals are important to examine in the context of social network structure (e.g., Casciaro, Barsade, Edmondson, Gibson, Krackhardt, & Labianca, 2015; Tasselli et al., 2015). Do actors who have an orientation toward separation brokerage experience dissatisfaction when operating in densely interconnected social structures? Are individuals with a mediation orientation more successful in networks characterized by high levels of heterogeneity? The

DBOS scale will allow researchers to address such questions and further the debate over whether individual orientations affect the returns that can be obtained from certain network positions.

Another promising avenue of future research will be to examine the contextual characteristics that favor mediation brokerage versus separation brokerage. That is, what are the contexts in which mediation brokerage is most predictive of performance and in what contexts does separation brokerage yield performance benefits? For example, the level of outcome interdependence in a given context may affect the efficacy of each DBOS brokerage orientation. The way in which an individual's goals relate to those of others affects how they interact socially, and this can in turn affect performance (Deutsch, 1949). Individuals operating in an environment characterized by low outcome interdependence that rewards individuals on the basis of individual achievement may achieve high performance by enacting separation brokerage, which has a competitive element. In contrast, environments with moderate to high levels of outcome interdependence may favor mediation brokerage. In these contexts, intermediating among individuals or groups is especially important for ensuring collective success and is likely to be particularly valued and rewarded.

The DBOS will also further research into how brokerage orientations interact with one another to lead to organizational outcomes. Brokerage theorists have suggested that various orientations interact with one another synergistically (e.g., Lingo & O'Mahony, 2010), but further research is needed for a full understanding of how various combinations of brokerage orientations work in concert with one another to produce other organizationally relevant outcomes (Obstfeld et al., 2014). Do brokerage orientations interact with one another to impact extra role behaviors like organizational citizenship behavior? Does a profile that contains high levels of all three brokerage orientations yield the social skill necessary for building coalitions,

orchestrating networks, and generating innovation—ultimately enhancing employee performance? These questions can now be pursued using the DBOS measures along with the *tertius iungens* scale.

Conclusion

The studies reported here show the Disjunct Brokerage Orientation Scale to be a valid measure of mediation and separation brokerage. This construct has been shown to be important in the organizational innovation process, and it may have consequences for other organizationally relevant outcomes. These studies suggest that the DBOS sub-scales fit in the hypothesized nomological network yet are independent from theoretically similar constructs. These results suggest that the orientations captured by the DBOS merit further research.

Recent work (Kellogg, 2014; Lingo and O'Mahony, 2010; Obstfeld, 2017; Quintane & Carnabuci, 2016; Soda et al., 2017; Sgourev, 2015) supports the notion that individuals' orientation toward certain brokerage behavior is an important new area of brokerage research. The emerging work in this area, however, has primarily been either theoretical or qualitative in nature. We hope this study serves as a vanguard for new empirical work by offering an approach that will allow researchers to measure brokerage orientation along with more established measures of social network structure.

TABLE 1

DBOS Scale Factor Structure (Study 1)

Initial Scale Items	**Factor 1** Mediation Orientation	**Factor 2** Separation Orientation
1. I sometimes mediate interactions between coworkers that may not trust one another.	**0.90**	0.18
2. I sometimes mediate interactions between coworkers that don't get along.	**0.82**	0.28
3. I often work as a "go-between" at work for others who can't interact directly.	**0.77**	0.15
4. I look for opportunities to relay unique information from one work contact to another.	**0.38**	-0.01
5. It can be advantageous to maintain separation between some of my work contacts.	-0.02	**0.85**
6. It is often better to keep some people from interacting with one another.	0.11	**0.69**
7. I prefer to keep some of my work contacts separate from one another.	0.13	**0.59**
8. I maintain a set of work contacts who don't know one another.	0.12	**0.31**
Eigenvalue	2.78	1.97
Percentage of variance explained	34.69	24.60
Cumulative percentage of variance explained		59.29
Coefficient alpha	0.80	0.70
Final Scale Items		
1. I sometimes mediate interactions between coworkers that may not trust one another.	**0.91**	0.14
2. I sometimes mediate interactions between coworkers that don't get along.	**0.83**	0.24
3. I often work as a "go-between" at work for others who can't interact directly.	**0.77**	0.12
4. It can be advantageous to maintain separation between some of my work contacts.	0.05	**0.87**
5. It is often better to keep some people from interacting with one another.	0.16	**0.69**
6. I prefer to keep some of my work contacts separate from one another.	0.18	**0.58**
Eigenvalue	2.58	1.81
Percentage of variance explained	43.05	30.20
Cumulative percentage of variance explained		73.25
Coefficient alpha	0.87	0.75

TABLE 2

Fit Indices for Confirmatory Factor Analysis (Study 2)

Model	X^2	*df*	Standardized Root Mean Square Residual (SRMR)	Root Mean Square Error of Approximation (RMSEA)	Comparative Fit Index (CFI)	Tucker-Lewis Index (TLI)	ΔX^2	Δ *df*
Null model	893.65***	15	0.32	0.41	0.00	0.00	-	-
Common factor model	245.46***	9	0.15	0.27	0.73	0.55	648.19***	6
Two-factor model	6.65	8	0.02	0.00	1.00	1.00	238.81***	1

*** $p < .001$

TABLE 3

Variable Means, Standard Deviations, and Bivariate Correlations (Study 2)

	N	*M*	*SD*	1	2	3	4	5	6	7	8
1. Mediation Orientation	355	4.29	1.45	(0.88)							
2. Separation Orientation	355	4.43	1.19	0.30**	(0.77)						
3. Combined DBOS	355	4.37	1.06	0.85**	0.76**	(0.79)					
4. *Tertius Iungens* Orientation	355	4.97	1.17	0.66**	0.21**	0.57**	(0.91)				
5. Social Astuteness	355	4.94	0.96	0.35**	0.13*	0.31**	0.39**	(0.86)			
6. Coalition Building	355	4.07	1.46	0.42**	0.07	0.33**	0.42**	0.39**	(0.92)		
7. Self-Monitoring	355	2.99	0.62	0.31**	0.11*	0.28**	0.35**	0.69**	0.36**	(0.86)	
8. Machiavellianism	355	3.09	0.78	0.21**	0.25**	0.28**	0.07	0.15**	0.19**	0.24**	(0.84)

**. Correlation is significant at the 0.01 level (two-tailed).

*. Correlation is significant at the 0.05 level (two-tailed).

TABLE 4

Correlations with Machiavellian Personality Scale Sub-Dimensions (Study 2)

Machiavellian Personality Scale Sub-Dimension	Mediation Orientation	Separation Orientation
1. Distrust of Others	0.15**	0.25**
2. Desire for Status	0.14*	0.08
3. Desire for Control	0.31**	0.15**
4. Amoral Manipulation	0.04	0.17**

**. Correlation is significant at the 0.01 level (two-tailed).

*. Correlation is significant at the 0.05 level (two-tailed).

TABLE 5

Results of Nested Model Comparisons for Discriminant Validity (Study 3)

Extraversion

	Model	X^2	*df*	Standardized Root Mean Square Residual (SRMR)	Comparative Fit Index (CFI)	ΔX^2	Δ *df*
Mediation Orientation	Unitary	673.55***	65	0.08	0.81	-	-
	Discriminant	491.54***	64	0.06	0.87	182.01***	1
Separation Orientation	Unitary	888.05***	65	0.11	0.75	-	-
	Discriminant	496.22***	64	0.06	0.87	391.83***	1

Core Self-Evaluations

	Model	X^2	*df*	Standardized Root Mean Square Residual (SRMR)	Comparative Fit Index (CFI)	ΔX^2	Δ *df*
Mediation Orientation	Unitary	893.89***	90	0.09	0.73	-	-
	Discriminant	694.73***	89	0.08	0.80	199.16***	1
Separation Orientation	Unitary	1062.00***	90	0.11	0.69	-	-
	Discriminant	679.77***	89	0.07	0.81	382.23***	1

*** $p < .001$

TABLE 6

Variable Means, Standard Deviations, and Bivariate Correlations (Study 4)

	N	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. Rank	111	0.27	-	-											
2. Gender	111	0.82	-	0.07	-										
3. Education	113	0.24	-	-0.01	0.15	-									
4. Functional Role	114	0.73	-	-0.57**	0.07	0.07	-								
5. Network Constraint	110	0.48	0.34	-0.05	0.08	0.03	0.11	-							
6. Intrinsic Motivation	110	4.53	2.16	0.20*	-0.02	0.08	-0.01	0.06	(0.91)						
7. Mediation Orientation	112	4.5	1.37	0.29**	0.13	0.01	-0.29**	0.10	0.07	(0.82)					
8. Separation Orientation	112	3.42	1.38	0.03	-0.08	0.21*	0.03	0.10	-0.09	0.23*	(0.77)				
9. *Tertius Iungens* Orientation	113	4.86	1.10	0.36**	-0.06	-0.12	-0.36**	-0.03	0.41**	0.45**	-0.04	(0.90)			
10. Minor Innovation Support	114	2.74	3.50	0.17	0.04	0.07	-0.12	-0.25**	-0.10	0.03	-0.16	0.04	-		
11. Major Innovation Support	114	1.02	1.36	0.08	-0.01	0.07	-0.12	-0.18	0.16	0.27**	0.01	0.27**	0.21*	-	
12. Innovation Initiation	114	0.62	1.16	0.16	0.21*	-0.02	-0.01	-0.15	0.02	0.17	0.02	0.19*	0.06	0.21*	-

**. Correlation is significant at the 0.01 level (two-tailed).

*. Correlation is significant at the 0.05 level (two-tailed).

TABLE 7

Results of Negative Binomial Regression Analysis (Study 4)

	Minor Innovation Support				Major Innovation Support				Innovation Initiation			
Variable	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
Control Variables												
Rank (Manager)	0.52*	(0.22)	0.57**	(0.22)	-0.15	(0.32)	-0.18	(0.33)	0.42	(0.37)	0.35	(0.36)
Gender (Male)	0.17	(0.27)	0.05	(0.26)	0.07	(0.26)	0.06	(0.27)	1.38*	(0.77)	1.49*	(0.72)
Education (PhD)	-0.02	(0.26)	0.15	(0.24)	0.01	(0.27)	0.06	(0.30)	0.01	(0.31)	0.23	(0.32)
Functional Role (Technical Role)	-0.02	(0.21)	0.22	(0.20)	-0.33	(0.32)	-0.03	(0.37)	0.01	(0.41)	0.24	(0.44)
Intrinsic Motivation	-0.22*	(0.11)	-0.32**	(0.12)	0.28*	(0.14)	0.19	(0.13)	0.14	(0.20)	0.12	(0.22)
Network Constraint	-0.33**	(0.12)	-0.35**	(0.11)	-0.13	(0.10)	-0.19*	(0.10)	0.01	(0.15)	0.09	(0.16)
Independent Variables												
Mediation Brokerage Orientation			0.22*	(0.12)			0.29*	(0.16)			-0.19	(0.17)
Separation Brokerage Oriantation			-0.23*	(0.12)			-0.05	(0.13)			-0.01	(0.15)
Tertius Iungens Brokerage Orientation			0.09	(0.12)			0.15	(0.15)			0.59**	(0.22)
Intercept	0.61*	(0.27)	0.46*	(0.26)	0.15	(0.34)	-0.01	(0.37)	-1.97**	(0.72)	-2.34**	(0.63)
Log Likelihood	-217.66		-215.23		-140.59		-137.91		-102.35		-99.80	

Note. Standard errors in parentheses, $n = 105$.

* $p < .05$ (one-tailed).

** $p < .01$ (one-tailed).

FIGURE 1

Brokerage Orientation Typology

Brokerage Category	Brokerage Type	Description
Tertius Iungens Orientation	Brief *Iungens*	To introduce or facilitate preexisting ties between parties such that the coordinative role of *tertius iungens* subsequently recedes in importance.
	Sustained *Iungens*	To introduce or facilitate interaction between parties while maintaining an essential coordinative role over time.
Disjunct Brokerage Orientation	Mediation	To intermediate between parties who cannot, or prefer not to, interact with one another. The mediation broker is a kind of *non-partisan* (Simmel, 1950) that is similar to the conduit broker (Obstfeld, Borgatti, & Davis, 2014).
	Separation	To see advantage in having disconnected alters and to actively work to maintain separation among network contacts. This orientation reflects Simmel's (1950) conception of active *tertius gaudens* brokerage.

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