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A Conceptual Framework of the Effects of Positive Affect and Affective Relationships on Group Knowledge Networks

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A theoretical model integrating research in social psychology and group knowledge networks regarding the pervasive influence of affect on group transactive memory systems (TMSs) is presented. The proposed affective transactive memory (ATM) model extending TMS beyond its cognitive tradition provides a promising interdisciplinary theoretical base for future research. The role of positive affect (PA) in the three dimensions of TMS effectiveness—accuracy in expertise recognition, sharedness of knowledge, and member participation—are discussed. Propositions are presented regarding the effects of members' PA and affective relationships on member information retrieval and allocation, which is further explored as four attribute and relational effects in knowledge networks. Ways to further integrate affect into contemporary small group knowledge network theorizing and research are suggested.

Keywords: *transactive memory; positive affect; knowledge network; information retrieval; information allocation*

Knowledge explosion and the unprecedented competition in the knowledge-based economy (Drucker, 1993) have propelled widespread use of work teams made up of experts in diverse domains (e.g., Davenport & Prusak, 1998; Littlepage, Hollingshead, Drake, & Littlepage, 2008; van der Vegt & van de Vliert, 2005). However, knowledge transfer effectiveness of

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work group members is not inherently optimal. In fact, knowledge hoarding, apprehension about failures, and unwillingness to leverage others' expertise were found to inhibit a knowledge-sharing culture (Michailova & Husted, 2003). We are still not certain about the effects and conditions associated with various knowledge management practices (Huber, 2001; Wolfe & Loraas, 2008). More specifically, a *Harvard Business Review* article (Casciaro & Lobo, 2005) raised a very tantalizing and pertinent question about expertise and affects in group knowledge transfer processes: Are you more likely to turn to the competent jerks or lovable fools when you need information at work? In other words, would you seek information from a colleague best able to do the job or just from someone you like?

Among the various research strands on job competency and affective states, two theoretical mechanisms with continuing fruitful research stand out. First, trait positive affect (PA) in organizational settings, which has its earlier root in studies of emotions and moods in general back in the 1940s (Bruner & Postman, 1947; Geertz, 1959; Rafaeli & Sutton, 1989), remains popular in work-related research today (e.g., Barsade, Ward, Turner, & Sonnenfeld, 2000; Elfenbein, 2007; Flynn, Chatman, & Spataro, 2001). Second, transactive memory theory, a relative newcomer in group studies initiated by Wegner and colleagues in the mid 1980s (Wegner, 1987, 1995; Wegner, Giuliano, & Hertel, 1985), has been followed by a rich body of theoretical and empirical development on group expertise differentiation and coordination (Brandon & Hollingshead, 2004; Contractor et al., 2004; Lewis, Lange, & Gillis, 2005; Moreland, 1999; Palazzolo, Serb, She, Su, & Contractor, 2006; Rau, 2005; Yuan, Fulk, & Monge, 2007).

Adequate evidence in the studies of both trait PA and transactive memory systems (TMS) has shown each construct's respective positive influences on work groups and their members. For example, after reviewing 225 papers on the effects of positive affectivity, comprising 293 samples, over 275,000 participants, and 3 classes of evidence—crosssectional, longitudinal, and experimental studies—a recent study concluded that happy individuals are successful across multiple life domains, including marriage, friendship, income, work performance, and health, and that "positive affect (PA) engenders success" (Lyubomirsky, King, & Diener, 2005, p. 803). Meanwhile, higher team performance is often observed when team TMSs are well developed—when team members retrieve, store, and share information based on expertise specialization and knowledge of who knows what (Hollingshead, 1998a, 1998b; Liang, Moreland, & Argote, 1995).

Interestingly, almost all previous studies of TMSs tend to focus on group cognitive interdependence while minimizing member affective states and

relationships. For instance, we do not yet know how PA influences the establishment and development of TMSs. The rare exception is a recent study conducted by Palazzolo and Clark (2007) who investigated how the development of TMSs influences group members' performance satisfaction. They reflected in the discussion section that "it is realistic to consider the possibility that *people who are more satisfied with their team's performance* to be the driving force behind people retrieving information from multiple others" (Palazzolo & Clark, 2007, p. 19, italics in the original). This demonstrates a surprising gap in our understanding of work group knowledge management: Very scant research has investigated how group members' affective states and relationships, such as job satisfaction, could drive their knowledge sharing behaviors. The lack of research on this topic is inconsistent with its theoretical and practical significance for at least four reasons, as discussed in the next section.

Thus, this article attempts to bridge this research gap and extend the theory of transactive memory by exploring the influences of PA on member information sharing. It integrates recent research in social psychology and group knowledge networks highlighting the pervasive influence affective states and relationships have on member information sharing in group TMSs. The affective transactive memory (ATM) model extending transactive memory theory beyond its cognitive tradition provides a promising interdisciplinary theoretical base for future research. It discusses the role of PA in the three dimensions of TMS effectiveness: accuracy in expertise recognition, sharedness of knowledge, and member participation (Brandon & Hollingshead, 2004). Specifically, it develops propositions regarding the effects of members' PA and affective relationships on member information retrieval and allocation, which is further explored as four attribute and relational effects in knowledge networks: (a) information transfer initiator effects, (b) information transfer reactor effects, (c) mixed effects, and (d) relational and interactional effects during information transfer. But before examining such effects, it is important to develop an understanding from previous research findings as to why extending transactive memory research with the influences of PA is necessary to advance small group research.

Transactive Memory and PA: An Overview of Research Findings

Transactive Memory (TM)

The intellectual roots of TM theory can be traced back to the functionalist view of organizations. "In an important aspect, 'organization' and 'specialization'

are synonyms" (Barnard, 1938, p. 136). Specialization inevitably involves division of labor. While the labor being divided up in the Industrial Age was mostly various roles on the assembly line, the current Information Age demands much specialization in various knowledge areas. When people are specialized in various knowledge areas, how do they communicate to support, make use of, or complement knowledge with each other? Transactive memory theory offers a framework to answer such a question.

Transactive memory is a shared system for encoding, storing, and retrieving information (Wegner, 1987; Wegner, Erber, & Raymond, 1991; Wegner et al., 1985). Furthermore, Wegner (1995) suggested that TMSs work like computer networks linking various information processors (individuals) such that each has such a cognitive directory of who knows what and constantly updates this directory through communication among the processors (individuals). To put it simply, TMSs serve as cognitive retention structures for groups by having group members keeping up cognitive directories of each other's expertise.

Positive Affect

Group members carry their affective history with them when they function as a group. Generally, emotions and affect can provide information about others and the environment and play an important role in relationship development and group identity (Buck, 1984). Thus it is worthwhile to consider how long-term individual affective attributes influence their performance in group information sharing processes as well. Positivity could be examined as moods or traits (the enduring and long term affect state; e.g., Forgas, 1995; Staw, Bell, & Clausen, 1986) or emotions (the relatively transitory and short-lived affect state; e.g., Frijda, 1994). There are ample examples in both directions of affect research in the past decades. Even though these two traditions may not be mutually exclusive, most previous literature still made an explicit choice of focus between the two (e.g., Burger & Caldwell, 2000; Schaubroeck, Ganster, & Kemmerer, 1996). Thereby, positivity is viewed as a trait in the current model as an initial exploration in TMS.

The most common focus on affective traits in organizational research is high–low positive and negative affect. PA is defined as an individual's disposition to experience positive mood states (Waston, Clark, & Tellegen, 1988). According to the definition, people with high PA tend to produce a positive reaction to various environmental phenomena and themselves and have a generalized positive cognitive set. The other closely related dispositional-mood dimension is negative affect, and individuals with high

negative affect dispositions react to environmental conditions and themselves with a generalized negative cognitive set (Clark & Waston, 1991). Keeping in mind Elfenbein's (2007) caution that there is a temptation to argue for the goodness of positive emotion and the badness of negative emotion in the organizational research literature, this article still focuses on PA instead of negative affect for the following two reasons. First, while negative affect is crucial for response to emergency and survival situations, PA is crucial for daily functioning and cooperation (Spoor & Kelly, 2004; Zajonc, 1998). Transactive memory literature mostly studies stable groups, and group members' information sharing activities are typically conceptualized as long-term daily functioning and cooperation (cf. Majchrzak, Jarvenpaa, & Hollingshead, 2007). So it is more meaningful to examine PA in the context of stable groups. Second, the positive influence of PA on work effectiveness and customers satisfaction in service sectors has been well established (Pugh, 2001). It is also important to examine whether a comparable effect should be expected for knowledge-based work teams.

Why PA Is Relevant to TMSs

First, examining affect related attributes and processes could greatly augment our understanding about transactive memory theory, which so far has been mostly based on cognitive processes of tasks and knowledge specialization alone. For example, previous studies in the TM literature have found the following cognition-based factors to be significantly related to one's tendency for information sharing in a group TMS: group members' embeddedness in information networks (Contractor et al., 2004), expertise power in a group (Yuan et al., 2007), and centralized network structure of information retrieval (Palazzolo, 2005). Just as organizational behavior studies assume that the organizations and the thoughts, feelings, and actions of the people who work in them have a mutual influence on each other (Brief & Weiss, 2002), small group research is also an area of inquiry concerned with both sorts of influence: The affective and emotional side of groups is a main focus of the psychodynamic perspective of group research (Poole, Hollingshead, McGrath, Moreland, & Rohrbaugh, 2004). Recent theorizing suggests that affect in groups and specific mechanisms to regulate group affective states have had important roles in promoting group survival over evolutionary history, as affect in groups serves a coordination function through communication and fostering group bonds and loyalty (Spoor & Kelly, 2004). Furthermore, much research has shown that being in a positive mood state generally encourages cooperation and altruism on

the job (Brief & Weiss, 2002). If we see information sharing with colleagues as a demonstration of cooperation in a TMS of a work group, it is imperative to find out whether being in a positive mood could also promote cooperative behaviors in a group TMS.

Second, the nature and characteristics of different jobs would demand various displayed emotions (Diefendorff & Richard, 2003). Therefore, it is reasonable to expect that the nature of demanded affective display would be different for sales representatives than for members of a research project team. Why is it important to consider work team context? Generally, social behavior is a dynamic two-way relationship between the person and the environment (Mischel, 1968). The importance of considering context in applying communication theories to organizational settings has been advocated by both communication and organizational behavior scholars (Mowday & Sutton, 1993; O'Reilly, 1991). More specifically, an interactional approach of the work environment and one's disposition warrant increased attention (Schaubroeck et al., 1996). However, to date studies on emotions and affects at work settings tend to focus on the relationship between individual affect and organizational outcomes most frequently in the context of the sales industry (Pugh, 2001; Sutton & Rafaeli, 1988) and in large organizational settings (Staw, Sutton, & Pelled, 1994). In contrast, studies of transactive memory in a group setting are mostly conducted in cross-functional and knowledge-intensive work group settings, relying heavily on knowledge pooling to fulfill group tasks (Hollingshead, 1998b; Liang et al., 1995; Moreland & Myaskovsky, 2000). This presents a gap in our understanding of the effects of PA in other types of work settings than sales interactions, especially in relation to group knowledge management.

Third, the benefits of training to develop TMS have been consistently emphasized in the TM literature, both in task skills (Lewis et al., 2005; Littlepage et al., 2008; Moreland, 1999) and in team process skills (Prichard & Ashleigh, 2007). However, such cognition and rationality based training may still not be enough to optimize team information sharing. In fact, group scholars call for theoretical developments that account for affect in groups in general (Kelly & Barsade, 2001). More specifically, Brandon and Hollingshead (2004) have called for future research that assesses group process issues influencing TMS development such as attitude or affect associated with transactive memory. They aptly pointed out a lack of research on how the effectiveness of the knowledge-pooling work groups would be influenced by members' affect. Building on the above two points, it would be of great interest to find out whether PA could improve knowledge sharing effectiveness in a work group's TMS just as it was often found to improve service quality evaluations in the sales industry.

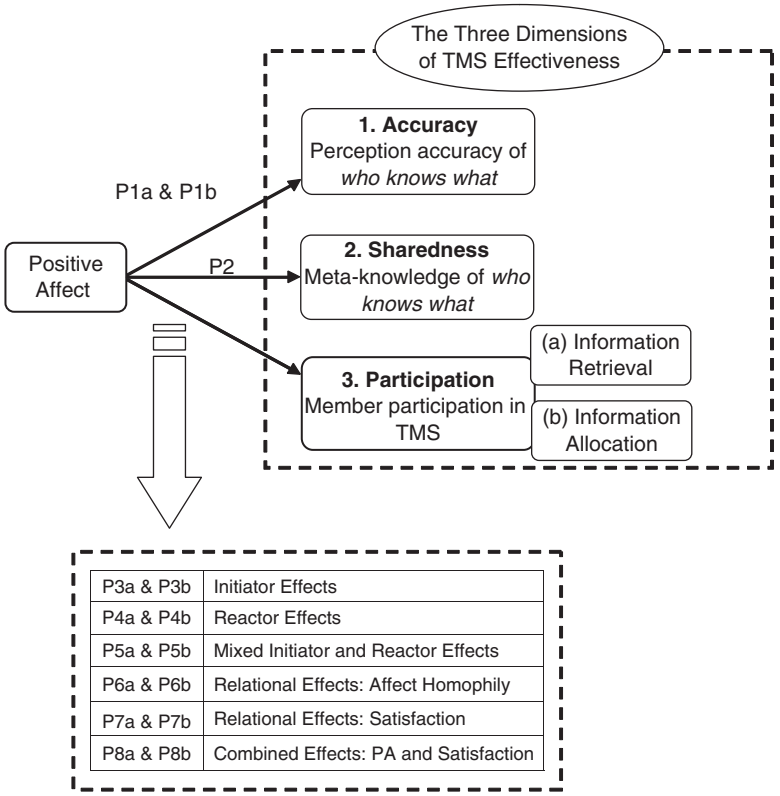
Last, and perhaps most importantly, PA may exert strong effects in TMSs in relation to the specific tasks that group members typically perform. In cross-functional and knowledge-intensive work groups, members are often engaged in such activities as communication with other members, innovation, decision making, and persuasion. Such task related behaviors are found to be heavily influenced by affect in many previous studies (e.g., Baron, 2008; Forgas & George, 2001; Lyubomirsky et al., 2005). For example, PA may contribute to the breadth and quality of one's social networks and thereby enhance social capital (Nahapiet & Ghoshal, 1998), and positive moods were found to be negatively related to creative performance when perceived recognition and rewards for creativity and clarity of feelings were high (George & Zhou, 2002). Such findings in social science research are backed by recent neuroscience research about the links between affect and cognitions. The neuroscience literature indicates that two distinct systems for processing information may exist within the human brain—reason and affect (Cohen, 2005; Marsland, Cohen, Rabin, & Manuck, 2006). Furthermore, affect and cognition interact even at very basic levels of neural functioning, and positive workplace interactions have beneficial effects on human cardiovascular, immune, and nervous systems (Ashby & Isen, 1999; Heaphy & Dutton, 2008). More specifically, PA was found to be associated with increased dopamine release, which improves people's cognitive flexibility and creative problem-solving capabilities (Ashby & Isen, 1999).

In sum, PA is an individual's disposition to experience positive mood states, and transactive memory is a shared system for encoding, storing, and retrieving information. Given the breadth of the effects of affect on cognitions and other workplace behaviors found in social psychology and group research literature as summarized in the four points above, it is essential to examine exactly how PA can influence communication activities in TMSs. After discussing why PA should be studied in TMS, an affective model and a set of propositions are presented to guide future research in this area.

How PA Influences Key Aspects of TMSs: ATM Model

This article has followed what Brandon and Hollingshead (2004) identified as the three most important dimensions of transactive memory effectiveness: expertise recognition, sharedness of knowledge, and participation. Potential impacts of PA in these three dimensions will be discussed, and the corresponding propositions in the affective transactive memory (ATM) model are summarized in Figure 1.

Figure 1
Affective Transactive Memory Model: A Framework of How Positive Affect Influences the Three Dimensions of Transactive Memory System (TMS) Effectiveness



Note: P = Proposition.

PA and Accuracy in Expertise Recognition

Recognition of expertise among members in a group is central to the TMS, for it provides a framework for distributing knowledge responsibilities (Brandon & Hollingshead, 2004; Wegner, 1987). If we view the performance of expertise recognition as a function of ability and motivation, the ability component is influenced by positive feeling states in a variety of ways

(Erez & Isen, 2002). On one hand, according to Forgas (1995), through the process of affect infusion, people often use their affective states as evaluative information. Alternatively, from a social functionalist view, affect can provide information about others and the environment (Buck, 1984). Moreover, generally people evaluate outcomes more positively when they are feeling happy (Erez & Isen, 2002). In light of these findings, it is reasonable to expect that group members' judgment accuracy for each other's expertise would be impaired by their state of feeling, and high PA would lead them to consistently give higher evaluation of other members' expertise.

On the other hand, a series of work by Isen and colleagues (e.g., Isen, Niedenthal, & Cantor, 1992; Kahn & Isen, 1993) have shown that PA can increase cognitive flexibility and bring to mind more aspects of concepts as well as more various aspects of concepts. Thus, "cognitive context of the outcome created by a positive affect state is likely to be more positive, *larger* and *more diverse* than cognitive contexts at other times" (Erez & Isen, 2002, p. 1056, italics added). In a similar way, Fredrickson (1998) suggested that positive feelings can broaden one's cognitions and actions and foster growth and coping skills. Furthermore, positive feelings were found to decrease bias in a group through their impact on creating a more inclusive, common in-group representation (Dovidio & Gaertner, 2005). In light of the reviewed research, we should expect members' PA to be instrumental for better recognition of who knows what in a group and to increase the accuracy level of group memory perception. Given the apparent bifurcation in the above discussion, a pair of competing propositions is advanced:

Proposition 1a: Group members with higher PA are more likely than those with lower PA to overestimate other members' expertise.

Proposition 1b: Group members with higher PA are more likely than those with lower PA to have accurate perception of other members' expertise.

PA and Sharedness of Knowledge

Brandon and Hollingshead (2004) predicted that a TMS works best when all group members have similar task-expertise-person units. When there are such similar units (or when sharedness of knowledge is high), all members have similar perceptions of each other's task responsibilities and expertise level in different knowledge areas in the group. If group members lack shared ideas of the group transactive memory, more time is spent on figuring out who knows what instead of knowledge sharing. Alternatively, sharedness of knowledge is called *metaknowledge of expertise* (Faraj &

Sproull, 2000) or *group cross understanding* (Lewis & Huber, 2008). In other words, when there is higher congruency or sharedness in group members' perception of who knows what, the group's TMS is more efficient and effective. So how could such group sharedness of metaknowledge be improved? Previous research has proposed that individual affect or mood may be consistent or homogeneous within work groups, resulting in a group affective tone (George, 1990). Therefore, one potential answer is to optimize the composition of group members' trait affects, or group affective composition (Kelly & Barsade, 2001).

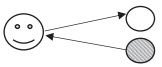
As noted earlier, there is considerable evidence suggesting that people with higher trait PA tend to be outwardly oriented (Waston et al., 1988), enjoy sharing (Rigby & Slee, 1993), and exhibit cooperation and altruism on the job (Brief & Weiss, 2002). Moreover, PA broadens individuals' perception and enhances their capacity to notice events or stimuli in the environment (e.g., Fredrickson, 1998). These findings have implications for group communication in general. Specifically, for a group made up of people with higher overall trait PA who enjoy sharing, work cooperatively, and are alert and responsive to the environment, they are more likely to spend time and efforts on communicating and learning who knows what in a group, which increases their mental agreement of group metaknowledge. Proposition 2 formalizes such implications.

Proposition 2: Groups composed of members with higher PA are more likely than those composed of members with lower PA to have more similarity in perceptions of who knows what.

PA and Participation in TMS

The two most important group member participation behaviors that facilitate TMSs are (a) information allocation—new information forwarded to group members whose expertise can facilitate the storage of it and (b) information retrieval (or information seeking)—retrieving needed information on a topic based on knowledge of the relative expertise (Wegner, 1995). By definition, PA is an individual's disposition to experience positive mood states and have an overall sense of well-being (Waston, Pennebaker, & Folger, 1987). It is thus expected that as an individual disposition or trait, PA may or may not be similar across group members and this would impact their interactions. Specifically, group members' PA can impact information retrieval and allocation based on four types of attribute and relational effects in the process of group information retrieval and allocation: (a)

Table 1
Four Types of Attribute and Relational Effects in Group Knowledge Networks

Term	Definition	Corresponding Proposition	Illustration
Initiator	A group member who proactively starts or initiates a behavior or action (such as information retrieval or allocation) in relation to another group member.	P3a & P3b	
Reactor	A group member who reacts to a behavior request started by another group member.	P4a & P4b	
Mixed effects	A network structure in which a member (node) serves as an initiator in one relationship and as a reactor in another relationship in the same network.	P5a & P5b	
Relational effects	Use of one network relationship (e.g., homophily) to explain or predict another network relationship (e.g., information retrieval).	P6a, P6b, P7a, P7b, P8a, & P8b	

Note: P = Proposition.

initiator effects, (b) reactor effects, (c) mixed effects, and (d) relational effects during information transfer (see Table 1 for the explanations of each type of effect).

The above categorization of four types of attribute and relational effects in the process of group information retrieval and allocation is developed based on applications of the following conventional conceptualizations in social network research. First, knowledge networks are "an organizational form with which to support knowledge sharing and creation" and are "comprised of a group of experts who are custodians of well-defined knowledge domain that is important for the achievement of company strategy and the attainment of business benefits" (Back, Enkel, & von Krogh, 2007, p. v). Second, in general, organizations can be conceptualized as knowledge networks in both intraorganizational and interorganizational settings (Monge & Contractor, 2003). Thus we can conceptualize small work groups in organizations as knowledge networks (Hollingshead & Contractor, 2002) that are composed of individual node or actor attributes,

communication links among the nodes or actors, and group level attributes (Mitchell, 1969; Monge & Contractor, 2003; Wasserman & Faust, 1994). Drawing on both social network and transactive memory literature, the article focuses on individual actor attributes (PA), communication links among the actors (information retrieval and allocation), and the interaction between attributes and communication links (homophily, job satisfaction, and information transfer) at the dyadic, triadic, and group levels of analysis in small group knowledge networks.

Initiator effects. People with higher PA are more likely to take the initiative to engage in information retrieval and/or allocation with other group members for two reasons. First, people with higher dispositional PA have a general tendency to act in a prosocial or cooperative manner (Rigby & Slee, 1993) and perform altruistic or conscientious behaviors at work (Williams & Shiaw, 1999). Engaging in knowledge transfer related activities is just one of such cooperative activities in a TMS. Second, as discussed earlier, higher PA people tend to have their perceptual antenna up and seek out larger and more diverse environmental stimuli and information. Thus, such members are likely to exchange information with colleagues, which is an important way to seek deeper and more diverse information from the group environment. Together, the observations and considerations summarized here suggest the following propositions.

Proposition 3a: Group members with higher PA are more likely than those with lower PA to retrieve information from other group members.

Proposition 3b: Group members with higher PA are more likely than those with lower PA to allocate information to other group members.

Reactor effects. Reactor effects could be described as the impacts of likable versus competent colleagues on prospective information seekers in a group. Casciaro and Lobo (2005) reported that organizational members in all kinds of professions often do not seek out expertise from a more knowledgeable colleague on a certain topic; instead, they turn to someone who may not be the most competent expert but who typically shows interest and enthusiasm about their work and about them as colleagues. Social scientific research suggests that people with PA will be viewed by others as more deserving of incentives and support on the job because they are likely to be viewed as more attractive, rated with more desirable traits (or halo), and exert more powerful social influence (Staw et al., 1994). Thus, Proposition 4a is proposed.

Furthermore, according to social contagion theory, infectious attitudes and behaviors in social networks influence individual attitudes and behaviors in networks (Contractor & Eisenberg, 1990; Monge & Contractor, 2003). Emotional expression is just one of the most powerful forms of social influence inside and outside of the workplace (e.g., Barsade, 2002) and by definition people with higher PA tend to demonstrate affective states such as enthusiasm and interest. Therefore, group members with higher PA are likely to induce another member's attitudes and behaviors via internalization or response facilitation (Yuan et al., 2005). Connecting back to the lovable fools phenomenon described earlier, it is expected that group members also tend to share information voluntarily with the more likable members, which is formalized in Proposition 4b.

Proposition 4a: Group members are more likely to retrieve information from those with higher PA than those with lower PA.

Proposition 4b: Group members are more likely to allocate information to those with higher PA than those with lower PA.

Mixed effects. In a well developed TMS, group members typically act as domain experts (the stars) for various knowledge areas to reduce group cognition burden and to enhance collaboration; each member acts as a domain expert where other group members retrieve information and allocate new and relevant information on a certain knowledge topic. Alternatively, domain experts (the stars) may also take the initiative to proactively retrieve information and allocate relevant information on a certain knowledge topic with other group members. In social network terminology, these alternative forms of domain experts serve as Mixed-2-Stars (Wang, Robins, & Pattison, 2008) in a TMS, which means they serve as an initiator in one relationship and as a reactor in another relationship in the same group network. Earlier discussion already indicated that the colleagues with higher PA are likely to perform prosocial and cooperative behaviors. Such alternative forms of domain expertise development also implies the education and socialization functions in TMS. For instance, in a well-developed TMS, the established domain experts take the initiative to allocate information to those who are new to the group as a team socialization tactic. Or, when a TMS is in its infancy, the assigned domain expert actively seeks information from colleagues to grow into a real expert on a certain knowledge topic. Hence, the following propositions,

Proposition 5a: Group members with higher PA are more likely than those with lower PA to retrieve information from and be allocated information to by other members.

Proposition 5b: Group members with higher PA are more likely than those with lower PA to allocate information to and be retrieved information from by other members.

Relational effects. The discussion in this article so far has been treating affect as dispositional attributes of individuals. As transactive memory is a form of socially shared cognition (Hollingshead, 2001), it is also important to take into consideration affective relationships among group members in TMSs. The affective relationships explored here are informed by theorizing and research in homophily and job satisfaction.

People who share similar status often are exposed to similar constraints, socialization experiences, and organizational experiences (Burt, 1987). Similar others can be conceptualized and operationalized in many ways, including age, gender, occupation, race, and nationality, to name just a few. Being similar in terms of demographic characteristics is one obvious and widely used embodiment of sharing similar status within a work group (e.g., Ibarra, 1992). Demographic similarity has been found by previous studies to be one of the most important determinants of interpersonal behaviors, as it can enhance attraction and increase frequency and quality of interaction between individuals (Barsness, Diekmann, & Seidel, 2005).

Though much less frequently explored in the literature, similarity in terms of affective traits could be another important representation of sharing similar status in a work group which so far has been understudied. Homogeneity without feelings of attraction may be detrimental to groups when sharing unique information is crucial for performance (Gruenfeld, Mannix, Williams, & Neale, 1996). How could similar affect traits influence group members' knowledge transfer related interactions? First of all, similarity suggests shared experiences and values, which facilitate interaction (Byrne, 1971); this is a homophily based rationale. Second, one of the most fundamental findings in sociology is the tendency of individuals to interact more with those to whom they are more similar (Bacharach, Bamberger, & Vashdi, 2005; Ibarra, 1992; McPherson & Smith-Lovin, 1987; McPherson, Smith-Lovin, & Cook, 2001), a phenomenon known as *birds of a feather flock together*. More specifically, a group could become and remain homogeneous in member affectivity through member selection and social influence processes. Third, the rationales underneath homophily include ease of communication, shared understandings, and comfort (Carley, 2002). Taking the above observations and rationales together, we would expect that group members with similar affective states may find it more comfortable and meaningful to communicate with each other, which increases

the possibility of their engagement in information sharing behaviors. Hence, the following propositions,

Proposition 6a: Group members with similar dispositional PA are more likely to retrieve information from each other than from members with dissimilar PA.

Proposition 6b: Group members with similar dispositional PA are more likely to allocate information to each other than to members with dissimilar PA.

Most previous research investigated the dispositional approach to global job satisfaction, and facet satisfaction (satisfaction toward work itself, supervision, coworkers, pay, and promotion) deserves more attention (Bowling, Hendricks, & Wagner, 2008). Meanwhile, neuropsychological evidence recently suggested that positive relationships among colleagues can have beneficial consequences beyond the instrumental benefits (Heaphy & Dutton, 2008). Following facet job satisfaction literature, this article focuses on job satisfaction as how much group members are satisfied with other members in a work group. In TMS, individuals are more likely to choose to develop a knowledge structure of specialization and sharing with someone they trust, like, and identify with (Todorova, Argote, & Reagans, 2008). Thus, it seems to be reasonable to expect that when one is satisfied with another group member, one is more likely to trust and enjoy working with that colleague, and consequently one is more likely to choose to develop a knowledge sharing relationship with the colleague. Therefore, the following propositions are advanced.

Proposition 7a: The more group members are satisfied with other members' job performance, the more they are likely to retrieve information from those members.

Proposition 7b: The more group members are satisfied with other members' job performance, the more they are likely to allocate information to those members.

Many studies have investigated the relationship between trait PA and job satisfaction (Judge & Larsen, 2001; Schaubroeck et al., 1996) and found that trait PA can be significantly correlated with and even predicted job satisfaction assessed longitudinally (Watson & Slack, 1993). However, job satisfaction is only partially dispositionally based (Judge & Larsen, 2001). Few studies have examined how the interactional effects of PA and facet job satisfaction toward coworkers could influence group information transfer behaviors. Thus, the following propositions,

Proposition 8a: The more group members are satisfied with another member's job performance and the higher is their PA, the more they are likely to retrieve and allocate information with that member.

Proposition 8b: The more group members are satisfied with another member's job performance and the higher is the other member's PA, the more they are likely to retrieve and allocate information with that member.

Discussion

This article represented a pioneering exploration of how affect-related attribute and relational factors, above and beyond cognition and rationality-related factors, would influence key knowledge sharing cognitions and activities in small work group TMSs. First, this article integrated and extended the literatures of PA and transactive memory. By suggesting connections between PA and TMSs, it complemented and extended growing research interest in cognitive factors in group knowledge networks. Second, this article specifically explored how PA influences member participation in TMSs, which is further explored based on four attribute and relational effects in the process of group information retrieval and allocation. Given that group scholars called for theoretical developments that account for affect in groups (Brandon & Hollingshead, 2004; Kelly & Barsade, 2001), social network literature may offer group scholars increased traction with which to investigate the hybrid of attribute and relational sides of group TMSs. The ATM model development here can serve as an early example of such an investigation. Finally, as one of the first works to extend research on knowledge networks by incorporation of human affect, this article has useful implications for further integrating affects in group research theoretical development and managerial practices, as suggested in the research agenda below.

Research Agenda

Interactions among the three dimensions of TM effectiveness. It is quite likely that there can be interactions among the three dimensions of TM effectiveness; for instance, perception of expertise was found to significantly influence individual information exchange with team members (Contractor et al., 2004; Huang, 2007; Yuan et al., 2007). However, as this article is the first attempt that focuses on the influence of affect on the

cognition and behaviors in TMSs, such interactions are not included in the current model. Further development of the ATM model need to take such interactions into consideration.

From affective homophily to diversity. As suggested by recent diversity literature, in surface-level homogeneous groups, members are concerned about being accepted by their fellow in-group members; thus, such groups suffer more from conformity pressures that prevent them from sharing unique information and opinions (Phillips, Northcraft, & Neale, 2006). Deeper level homogeneity such as affective similarity can lead to more comfortable and meaningful communication among group members, which increases the possibility of their engagement in information sharing behaviors (see Proposition 6a and 6b). To extend the application of affective homophily in knowledge networks, future research could also examine a closely related phenomenon, affective diversity. Furthermore, previous research found affective diversity compounded with low mean trait PA in a group was likely to produce the greatest task and emotional conflict and the least cooperation (Barsade et al., 2000). Future research on organizational fit and socialization tactics could explore how group-level affective diversity together with a group's average affect level can jointly influence knowledge-sharing tendencies of the whole group.

Beyond PA's positive effects. As noted earlier, previous literature cautioned against the temptation to argue for the goodness of positive emotion (Elfenbein, 2007) or the uniformly beneficial effects of PA (Baron, 2008). Heeding this caution, this article developed a pair of competing propositions regarding how PA could impact an individual's accuracy in expertise recognition. Such cognitive errors or biases due to the rosy lens that higher PA people typically use as suggested in Proposition 1a could be detrimental or even dangerous for group performance, especially in not well established groups. Furthermore, in Proposition 2, it was suggested that groups with higher overall member PA could have higher cognitive agreement on who knows what in a group. If such a proposition is validated, it is still not clear whether higher PA could meaningfully increase sharedness of who knows what in a group. The reason is that, group members may agree on very inaccurate directories of who knows what via bias or other processes, and consequently the shared perception of group transactive memory could increase without the increase of overall accuracy in expertise recognition.

Inaccurate perception of the directory of expertise can be quite counterproductive in a group TMS, and further research need to examine how this phenomenon of inaccurate high sharedness (inaccurate group collective perception of expertise) could be avoided or revised.

Affective breaks and consequences. In accordance with the mainstream literature, PA is defined as a dispositional mood in this article. However, the affective influence of emotions and moods on TMSs could be less stable, as even the happiest person in a group can also undergo some temporary emotions that are quite different from his or her disposition but nonetheless consequential for group interactions. Thus, future research should also examine the impacts of the more temporary emotions on TMSs, for example, how a break from an individual's disposition could further influence communication in knowledge networks and what factors would induce such an affective break.

Group affect map. Abundant research has shown the benefits of knowing who knows what in a group or organization, and scholars and consultants have recommended the use of mapping who knows what in the format of a knowledge network (e.g., Cross & Parker, 2004). Meanwhile, knowledge of who-likes-whom is an age-old strategy of cultivating favors and getting resources in a social network. The discussion in this article has suggested the influences of affective relationships on task-related behaviors. Taken together, mapping of the affective relationship in a group network could meaningfully complement a group's knowledge maps. The affective transactive model in this article offers an initial conceptual framework for such affective mapping.

Communication competence training. Previous research has already found that the failure to accurately communicate affective states, particularly positive emotions, may inhibit relationships between coworkers (Barsade, 2002). More specifically, as suggested in Propositions 1b, 3a, 3b, 4a, and 4b, competence to communicate PA is likely to facilitate such important processes as expertise differentiation and growth, information exchange with colleagues, and both proactive and reactive participation in group knowledge networks. Therefore, groups need to consider spending adequate time and resources on training that improves competence in communicating PA and promotes positive affective relationships among group members.

Conclusion

The article demonstrates a promising research direction by initiating the consideration of both the cognitive and affective dimensions in group TMSs. It offers a knowledge network model for understanding how groups members' trait affect and affective relationships influence information sharing in work groups. Incorporating PA as an attribute as well as relationships in the knowledge management can contribute to a more comprehensive theoretical framework for understanding the important group cognitions and behaviors identified by the extant research on transactive memory theory. Such a group affective model can more soundly reflect the ways in which members actually perceive and communicate in work groups during information sharing processes, which in turn can provide more useful guidance for small group knowledge management.

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