ABSTRACT

Title of Dissertation: HOW DOES CREATIVITY OCCUR IN
TEAMS? AN EMPIRICAL TEST

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Organizations benefit when workteams produce more rather than less creativity. What actions in organizations help this to occur – on the part of team leaders and team members? This is the primary question that my dissertation aims to answer. More specifically, I hypothesize that team leaders' behaviors (e.g., transformational, empowering, and boundary-working behaviors) lead to team members' affective and cognitive experiences (e.g., positive group affective tone, team empowerment) that in turn lead to teamwork processes (e.g., information sharing and boundary-spanning among team members) that ultimately lead to team creativity. Thus, my dissertation attempts to explain how and why team creativity occurs. Results from 52 organizational R&D teams suggest support for these hypothesized relationships and for the theoretical model overall. I conclude by discussing my findings' implications for managers and management scholars interested in enhancing team creativity.

HOW DOES CREATIVITY OCCUR IN TEAMS?

AN EMPIRICAL TEST

By

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CHAPTER 1: INTRODUCTION

The theme of the World Economy Forum's 2006 annual meeting in Davos, Switzerland, was "The Creative Imperative" in which creativity was identified as a "must" for businesses who wish to become and remain viable. According to the definition of "creativity" offered by Amabile (1996), businesses are creative when they develop and generate ideas that are novel and useful. The need for doing this— hence the need for being creative— has been identified by Ford and Gioia (1995) and Kim and Mauborgne (2005) as urgent in light of business trends such as globalization, technology advancement, and the knowledge-based economy that increase the speed of changes that engulf businesses today. Businesses cannot be creative without employees who help them generate novel and useful ideas (e.g., Amabile, 1988; Oldham & Cummings, 1996; Woodman, Sawyer, & Griffin, 1993). Consistent with this, West and Anderson (1996) found that, in top management teams, innovation (which is the *implementation* of creative ideas, cf. Amabile, 1996; West & Farr, 1990; Woodman, Sawyer, & Griffin, 1993) was significantly positively associated with the proportion of team members who suggested improved work-related procedures.

West and Anderson's finding that team innovation is generally higher when procedural improvements are suggested by *a higher proportion of team members* suggests that it organizations' creativity may similarly be higher when more of their members are suggesting creative ideas. This may be partly why organizations have gradually transformed from an individual based-structure to a team-based structure

(cf. Ilgen, 1999; Kozlowski & Bell, 2003). Consistent with this explanation, there is a tendency for organizations when seeking creative ideas, such as new products, to assign employees to crossfunctional teams, or teams comprised of members from various functional backgrounds (cf. Lovelace, Shapiro, & Weingart, 2001). My dissertation's focus is on team creativity, not team innovation, due to the fact that it can take years before creative ideas get implemented, hence for innovation to occur, and because my theorizing pertains to *the process by which teams are creative*, hence to *team creativity* (cf. Amabile, 1996)— that is, to the process by which team members' collective efforts result in novel and useful ideas (e.g., Gilson & Shalley, 2004; Taggar, 2002).

But does creativity happen in teams? And if so, how? Surprisingly, we know relatively little about how to obtain creativity from employee teams since, as Shalley, Zhou, and Oldham (2004) concluded after extensively reviewing the creativity literature, the bulk of empirical attention has been devoted to understanding the creativity and/or creative processes *of individuals*. This conclusion is evident in Table 1 where it can be seen that relatively few studies available from 1990 to 2010 from the database Business Source Complete have examined antecedents to *team creativity.*. Importantly, some of the studies shown in Table 1 were published after Shalley and colleagues' (2004) review of the creativity literature. Therefore, some progress in the last few years (although still little) has been made toward understanding antecedents to team creativity. Table 2 shows some of the conclusions provided by the findings of studies listed in Table 1. The conclusions selected for

Table 2 were those that appeared with highest frequency in the relatively sparse

studies of natural ongoing teams in organizational settings.

Insert Tables 1 and 2 about here

As a set, the conclusions shown in Table 2 suggest that managers who wish to

have team creativity ought to consider numerous team-related attributes, including:

(1) team composition factors, (2) task design factors, (3) team emergent-state factors,

(4) team process factors, and (5) team leader behavior factors. In my dissertation,

team composition factors will be captured via the extent to which members' share

similar creative ability, their preference for workgroup, and tenure on the team, task

design factors will be captured via the extent to which members are interdependent in

their task-related needs, team emergent-state factors will be captured via how much

team members report feeling that the team has a positive tone and is empowered,

team process factors will be captured via the extent to which members share

information and engage in boundary-spanning behaviors in the team, and team leader

behavior factors will be captured via the extent to which leaders' actions are

transformational, empowering, and boundary-spanning in nature. Since "team

emergent-states" and "team processes" each share the role of "process factors" within

the classic Input-Process-Outcome team model proposed by Hackman (1987), it is

important to note how these two concepts differ from each other. By team processes, I

mean "interactions such as communication and conflict that occur among group

members and external others" (Cohen & Bailey, 1997, p.244) such as team members'

collective behaviors and interactions with other members to achieve their collective

goals. These processes typically become routine and, as such, may be experienced

daily, as illustrated by behaviors such as informing each other about new work-

related issues and coordinating activities with other groups. In contrast to this routine-

quality, team emergent-states are dynamic in nature, and are team-related properties,

such as the level of positive affect felt by team members at any particular moment,

that "…vary as a function of team context, inputs, processes, and outcomes" (Marks,

Mathieu, Zaccaro, 2001, p.357).

The likelihood that team creativity is influenced by the five team-related

attributes named above is consistent with conclusions made by Hülsheger, Anderson,

and Salgado (2009) guided by their meta-analysis of literature pertaining to

antecedents to team-level innovation. Additionally, the likelihood that the five team-

related attributes will have important interrelationships with each other in addition to

directly influencing the team outcome-variable (i.e., team creativity) is consistent

with the theorizing of team scholars who characterize team outcomes as ultimately

due to dynamics associated with "team-inputs" and "team-mediators" such as team

emergent-states and/or team-processes (cf. Cohen & Bailey, 1997; Hackman, 1987;

Ilgen, Hollenbeck, Johnson, & Jundt, 2005). The more recent teamwork model, IMOI

(input-mediator-output-input) theorized by Ilgen and colleagues (2005), assumes that

team input factors lead to team mediator factors (including team emergent state

factors and team process factors) that in turn lead to team outcome factors, is

especially influential in guiding the theoretical model I propose as antecedents to

team creativity. My reliance on the IMOI model for theoretical guidance is due to the

fact that this model is similar to the traditional IPO (input-process-output) model proposed by Hackman (1987) yet improves on it by capturing a broader range of variables like team emergent-state factors (e.g., emergent cognitive or affective states) that reflect the complex and dynamic characteristics of teamwork. As can be seen in Figure 1, my theoretical model proposes that team creativity is influenced by variables that represent the three of the five fundamental team-related attributes named above— specifically: (1) team-emergent state factors (e.g., positive group affective tone and team empowerment), (2) team process factors (e.g., team information sharing, team boundary-spanning), and (3) team leader behaviors (e.g., transformational behaviors, empowering behaviors, boundary-spanning behaviors.) My selection of the latter three variable-categories is guided by the following reasons. First, team mediator factors (hence team emergent- and team process-factors) have been identified as the most proximal cause of team outcomes (e.g., Ilgen et al., 2005; Marks et al., 2001). Second, and relatedly, Hülsheger and colleagues's (2009) meta-analysis of the team creativity literature found team mediator factors to indeed be more influential than team composition- or task design- factors in explaining team creativity. Third, Zaccaro, Rittman, and Marks (2001: 452) theorized that leader-related attributes "…represent perhaps the most critical factor in the success of organizational teams." They explain the critical role of leaders as likely due to the influence leaders have on the degree of "coherence" among team members' behaviors, such as achieving shared goals, that typically enhance team success. This may thus hold true for teams whose assignments are to be creative, such as Research and Development (R&D) Teams, which will be the focus of my dissertation study.

Consistent with Zaccaro et al.'s view, Keller (1992, 2006) found in his longitudinal studies of R&D teams' performance that team leader behaviors were indeed a significant predictor. On the other hand, for reasons I explain in the literature review guiding my hypotheses (in Chapter 2), the importance of leader-behavior in influencing team creativity may be less in teams whose members have a higher (rather than lower) frequency of positive emergent states such as positive group-related affect and high levels of team empowerment, and a higher (rather than lower) frequency of positive team-processes (e.g., information-sharing among team members) due to the possibility that the latter feelings and actions on the part of team members may act as "substitutes for leadership" (Kerr & Jermier, 1978) and be more proximal to team creativity. As such, I am expecting the role of leader-behaviors in influencing team creativity to be less proximal than the mediating variables (e.g., team emergent-states and team-processes) that I will be investigating. Importantly, my dissertation does *not* ignore team composition factors and task design factors; rather, as I noted above, these factors are also measured in my dissertation but treated as control variables since I do expect them to have some (albeit smaller) influence on team creativity. In summary, then, my theoretical model highlights *key* determinants of team creativity that I will be hypothesizing.

Insert Figure 1 about here

Although I agree that multiple team-attributes, such as those described above, are likely to influence team creativity, the meta-analysis findings of Hülsheger et al.

(2009) as well as the findings of studies shown in Table 1 cannot explain how and why these team-attributes relate to team creativity. The inability of past work to explain these variables' interrelationships is due to several reasons. First, most past studies have examined the effect of only one or, at most, two of the five team-attributes named above and represented in my theoretical model. Although Hülsheger et al.'s (2009) meta-analysis is an exception, their methodology prevents empirical tests of these five team-attributes' potential moderating- and/or mediating-relationships. Although Shin and Zhou (2007) is the other exception, their model excluded team-attributes associated with team process factors. Thus, although Shin and Zhou (2007) measured more team-attributes than is typical in studies examining antecedents to team creativity, their findings are still vulnerable to the rival explanation that the team creativity they observed may have been due to the unmeasured variable of team process behaviors such as information sharing or boundary-spanning behaviors by team members.

This Dissertation's Purpose and Potential Contributions

The purpose of my dissertation is to theoretically and empirically examine how and why team creativity occurs. Toward this goal, I will test the theoretical model shown in Figure 1; this means that, at a minimum, I will be assessing the variables comprising Figure 1. Importantly, I will be assessing as control variables the team-attributes associated with team composition- and task design-factors, for reasons I explained above. As such, the theoretical model I test improves upon those tested in previous work and, thereby, promises to extend conclusions associated with antecedents to team creativity. The test I make of this theoretical model will involve a

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sample of team members on natural ongoing, not artificially-created, teams in a business organization whose members are fulltime employees with assigned team-tasks that require them to be creative (i.e., to create new products) and to coordinate their actions in order to do so. As a result, the teams I study are likely to experience the variables that my theoretical model will assess, a possibility that seems less likely when studies involve artificially-created, temporary teams comprised of undergraduates who often lack work-related team experiences (for an elaboration of this view, see Kozlowski & Ilgen, 2006; McGrath, Arrow, & Berdahl, 2000). My study of ongoing natural teams helps fill the void identified by George (2008: 466) regarding how little is known in the group creativity literature "… about the creativity of ongoing groups in organizations." By studying natural ongoing teams comprised of fulltime employees, my dissertation also enables me to build upon the empirically-guided conclusions of Shin and Zhou (2007) whose study is one of the few to also study team creativity dynamics in a natural organizational setting.

With regard to the team leader-related attributes (leaders' degree of transformational leadership behaviors, team-empowering behaviors, and boundary-spanning behaviors), each of these have been linked to other variables shown in my theoretical model in ways that I explain in Chapter 2. By testing all of these leader-related behaviors in one study in a manner that includes mediating variables, my findings also promise to illuminate the relative importance of different leadership behaviors in influencing team creativity and the processes by which each leadership behavior may help teams be creative. More specifically with regard to how leaders' behavior may influence team creativity, as can be seen in Figure 1, I will be

theorizing that team leaders' transformational, empowering, and boundary-spanning behaviors are essential for creating team members' positive affective, cognitive, and behavioral experiences in teams that ultimately enhance teams' creativity. Importantly, and also shown in Figure 1, I will be theorizing that the leaders who span boundaries in their organization (e.g., talk with people who are outside of the team they are leading in efforts to obtain resources the team needs to do its work, cf. Ancona & Caldwell, 1992) will be more likely to obtain support from the broader organization for team creativity-related needs; and that this organizational support in turn aids teams in being creative. Because my dissertation assesses these variables as well, these relationships can be empirically examined in my dissertation.

My biggest theoretical contribution is highlighting the key role that team emergent-states and team processes play in influencing team creativity. More specifically, as shown in Figure 1, my theoretical model suggests that team emergent-states (e.g., team members' experience of positive group-affect and empowerment in teams) lead to team processes (e.g., members' behaviors associated with information sharing and spanning boundaries) that ultimately enhance the degrees of creativity in teams. These specific relationships are *not* found in models that have previously been offered as antecedents to "team effectiveness," though the team-effectiveness models do tend to refer to the importance of emergent-states and team processes (e.g., Ilgen et al., 2005; Kozlowski, Gully, Salas, & Cannon-Bowers, 1996). Since high levels of team creativity does not guarantee high levels of team effectiveness, and it can even lower the levels of team effectiveness (Gilson, Mathieu, Shalley, & Ruddy, 2005), general team effectiveness models seem unlikely to apply to team creativity. Thus,

one potential contribution of my dissertation is that it, unlike models of team effectiveness, provides theoretically specific reasons why and how team emergent-states and team processes lead to high levels of team creativity (as explained in Chapter 2).

For several reasons my dissertation promises to expand the thinking of managers interested in team creativity, not only management scholars. First, my dissertation can help sensitize managers to the fact that leadership behaviors, such as behaviors that may enhance emergent states that are conducive to team creativity as suggested by my theoretical model, can be developed and trained (Bass, 1990; Latham, 1988), and may need to be emphasized in managerial training programs whose purpose is meant to increase teams' creativity. Second, my dissertation can help sensitize managers to the fact that team members' positive affective, motivational, and behavioral experiences in teams are critical factors to increase team creativity. The potential importance of these emergent states suggests that leaders' behaviors alone are unlikely to be sufficient for assisting teams in reaching creative performance goals.

Overview of Chapters

This dissertation proceeds as follows. In the next chapter (Chapter 2) I review the literature that has guided the hypotheses I will test whose visual summary is shown in Figure 1. In Chapter 3, I describe the method I have used to test my hypotheses, including the measures used to assess variables in the theoretical model in Figure 1, tests to verify that aggregating members' perceptions is conceptually and empirically warranted, and model-related tests whose purpose is to ensure that my

theoretical model is valid for testing. In Chapter 4 I describe the results of model-related tests and the dissertation study's findings; and in Chapter 5 I identify key conclusions that are guided by my dissertation's findings, limitations of this dissertation and implications for future research needs, and implications for managers as well as management scholars interested in enhancing team creativity.

CHAPTER 2: LITERATURE REVIEW AND HYPOTHESES

In this chapter I review literature guiding the theoretical model that this dissertation tests, shown in Figure 1. More specifically, I start by reviewing literature leading me to posit that the most proximal variables to team creativity are *team process-related behaviors* associated with the extent to which members share information with each other and/or span boundaries, called "information-sharing" and "boundary-spanning," respectively. An example of information-sharing in teams is exchanging unique ideas and solutions to finish their project. Consistent with this, De Dreu (2007) describes information-sharing in teams to consist of behaviors such as sharing work-related issues with other members and exchange new and unique perspective and opinions with other members. An example of boundary-spanning in teams is meeting potential customers and understanding their needs, as well as negotiating project deadline with employees of other teams or organization. Consistent with this, Ancona and Caldwell (1992) describe boundary-spanning in teams to consist of behaviors such as understanding the external context, task-coordinating, persuading external stakeholders, and protecting the teams.

Since people's behaviors are influenced by people's affective states (cf. Frijda, 1986; Lazarus & Folkman, 1984) and motivational states (cf. Locke & Latham, 1990; Vroom, 1964), and affective and motivational states in teams are often emergent in nature (cf. Chen & Kanfer, 2006; Kelly & Barsade, 2001), my hypothesizing next takes me to the emergent states in teams likely to influence the extent to which members will behave in information-sharing and/or boundary-spanning ways.

Specifically, I will review literature leading me to hypothesize that information sharing and boundary-spanning are each more likely to occur when team members experience higher levels of positive team affect (or feelings of being excited, strong, enthusiastic, and proud, cf. George, 1996; Barsade, 2002) and team empowerment (or believing in team's capability to accomplish goals, importance of their tasks, and team's ability to set the goals and determine work procedures, cf., Kirkman & Rosen, 1999).

Cumulatively, at this point my initial set of hypotheses suggest that teams characterized by the emergent states of greater positive affect and empowerment will probably be more creative due to the greater likelihood of information-sharing and boundary-spanning that ought to occur in such teams. As a result, my hypothesizing next leads me to identify the team process behaviors as mediators of the emergent states' likely effect on team creativity.

A key question that emerges at this point is what enables some teams, perhaps more than other teams, to experience emergent states associated with higher levels of positive affect and empowerment? I will hypothesize that team leader-behaviors (i.e., those relating to transformational leadership, empowering leadership, and boundary-spanning) trigger these emergent states; importantly, however, this is likely only if the teams' members have significant interaction with their leader, which may not always be the case. As a result, although I expect leader behaviors to potentially influence team creativity, I view these as less proximal than the teams' emergent states or team process-behaviors, hence potentially less influential. This is especially true in teams that feel highly empowered since such teams are, by definition, "self-managing" and

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thereby less dependent on leaders to set goals and/or make decisions (cf., Kirkman & Rosen, 1999). My reason for presenting hypotheses about leader-influences last in my dissertation thus reflects my expectation that leader-influences may be less proximal in influencing team creativity relative to the influence that will probably be shown for team processes (teams' level of information-sharing and empowerment) and team emergent states (i.e., teams' degree of positive affect and empowerment).

One leadership behavior that I conceptually treat differently than the others pertains to the leader's degree of boundary-spanning behavior. This is because boundary-spanning, unlike the other leader-behaviors, pertains to leaders' interacting with outsiders of the team for the purposes of obtaining resources that their team may need. The variable of "organizational support for creativity," shown in Figure 1, regards support from others in the organization—hence outsiders. If leaders have been successful at boundary-spanning, then they ought to gain more organizational support for creativity which, in turn, ought to help their teams to indeed be creative.

Next, I provide the literature reviews leading me to the hypotheses described above, each in turn.

Team Process-Related Behaviors Likely to Influence Team Creativity

There are two team process-related behaviors that I posit are likely to increase teams' creativity: (1) the extent to which team members experience information-sharing in the team, and (2) the extent to which team members experience boundary-spanning behaviors among its members. My reasons for expecting each of these positive relationships are reviewed next, each in turn.

The Likely Positive Effect of Information-Sharing on Team Creativity. Team

information sharing, or information exchange among team members, involves

conscious and deliberate attempts on the part of team members to exchange work-

related information, keep one another appraised of activities, and inform one another

of key developments (Bunderson & Sutcliffe, 2002; Stasser & Titus, 1987), such as

"informing other members about work-related issues," and "getting new fact,

insights, and ideas from others" (De Dreu, 2007). Past studies on team creativity have

found that higher levels of information sharing among team members tends to be

significantly positively associated with teams' creativity (e.g., Hargadon & Bechky,

2006; Rhee, 2006). The types of "information sharing behaviors" that past studies

have linked to greater team creativity include, in the case of Hargadon and Bechky

(2006), the following actions: (1) active search of the assistance of others (i.e., help-

seeking), (2) devotion of time and attention to assisting others (i.e., help-giving), (3)

respectful attention to, and building upon, the comments and actions of others (i.e.,

reflective reframing), (and 4) active support of these behaviors (i.e., reinforcing).

Similarly, the information-sharing actions examined by Rhee (2006) include: morale-

building communication (e.g., exchanging positive and encouraging comments with

other team members), active affirmation (e.g., support for other members' ideas and

opinions), and building on ideas (e.g., developing and expanding others' original

ideas). These actions thus seem to encompass interpersonal supportiveness with

regard to how information is, both, given and received. The positive linkage that

these information-sharing behaviors have with team creativity is therefore consistent

with the tendency for employees to be more willing to share ideas, even expressions

of concern, in environments that they perceive as receptive, or safe (cf. Dutton & Ashford, 1993).

Another reason why I expect teams with more information-sharing to be more creative is due to the information-specific benefits that scholars have linked to the availability of greater (presumably non-redundant) levels of information sharing in teams, and the fact that these information-related benefits (listed next) have each been identified as necessities of creativity (Amabile, 1996; Torrance, 1988). Specifically, in the presence of more rather than less information, numerous scholars have theorized that team members ought to be better able to: identify different aspects of their tasks including potential problems and issues, broaden the available job-related knowledge and skills by their team members' understanding of others' expertise, and be exposed to diverse perspectives that may then, with the supportiveness associated with information-sharing behaviors, be integrated (e.g., Donnellon, Gray, & Bougon, 1986; Liang, Moreland, & Argote, 1995; Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000). The informational benefits of information-sharing, coupled with the interpersonal sensitivity associated with descriptions of this construct, thus lead me to predict:

Hypothesis 1: Teams' engagement in team information sharing is positively associated with the degree to which teams are creative, as illustrated by Arrow A in Figure 1.

The Likely Positive Effect of Team Boundary-Spanning on Team Creativity. Team boundary-spanning is defined as the activities that a team engages in to

establish and maintain relationships and interactions with external actors (i.e.,

customers or potential customers, members of other teams or departmental or

divisional areas in the organization whose knowledge, skills, and/or authority may be

needed) that enable the team to meet its overall goals (Ancona & Caldwell, 1992;

Faraj & Yan, 2009; Joshi, Pandey, & Han, 2009; Marrone, Tesluk, & Carson, 2007),

such as "exporting information and/or resources to outsiders" to persuade external

actors to support the team (i.e., "ambassador" activities; Ancona & Caldwell, 1988,

p.475), "bringing information and/or resources need by the team in across the

boundary" (i.e., "scout" activities; Ancona & Caldwell, 1988, p.472), and "policing

the boundary by controlling the information and resources that external agents want

to send into the group" to protect the team against uncertainties and disturbances from

competing external demands (i.e., "sentry" activities; Ancona & Caldwell, 1988,

p.477).

More specifically, ambassador activities involve building formal and/or

informal channel to communicate with outsiders ("building channels"), informing

other groups about the team's progress ("informing"), resolving the issues of

interdependent schedules ("coordinating"), and shaping the beliefs and behaviors of

outsiders to support the team ("molding") (Ancona & Caldwell, 1988, 1992).

Activities such as presenting the team's accomplishments to upper level management,

persuading others to support the team, and seeking information regarding the political

and strategic terrain of the organization constitute ambassadorial activities (Ancona &

Caldwell, 1992). Scout activities involve mapping or understanding the

characteristics of external environment ("modeling"; e.g., "who supports us and who

doesn't?," "what do people want us to do?"), gathering information and/or equipment for task-related issues ("gathering information and resources"), seeking information about events that might occur and might have relevance to the group ("scanning"), and collecting other groups' perceptions of the team's progress, product, members, or functioning ("feedback seeking") (Ancona & Caldwell, 1988, 1992). Sentry activities involve translating outsider's message into words that members would understand and accept ("translating"), and taking information from outsiders and delivering a smaller amount to the group ("filtering") (Ancona & Caldwell, 1988, 1992).

Numerous studies have demonstrated that positive team outcomes tend to occur when team members engage in boundary-spanning, such as high team performance (Marrone, Tesluk, & Carson, 2007; Hirst & Mann, 2004; Tushman & Katz, 1980), and high team viability (Marrone et al., 2007; Ancona & Caldwell, 1992; Katz & Tushman, 1983). For two reasons, I expect the outcome of team creativity to also be greater in such teams. First, there is empirical support for greater team creativity to occur in teams whose members engage in more boundary-spanning. Specifically, in their case study of video game-developing teams, Cohendet and Simon (2007) qualitatively observed greater creativity (indicated by reviews by the critiques and customers as well as the degree of commercial success) in teams whose members more rather than less frequently engaged in boundary-spanning behaviors, such as interactions with local community, communication with customers and critics, and participation in professional associations. Similarly, in studies by Ancona and Caldwell (1992) of new product development teams and by Hülsheger and colleagues (2009) of numerous types of teams in their meta-analysis, a higher quality of team

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innovation (indicated by measures of quality of technical innovation as well as adherence to budget and schedule) was generally found in teams whose members had engaged in more rather than fewer boundary-spanning behaviors, such as persuading external stakeholders (i.e., upper management team members, other teams at comparable or lower levels in the organization) to support the team and provide the team with resources as well as protecting the team from outside interference.

The latter findings document that team members' boundary-spanning positively influence team creativity but do not explain why. My reason for expecting this positive relationship is that team members who engage in boundary-spanning behaviors are able to inform outsiders, who may be potential) customers, about their team's progress and outcomes, and thereby shape outsiders' beliefs and behaviors toward the team (e.g., Ancona & Caldwell, 1992; Woodman et al., 1993). If the beliefs and/or behaviors that boundary-spanning team members shape include the appropriateness of giving the team requested resources, then members who achieve this ought to have the support that is needed to be creative (e.g., Perry-Smith & Shalley, 2003). Additionally, if the beliefs and/or behaviors that boundary-spanning team members shape the usefulness of the product and idea they develop, then members who achieve this ought to be considered creative (cf. Csikszentmihalyi, 1996, 1999). Thus, I predict:

Hypothesis 2: Teams' engagement in team boundary-spanning is positively associated with the degree to which teams are creative, as illustrated by Arrow B in Figure 1.

Two Emergent States Likely to Influence Team Creativity

There are two team emergent states that seem likely to increase the extent to which teams will experience the creativity-enhancing behaviors just described in the previous section-- namely: (1) the extent to which team members experience positive affectivity in the team, hereafter called "positive group affective tone" (cf. George, 1996); and (2) the extent to which members experience empowerment as a team. My reasons for expecting each of these positive relationships are reviewed next, each in turn.

Why Might Group Positive Affective Tone Increase Creativity-Enhancing Behaviors in Teams? People's behaviors are influenced by people's affective states (cf. Frijda, 1986; Lazarus & Folkman, 1984); it is thus not surprising that the extent to which creativity-enhancing behaviors occurs in teams is influenced by the extent to which members of the team feel a shared degree of team-affect. But why might information-sharing and boundary-spanning behaviors, in particular, be more likely to occur in teams with more (rather than less) group positive affective tone? Next, I review literature that guides my expectation for these positive relationships to occur, each in turn.

The Likely Effect of Positive Group Affective Tone on Team Information-Sharing. For two reasons, I expect a higher frequency of information-sharing to occur

in teams with higher rather than lower levels of positive group affective tone. First, greater levels of proactivity (cf. Crant, 2000), including more information-related giving and seeking in particular, have been found to occur among individuals and in teams who feel higher levels of positive affect (Barsade, 2002; Fredrickson & Joiner, 2002; George, 1991; Rhee, 2006). For example, George (1991) found that positive affective experiences in salespeople led to greater information sharing behaviors with customers, such as "informing a customer of the important features of an item." While this description may seem like individual-level phenomena, team members tend to reciprocate the behaviors they see others in their team engaging in (cf. Seers, 1989); and therefore, when a positively affected team member behaves proactively, for example, by sharing information, this is likely to become a team norm, hence a team-level information sharing phenomenon.

My second reason for expecting more information-sharing to occur in teams with a positive group affective tone, is that previous studies have found that when team members share similar affective experiences or reactions with other members, they are more rather than less likely to feel attached to the other members (George, 1995; Walter & Bruch, 2008), and thus, to engage in cooperative behaviors like sharing information and knowledge more rather than less frequently (e.g., Barsade, Ward, Turner, & Sonnenfeld, 2000; Reagans & McEvily, 2003). For example, Barsade and colleagues (2000) found that, when team members experienced different emotions, their level of cooperation tended to be less. Importantly, the logic here suggests that any shared affective state, hence even a negative one, will probably increase team members' attachment to each other, hence likelihood to engage in

cooperative (e.g., information-sharing) behavior. However, since idea-sharing is

generally greater in situations that communicators perceive as "safe" (Alge, Ballinger,

Tangirala, & Oakley, 2006; Dutton & Ashford, 1993), it is likely that the nature of

shared team-affect that will lead to increased levels of information-sharing will be

positive in nature. Thus, I predict:

Hypothesis 3: Teams' degree of group positive affective tone is positively

associated with the frequency of information-sharing behaviors in the team,

as illustrated by Arrow C in Figure 1.

The Likely Effect of Positive Group Affective Tone on Team Boundary-

Spanning. Why might teams with higher levels of positive group affective tone

engage in more frequent team boundary-spanning behaviors? In short, similar to the

case of team information sharing behaviors, I believe this is because team boundary-

spanning behaviors are *proactive* in nature. As explained above, greater levels of

proactivity have been found among individuals who feel higher levels of positive

affect (e.g., Fredrickson & Joiner, 2002; George, 1991), and team members' proactive

(and thus desirable, cf. Crant, 2000) behaviors tend to be copied and replicated by

other team members through vicarious learning or modeling (e.g., Bandura, 1987)

and via role-making among team members or team-member exchange (e.g., Seers,

1989). More specifically, Bandura (1997) theorized that people can replicate others'

behaviors when they can see the others' behaviors and when they believe those

behaviors are relevant and desirable. With regard to "seeing" other team members'

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behaviors, this is likely given the typically interdependent nature of teams that, in turn, usually means that team members need to interact or coordinate with each other with a nontrivial frequency. With regard to believing that proactive behaviors, such as boundary-spanning, are desirable in teams, this is likely since boundary-spanning behaviors typically ease teams' ability to obtain needed resources from people outside the team (cf. Ancona & Caldwell, 1992).

Another reason why teams with higher levels of positive group affective tone are likely to engage in more frequent team boundary-spanning behaviors is because the recent broaden-and-build theory of positive affective experiences suggests that positive affective experiences broaden actors' scope of attention and action, as well as build enduring physical, social, and psychological resources (Fredrickson, 1998, 2001). Consistent with this theory, Fredrickson and Joiner (2002) showed that individuals experiencing positive affect dealt with a problem using a wider range of perspectives and potential courses of actions such as thinking of different ways to deal with the problem or approaching to others and getting different perspectives from their owns in solving the problem (i.e., gathering information and resources, scanning). Also, because individuals with positive affective experiences are more rather than less likely to engage in cooperative behaviors (e.g., Barsade, 2002), and cooperative behaviors may help them to build friendships, they may develop relationships with others and influence their perception more rather than less easily (i.e., building channels, molding). Therefore, through modeling and team-member exchange, when team members experience positive affect more frequently, they may engage in higher levels of team boundary-spanning behaviors. Thus, I predict:

Hypothesis 4: Teams' degree of group positive affective tone is positively associated with the frequency of boundary-spanning behaviors in the team, as illustrated by Arrow D in Figure 1.

Why Might Team Empowerment Increase Creativity-Enhancing Behaviors in Teams? People's behaviors are influenced by the extent to which they feel confident about their abilities to do things and, relatedly, confident that others will respond positively to what they do— that is, by their motivational states (cf. Locke & Latham, 1990; Vroom, 1964). Since the extent to which people feel confident in their abilities is a key aspect of feeling empowered (cf. Kirkman & Rosen, 1999), it is natural that teams who feel greater confidence in their creativity-related abilities, or empowered to act creatively, will more frequently engage in creativity-enhancing behaviors. But why might information-sharing and boundary-spanning behaviors, in particular, be more likely to occur in teams with more (rather than less) team empowerment? Next, I review literature that guides my expectations for these positive relationships, each in turn.

The Likely Effect of Team Empowerment on Team Information-Sharing. Why might information sharing be greater in teams with higher levels of team empowerment? This is because when team members believe they can positively influence positively their organization, they are more rather than less likely to speak up, or "voice" in general (e.g., Dailey & Morgan, 1978; Hansen, 1999; Jackson & King, 1983), and even be more likely to express concerns that they have, termed

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"issue-selling" (Ashford & Dutton, 1993). Employees who believe that they can "make a difference" in their organization—that is, have impact—are characterized as feeling "empowered" (Spreitzer, 1995). As such, team members who perceive their team as highly empowered are also more likely to speak up, or share information with each other. Additionally, information sharing is a form of proactive behavior (cf., Crant 2000); and more empowered employees typically behave more proactively (cf. Kirkman & Rosen, 1999). Cumulatively, these reasons lead me to predict:

Hypothesis 5: Teams' degree of team empowerment is positively associated with the frequency of information-sharing behaviors in the team, as illustrated by Arrow E in Figure 1.

The Likely Effect of Team Empowerment on Team Boundary-Spanning. My reason for expecting a higher frequency of boundary-spanning in teams with higher rather than lower levels of team empowerment is, again, due to the fact that boundary-spanning (since it includes help-*seeking*) is proactive behavior (cf. Crant, 2000); and as just noted, more empowered employees tend to behave more proactively. Consistent with my thinking, building channels to outsiders and persuading them to support the team, collecting information and resources needed by the team and bringing them to the team have been found to occur among teams that experience higher levels of empowerment (Kirkman, Rosen, Tesluk, & Gibson, 2004; Marrone, Tesluk, & Carson, 2007). More specifically, Marrone and colleagues (2007) found that when team members felt more confident (especially in boundary-spanning behaviors), they tended to more frequently engage in boundary-spanning behaviors.

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Similarly, although they did not empirically assess teams' boundary-spanning behaviors, Kirkman et al. (2004) found that empowered teams tended to have higher levels of process improvement, and they speculated that this was due to the more empowered teams having a greater amount of actions relating to members integrating with other teams inside and outside organization, and influencing organization-level strategy and direction. Thus, I predict:

> *Hypothesis 6: Teams' degree of team empowerment is positively associated with the frequency of boundary-spanning behaviors in the team, as illustrated by Arrow F in Figure 1.*

Do Team Process-Behaviors Mediate Team Emergent State-Effects on Team Creativity?

In summary, my hypothesizing to this point suggests that greater team creativity will occur in teams with a higher frequency of team process-behaviors associated with information-sharing and boundary-spanning, and that each of the latter behaviors will probably be more frequent in teams that have higher levels of positive group affective tone and team empowerment. This suggests, then, that teams with a more positive group affective tone and team empowerment will be more creative, and that the latter relationships are mediated by such teams' greater level of information sharing- and boundary spanning-behaviors. I know of no studies that have tested the mediation relationship I have just posited. However, empirical evidence exists to support a direct positive relationship between teams' level of

empowerment and their degree of process improvement, hence creativity (cf. Kirkman et al., 2004), as noted above; and to support a direct positive relationship between groups' level of positive affect and their degree of creativity. With regard to the latter relationship, in two laboratory studies involving undergraduate students, Grawitch, Munz, and Kramer (2003) and then later Grawitch, Munz, Elliott, and Mathis (2003) found that the teams who reported stronger levels of positive affect tended to produce more creative outcomes, as judged by independent raters of students' ideas relating to the design of a building in the first study and to ways to improve the quality of student life in the second study. And my theorizing in the previous section suggests that the reason why teams' positive affect and team empowerment influences creativity is because each of these emergent states evoke creativity-enhancing team process behaviors. Thus, I predict:

> *Hypothesis 7: Teams' degree of group positive affective tone is positively associated with their degree of team creativity due to two mediating processes: (1) the tendency for more positively affected teams' tendency to engage in more frequent information-sharing behaviors (represented in Figure 1 via arrows A and C); and (2) the tendency for more positively affected teams' tendency to engage in more frequent boundary-spanning behaviors (represented in Figure 1 via arrows B and D).*

> *Hypothesis 8: Teams' degree of team empowerment is positively associated with their degree of team creativity due to two mediating processes: (1) the*

tendency for more positively affected teams' tendency to engage in more

frequent information-sharing behaviors (represented in Figure 1 via arrows A

and E); and (2) the tendency for more positively affected teams' tendency to

engage in more frequent boundary spanning behaviors (represented in Figure

1 via arrows B and F).

It is because one of my dissertation's primary aims is to illuminate understanding about why and how team emergent-states and team processes lead to high levels of team creativity that I have chosen to isolate the latter two mediating relationships from other possible mediating relationships in my theoretical model (e.g., team leader behaviors to team emergent states to team processes). As I note in my final chapter, future research is needed to examine a host of other possible mediating relationships that my model suggests may influence team creativity.

Possible Antecedents to Team Emergent States that Influence Team Creativity

Until now my theorizing has pertained solely to the actions of team members (e.g., their degree of information-sharing and boundary-spanning) or to the affective states of team members (e.g., their degree of positive affect and their degree of empowerment) that may influence teams' level of creativity. But how do these emergent states, and ultimately team process-behaviors associated with them, come to be? Might teams' leaders influence this?

In this section I review literature guiding hypotheses about the effect of team leader-behaviors (i.e., those relating to transformational leadership, empowering

leadership, and boundary-spanning) on the emergent states that team members have. I begin by reviewing what is known about the effects of transformational leadership on team emergent states.

The Likely Effect of Transformational Leadership on Team Emergent States. How might team leaders' transformational leadership behaviors influence the positivity of teams' affective state? For two reasons I posit that transformational behaviors will increase teams' positivity. My first reason pertains to previous findings of the positive linkage between transformationl leadership behaviors and individual members' positive affective experiences (e.g., Bono, Foldes, Vinson, & Muros, 2007; Cherulnik, Donley, Wiewel, & Miller, 2001). My reason for positing that transformational leadership may similarly positively affect a team's level of positive affectivity is due to the tendency for individual team members to observe other members' public display of affect and, thereby, for individuals' public affective displays to transmit affective experiences to other team members through mood contagion or mechanisms that induce congruent affective states (Hatfield, Cacioppo, & Raptson, 1993; Kelly & Barsade, 2001); ultimately, this social influence of positive affectivity is thus likely to lead to team members' sharing a positive group affective tone (see Barsade, 2002; Sy, Côté, & Saavedra, 2005 for empirical support). My second reason for positing that transformational leadership may positively affect a team's level of positive affectivity is guided by Bono and Ilies's (2006) finding that leaders who engage in more transformational behaviors tend to use more positive affect words (e.g., good, happy) in their written and verbal communications, and thus, tend to have more positive affective experiences. Again, such positive affect, in turn,

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tends to influence team members' affective experiences in congruent ways (Sy, Côté, & Saavedra, 2005) because team members tend to mimic people's facial expressions, movements, and posture (i.e., mood contagion, cf. Hatfield, Cacioppo, & Rapson, 1994). Indeed, George (1996) suggests that leader's positive affective experiences lead to positive group affective tone. Thus, based on the two reasons above, I predict:

Hypothesis 9: Leaders' degree of transformational leadership behaviors is positively associated with the degree to which teams have a positive affective tone, as illustrated by Arrow G in Figure 1.

Might team leaders' transformational leadership behaviors also influence the extent to which team members feel empowered as a team? For three reasons, this seems likely. First, transformational leaders tend to give followers "idealized influence." When leaders do this, they tend to more frequently express confidence in teams' collective efforts and provide positive feedback to followers. This type of behavior has been shown to enhance the levels of team members' efficacy beliefs (Dvir, Eden, Avolio, & Sharmir, 2002; Kark, Shamir, & Chen, 2003), which is an integral part of descriptions of feeling empowered (Kirkman & Rosen, 1999; Spreitzer, 1995).

A second reason why I expect team empowerment to be higher when team leaders engage in more rather than fewer transformational behaviors pertains to Bass's (1985) theorizing that leaders who engage in more transformational behaviors tend to more frequently provide the importance and significance of the tasks (i.e.,

idealized influence), which, in turn, may increase team members' beliefs in their responsibility and task-significance.

A third reason is because leaders who engage in more transformational behaviors tend to more frequently provide team members opportunity to discover new ideas and experiment new approaches (i.e., intellectual stimulation), which, in turn, may increase team members' beliefs in their autonomy. For example, team members whose leaders are encouraging them to reformulate problems, be imaginative, and/or to experiment with new ways of solving problems seem likely to believe that they have substantial freedom, independence, and discretion in their work.

Cumulatively, given team members' beliefs in efficacy in teams, task-significance or meaningfulness, and autonomy are led by transformational behaviors, and they are the components of team empowerment (Kirkman & Rosen, 1999), I predict:

Hypothesis10: Leaders' degree of transformational leadership behaviors is positively associated with the degree to which teams feel empowered, as illustrated by Arrow H in Figure 1.

The Likely Effect of Empowering Leadership on Team Emergent States. How might team leaders' empowering leadership behaviors influence the positivity of teams' affective state? Guided by theorizing and empirical findings regarding the effects of empowering leadership, it is likely that leaders who are more (rather than less) empowering will lead team members to believe in their tasks' importance and

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meaningfulness, their capability and efficacy, and their freedom to choose their own

goals and generate solutions when facing problems (e.g., Kirkman & Rosen, 1999;

Manz & Sims, 1987; Oldham & Cummings, 1996). These types of beliefs have

previously been found to be significantly associated with feeling: interested, excited,

proud, and determined (e.g., Deci & Ryan, 1987; McAuley & Courneya, 1992; Smith

& Ellsworth, 1987); and all of these feelings have been identified as examples of

positive affect (Barrett & Russell, 1998; Watson, Clark, & Tellegen, 1988). Thus, I

expect that when team leaders engage in more rather than fewer empowering

behaviors, team members may have more rather than less positive affective

experiences in teams. Therefore:

> *Hypothesis 11: Leaders' degree of empowering leadership behaviors is*
>
> *positively associated with the degree to which teams feel positive group*
>
> *affective tone, as illustrated by Arrow I in Figure 1.*

Might team leaders' empowering leadership behaviors also influence the

extent to which team members feel *empowered as a team*? The findings of past

studies suggest that this is indeed likely. More specifically, when leaders engage in

more empowering behaviors (e.g., delegating responsibilities, asking for employee

input, enhancing personal control), team members are more likely to feel: (1) a higher

level of meaning in their work (Hackman, 1987) and (2) a higher level of autonomy

and choice in their work (Thomas & Velthouse, 1990) - both of these feelings being

used in descriptions of empowerment at the individual-level (cf. Spreitzer, 1995) and

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team-level (Kirkman & Rosen, 1999). Additionally, it has been found that, when leaders engage in seeking team member's input in decision making, members tend to expand their knowledge, learn from each other, and acquire new skills (Srivastava, Bartol, & Locke, 2006), all of which are likely to enhance feelings of confidence as a team, hence team empowerment. Thus, I predict:

Hypothesis 12: Leaders' degree of empowering leadership behaviors is positively associated with the degree to which teams feel empowered, as illustrated by Arrow J in Figure 1.

The Likely Effect of Leader's Boundary-Spanning Behaviors on Team Emergent States. How might team leaders' boundary-spanning behaviors influence team emergent states? For several reasons I posit that these behaviors will increase teams' sense of empowerment. First, leaders who engage in more boundary-spanning behaviors tend to engage in behaviors that protect their teams from feeling threatened or overwhelmed (e.g., "protecting the team from outside interference," "absorbing outside pressure for the team so it can work free of interference," cf. Ancona & Caldwell, 1992). Typically, people feel a greater sense of efficacy when they feel that the task they are handling is "manageable," hence not too overwhelming. Therefore, greater efficacy (which is a key ingredient of empowerment, cf. Spreitzer, 1995) ought to be felt by those whose leaders engage in boundary-spanning behaviors. Consistent with this, studies in the stress literature consistently demonstrate that employees tend to express higher levels of efficacy (for various tasks) when their

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stress level is low (e.g., Major, Richards, Cooper, Cozzarelli, & Zubek, 1998; Lazarus & Folkman, 1984). Furthermore, Jex and Thomas (2003) found that teams with higher levels of job stressors (e.g., average number of hours spent working per day, role overload, work-family conflict, interpersonal conflict) developed lower degree of team efficacy beliefs.

A second reason why I expect team empowerment to be higher when team leaders engage in more rather than fewer boundary-spanning behaviors pertains to Ancona and Caldwell's (1992) theorizing that team leaders who engage more boundary-spanning behaviors tend to more frequently attempt to influence the external environment and shape the beliefs and behaviors of outsiders, through behaviors such as persuading outsiders that the team's activities are important, talking up their teams to outsiders, and persuading outsiders to support their team's products. Through these behaviors, team members can receive more rather than less positive feedback about their products (e.g., creative ideas) from outsiders, which can influence their efficacy beliefs by being considered as a mastery experience (Bandura & Cervone, 1986). Consistent with this, Gist and Mitchell (1992) theorized that supportive task environment should enhance efficacy beliefs.

A third reason why I expect team creative empowerment to be higher when team leaders engage in more rather than fewer ambassadorial behaviors pertains to Ancona and Caldwell's (1992) theorizing that team leaders who engage more boundary-spanning behaviors tend to more frequently attempt to construct a picture of the external environment, including predicting future trouble spots or potential allies, through behaviors such as attempting to answer questions such as who supports

their teams and who doesn't, and what outsiders want their teams to do. Through

these behaviors, team members can find out the needs of outsiders, and become aware

of the external demands toward themselves, which result in increase of their

understanding of meaning and significance of their works. Cumulatively, the

theorizing and related findings reviewed above lead me to predict:

> *Hypothesis 13: Leaders' degree of boundary-spanning behaviors is positively*
> *associated with the degree to which teams feel empowered, as illustrated by*
> *Arrow K in Figure 1.*

The Likely Effect of Organizational Support for Creativity on Team Creativity

Until now, my theorizing has assumed that team creativity is influenced by the

affective and motivational states and actions of team members and/or actions of team

leaders. However, team's level of creativity may be influenced by other factors, like

organizational support for team creativity (e.g., Amabile, Conti, Coon, Lazenby, &

Herron, 1996; Scott & Bruce, 1994). For this reason, my model shows a direct

relationship between organizational support for team creativity and teams' level of

creativity. Indirect support is found from studies examining individual-level creativity

(e.g., Amabile et al., 1996; Scott & Bruce, 1994; Zhou & George, 2001). For

example, Scott and Bruce (1994) theorized and found that individual employees are

generally more creative when they perceive that creativity is more (rather than less)

valued and supported by an organization, presumably because more supportive

organizations are less likely to cause employees concern about the potential risks

associated with creativity (e.g., unsuccessful attempts to insert changes and new approaches into an existing system).

When team members perceive the degrees of organizational support for their team's creativity in a similar way, and thus their perceptions about the policies, practices, and procedures that their organization have about creative ideas and products are shared with each other, they might develop a unique team-level cognition of how much a creative team as a whole is supported and desired by the organization (cf., Li, Liang, & Crant, 2010; Naumann & Bennett, 2000). This team-level cognition, or team climate of organizational support for team creativity, might be related to team members' collective attitudes and behaviors, thus related to the levels of team creativity. Therefore, I predict:

Hypothesis 14: The extent to which team members perceive organizational support for team creativity to be high is positively associated with the degree to which teams are creative, as illustrated by Arrow L in Figure 1.

Do Team Leader Behaviors Influence Organizational Support for Team Creativity?

Generally, organizational support for team creativity is assumed to be determined by factors at organization-level (cf. Amabile et al., 1996; Woodman et al.1993). However, I expect a certain action of team leaders— namely, boundary-spanning actions— may increase the level of organizational support that their teams receive.

Why might team leaders' engagement in more rather than fewer boundary-spanning behaviors lead to higher rather than lower levels of organizational support for team creativity? It might be because, as explained above, leaders' boundary-spanning behaviors include persuading external stakeholders, including upper management and other teams at comparable or lower levels in the organization, to support the team so to protect the team from outside interference (i.e., ambassador behaviors) and providing the team with resources and/or equipment as well as protecting the team from outside interference (i.e., scout behaviors; cf. Ancona & Caldwell, 1992). Additionally, my expectation of the positive relationship between leaders' boundary-spanning behaviors and organizational support for team creativity is because of the finding that leaders who span boundaries more frequently tend to obtain high levels of power in the organization (e.g., Floyd & Wooldridge, 1997), which may result in the leaders' and their teams' receiving more respects, rewards, and recognition from the organization. Thus, I predict:

Hypothesis 15: Leaders' degree of boundary-spanning behaviors is positively associated with the degree to which teams are creative, as illustrated by Arrow M in Figure 1.

In the next chapter, I describe the sample, procedure, and measures I used to test my hypotheses.

CHAPTER 3: METHODS

<u>Research Setting and Sample</u>

Consistent with previous studies on team creativity (e.g., Pirola-Merlo &
Mann, 2004; Shin & Zhou, 2007), survey data was collected from ongoing research
and development (R&D) teams who fit selection criteria (described subsequently) and
were part of a Fortune 100 multinational company within the telecommunication
industry, and whose plant locations were in the United States (U.S.) and Korea.
Although this multinational company has plant locations elsewhere in the world, the
U.S. and Korea were identified by senior HR managers in this company as their
largest; neither alone, however, was large enough to be my only source of data-
collection. Because the plants are located in different countries, I took care to create
surveys for the U.S. and Korea in English and Korean, respectively; and to engage in
actions assuring each survey's meaning-equivalence (as described in the "General
Procedure" section below). Additionally, as shown in the "Measures section" later in
this chapter, I took care to include questions in the survey that assess participants'
"collectivism" and "power distance," which are cultural values that have previously
been found to distinguish Asians and U.S. Americans (cf., Hofstede, 1980; Kirkman
& Shapiro, 2001). Importantly, as I explain in "Analytic Strategy" later in this
chapter, the Korean and U.S. American participants did not significantly differ from
each other on these cultural values; as a result, there was no need to statistically
control for these when testing hypotheses. At the team-level, I also found an
aggregate level of "psychological collectivism" (Jackson, Colquitt, Wesson, &

Zapata-Phelan, 2006) to not significantly differ across the U.S. versus Korean R&D teams. The teams I accessed fit the following selection criteria: (1) the teams were engaged in R&D tasks, hence in tasks requiring creativity; (2) the R&D team on which employees were members had functioned as a team for at least three weeks prior to the launch-date of this study's survey; (3) the R&D team had no more than two formally-assigned leaders; and (4) the R&D team-size was at least 2 members (the senior HR managers said the average R&D team size in their company was 2-3 members). This description of team-size was verifiable in the U.S., but not in the Korean, plant location. This is because a full listing of R&D team members was provided to me by the HR manager in the U.S. location only (whose average team-size was 2.7); in contrast, in Korea, the HR manager was willing only to provide me the names of three R&D team members per team leader. This is one of the limitations of this study that I identify in Chapter 5.

With regard to the type of R&D tasks that the teams in my study were engaged in, half of the teams were engaged in either applied or mission-oriented research and slightly less than half were engaged in new product or process development— activities that are similar to descriptions of previously-studied R&D teams (e.g., Keller, 1992, 2006). With regard to the stability of the teams participating in my study, the average team tenure of the team leaders and team members were 42.94 months and 33.83 months, respectively, which is also similar to characteristics of previously-studied R&D teams (e.g., Keller, 1992). On the other hand, there was high variability regarding team-tenure of the team leaders and team members participating in my study, evidenced by high standard deviations in team leaders' and

team members' tenure (seen in Table 3, which shows the demographic characteristics comprising this dissertation's sample). This variability, however, characterized the R&D teams in both plant-locations.Therefore, I controlled for team members' tenure diversity when testing my hypotheses (see "Control Variables" in Chapter 3).

Insert Table 3 about here

One difference between the R&D teams in the Korean versus U.S.-plant locations was observed. Specifically, I found that the average number of team members responding to the study surveys was slightly larger in South Korea than in the U.S. plant-location (3 versus 2.35 members per team in these two locations, respectively). However, I found similarities in teams in both locations, in that all teams had only one leader, they had been functioning for at least three weeks, they had at least two members, and they were involved in similar functions (i.e., research and development). Thus, the qualities of this sample enabled me to study employees involved in team-tasks requiring creativity in teams, and to study team leader behavior as well as team-processes that may contribute to the creativity of team-outcomes.

To gain access to these R&D teams, the following actions were taken. First, helped by my ability to speak Korean and via a personal introduction to a senior Korean HR manager at this company, I was able to meet with one of this company's senior managers and explain in Korean this study's purpose and its potential benefits to participating companies. More specifically, I explained that the overriding purpose

was to improve understanding about how creativity occurs in teams, that conducting the survey required little administration on the part of the company since I would be using web-based surveys and managing the website myself, and that the benefits of participating included the receipt of an "executive report" whose content would describe the study's key findings in aggregated ways that would protect all participants' identity. This initial conversation led to others with more senior managers at this company, and ultimately to the company's senior management agreeing to let me email web-based surveys to its employees once I signed documents stating that this study's findings, in any form (including future publications), would never state the identity of the company or its participants. Additionally, an HR manager of this company supplied me with a list of members' email addresses (of those belonging to teams matching criteria for selection, as described above) so that I could email them web-based surveys. Although I had hoped to also receive a list of R&D team assignments, this was deemed infeasible by the managers in the Korea location who instead provided me with the names of three employees per R&D team leader.

As promised, the senior managers sent a "call" out for participation to teams fitting the four characteristics in both of these centers-locations (to 100 teams in 5 divisions in South Korea and to 22 teams in 2 divisions in the U.S.). In South Korea positive replies were received from 40 teams from 5 divisions, reflecting a team response-rate of 40%; and in the U.S. positive replies were received from all teams, reflecting a team response-rate of 100%. I created a list of contact information for these study-volunteers, being careful to note which participants belonged to which

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teams, and who each team's leaders were. For the South Korean-centered

participants, this list consisted of 40 teams - 40 team leaders and 120 team members

(an average of 3 members per team). For the U.S. centered participants, this list

consisted of 22 teams - 22 team leaders, and 51 team members (an average of 2.32

members per team). The cumulative number of study volunteers in this study (across

the two locations) was 62 team leaders (one leader per team) and 171 team members

in 7 divisions.

As I explain in the "General Procedure" section below, the initial sample of 62

teams shrank to 52 due to elimination criteria associated with missing data and low

levels of agreement among members' perceptions of study variables (i.e., too much

variance among members' perception of study variables to warrant team level

analysis), as I explain in the "Analysis" section later in this chapter. These final 52

teams consisted of 52 team leaders (20 from the U.S., and 32 from South Korea) and

143 team members (47 from the U.S., and 96 from South Korea). Thus, this

dissertation's team-related analyses.consisted of responses from 2.75 members per

team. Possible limitations associated with this relatively low team-size are discussed

in Chapter 5. Table 4 shows the demographic characteristics associated with this final

team-sample.

Insert Table 4 about here

All participants in this study received three different surveys by email, which was made possible by the participant contact information that I received from the company's HR Department. The content of the first, second, and third surveys, and the order in which these were sent to participants, matches the ordering of variables shown in my hypothesized model (see Figure 1). The first survey was received in late January 2009, the second survey was received in late March 2009, and the third survey was received in late May 2009. Two reasons I sent three surveys at different times (e.g., each 8 weeks apart) were, first, to reflect the causal relationships between variables in my theoretical model, and second, to minimize the possible confounding effects from measuring all variables at the same time (i.e., common method biases, Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Exceptions to this timeline occurred when survey-recipients failed to return the previously-sent survey; on these occasions I sent an email-reminder and usually within two days I would receive the survey that would then enable me to send the next one. All team leaders and members were asked to finish each survey within two weeks after receiving a survey so that the study could stay on schedule; all were informed that they would be receiving a total of three surveys, with the length of each subsequent survey shorter than the previous one. More specifically, the first survey was approximately 20 minutes for team members and 12 minutes for team leaders, the second survey was approximately 5 minutes shorter in length for both of these groups, and the third survey (which assessed only team creativity) was shortest (2 minutes) for both groups.

Unlike the first and second surveys whose content differed for team members and team leaders (in ways described in the section titled "Surveys for Team Members versus Team Leaders"), the content of the third survey received by team members and team leaders was the same. This last survey (the briefest) consisted solely of questions assessing how creative the R&D team had been. The third survey's content is shown in Appendix A; its Korean version is shown in Appendix B.

To minimize the possibility of social desirability biases and encourage honest responses, confidentiality of the completed surveys was guaranteed. More specifically, all leaders and members were informed that the company would *not* have access to their individual responses, and the final report would be based on only the overall results from the survey (e.g., means, standard deviations). Also, they were informed that they provided data directly from their own computer, and only the researcher could access the dataset, thereby eliminating any possibility of the company's access to their response. Additionally, an Informed Consent Form preceded each survey to ensure that this information was salient each time; this Informed Consent Form also stated that participation was voluntary, not required, and that participants could choose without incurring any penalty to *not* participate. Indeed, some participants did choose to stop participating along the way. When more than one team member failed to return a survey, or when any team's leader (since each team had only one leader) failed to return a survey, the team was eliminated from the sample.

Because survey-participants were South Korean as well as U.S. American, the survey-content needed to be understandable to both of these country-populations.

To ensure this, each survey that was sent to South Koreans was first translated from English to Korean, and then back-translated to English to assure that the Korean translation remains consistent with the initial meanings of the survey-content. Bilingual speakers of Korean and English who are unfamiliar with the study's hypotheses did the initial translation from English to Korean, and then the back-translation from Korean to English. Doing this is consistent with the advice of Brislin (1980) for conducting research in more than one culture.

Surveys for Team Members versus Team Leaders

    The first two surveys received by team members and team leaders differed in some content, but shared some content-similarities. The similarities in the first survey pertained to questions about demographic characteristics and cultural values, the specifics for which are named in the "Measures" section later in this chapter. The substantive differences in the first survey were as follows: Team leaders were asked to identify the primary objective of their current team project (i.e., whether this objective was new product development or applied research). In contrast, team members were asked the extent to which they perceived transformational-, empowering-, and boundary-spanning behaviors from their team leader and about their own attitudes and/or preferences regarding team work (i.e., preference for workgroup), and team members' perception of the degree of interdependence among other members to achieve their goals (i.e., team interdependence). The English versions of the first survey for the team leader and team member are shown in

Appendices C and D, respectively; and the Korean versions of the first survey for the team leader and team member are shown in Appendices E and F, respectively

With regard to the second survey, their similarities for team members and team leaders regarded questions about the frequency of team members' information-sharing and boundary-spanning behaviors. Their substantive differences were as follows: Unlike team leaders who assessed only the latter behaviors of team members, the team members were additionally asked questions about the extent to which they perceived organizational support for team creativity during the past four weeks (i.e., since completing the first survey), and felt empowered as a team and positive affect during the past four weeks. My reason for not asking team leaders about the latter emergent-states is because these pertain to internal (non-observable) feelings. The second survey's English versions for the team leader and team member are shown in Appendices G and H, respectively; and its Korean versions for the team leader and team member are shown in Appendices I and J, respectively.

Measures

Team Leader's Behaviors

Team leader's transformational behaviors. To assess the extent to which team leaders engage in transformational leadership behaviors, I replicated how Shin and Zhou (2007) did this; and therefore, I asked team members to assess team leaders' transformational leadership behaviors via their completion of the 20-item measure (which were anchored by 1 = "not at all", and 5 = "frequently, if not always") by Avolio and Bass (2004), termed "MLQ 6," and aggregated it to the team level. These

20 items represent the four dimensions of transformational leadership behaviors, such as: (1) idealized influence (e.g., "my team leader displays a sense of power and confidence"), (2) inspirational motivation (e.g., "my team leader talks optimistically about the future"), (3) intellectual Stimulation (e.g., "my team leader gets others to look at problems from many different angles)." and (4) individualized consideration (e.g., "my team leader considers each individual as having different needs, abilities, and aspirations from others"). The Cronbach's alphas for the four dimensions were 0.900, 0.858, 0.857, and 0.741, respectively. The Cronbach's alpha for this scale as a whole was 0.955.

Importantly, given that transformational behaviors were multi-dimensional ones as mentioned above (e.g., Avolio & Bass, 2004), I adopted hierarchical or second-order factor approach (Wold, 1982, 1988) to measure this. More specifically, in my analytical procedures, I first assigned the 20 items to their purported dimensions (e.g., idealized influence, inspirational motivation, intellectual stimulation, individualized consideration) by averaging their scores, and then assigned these four dimensions to transformational behavior variable. Ths score of each team leader's transformational behaviors was calculated via principle component analysis.

Team leader's boundary-spanning behaviors. To assess the extent to which team leaders engage in boundary-spanning behaviors, I asked team members to assess team leaders' boundary-spanning behaviors via their completion of the 21-item measure (which were anchored by 1 = "strongly disagree", and 7 = "strongly agree") by Ancona & Caldwell (1992) and aggregated it to the team level. These 21 items

represent the three dimensions of boundary-spanning behaviors, such as: (1)

ambassadorial behaviors or the behaviors that involve the export of information

and/or resources to outsiders (e.g., "my team leader keeps other groups in the

company informed of my project team's activities," "my team leader persuades others

to support the project team's decisions"), (2) scouting behaviors or the behaviors that

bring information and/or resources needed by the team in across the boundary (e.g.,

"my team leader acquires resources (e.g., money, new members, equipment) for the

project team," "my team leader procures things which the project team needs from

other groups or individuals in the company"), and (3) sentry behaviors or the

behaviors that control the information and resources that external agents want to send

into the group to police the boundary (e.g., "my team leader absorbs outside pressures

for the project team so it can work free of interference," "my team leader protects the

project team from outside interference") (cf. Ancona & Caldwell, 1988). The

Cronbach's alphas for the three dimensions were 0.923, 0.944, and 0.938,

respectively. The Cronbach's alpha for this scale as a whole was 0.967.

Importantly, like team leader's transformational behaviors, team leader's

boundary-spanning behaviors were constructed using hierarchical or second-order

factor approach (Wold, 1982, 1988) by using its three dimensions – ambassadorial,

scouting, and sentry behaviors. Ths score of each team leader's transformational

behaviors was calculated via principle component analysis.

Team leader's empowering behaviors. To assess the extent to which team

leaders engage in empowering behaviors, I asked team members to assess team

leaders' empowering behaviors via their completion of the 14-item measure (which

were anchored by 1 = "strongly disagree", and 7 = "strongly agree") by Kirkman and

Rosen (1997) and aggregated it to the team level. Sample items include "my team

leader gives my team many responsibilities," "my team leader asks the team for

advice when making decisions," "my team leader encourages my team to take control

of its work," "my team leader allows my team to set its own goals," "my team leader

encourages my team to figure out the causes/solutions to its problems," "my team

leader tells the tem to expect a lot from itself," and "my team leader trusts my team."

The Cronbach's alpha for this scale was 0.915. Importantly, the hierarchical or

second-order factor approach (Wold, 1982, 1988) was not used for team leader's

empowering behaviors because of three reasons. First, these behaviors have

previously been theorized and reported as uni-dimensional (e.g., Kirkman & Rosen,

1999). Second, previous studies measuring team leaders' empowering behaviors

assessed these via a uni-dimensional approach (e.g., Kirkman & Rosen, 1999;

Kirkman et al., 2004). And thirdly, consistency with past practice helps ensure that

my findings can build on ones reported previously in the literature.

Team Emergent State Factors

    Team's level of positive affective tone. To assess the extent to which the team

experiences positive emotions, I replicated how this has been done in previous studies

(e.g., George, 1995; George & Zhou, 2002; 2007) and therefore, I measured each

team member's positive affective experience and then aggregated it to the team level

of analysis. For doing this, first, each team member's positive affective experiences

were measured with the 10 markers of positive affects from the Positive and Negative

Affect Scale (PANAS; Watson et al., 1988). More specifically, team members were asked to indicate, on a 5-point scale ranging from 1 (very slightly or not at all) to 5 (extremely), how strongly they felt ten positive moods – namely: interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active during the past four weeks. To be consistent with the hypothesized model, I chose the 4-week time frame to ensure that I was measuring team members' affective experiences not traits. In particular, Watson and colleagues suggested that the PANAS assess affective states when used with instructions for respondents to report how they feel during specific time frames, such as the 4-week time frame I used in the present study (e.g., Watson et al., 1988). The Cronbach's alpha for this scale was 0.903.

Team's level of empowerment. To assess the extent to which the team believes they are empowered, I replicated how Kirkman and colleagues (2004) assessed this; and therefore, I asked team members to indicate (via a scale anchored by 1=strongly disagree and 7=strongly agree) how strongly they agree with 12 items which were originally developed by Kirkman and Rosen (1999) and shortened and used by Kirkman and colleagues (2004), and aggregated it to the team level of analysis. Sample items include "my team has confidence in itself," "my team believes that its projects are significant," "my team can select different ways to do the team's work," and "my team has a positive impact on this company's customers." The Cronbach's alpha for this scale was 0.932.

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Team Process Factors

Team's level of information-sharing. To assess the extent to which the team experiences information sharing among its members, I replicated how De Dreu (2007) assessed this; and therefore, I asked team members to indicate (via a scale anchored by 1= totally disagree and 7=totally agree) how strongly they agree with the following six items: (1) "communicating is a problem in my team," (2) "members of my team inform each other about work-related issues," (3) "the quality of information exchange in our team is good," (4) "I get new facts, insights, and ideas from my colleagues," (5) "during work meetings, we tell each other what we know already and do not exchange new information," and (6) "we do not repeat ourselves during team meetings." Importantly, the first and fifth items are stated reversely. Also, for comparison purpose, leaders were also asked to assess how much information sharing they observed in the team using the measure described above; when doing this the referent changed from "my team" to "this team" and from "we" to the pronouns of "they" and "their." The Cronbach's alpha for this scale was 0.752 from team members and 0.951 from team leaders. The degree of team members' and team leaders' perceptual aggrement on the degree of team information sharing was .790, which ensured team members' assessment on team information sharing is more rather than less likely to be accurate, and hence, appropriate to be used in my hypothesis-testing.

Team's level of boundary-spanning. To assess the extent to which the team engages in boundary-spanning behaviors, I asked team members to indicate (via a

scale anchored by 1= not at all, and 7= to a very great extent) the extent to which their

team engages in the following 21 actions developed by Ancona and Caldwell (1992).

Consistent with previous studies on team boundary-spanning behaviors (e.g., Ancona

& Caldwell, 1992; Faraj & Yan, 2009), the items used to measure team boundary-

spanning behaviors are the same to those items to measure team leader's boundary-

spanning behaviors except the referent. More specifically, here, the referent "my team

leader" was replaced to "my team members." Also, like team information sharing, for

comparison purpose, leaders were also asked to assess how much boundary-spanning

they observed from the team members using the measure described above. The

Cronbach's alphas for the three dimensions were 0.848, 0.852, and 0.828 from team

members and 0.986, 0.929, and 0.948 from team leaders, respectively. The

Cronbach's alpha for this scale as a whole was .921 from team members and .995

from team leaders.

Importantly, like team leader's boundary-spanning behaviors, team's level of

boundary-spanning behaviors were constructed using hierarchical or second-order

factor approach (Wold, 1982, 1988) by using its three dimensions – ambassadorial,

scouting, and sentry behaviors (Ancona & Caldwell, 1988). The degree of team

members' and team leaders' perceptual agreement on the degree of team boundary-

spanning was .760, which ensured team members' assessment on team boundary-

spanning is more rather than less likely to be accurate, and hence, appropriate to be

used in my hypothesis-testing.

Contextual Factor

     Team's level of organizational support for team creativity. To assess the extent to which the team perceives support for team creativity from its organization, I asked team members to indicate (via a scale anchored by 1=strongly disagree, and 7=strongly agree) the extent which their team agrees to the 4 statements originally developed by Scott and Bruce (1994) and used by Zhou and George (2001). Importantly, since the original statements are developed for individual-level creativity, I modified them to reflect team-level creativity. More specifically, the original 4 statements are: (1) "creativity is encouraged at our company," (2) "our ability to function creatively is respected by the leadership," (3) "the reward system here encourages innovation," and (4) "our company publicly recognizes those who are innovative." The revised and used statements in this dissertation are: (1) "creativity in teams is encouraged at our company," (2) "our ability as a team to function creatively is respected by the leadership," (3) "the reward system here encourages creativity in team," and (4) "our company publicly recognizes creative teams."

     Team members' responses to these 4 statements are aggregated so they reflect team level perception of organizational support for team creativity. My reason for treating this perception at the team-level rather than at the organizational-level is because the level of perceived organizational support for creativity seems likely to differ across teams due to the fact that teams, just like organizational subgroups in general, often have different experiences (e.g., Gelade & Ivery, 2003; Martin, 1992; Zohar & Luria, 2005) as well as due to the fact that statistically it does not make

sense to treat this as an organization-level variable given that the data for this study is collected from one organization. The Cronbach's alpha for this scale was 0.886.

Team Outcome Variable

Team's level of creativity. To assess the extent to which the team produces creative outcomes, I replicated how Shin and Zhou (2007) assessed this; and therefore, I asked team leaders to compare the team they were leading with other teams performing similar tasks. More specifically, they were asked to indicate (via a scale anchored by 1= poorly and 7= very much) how creative they perceive the team to be. These four statements were: (1) "compared with other teams of similar function, how creative do you consider the team your are leading to be?," (2) "compared with other teams of similar function, how well does the team you are leading produce new ideas?" (3) "compared with other teams of similar function, how significant are those ideas to your organization?," and (4) "compared with other teams of similar function, how useful are those ideas?" My reason for choosing this four-item measure is due to Shin and Zhou's (2007) using it to assess team creativity and due to its consistency with Amabile's (1996) description of the essential aspects of creativity being idea's newness, significance, and usefulness. The Cronbach's alpha for team creativity scale from team leaders was 0.969.

Besides team leaders, for comparison purposes, team members also assessed team creativity using the measure developed by Shin and Zhou (2007) with the replacement of "the team you are leading" with "your team." Specifically, team members were asked to indicate (via a scale where 1= poorly and 7=very much) how

well their team has been creative, produced new ideas, produced significant ideas, and produced useful ideas. The Cronbach's alpha for team creativity scale from team members was 0.957. The degree of team members' and team leaders' perceptual agreement on the degree of team creativity was .936; this near-perfect alignment between team members' and team leaders' perceptions of team creativity suggests that it is appropriate to use team members' perceptions of this in my hypothesis-testing. My reason for using team leaders' judgment of team creativity rather than the judgement of team leaders or members on other teams is due to the greater difficulty that outsiders would likely have in evaluating this in light of the R&D teams projects' technical and complex nature.

Importantly, in my analysis, I used the residuals of team creativity (assessed by team leaders) regressed by three categorical variables, including (1) primary objective of team project (e.g., Keller, 1992; Shin & Zhou, 2007), (2) division, and (3) country-location, instead of team leaders' original assessment of it. More specifically, the procedure I took was as follows. First, I created three sets of dummy variables for each of them. Second, I regressed the team creativity variable on the three sets of dummy variables, and saved the residuals. Third, I used those residuals as indicators of the final outcome variable in my analytical model. I did this instead of using all of them as a "control" variables in the analysis because, first, the analytical technique I employed (i.e., PLS-SEM which is described in detail in the section titled "Test of measurement model validity" later in this chapter) requires that all the variables in my analyses be metric, hence not categorical (Chin, 1998; Wold, 1982); and second, the "listserv" group of PLS-SEM researchers (SmartPLS Forum;

advise partialling out the control variables prior to the analysis. The Cronbach's alpha for the residuals of this scale was .952. The correlation between the average of original team creativity variable (assessed by team leader) and residuals of team creativity (assessed by team leader) was 0.871 ($p <$ .01).

Control Variables

Variables that have previously been positively significantly associated with teams' creativity (as shown in Table 2), but are tangential to the hypothesized relationships I aim to test in my dissertation, were measured and used for statistical control variables. More specifically, I controlled for two sets of team-attribute factors— team composition and task design factors (as shown in Table 1) in ways that I describe below. Below, in addition to describing how I assessed each control variable, I explain why each variable may influence team creativity.

Team Composition Factors. The first set of control variables pertained to *team composition factors* (e.g., Campion, Medsker, & Higgs, 1993; Gladstein, 1984). Campion and his colleagues (1993) identified several dimensions of team composition factors, including individual team members' ability, preference for workgroup, and job-related diversity. Thus I constructed team composition factor variable based on the dimensions identified by Campion and colleagues (1993). The measure I used to assess individual team members' ability pertained to creative ability-assessment, specifically the self-reported measure developed by Shalley, Gilson, and Blum (2009). My reason for measuring creative ability is because past

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studies found that the average level of individual team members' creative ability in teams is positively associated with the teams' levels of creativity (Pirola-Merlo & Mann, 2004; Taggar, 2002). For calculating teams' average level of individual team members' ability, I used an additive composition model (Chan, 1998). The Cronbach's alpha for this scale was 0.890. This approach to assessing mean-level of individual team members' ability enabled me to keep anonymous the identity of team members who opted to participate in this study since I did not need to ask team leaders for this assessment. Although self-assessments are always at risk for social desirability biases, previous self-assessment of creativity have been found to be similar to team leaders' assessments of members' creativity (Axtell, Holman, Unsworth, Wall, Waterson, & Harrington, 2000).The measure I used to assess team members' preference for workgroup (versus solo) was that which was previously used by Jackson, Colquitt, Wesson, and Zapata-Phelan (2006). Similarly to individual team members' creative ability, I used an additive composition model (Chan, 1998) to aggregate team members' response to team-level variable. To assess the job-related diversity among team members, I calculated the degree of team-tenure diversity using Blau's (1977) index, which takes into account how team members are distributed among the possible categories of a variable. This index is represented by the formula shown below.

$$D = 1 - \sum (P_i)^2$$

The P_i is the proportion of members in the i category. Since a perfectly homogenous population would have a diversity index score of 0, and a perfectly heterogeneous population would have a diversity index score of 1. For calculating team-tenure diversity score, I followed the procedure used by Kearney, Gebert, and Voelpel (2009) and thus I transformed them into categorical variables first, and then calculated the degree of their diversity based on Blau's (1977)'s index; the following categories were used: "less than 1 year", "1~2 years," "2~3 years," "3~4 years," "4~5 years," and "more than 5 years." After calculating team-tenure diversity score, I constructed a formative variable[1] for the team composition using the three measures of (1) the average level of individual team members' creative ability, (2) team members' preference for work group, and (3) team-tenure diversity.

Task Design Factors. The second set of control variables pertained to task design factors— specifically, the extent of team interdependence factor (e.g., Campion et al., 1993). The reason why higher team interdependence may be associated with higher team creativity is because high levels of team interdependence stimulate high levels of interpersonal interaction and cooperation among team

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[1] By formative variable, I mean one in which the indicators (in this case, individual team members' ability, preference for team work, and team-tenure diversity) are expected to cause certain attributes of the latent variable (here, team composition), while the indicators are not expected to be highly correlated with each other (Bollen & Lenox, 1991; Edwards & Bagozzi, 2000; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). It is different from the more general type of latent construct, which cause the indicators (i.e., reflective variable).

members (cf. Campion et al., 1993; Hülsheger et al., 2009) which may influence the

levels of team creativity beyond the effect of information-sharing on it. Consistent

with this, as shown in Table 2, team interdependence has been reported to be

positively associated with team creativity (e.g., Gilson & Shalley, 2004). To measure

team interdependence, I used Campion and his colleagues' (1993) items of task

interdependence, goal interdependence, and interdependent feedback and rewards.

Importantly, similar to the team composition variable, I added the scores of these

three dimensions as indicators to form a team interdependence variable since the

degree of team interdependence should be determined by the degrees of these three

dimensions, not vice versa. The Cronbach's alphas for the three dimensions were

0.690, 0.737, and 0.739, respectively. The Cronbach's alpha for this scale as a whole

was 0.826.

 Individual Difference Factors - Team members' and team leaders' cultural

values. Finally, I asked team members and team leaders to indicate their cultural

values in terms of four dimensions that previous studies have found to differentiate

Asians from U.S. Americans (e.g., Hofstede, 1980). Specifically, I assessed

participants' collectivism-individualism (or the extent to which individuals put group-

interests ahead of individual needs), power distance (or the extent to which

individuals accept power-inequality, such as the need to show deference to

authorities), uncertainty avoidance (or the extent to which individuals prefer to avoid

situations of uncertainty or high risk), and masculinity-femininity (or the extent to

which individuals stress achievement over harmony.) Consistent with previous

management studies involving more than one country as sites for data collection (e.g.,

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Kirkman & Shapiro, 2001), I measured these values using the individual-level 22-item cultural value assessment created by Dorfman and Howell (1988), which includes six items for individualism-collectivism, six items for power distance, five items for uncertainty avoidance, and five items for masculinity-femininity. The Cronbach's alphas for the four dimensions were 0.683, 0.651, 0.615, and 0.689 from team members and 0.653, 0.682, 0.732, and 0.781 from team leaders.

Analytic Strategy

There are two sets of analytic strategies that I will describe here: (1) analyses I engaged in prior to testing my hypotheses, and (2) hypothesis-testing analyses I describe these two sets of analyses next, each in turn.

Pre-Hypothesis Testing Analyses.

Prior to testing my hypotheses, I conducted several analyses, including: (1) an analysis of independent samples t-test to investigate whether or not team members and team leaders in the U.S. have different cultural values from those in South Korea, and hence, to determine whether or not I need to control for the effect of cultural values in my hypotheses-testing analyses, (2) an empirical analysis (i.e., reliability within group, or "r_{wg}", cf. James, Demaree, & Wolf, 1984; intra-class correlations, or the "ICC-approach," cf. Bliese, 2000) to justify the appropriateness of aggregating team members' perceptions; and (4) a structural equation modeling (SEM) approach using partial least squares (PLS) to test the validity of my hypothesized model, a

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procedure called "PLS-SEM" (described in detail below). The results of these analyses are described next, each in turn.

Test of cultural differences. With regard to the first pre-hypothesis testing analysis, the result from the t-test revealed no significant differences between team members and leaders in the U.S. and team members and leaders in the South Korea on all dimensions of cultural values, such as collectivism-individualism ($t = .131$, $p > .10$ for team members; $t = .014$, $p > .10$ for team leaders), power distance ($t = .919$, $p > .10$ for team members; $t = .615$, $p > .10$ for team leaders), uncertainty avoidance ($t = .584$, $p > .10$ for team members; $t = 1.25$, $p > .10$ for team leaders), and masculinity-femininity ($t = .205$, $p > .10$ for team members; $t = .129$, $p > .10$ for team leaders). This result might be due to the fact that majority of the team leaders and members in the U.S. were Asian or Asian American as shown in Table 3. Based on these findings I concluded that team members and team leaders in the U.S. had similar cultural values with those in South Korea, and thus, I decided not to use their cultural values as control variables in my hypothesis-testing.

Test of aggregation appropriateness. With regard to my conceptual analysis, clarification in this way is one of the important steps to ensuring appropriate construct measurement, data analysis, and interpretation within the context of organizational research; another important step is to then empirically justify the level of analysis that I claim as appropriate (cf., Dansereau, Alutto, & Yammarino, 1984; Kenny, Kashy, & Cook, 2006; Klein & Kozlowski, 2000). Toward the goal of conceptual clarification, I clarify here that the level of analysis that is appropriate for testing my hypothesized model is the *team-level*. This is because the overarching question driving my

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dissertation is: "What are the antecedents to *team* creativity, and to what extent might these antecedents pertain to team leader behaviors in the team (hence as collectively perceived by team members), and to emergent-states and team process-variables as collectively perceived by team members?" As a result, all variables in my hypothesized model are at the team-level.

To empirically justify that the team-level of analysis is indeed appropriate for testing my model, I utilized the assessments of the variables shown in the theoretical model (in Figure 1) from members of 52 teams to calculate the reliability within group (r_{wg}; James, Demaree, & Wolf, 1984; 1993) and the intra-class correlations (ICC(1), ICC(2); Bliese, 2000). The results of the reliability within group, ICC(1), and ICC(2) analyses are presented below in Table 5.

Insert Table 5 about here

As can be seen from Table 5, for all variables used in my model, median Rwgs range from .795 to .895, which suggest that team members within the team shared similar perceptions about all the study variables (James et al., 1984; 1993), thereby justifying aggregation of member-responses to team level variables. Additional support for aggregating member responses comes from my finding the ICC(1) values of all study variables to be higher or equal to the median ICC(1) of .12 (which ranges from .108 to .235), a pattern that James (1982) says indicates that there is a good amount of between-team variability relative to within-team in team members' perceptions of study variables. Importantly, the ICC(2) values of my study

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variables are relatively low compared to the ICC(2) values reported in the

organizational literature (cf. Bliese, 2000; Chen & Bliese, 2002). The relatively low

ICC(2) values might not be surprising considering the small number of team members

per a team (i.e., in average, 2.75 members per a team) which heavily influence the

value of ICC(2) (Bliese, 2000). However, they should not prevent aggregation if

aggretaion is justified by theory and supported by high r_{wg} and ICC(1) (Chen &

Bliese, 2002; Liao & Chuang, 2007). Moreover, if I find support for my theoretical

model despite the relatively low ICC(2), this will suggest that my model is robust.

Therefore, I proceeded with aggregation, acknowledging that the relationship

between the aggregated measure of my study variables might be underestimated..

    Test of measurement model validity. The last analysis I ran prior to testing

hypotheses pertained to testing the validity of my hypothesized model in order to

ensure that it is appropriate to conceptually treat my model's variables as distinct

constructs when testing hypotheses. To test the model's validity I used a structural

equation modeling (SEM) approach using partial least squares (PLS), or what is

called "PLS-SEM" (Wold, 1982, 1985). My choice of this approach is due to the fact

that this is recommended for research in which: (1) the theoretical model is new or

not well formed; (2) the model is relatively complex (i.e., large number of latent

variables and/or structural paths); (3) the model requires the modeling of latent

variables in different modes (i.e., formative and reflective); (4) the assumptions of

normality may not be met; and (5) the sample size is relatively small (Chin &

Newsted, 1999; Wold, 1985). All of these factors are characteristic of the present

study, thereby supporting the selection of PLS-SEM for these analyses. The PLS-

SEM approach has been used across a broad set of business research domains, including strategy (e.g., Cording, Christmann, & King, 2008; Hulland, 1999), entrepreneurship (e.g., Moreno & Casillas, 2008), marketing (e.g., Fornell & Bookstein, 1982), management information systems (e.g., Pavlou & Fygenson, 2006), decision sciences (e.g., Preston, Leider, & Chen, 2008), and organization studies (e.g., Goldberg & Waldman, 2000). Moreover, several leadership studies (e.g., Bass, Avolio, Jung, & Berson, 2003; Howell & Avolio, 1993; Howell & Hall-Merenda, 1999; Middleton, 2005; Shamir, Zakay, Breinin, & Popper, 1998; Sosik, Avolio, & Kahai, 1997) have also used this approach.

With the regard to the sample size, Chin (1998) suggested a "10 times" rule of thumb for the minimum sample size in PLS analysis. More specifically, the sample size is determined by (a) the latent variable with largest number of formative indicators or (b) the dependent latent variable with largest number of independent latent variable impacting it. The minimum sample size is suggested to be 10 times either (a) or (b), whichever is greater, according to Chin (1998). In the research model of this study, the largest number of formative indicator is 2 (e.g., team member diversity, team member creativity) and the largest number of independent latent variables that impact the same dependent variable is 5. Therefore, the minimum required sample size for this study is 50. This study collected 62 data samples and selected 52 data samples from on-going research and development teams, which is larger than 50, the minimum requirement of sample size.

In PLS-SEM, relationships among latent variables are estimated and tested within the context of a measurement model, essentially using a combined regression

and factor analysis within the same statistical procedure. Importantly, to do this (and to do my hypothesis-tests, which will be presented in Chapter 4), I added two control variables that have been identified as antecedents of team creativity to my research model shown in Figure 1, such as "team composition factors" (e.g., team member's individual-level creativity, team members' preference for workgroup, team tenure diversity among team members) and all those associated with "task design factors."

All PLS-SEM analyses were conducted using the SmartPLS software application (Ringle, Wende, & Will, 2005). The significance of the path coefficients (i.e., t-statistic) are estimated using a bootstrap procedure using random samples (e.g., 1,000) from the original data set (n=52) using replacement sampling since PLS-SEM makes no distributional assumptions (Chin, 1998). More specifically, this procedure uses a data sample (observed data set) as a proxy for the population and draws a sub-sample with replacement from the data sample. In this study, the significance of a path will be tested with the bootstrap running with sub-sample size of 52 and 500 repetitions. The significance of a path will then be determined with an ordinary t-test distribution with df = 500. Since all hypotheses are directional in this study, a one tail t-test will be used. According to one tail t-test (df = 500), 99% significance level or p < .01 requires t-value greater than 2.334, 95% significance level or p < .05 requires t-value greater than 1.648, and 90% significance level or p < .10 requires t-value greater than 1.283.

Like other structural equation models, PLS models are analyzed and interpreted in two stages. The first stage involves an assessment of the validity and reliability of the measurement model. The second stage involves the assessment and

interpretation of the structural (i.e., theoretical) model including hypothesis testing. The details of these statistics and procedures will be explained in more detail in Chapter 4, discussed within the context of the study's results.

Power Analysis

Since the variable in the hypothesized model is team creativity and there are five antecedent paths leading to it (e.g., team information sharing, team boundary-spanning, perceived organizational support for the creativity by team members, team composition, team interdependence), using the convention of 10 cases, the minimal sample size is 50 cases (i.e., teams).

To obtain a more specific estimate for the purpose of this study, the G*Power software application (Faul, 2007) was used to estimate the power of the statistical methods used. Given the size of the present sample (n=52), the endogenous variable with the greatest number of predictors (i.e., 5), and a conventional level (alpha=.05), adequate power (>.80) was achieved to detect small to medium size. Since the hypothesized model deals with relatively new constructs, like team creativity, the achieved power level is sufficient to make prediction from the PLS-SEM results (e.g., Cohen, 1977).

CHAPTER 4: RESULTS

The results associated with analyses investigating the appropriateness of aggregating variables in my model were presented in the previous chapter, Chapter 3. Adjustments that those results identified as necessary, such as reducing the sample to 52 teams, have been made prior to the analyses I ran subsequently, all of which are described and their respective results reported in this chapter. More specifically, in this chapter, I present descriptive statistics, the results of testing the appropriateness of my theoretical model, and the results of all hypothesis-tests associated with a sample of 52 R&D teams, each of which is led by one team leader.

Descriptive Statistics

Table 6 presents means, standard deviations, and bivariate correlations for all study variables. Importantly, all of these scores are calculated after aggregating team members' responses to the team-level, given that the team-level is this dissertation's conceptual level of analysis (for reasons explained in the previous chapter).

Insert Table 6 about here

Measurement Model Evaluation

Consistent with previous work using PLS-SEM (Bass, et al., 2003; Barclay, Higgins, & Thompson, 1995; Howell & Avolio, 1993; Sosik et al., 1997), I tested the

measurement model by examining three indicators of its quality: (1) individual item reliability, (2) internal consistency, and (3) discriminant validity.

First, to examine individual item reliability, I examined the factor loadings of the measures on their corresponding constructs. A common rule of thumb in PLS-SEM is to accept items with more explanatory power than error variance (Fornell & Bookstein, 1982). A general guideline is that indicator loadings greater than .7 indicate that more shared variance between the latent variable and its measures as opposed to error variance. However, if there are additional indicators related to the latent variable to which they can be compared, indicator loadings of .5 or .6 may be acceptable (Chin, 1998). Table 7 shows the factor loadings of measures used to test the theoretical model. Most items had factor loadings on their respective constructs that were greater than .7; exceptions were one item for leaders' empowering behaviors, two items for team members' positive affective experiences, three items for team members' team empowerment experiences, and two items for the team composition factor. Because the factor loadings of these items were greater than .5 and their respective latent variable had additional indicator variables (e.g., 13 other items for leaders' empowering behaviors), all items used in this study showed acceptable individual item reliability.

Insert Table 7 about here

Second, to examine each construct measure's internal consistency, I computed two measures: (1) each variable's composite scale reliability (Fornell & Larcker,

1981) and (2) each variable's "average variance extracted," or AVE (Fornell & Larcker, 1981). The composite scale reliability is similar to Cronbach's alpha and uses the items' loadings estimates within the measurement model and has a criterion cut-off of .7 or more; but unlike Cronbach's alpha, the composite scale reliability is not influenced by the number of items in the scale. For comparison purposes, both measures of internal consistency are presented for all relevant latent variables in Table 8 where both measures are above the recommended level of .7 for all latent variables.

Insert Table 8 about here

Additional support for the internal consistency of the study variables comes from examining the AVE (Fornell & Larcker, 1981), a statistic that reflects the amount of variance that a latent variable extracts from its indicators relative to the amount of measurement error (Chin, 1998). Chin explains that this statistic is applicable for reflectively modeled latent variables and that measures of AVE should generally be greater than .5, indicating that at least 50% of the variance of the indicators has been accounted for. Based on the results shown in Table 8, all latent variables had AVEs greater than the recommended value.

Finally, to examine the discriminant validity among the constructs comprising my theoretical model, I used criteria similar to a multitrait/multimethod analysis (Barclay et al., 1995; Howell & Avolio, 1993). One criterion is that the construct represented by the items should share more variance with its items than with other

constructs in the model (Carmines & Zeller, 1979). A matrix is shown in Table 6, in which the diagonal elements show the square root of the average variance shared by a variable with its items. For adequate convergent and discriminant validity, the diagonal elements should be greater than entries in the corresponding rows and columns. Results summarized in Table 6 indicate this criterion was met. Another criterion is that no measurement item should load more highly on another construct than it does on the construct it purports to measure (Carmines & Zeller, 1979). Results summarized in Table 6 indicate that this criterion also was met. Thus, the assessment of reliability and validity suggest that the measurement model is satisfactory.

In summary, the three indicators of my theoretical model's quality each indicate that the model is appropriate as is; as such, I proceeded to test the hypotheses that the model illustrates. The results of doing so are presented next.

Hypothesis Test Results

Before presenting the results of testing each hypothesis, let me clarify that the control variables of "team composition factors" and "task design factors" were indeed generally positively associated with the extent of team creativity (β = .222, t = 2.227, p < .05 for team composition factors; β = .204, t = 1.779, p < .05 for task design factors.) As such, my plan to control for these variables when testing my hypotheses is appropriate.

Table 9 presents the bootstrap output with mean path coefficient (i.e., average of path coefficient from 500 repetitions), standard deviation for path coefficient (i.e.,

standard deviation for path coefficient from 500 repetitions), and t-statistics for path coefficient. Figure 2 illustrates this result.

Insert Table 9 about here

Insert Figure 2 about here

I report the results of all hypothesis-tests next, in the following order. I begin by reporting "Team Process Behavior-Effects on Team Creativity" (Hypotheses 1 and 2). Then I report "Team Emergent State- associations with Team Process Behaviors" (Hypothesis 3 to Hypothesis 6). Next, I report "Team Leader Behavior Effects on Group Positive Affective Tone and Empowerment" (Hypotheses 9 to Hypotheses 13). Then, I report the results of the mediation hypotheses pertaining to the possibility that the team emergent state-effects on team creativity may be due to teams' degree of information-sharing and boundary-spanning behaviors (Hypotheses 7 and 8). Finally, I report "Organizational Support for Team Creativity Effect on Team Creativity" and "Team Leader Boundary-Spanning Behavior Effects on Organizational Support for Team Creativity."

Team Process Behavior-Effects on Team Creativity

Consistent with Hypothesis 1, team members' frequency of information-sharing behaviors in their team was indeed generally positively associated with teams'

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level of creativity. Evidence supporting the significance of this relationship can be seen in several ways. First, as seen in the correlation matrix in Table 6, the Pearson correlation between these two variables was .413 ($p < .01$). Second, as shown in the results in Table 9 and Figure 2, the path represented by this hypothesized relationship is significant ($\beta = .305$, $t = 2.056$, $p < .05$). Cumulatively, all of these results suggest that Hypothesis 1 was supported.

Hypothesis 2, which predicted that team members' frequency of boundary-spanning behaviors in their team would generally be positively associated with teams' level of creativity, was marginally and inconsistently supported. Evidence of this questionable level of support is the following. First, as seen in the correlation matrix in Table 6, frequency of teams' boundary-spanning behaviors and team creativity were significantly positive correlated ($r = .392$, $p < .01$). Yet, as shown in the results in Table 9 and Figure 2, the path represented by this hypothesized relationship is only marginally significant ($\beta = .131$, $t = 1.341$, $p < .10$). Taken together, these results suggest that there is only marginal support for Hypothesis 2.

Team Emergent State-Associations with Team Process Behaviors

Consistent with Hypothesis 3, teams' level of positive affective tone was indeed generally positively associated with the level of information-sharing behaviors in the team. Evidence supporting the significance of this relationship can be seen in several ways. First, as seen in the correlation matrix in Table 6, the Pearson correlation between these two variables was .377 ($p < .01$). Second, as shown in the results in Table 9 and Figure 2, the path represented by this hypothesized relationship

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is significant (β = .210, t = 1.792, p < .05). Cumulatively, all of these results suggest that Hypothesis 3 was supported.

Consistent with Hypothesis 4, teams' level of positive affective tone was indeed generally positively associated with the level of boundary-spanning behaviors in the team. Evidence supporting the significance of this relationship can be seen in several ways. First, as seen in the correlation matrix in Table 6, the Pearson correlation between these two variables was .627 (p < .01). Second, as shown in the results in Table 9 and Figure 2, the path represented by this hypothesized relationship is significant (β = .384, t = 4.580, p < .01). Cumulatively, all of these results suggest that Hypothesis 4 was supported.

Consistent with Hypothesis 5, teams' level of empowerment was indeed generally positively associated with the level of information-sharing behaviors in the team. Evidence supporting the significance of this relationship can be seen in several ways. First, as seen in the correlation matrix in Table 6, the Pearson correlation between these two variables was .476 (p < .01). Second, as shown in the results in Table 9 and Figure 2, the path represented by this hypothesized relationship is significant (β = .377, t = 3.074, p<.01). Cumulatively, all of these results suggest that Hypothesis 5 was supported.

Consistent with Hypothesis 6, teams' level of empowerment was indeed generally positively associated with the level of boundary-spanning behaviors in the team. Evidence supporting the significance of this relationship can be seen in several ways. First, as seen in the correlation matrix in Table 6, the Pearson correlation between these two variables was .352 (p < .01). Second, as shown in the results in

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Table 9 and Figure 2, the path represented by this hypothesized relationship is significant ($\beta = .452$, $t = 4.881$, $p < .01$). Cumulatively, all of these results suggest that Hypothesis 6 was supported.

Team Leader Behavior Effects on Group Affective Tone and Team Empowerment

Consistent with Hypothesis 9, the frequency with which team leaders engaged in transformational leadership behaviors was indeed generally positively associated with the extent of team's positive affective tone. Evidence supporting the significance of this relationship can be seen in several ways. First, as seen in the correlation matrix in Table 6, the Pearson correlation between these two variables was .358 ($p < .01$). Second, as shown in the results in Table 9 and Figure 2, the path represented by this hypothesized relationship is significant ($\beta = .290$, $t = 1.848$, $p < .05$). Cumulatively, all of these results suggest that Hypothesis 9 was supported.

Contrary to Hypothesis 10, the frequency with which team leaders engaged in transformational leadership behaviors was NOT generally positively associated with the extent of team empowerment. Evidence supporting the non-significance of this relationship can be found from the Table 9 and Figure 2, where the path represented by this hypothesized relationship is not significant ($\beta = .133$, $t = 1.194$, $p > .10$).

Contrary to Hypothesis 11, the frequency with which team leaders engaged in empowering behaviors was NOT generally positively associated with the extent of team's positive affective tone. Evidence supporting the non-significance of this relationship can be found from the Table 9 and Figure 2, where the path represented by this hypothesized relationship is not significant ($\beta = .148$, $t = 1.204$, $p > .10$).

Consistent with Hypothesis 12, the frequency with which team leaders engaged in empowering leadership behaviors was indeed generally positively associated with the extent of team empowerment. Evidence supporting the significance of this relationship can be seen in several ways. First, as seen in the correlation matrix in Table 6, the Pearson correlation between these two variables was .425 (p < .01). Second, as shown in the results in Table 9 and Figure 2, the path represented by this hypothesized relationship is significant (β = .354, t = 2.267, p < .05). Cumulatively, all of these results suggest that Hypothesis 12 was supported.

Contrary to Hypothesis 13, the frequency with which team leaders engaged in boundary-spanning behaviors was NOT generally positively associated with the extent of team empowerment. Evidence supporting the non-significance of this relationship can be found from the Table 9 and Figure 2, where the path represented by this hypothesized relationship is not significant (β = .035, t = 0.038, p > .10).

Do Team Process Behaviors Mediate Team Emergent State-Effects on Team Creativity?

Hypothesis 7 predicted that the tendency for teams' level of positive affective tone to be positively related to team creativity would be, at least, partially mediated by the frequency with which information-sharing and boundary-spanning behaviors occurs in the team. Guided by Baron and Kenny (1986), support for this mediating hypothesis would require me to observe three patterns involving teams' frequency of information-sharing and three patterns involving teams' frequency of boundary-spanning. First, with regard to information-sharing in the team, I would need to see

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that higher levels of positive affective tone in the team are significantly positively

associated with higher levels of team creativity. To do this, I added the direct path

from team's level of positive affective tone to team creativity and omitted the path

from and to the team's level of information-sharing and boundary-spanning behaviors.

As can be seen in the "Direct Effect Model" column of Table 10, this positive direct-

effect did indeed occur. Second, I would need to see that higher levels of information-

sharing behaviors and boundary-spanning behaviors in the team are significantly

positively associated with higher levels of team creativity; data supporting this was

already noted when reporting the Hypothesis 1 and 2-related results above. Third, I

would need to see that the significant positive relationship between teams' positive

affective tone and team creativity weakens when the frequency of information-

sharing behaviors and boundary-spanning behaviors in the team are each controlled,

while continued significant positive linkages occur with team creativity by, both,

information-sharing and boundary-spanning behaviors.. To do this, I added direct

paths from teams' level of positive affective tone to team creativity, while

maintaining the paths from and to the teams' level of information-sharing behaviors

and boundary-spanning behaviors. After doing this, the direct paths from teams' level

of positive affective tone to team creativity remained significant when team

information sharing and team boundary-spanning were controlled ($\beta = .245$, $t = 1.866$,

$p < .05$), and team creativity remained significantly positively associated with team

information sharing ($\beta = .264$, $t = 1.828$, $p < .05$), but not with team boundary-

spanning ($\beta = .032$, $t = 0.431$, $p > .10$). Consequently, these results suggest that only

teams' level of information sharing partially mediates the relationship between teams'

level of positive affective tone and team creativity (i.e., such mediation did not occur via teams' level of boundary-spanning behaviors).

Besides the procedure of Baron and Kenny (1986), I also conducted Sobel's (1982, 1988) test to further explore the possible mediating effect of team information sharing and team boundary-spanning in the relationship between teams' level of positive affective tone and team creativity and between teams' level of team empowerment and team creativity. It is because Sobel's (1982, 1988) test was shown to be superior to Baron and Kenny's (1986) procedure in terms of power (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) and many recent studies employing PLS-SEM technique used this test to determine mediation effect (e.g., Cording et al., 2008; Thompson, Mamilton, & Rust, 2005; Wetzels, Odekerken-Schröder, & Van-Oppen, 2009). Importantly, the reason I tested the mediating role of team information sharing and team boundary-spanning in the relationship between teams' level of team empowerment and team creativity is because some researchers (e.g., Collins, Graham, & Flaherty, 1998; James, Mulaik, & Brett, 1982; Shrout & Bolger, 2002) have suggested that showing a direct relationship between the exogenous variable (e.g., team empowerment) and dependent variable (e.g., team creativity) is not fundamental to establishing complete mediation. Indeed, Kenny, Kashy, and Bolger (1998), in their elaboration on the Baron and Kenny's (1986) procedure, wrote that "Step 1 [or testing direct effect of independent variable on dependent variable] is not required, but a path from the initial variable to the outcome is implied if Steps 2 [or testing the direct effect of independent variable on mediating variable] and Step 3 [or testing the direct effect of mediating variable on dependent variable] are met" (p.260), especially

when the correlation between independent variable and mediating variable is higher than the correlation between mediating variable and dependent variable (i.e., suppressor; cf. Cohen, Cohen, West, & Aiken, 2003), which is what my previous tests of Hypothesis 1, 2, 5, and 6 showed.

As can be seen in the "Sobel t-Test" in Table 10, only team information sharing was found to have a mediating role in the relationship between positive group affective tone and team creativity (t = 1.381, p < .10), which is consistent with my previous test. Cumulatively, all of these results suggest that Hypothesis 7 was partially supported due to the fact that team information-sharing behaviors (but not by team boundary-spanning behaviors) mediate the relationships that team creativity have with teams' positive affective tone.

Hypothesis 8 predicted that the tendency for teams' level of empowerment to be positively related to team creativity would be, at least, partially mediated by the frequency with which information-sharing and boundary-spanning behaviors occurs in the team. As can ben seen in the "Sobel t-Test" in Table 10, both team information sharing and team boundary-spanning were found to have a mediating role in the relationship between team empowerment (t = 1.790, p < .05) and team creativity (t = 1.326, p < .10). Thus, although team empowerment didn't have direct effect on team creativity, it did influence team creativity positively and significantly indirectly, through team members' information sharing behaviors and boundary-spanning behaviors. Thus, Hypothesis 8 was also supported.

Insert Table 10 about here

Organizational Support for Team Creativity Effect on Team Creativity

Contrary to Hypothesis 14, the level of organizational support for team creativity was *not* generally positively associated with teams' level of creativity. Evidence supporting the non-significance of this relationship can be found from the Table 9 and Figure 2, where the path represented by this hypothesized relationship is not significant ($\beta = .087$, t = 0.577, p > .10).

Team Leader Boundary-Spanning Behavior Effects on Organizational Support for Team Creativity

Consistent with Hypothesis 15, the frequency with which team leaders engaged in boundary-spanning behaviors was indeed generally positively associated with the degree of organizational support for team creativity. Evidence supporting the significance of this relationship can be seen in several ways. First, as seen in the correlation matrix in Table 6, the Pearson correlation between these two variables was .466 (p < .01). Second, as shown in the results in Table 9 and Figure 2, the path represented by this hypothesized relationship is significant ($\beta = .534$, t = 6.501, p < .05). Cumulatively, all of these results suggest that Hypothesis 15 was supported.

In summary, I found support for ten of my fifteen hypotheses. Moreover, support for my overall model is found via various tests, like correlation analysis,

PLS-SEM test, and mediation test. Consequently, I conclude that my theoretical

model is generally supported. In the next chapter I discuss the implications of my

findings for, both, team members and team leaders interested in enhancing team

creativity.

CHAPTER 5: DISCUSSION

Taken together, how do my dissertation's findings advance understanding about antecedents to team creativity? In this chapter I posit that my findings advance this understanding in three ways. First, unlike Taggar (2002) who theorized that team creativity can be enhanced by "team creativity-relevant processes," such as providing constructive feedback, and eliciting and appreciating different ideas, needs, and viewpoints, I offer empirical support for the positive effect that information sharing behaviors have on team creativity. Similarly, unlike Gilson and Shalley (2004) who theorized that team creativity can be enhanced by "team creative processes," such as linking ideas from multiple sources, delving into unknown areas to find better or unique approaches to a problem, and seeking out novel ways of performing a task (all of which seem related to boundary-spanning as well as information-sharing), I offer empirical support for this. Such empirical support is woefully lacking in the team creativity literature, a conclusion reached by George (2008) and Shalley and colleagues (2004). The near-absence of empirical support for team process-effects on team creativity is due to the tendency for the studies of team creativity to be sparse in number and/or in laboratory settings that lack teams whose assigned tasks allow scholars to study team boundary-spanning as well as information-sharing behaviors (e.g., Kozlowski & Ilgen, 2006; Paulus & Van der Zee, 2004). Although Shin and Zhou (2007) studied natural ongoing teams in an organizational setting, their study did not include measures of teams' information-sharing behavior or boundary-spanning behavior.

A second way my dissertation findings advance understanding about antecedents to team creativity pertains to my finding circumstances that may encourage team creativity-enhancing process-behaviors to occur. Specifically, my findings suggest that the team creativity-enhancing process behaviors of information-sharing and boundary-spanning are both more likely to occur when teams have a higher positive affective tone and a higher degree of empowerment. This finding thus suggests there is value in conceptually distinguishing rather than lumping together "mediating variables" that regard team process-behaviors versus team emergent states. On the other hand, since I assessed teams' process behaviors and emergent-states at the same time (i.e., in the second of three surveys), future research is needed to determine with more certainty than my data allows whether indeed team emergent states lead to team creativity-enhancing behaviors or if, instead, the causal order may be reversed. Although my findings cannot resolve this uncertainty, they hopefully help scholars recognize the need to design future team creativity studies in a manner that may enable this resolution to occur. Such future studies will add to the paucity of team creativity studies that exist and build on my dissertation's efforts to sensitize team scholars to the need to conceptually distinguish as antecedents to team creativity: (1) team emergent-states versus (2) team process-behaviors. This bifurcation is not seen in previous studies of team creativity.

Furthermore, my finding regarding how teams' level of positive group affective tone and team empowerment related to team creativity-enhancing process behaviors and teams' level of creativity raises several important theoretical issues. Specifically, my finding positive group affective tone to be significantly positively

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associated with team creativity provides empirical support at the team-level for Fredrickson's (1998, 2001) individual-level "broaden-and-build theory of positive affective experiences." Consistent with the latter theory, this finding suggests that team members with more positive affective experiences tend to broaden their awareness and engage in novel, varied, and exploratory actions, such as exchanging their unique perspectives and job-related skills with others, or interacting with upper management or members of other teams to facilitate their work processes. These broadenend actions, in turn, may build skills and resources for team members' creative ideas and ultimately assist product-generation in teams. Additionally, my finding that positive group affective tone has both indirect and direct effects on team creativity (through team process behaviors) suggests that previous findings that link individuals' affective experiences to their levels of motivation (e.g., Seo, Bartunek, & Barrett, 2010) and creativity (e.g., Isen, Daubman, & Nowicki, 1987) are applicable to team-level phenomena.

Secondly, my finding team empowerment to be significantly positively associated with team creativity reinforces Shin and Zhou's (2007) empirically guided conclusion that team members' self-efficacy enhances team creativity. However, my inclusion of team process behaviors enabled me, unlike Shin and Zhou (2007), to also observe that the positive effect that team empowerment has on team creativity is indirect and only possible when it leads to teams' information-sharing behaviors and boundary-spanning behaviors. One possibility that is suggested by this finding is that teams with higher levels of team empowerment engage in more information sharing behaviors and boundary-spanning behaviors; and it may be the latter behaviors that

ultimately enable the teams to be more creative. This possibility is consistent with the

theorizing of Marks and colleagues (2001) that team emergent states tend to become

new inputs to subsequent team processes that ultimately influence team outcomes. On

the other hand, it is also possible that, if in any case team empowerment does not lead

to team members' information-sharing behaviors and boundary-spanning behaviors,

the positive association between team empowerment and team creativity may

disappear. For example, when team members don't prefer working by their own goals

and controlling their own behaviors (e.g., high on power-distance dimension;

Kirkman & Shapiro, 2001), team empowerment may not lead to team creativity

because it might not lead team members to engage in information sharing and

boundary-spanning (cf. Kirkman & Shapiro, 1997) – a priori requirement of the

positive association between team empowerment and team creativity.

However, the causal order of emergent states and team process behaviors

cannot be known with certainty until future study designs enable causality to be

determined; and thus it is also possible that the teams with higher levels of

information sharing and boundary-spanning are the ones that are highly empowered.

This latter possibility also extends the empirically-guided conclusions of Shin and

Zhou (2007), however, since they theoretically and empirically assumed that the

"trigger" of teams' self-efficacy was solely team leader behavior. Future research is

needed to examine what the various team member- as well as team leader-related

sources of team empowerment may be and to examine, more specifically, the extent

to which one of these sources may be the extent to which members share information

with each other and span their team boundary or the extent to which the latter

behaviors are a consequence of team empowerment

A third way my dissertation findings advance understanding about

antecedents to team creativity pertains to my finding that teams' emergent states are

directly influenced by team leader behaviors, after controlling for fundamental team-

attributes such as "team composition factors" (e.g., the mean level of individual team

members' creativity, team members' preference for work group, team-tenure

diversity among team members) and "team design factors" (i.e., task interdependence,

goal interdependence, interdependent rewards and feedback). This conclusion is

guided by my finding team leaders' perceived level of engagement in

transformational behaviors to be significantly positively associated with teams'

reported level of positive affect and team leaders' perceived level of empowering

behaviors to be significantly positively associated with the level of empowerment

reported by teams. This conclusion echoes the theorizing of Zaccaro and colleagues'

(2001) that team leaders' importance on team success is due to their effect on

developing coherence among team members and thus developing their coordinating

and cooperating behaviors. However, my findings further explain *how* team leaders

may develop the coherence among team members. This is because my findings show

a positive association between team leaders' transformational behaviors and team

members' positive affective experiences and a positive association between team

leaders' empowering behaviors and team members' enhanced empowerment feeling

in teams. Consistent with this, Kozlowski, Gully, Salas, and Cannon-Bowers (1996)

theorized that team coherence results from team members' collective affective,

motivational, and cognitive experiences, which are formd through team leaders' inspirational and supportive behaviors.

Interestingly, I expected team leaders' transformational behaviors to also influence teams' level of empowerment, their empowering behaviors to also influence teams' level of positive affective experiences, and their boundary-spanning behaviors also influence team's level of empowerment, but the latter three relationships were not observed. This raises the possibility that various types of leadership behaviors affect team creativity via different emergent states. Since I found, consistent with the findings of Grawich, Munz, and Kramer (2003) and Shin and Zhou (2007), that team members' feeling of positive affect and empowerment are each important to team creativity, it may behoove leaders who wish to enhance teams' creativity to engage in both transformational and empowering behaviors. This suggests that *team leaders*, not only team members, have a critical role to play in helping teams be creative.

In summary, the three ways that my dissertation findings advance understanding about how team creativity occurs pertains to: (1) identifying team process-behaviors that enhance team creativity (i.e., information-sharing and boundary spanning in teams); (2) identifying team emergent states (i.e., group positive affective tone and team empowerment) that help bring about process-behaviors that enhance team creativity; and (3) team leader behaviors that help bring about team creativity-enhancing emergent states. Importantly, the latter two ways reinforce and extend Shin and Zhou's (2007) observation that team leaders' transformational behaviors and team members' feeling of confidence and optimism is an important determinant of team creativity. Cumulatively, these insights suggest that

if teams are to be maximally creative, they probably need positive behaviors on the part of team members *and* team leaders, which is why future studies of antecedents to team creativity will probably benefit by studying interaction-effects involving actions and/or perceptions of both of these groups.

<u>Limitations of the Study</u>

Despite this study's contributions, there are some limitations. First, as I noted when describing my team-sample, the size of the teams averaged 2.75 members; and as such, it remains unclear if the patterns I observed in my data would hold true for teams whose size is 10 members or more. Relatedly, the teams in the Korean location (unlike the U.S. location) may possibly have been larger than 2.75 members per team; the Korean HR managers' refusal to provide me this information makes the team size in Korea an uncertainty (though they did say the average team-size is between 3-10 members). The question of whether the team-related phenomena I observed would occur in teams larger than 2.75 members is one of the needs of future team creativity research that my dissertation helps illuminate as needed.

Secondly, as I noted earlier, the ICC(2) aggregation-statistics were lower than ideal, making questionable whether aggregation was appropriate in this study. On the other hand, the ICC(2) statistic is contingent on team-size; and as noted above, this was relatively small in this study. Moreover, the fact that my theoretical model was nevertheless nearly fully supported despite relatively low ICC(2) suggests that my theoretical model may be robust. Testing the veracity of this assumption is another need in future research.

Thirdly, all of the leaders and members were recruited from a single organization. Since leaders' and members' behaviors are embedded within the organizational context (e.g., Ilgen, 1995; Sparrowe & Liden, 1997), the result of my dissertation may be due to the specific characteristics of the recruited organization. On the other hand, given that my study's purpose was to test theorized relationships rather than the generalizability of previously-established findings, the homogeneity of company- and industry-culture is a strength associated with my study participants all belonging to one company. Thus, despite the potential concern of sampling from a single organization, my dissertation contributes to the literature on team creativity.

A fourth limitation of this study pertains to the tendency for leaders to engage in more than one type of leader behavior (Bass, 1985) and the fact that I did not conceptualize nor empirically test the likelihood that interactive effects among the leader-behaviors in my theoretical model probably exist. Again, this raises a question in need of future team creativity research. Hopefully, this study will serve as an impetus for such future studies to occur.

A fifth limitation of this study is my testing only two mediating relationships between team emergent-states, team processes, and team creativity from other possible mediating relationships in my theoretical model. For example, it is possible that team leaders' transformational behaviors can enhance the degrees of team creativity through team emergent states, as found by Shin and Zhou (2007), or through other types of team emergent states and team processes. Additionally, it is possible that team leaders' empowering behaviors can enhance the degrees of team creativity through team emergent states and/or team processes. These possibilities

also suggest that there might be other important mediating relationships to explain team creativity that need to be examined in future research.

A sixth limitation of this study, mentioned earlier in this chapter, regards my assessing team emergent states and team process behaviors in the same survey (in the second of three surveys). This was not my originally intended research design, but I found it difficult to get the participating company to agree to have its team leaders and team members complete more than three surveys. Balancing practical versus theory-testing demands is part of the challenge of studying teams in natural organizational settings, and is perhaps why so few team scholars do this (George, 2008). While my dissertation has these limitations, hopefully the general support that was found for my theoretical model and the research questions that my findings suggest are next in need of testing will encourage more studies about antecedents to team creativity to occur, especially in real teams where team emergent states and information-sharing and boundary-spanning behaviors and other actions (on the part of members as well as team leaders) may be observed.

A seventh limitation of this study is that my empirical assessment of information sharing processes in teams, though consistent with the one used by DeDreu (2007), is narrower than the qualitative descriptions of information sharing behaviors described by Hargadon and Bechky (2006) and Seddon and Biassutti (2009), such as help-seeking, help-giving, reflective reframing, and reinforcing. My measurement choice was due to my aim to build upon previous works on team creativity or team creativity-related studies and thus my need to replicate how others

have measured team information sharing behaviors. Nevertheless, the development of a broader empirical assessment of these behaviors is needed in future research.

An eighth limitation of this study is that my empirical assessments excluded measures of the team's life cycle and the specific targets of boundary-spanning behaviors engaged in by the team leaders or by team members. If I had included these measures, perhaps I might be able to explain why team creativity was only marginally influenced by the boundary-spanning behaviors of team members and not at all influenced by the boundary-spanning behaviors of team leaders. For example, Shalley and Perry-Smith (2008) theorized that the positive relationship between team members' boundary-spanning behaviors and team creativity might depend on the stage of development of the ideas and products because it affects team members' level of familiarity with one another and with the task, as well as the degree of necessity to interact with external stakeholders. Also, regarding the target of external-interaction, Ancona (1990) showed that the effect of team leaders' boundary-spanning on team innovation depends on not only the frequency but also whom the team leaders interact with (e.g., leaders/members of other teams, customers, upper management). Therefore, future research on the effect of team leaders' and team members' boundary-spanning behaviors on team creativity needs to assess team life cycle and target of boundary-spanning behaviors in addition to the frequency of these behaviors.

A ninth limitation of this study regards my adopting PLS-SEM to test my hypotheses. Since PLS-SEM minimizes residual variance and maximize variance explained among study variables, my findings in this study might be more prediction-

oriented rather than comfirmation-oriented, and more data-driven than theory-driven (Fornell & Bookstein, 1982). On the other hand, since I ensured the validity of measurement model and sufficient level of power before adopting PLS-SEM, my result might reflect the real team phenomenon that researchers using other statistica techniques might find (cf. Wilkinson, Blank, & Gruber, 1996). Indeed, my additional OLS-regression analyses on all of the hypothesized relationships showed identical results with what I reported here, in that all significant paths in Chapter 4 were shown to have significant coefficient with the same direction. Additionally, the Sobel t-test results using results from OLS-regression analyses confirmed the mediating tests results I reported here (t = 1.746, p < .10 and t = 1.690, p < .10 for the mediating effect of team information sharing and team boundary-spanning on the relationship between positive group affective tone and team creativity, respectively; t = 2.195, p < .05 and t = 1.719, p < .10 for the mediating effect of team information sharing and team boundary-spanning on the relationship between team empowerment and team creativity, respectively.) Thus, despite the potential concern of using PLS-SEM, my findings reflect the real phenomenon in teams to explain how and why team creativity occurs.

Implications for Management Scholars

This dissertation's findings have numerous implications for management scholars, minimally the identification of research questions in need of future team creativity research that occur in the previous section. Additionally, my findings suggest that the conclusions from previous studies on team creativity, which are

shown in Table 2, need revising in ways that go beyond "direct effects" on team creativity. Toward this goal, I provide Table 11 which distinguishes direct effects versus indirect effects on team creativity (labeled "Direct Antecedents" and "Indirect Antecedents," respectively). Additionally, Table 11 identifies "Team Inputs" that help to explain the indirect effects that are noted in the table. Importantly, although all of the conclusions shown in Table 11 are suggested by my dissertation's findings, all are in need of future research due to the fact that this dissertation study is not limitation-free. As such, Table 11 in addition to the research questions I identify in the previous section, offer management scholars numerous ways to further advance understanding about how and why team creativity occurs. If my conclusions, as a set, are generally correct, then they extend Zaccaro and colleagues' (2001) theorizing that team leader-related attributes (e.g., team leader behaviors) are significant predictors of team success (e.g., team creativity), This is because, collectively, the conclusions guided by my dissertation's findings suggest that team success, such as team creativity, may be linked less proximally to team leader-related attributes than to team-related attributes (e.g., team emergent-states, team process). The importance of the latter "team inputs" may be due to the possibility that these team inputs substitute for the positive effect of team leader-related attributes (cf. Kerr & Jermier, 1978). Importantly, however, my dissertation's findings also suggest that team leaders may act as "triggers" of team creativity since the emergent states and team processes (team inputs) were significantly linked to, hence presumably developed at least in part by, team leaders' behaviors. This possibility is consistent with Shin and Zhou (2007) finding team leader behaviors to be instrumental in enhancing team members'

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collective efficacy beliefs and thereby also team creativity. In summary, testing the

conclusions I offer via Table 11, plus the questions in need of future research

identified earlier in this chapter, are important implications of my findings for

management scholars.

Insert Table 11 about here

Implications for Managers

My findings provide four practical implications for managers who are

interested in enhancing team creativity. First, my finding that team leaders'

transformational and empowering behaviors have important roles in team creativity

has implications for areas such as selection, assignment, and training. With regard to

selecting leaders for team assignments where creativity is needed, such as R&D tasks,

it may behoove managers to identify leaders likely to be transformational and

empowering. This may be achieved by using tests that assess personality tests, such

as NEO-PI (Costa & McCrae, 1992) and IPIP (Goldberg, 1999), that assess the extent

to which leaders are high on ageeeableness, conscientiousness, extraversion,

emotional stability, and openness-to-experience, since these are all dimensions of

personality that have been linked to more transformational behaviors (e.g., Bono &

Judge, 2004; Judge & Bono, 2000). Since more supportiveness has been linked to

higher levels of emotional intelligence (e.g., Rubin, Munz, & Bommer, 2005),

identifying leaders' level of emotional intelligence—for example, via the instrument

called "MSCEIT" (Mayer, Salovey, Caruso, & Sitarenios, 2002)— may help identify leaders likely to be supportive via transformational and/or empowering behaviors.

A second implication for managers pertains to the fact that leader behaviors are developable and trainable (e.g., Bass, 1990; Latahm, 1998); and as such, it may behoove managers to provide leadership training for transformational- and empowering- behaviors (e.g., Mullen & Kelloway, 2009) and/or emotion-abilities that have been linked to greater levels of these types of leadership behaviors.

A third implication for managers is that my findings suggest that emergent states and team processes are more proximal than team leader behaviors in influencing team creativity; and as such, actions that likely enhance these mediating states (which may or may not relate to leader-actions) are also likely to enhance team creativity. For example, managers may need to take actions in multiple areas of human resource policies to enhance the degree to which team members feel positive and empowered in teams and eager to engage in information sharing- and boundary-spanning behaviors. More specifically, given that team members' positive affective experiences in teams are associated with their affective experiences in non-work settings (Madjar, Oldham, & Pratt, 2002), it may be beneficial for managers to provide support to, not just employees, but also their family members like spouse and children. Additionally, adopting human resources policies including providing team members with team-based rewards, cross-training, and opportunities to make staffing decisions may be helpful for those managers given that these policies are associated with team members' experiences of team empowerment (Gibson & Kirkman, 1999; Manz & Sims, 1993; Guzzo, Yost, Campbell, & Shea, 1993).

A final implication of my dissertation's findings for managers is that none of the actions suggested above are likely, alone, to be effective in enhancing team creativity. This is because, as my theoretical model suggests, the "blackbox" of team creativity involves multiple variables, hence potentially many interventions, that influence each other. Hopefully, my dissertation will spark enthusiasm on the part of managers as well as management scholars to examine the direct and indirect antecedents of team creativity, as well as their interrelationships, that my dissertation suggests exist.

APPENDIX A

<u>THE THIRD SURVEY FOR TEAM LEADERS & MEMBERS IN THE U.S.</u>

I.   Please answer the following questions by placing a number to the left of each item using the scale provided below. (1 = poorly, 4 = medium, 7 = very much)

1.   Compared with other teams of similar function, how creative do you consider the team you are leading to be?
2.   Compared with other teams of similar function, how well does the team you are leading produce new ideas?
3.   Compared with other teams of similar function, how significant are those ideas to your organization?
4.   Compared with other teams of similar function, how useful are those ideas?

APPENDIX B

<u>THE THIRD SURVEY FOR TEAM LEADERS & MEMBERS IN SOUTH KOREA</u>

I. 다음은 귀하가 참여하시는 팀/프로젝트에 대한 귀하의 의견을 묻는 질문입니다.
    다른 비슷한 연구개발 팀과 비교할때, 귀하께서 다음의 항목들에 얼마나
    동의하시는지 표시하여 주십시오. (1=매우 그렇지 않다, 7=매우 그렇다)

1.   나의 팀은 매우 창의적이다.
2.   나의 팀은 새로운 아이디어를 매우 잘 만들어낸다.
3.   우리가 (나의 팀이) 만들어낸 아이디어들은 우리 조직에 매우 중요하다.
4.   우리가 (나의 팀이) 만들어낸 아이디어들은 매우 유용하다.

APPENDIX C

<u>THE FIRST SURVEY FOR TEAM LEADERS IN THE U.S.</u>

I. Please provide the following demographic information about yourself.

1.   How old are you? (   ) years old.
2.   What is your gender? (1) Male (2) Female
3.   How would you describe your ethnicity and/or race?
         (1) Native American / Alaska Native
         (2) Asian American / Asian / Pacific Islander
         (3) African American / Black
         (4) Caucasian / White
         (5) Hispanic / Latino
4.   Please indicate your highest educational level attained.
         (1) Some college – no degree
         (2) Two-year college degree (Associates)
         (3) Four-year college degree (Bachelors)
         (4) Post graduate degree – Master's Degree
         (5) Advanced degree – Ph.D., JD, etc.
5.   How long have you been in your current project group? (   ) months
6.   How long have you been in your current occupation/line of work? (   ) months

II. In this section, we ask you to tell us about your personal beliefs and values. For each statement, please choose the number that best represents your beliefs and values where 5 = strongly agree, 4 = somewhat agree, 3 = neither agree nor disagree, 2 = somewhat disagree, and 1= strongly disagree.

1.   Group welfare is more important than individual rewards.
2.   It is important to have job requirements and instructions spelled out in detail so that employees always know what they are expected to do.
3.   Meetings are usually run more effectively when they are chaired by a man.
4.   Managers should make most decisions without consulting subordinates.
5.   Group success is more important than individual success.
6.   Managers expect employees to closely follow instructions and procedures.
7.   It is more important for men to have a professional career than it is for women to have a professional career.
8.   It is frequently necessary for a manager to use authority and power when dealing with subordinates.
9.   Being accepted by the members of your work group is very important.
10.   Rules and regulations are important because they inform employees what the organization expects of them.

11. Men usually solve problems with logical analysis; women usually solve problems with intuition.
12. Managers should seldom ask for the opinions of employees.
13. Employees should only pursue their goals after considering the welfare of the group.
14. Standard operating procedures are helpful to employees on the job.
15. Solving organizational problems usually requires an active forcible approach which is typical of men.
16. Managers should avoid off-the-job social contacts with employees.
17. Managers should encourage group loyalty even if individual goals suffer.
18. Instructions for operations are important for employees on the job.
19. It is preferable to have a man in a high level position rather than a woman.
20. Employees should not disagree with management decisions.
21. Individuals may be expected to give up their goals in order to benefit group success.
22. Managers should not delegate important tasks to employees.

III. Please choose the primary function of the team you are leading from the categories below. (choose one)

1. Basic research to create broad-based new knowledge
2. Applied or mission-oriented research that creates new knowledge for application to a particular problem
3. New product or process development that takes existing knowledge and produces a new product or process
4. Technical service or existing product or process development that modifies or improves a current product or process.

APPENDIX D

I. Please provide the following demographic information about yourself.

1. How old are you? ( ) years old.
2. What is your gender? (1) Male (2) Female
3. How would you describe your ethnicity and/or race?
   (1) Native American / Alaska Native
   (2) Asian American / Asian / Pacific Islander
   (3) African American / Black
   (4) Caucasian / White
   (5) Hispanic / Latino
4. Please indicate your highest educational level attained.
   (1) Some college – no degree
   (2) Two-year college degree (Associates)
   (3) Four-year college degree (Bachelors)
   (4) Post graduate degree – Master's Degree
   (5) Advanced degree – Ph.D., JD, etc.
5. How long have you been in your current project group? ( ) months
6. How long have you been in your current occupation/line of work? ( ) months

II. In this section, we ask you to tell us about your personal beliefs and values. For each statement, please choose the number that best represents your beliefs and values where 5 = strongly agree, 4 = somewhat agree, 3 = neither agree nor disagree, 2 = somewhat disagree, and 1= strongly disagree.

1. Group welfare is more important than individual rewards.
2. It is important to have job requirements and instructions spelled out in detail so that employees always know what they are expected to do.
3. Meetings are usually run more effectively when they are chaired by a man.
4. Managers should make most decisions without consulting subordinates.
5. Group success is more important than individual success.
6. Managers expect employees to closely follow instructions and procedures.
7. It is more important for men to have a professional career than it is for women to have a professional career.
8. It is frequently necessary for a manager to use authority and power when dealing with subordinates.
9. Being accepted by the members of your work group is very important.
10. Rules and regulations are important because they inform employees what the organization expects of them.

11.   Men usually solve problems with logical analysis; women usually solve problems with intuition.
12.   Managers should seldom ask for the opinions of employees.
13.   Employees should only pursue their goals after considering the welfare of the group.
14.   Standard operating procedures are helpful to employees on the job.
15.   Solving organizational problems usually requires an active forcible approach which is typical of men.
16.   Managers should avoid off-the-job social contacts with employees.
17.   Managers should encourage group loyalty even if individual goals suffer.
18.   Instructions for operations are important for employees on the job.
19.   It is preferable to have a man in a high level position rather than a woman.
20.   Employees should not disagree with management decisions.
21.   Individuals may be expected to give up their goals in order to benefit group success.
22.   Managers should not delegate important tasks to employees.

III. Please think about the project groups to which you currently belong, and have belonged to in the past. The items below ask about your relationship with, and thoughts about, those particular groups. Respond to the following questions, as honestly as possible, using the response scales provided. (1 = strongly disagree, 5 = strongly agree)

1.   I prefer to work in my project team rather than working alone.
2.   Working in my project team is better than working alone.
3.   I want to work with my project team as opposed to working alone.
4.   I feel comfortable counting on my project team members to do their part.
5.   I am not bothered by the need to rely on project team members.
6.   I feel comfortable trusting my project team members to handle their tasks.
7.   The health of my project team is important to me.
8.   I care about the well-being of my project team.
9.   I am concerned about the needs of my project team.
10. I follow the norms of my project team.
11. I follow the procedures used by my project team.
12. I accept the rules of my project team.
13. I care more about the goals of my project team than my own goals.
14. I emphasize the goals of my project team more than my individual goals.
15. My project team's goals are more important to me than my personal goals.

IV. The items below consist of statements about your project team, and how your project team functions as a group. Please indicate the extent to which each statement describes your team, using the response scales provided. (1=strongly agree, 5=strongly disagree).

1.   I cannot accomplish my tasks without information or materials from other members of my team.

2. Other members of my team depend on me for information or materials needed to perform their tasks.
3. Within my team, jobs performed by team members are related to one another.
4. My work goals come directly from the goals of my team.
5. My work activities on any given day are determined by my team's goals for that day.
6. I do very few activities on my job that are not related to the goals of my team.
7. Feedback about how well I am doing my job comes primarily from information about how well the entire team is doing.
8. My performance evaluation is strongly influenced by how well my team performs.
9. Many rewards from my job (e.g., pay, promotion, etc.) are determined in large part by my contributions as a team member.

V. In this section, we ask you to tell us about yourself or the work you produce. For each statement, please choose the number that best represents yourself or the work you produce where 4 = strongly agree, 3 = somewhat agree, 2 = somewhat disagree, and 1= strongly disagree.

1. The work I produce is creative.
2. The work I produce is original.
3. The work I produce is novel.

VI. In this section, using the scale below, please indicate how frequently your project team's leader engages in the following behaviors. (1 = not at all, 2 = once in a while, 3 = sometimes, 4 = fairly often, 5 = frequently, if not always)

1. My team leader re-examines critical assumptions to question whether they are appropriate.
2. My team leader talks about his/her most important values and beliefs.
3. My team leader seeks differing perspectives when solving problems.
4. My team leader talks optimistically about the future.
5. My team leader instills pride in me for being associated with him/her.
6. My team leader talks enthusiastically about what needs to be accomplished.
7. My team leader specifies the importance of having a strong sense of purpose.
8. My team leader spends time teaching and coaching.
9. My team leader goes beyond self-interest for the good of the group.
10. My team leader treats me as individuals rather than just as a member of the group.
11. My team leader acts in ways that build my respect.
12. My team leader considers the moral and ethical consequences of decisions.
13. My team leader displays a sense of power and confidence.
14. My team leader articulates a compelling vision of the future.
15. My team leader considers me as having different needs, abilities and aspirations from others.

16.   My team leader gets me to look at problems from many different angles.
17.   My team leader helps me to develop my strengths.
18.   My team leader suggests new ways of looking at how to complete assignments.
19.   My team leader emphasizes the importance of having a collective sense of mission.
20.   My team leader expresses confidence that goals will be achieved.

VII. In this section, using the scale below, please indicate the extent to which you agree with the following statements concerning your project team's leader. (1 = strongly disagree, 7 = strongly agree).

1.   My team leader gives my team many responsibilities.
2.   My team leader makes my team responsible for what it does.
3.   My team leader asks the team for advice when making decisions
4.   My team leader uses team suggestions and ideas when making decisions.
5.   My team leader controls much of the activities of the team.
6.   My team leader encourages my team to take control of its work.
7.   My team leader allows my team to set its own goals.
8.   My team leader encourages my team to come up with its own goals.
9.   My team leader stays out of the way when the team works on its performance problems.
10.   My team leader encourages my team to figure out the causes/solutions to its problems.
11.   My team leader tells the team to expect a lot from itself.
12.   My team leader encourages my team to go for high performance.
13.   My team leader trusts my team.
14.   My team leader is confident in what my team can do.
15.   My team leader absorbs outside pressures for the project team so it can work free of interference.
16.   My team leader protects the project team from outside interference.
17.   My team leader prevents outsiders from "overloading" the project team with too much information or too many requests.
18.   My team leader persuades other individuals that the project teams' activities are important.
19.   My team leader scans the environment inside your organization for threats to the product project team.
20.   My team leader "talks up" the project team to outsiders.
21.   My team leader persuades others to support the project team's decisions.
22.   My team leader acquires resources (e.g., money, new members, equipment) for the project team.
23.   My team leader reports the progress of the project team to a higher organizational level.
24.   My team leader finds out whether others in the company support or oppose my project team's activities.

25. My team leader finds out information on my company's strategy or political situation that may affect the project.
26. My team leader keeps other groups in the company informed of my project team's activities.
27. My team leader resolves project problems with external groups.
28. My team leader coordinates activities with external groups.
29. My team leader procures things which the project team needs from other groups or individuals in the company.
30. My team leader negotiates with others for delivery deadlines.
31. My team leader reviews project plan with outsiders.
32. My team leader finds out what competing firms or groups are doing on similar projects.
33. My team leader scans the environment inside or outside the organization for marketing ideas/expertise.
34. My team leader collects technical information/ideas from individuals outside of the project team.
35. My team leader scans the environment inside or outside the organization for technical ideas/expertise.

APPENDIX E

<u>THE FIRST SURVEY FOR TEAM LEADERS IN SOUTH KOREA</u>

I.   먼저 귀하의 특징에 관한 질문을 드리겠습니다. 해당란에 표시해주시거나, 직접 기입해
    주십시오.

1.   귀하의 연령: 만 (   )세
2.   귀하의 성별: (1) 남 (2) 여
3.   귀하의 학력:
        (1) 고등학교 졸업
        (2) 전문대학 졸업
        (3) 대학교 졸업
        (4) 대학원 (석사) 졸업
        (5) 대학원 (박사) 졸업 이상
4.   귀하는 현재 소속팀에서 얼마나 근무하셨습니까? (   )개월
5.   귀하는 현재 진행하시는 업무와 관련된 직종에 얼마나 오래 근무하셨습니까? (   )
        개월

II. 다음은 귀하 스스로의 가치관이나 믿음을 묻는 질문들입니다. 아래의 척도를 바탕으로
    귀하의 생각과 가장 가깝다고 판단되는 곳번호를 골라주십시오. (1=절대 동의하지
    않는다, 2= 동의하지 않는 편이다, 3=그저 그렇다, 4=동의하는 편이다, 5=전적으로
    동의한다)

1.   집단의 복지가 개인에 대한 보상보다 더욱 중요하다.
2.   회사가 종업원들에게 기대하는 것이 무엇인지를 항상 알 수 있도록, 그들에게 직무에
        대한 요구사항과 지시사항들을 상세하게 설명해주는 것이 중요하다.
3.   회의는 한 사람에 의해 주도될 때 대체로 더욱 효과적으로 운영된다.
4.   관리자들은 대부분의 의사결정을 부하직원들과 상의하지 않고 내릴 필요가 있다.
5.   집단의 성공이 개인의 성공보다 더욱 중요하다.
6.   관리자들은 종업원들이 지시사항과 절차를 엄격하게 준수할 것을 기대한다.
7.   여자보다는 남자가 전문적인 경력을 쌓는 것이 더 중요하다.
8.   관리자가 부하직원들을 다룰 때 권력과 권한을 행사하는 것이 때때로는 필요하다.
9.   내가 일하는 작업집단의 일원으로 받아들여지는 것은 매우 중요한 문제이다.
10.   규칙과 규제는 종업원들에게 회사가 무엇을 기대하고 있는지를 알려주는 기능을
        하므로 중요하다.
11.   남자들은 논리적 분석을 통해 문제를 해결하는 반면, 여자들은 보통 직관적으로
        문제를 해결한다.
12.   관리자들은 종업원들의 의견을 물어보지 않아도 괜찮다.
13.   종업원들은 집단의 복지를 먼저 생각한 후에 개인적인 목표들을 추구해야만 한다.
14.   표준작업절차는 종업원들의 작업수행에 도움이 된다.

15. 조직문제를 해결하는 데는 가장 남성적인 방식인, 적극적이고 강제적인 방법을 사용하는 것이 대체로 효과적이다.
16. 관리자들은 종업원들과 업무 이외에 사교적 만남을 피해야 한다.
17. 관리자들은 종업원 개인 각자의 목표를 희생시키는 한이 있더라도 집단의 충성심을 높여야만 한다.
18. 업무의 규정이나 규칙들은 종업원들의 작업수행에 중요하다.
19. 조직의 고위직에는 여자보다는 남자를 임명하는 것이 더욱 바람직하다.
20. 종업원들은 관리자의 의사결정에 반대하는 일이 없어야만 한다.
21. 개인들은 집단 전체의 성공에 도움이 된다면 개인의 목표를 포기하는 것도 감수해야 한다.
22. 관리자들은 중요한 업무들을 부하직원들에게 맡겨서는 안된다.

III. 다음은 귀하가 이끄시는 팀/프로젝트의 업무에 대한 질문입니다. 아래의 항목 중, 대개 귀하의 팀은 어떤 종류의 연구에 임하고 계십니까? (아래의 네가지 항목 중 가장 잘 맞는 하나를 선택하여 주십시오.)

1. 광범위한 새로운 지식(이론)을 세우는 기초 연구 또는 특정 임무가 주어지지 않은 연구.
2. 어떤 특정 문제에 적용하기 위한 새로운 지식(이론)을 창출해 내는 응용 또는 임무지향적 연구.
3. 기존의 지식(이론)을 이용하여 새로운 제품이나 공정을 만들어내는 신 제품/공정 개발.
4. 현재의 제품이나 공정을 변경 또는 향상기키는 기술적 용역 또는 기존 제품/공정 개발

APPENDIX F

<u>THE FIRST SURVEY FOR TEAM MEMBERS IN SOUTH KOREA</u>

I. 먼저 귀하의 특징에 관한 질문을 드리겠습니다. 해당란에 표시해주시거나, 직접 기입해 주십시오.

1. 귀하의 연령: 만 (   )세
2. 귀하의 성별: (1) 남 (2) 여
3. 귀하의 학력:
    (1) 고등학교 졸업
    (2) 전문대학 졸업
    (3) 대학교 졸업
    (4) 대학원 (석사) 졸업
    (5) 대학원 (박사) 졸업 이상
4. 귀하는 현재 소속팀에서 얼마나 근무하셨습니까? (   )개월
5. 귀하는 현재 진행하시는 업무와 관련된 직종에 얼마나 오래 근무하셨습니까? (   ) 개월

II. 다음은 귀하 스스로의 가치관이나 믿음을 묻는 질문들입니다. 아래의 척도를 바탕으로 귀하의 생각과 가장 가깝다고 판단되는 곳번호를 골라주십시오. (1=절대 동의하지 않는다, 2= 동의하지 않는 편이다, 3=그저 그렇다, 4=동의하는 편이다, 5=전적으로 동의한다)

1. 집단의 복지가 개인에 대한 보상보다 더욱 중요하다.
2. 회사가 종업원들에게 기대하는 것이 무엇인지를 항상 알 수 있도록, 그들에게 직무에 대한 요구사항과 지시사항들을 상세하게 설명해주는 것이 중요하다.
3. 회의는 한 사람에 의해 주도될 때 대체로 더욱 효과적으로 운영된다.
4. 관리자들은 대부분의 의사결정을 부하직원들과 상의하지 않고 내릴 필요가 있다.
5. 집단의 성공이 개인의 성공보다 더욱 중요하다.
6. 관리자들은 종업원들이 지시사항과 절차를 엄격하게 준수할 것을 기대한다.
7. 여자보다는 남자가 전문적인 경력을 쌓는 것이 더 중요하다.
8. 관리자가 부하직원들을 다룰 때 권력과 권한을 행사하는 것이 때때로는 필요하다.
9. 내가 일하는 작업집단의 일원으로 받아들여지는 것은 매우 중요한 문제이다.
10. 규칙과 규제는 종업원들에게 회사가 무엇을 기대하고 있는지를 알려주는 기능을 하므로 중요하다.
11. 남자들은 논리적 분석을 통해 문제를 해결하는 반면, 여자들은 보통 직관적으로 문제를 해결한다.
12. 관리자들은 종업원들의 의견을 물어보지 않아도 괜찮다.
13. 종업원들은 집단의 복지를 먼저 생각한 후에 개인적인 목표들을 추구해야만 한다.
14. 표준작업절차는 종업원들의 작업수행에 도움이 된다.

15. 조직문제를 해결하는 데는 가장 남성적인 방식인, 적극적이고 강제적인 방법을 사용하는 것이 대체로 효과적이다.
16. 관리자들은 종업원들과 업무 이외에 사교적 만남을 피해야 한다.
17. 관리자들은 종업원 개인 각자의 목표를 희생시키는 한이 있더라도 집단의 충성심을 높여야만 한다.
18. 업무의 규정이나 규칙들은 종업원들의 작업수행에 중요하다.
19. 조직의 고위직에는 여자보다는 남자를 임명하는 것이 더욱 바람직하다.
20. 종업원들은 관리자의 의사결정에 반대하는 일이 없어야만 한다.
21. 개인들은 집단 전체의 성공에 도움이 된다면 개인의 목표를 포기하는 것도 감수해야 한다.
22. 관리자들은 중요한 업무들을 부하직원들에게 맡겨서는 안된다.

III. 다음은 귀하의 현재 소속팀에 대한 믿음이나 느낌을 묻는 질문들입니다. 아래의 척도를 바탕으로, 귀하께서 다음의 항목들에 얼마나 동의하시는지 표시하여 주십시오. (1=매우 그렇지 않다, 5=매우 그렇다)

1. 나는 혼자 일하는 것보다 팀의 일원으로 일하는 것을 더 선호한다.
2. 다른 멤버들과 함께 일하는 것이 혼자 일하는 것보다 더 낫다.
3. 나는 혼자 일하는 것에 비해 팀 멤버들과 함께 일하는 것을 원한다.
4. 나는 팀 멤버들이 각자 맡은 역할을 잘 수행한다고 생각한다.
5. 내 일의 일부를 다른 멤버들에게 부탁하는 것은 불편한 일이 아니다.
6. 나는 팀 멤버들이 각자의 업무를 잘 한다고 믿는다.
7. 나는 팀의 멤버들간의 화합이 중요하다고 믿는다.
8. 나는 팀의 성공을 중요하게 여긴다.
9. 나는 팀의 필요한 부분을 채우기 위해 노력한다.
10. 나는 팀의 규범을 지킨다.
11. 나는 팀에서 행해지는 절차를 지킨다.
12. 나는 팀의 규칙을 인정하고 따른다.
13. 나는 팀의 목표를 나의 목표보다 중시한다.
14. 나는 나의 목표보다 팀의 목표를 더 강조한다.
15. 내 팀의 목표는 내 개인의 목표보다 나에게 더 중요하다.

IV. 아래의 문항들은 귀하가 현재 맡고 있는 업무의 특징을 확인하기 위한 것들입니다. 각 항목마다 귀하의 업무상황에 가장 가깝다고 판단되는 번호 하나만을 적어주시기 바랍니다. (1= 전혀 맞지 않다, 2=약간 맞다, 3=그저 그렇다, 4=상당히 맞다, 5=완전히 맞다)

1. 나는 소속팀의 다른 구성원들로부터 정보나 자료를 제공받지 않고서는 내 업무를 완수할 수 없다.
2. 소속팀의 다른 구성원들은 그들의 업무수행에 필요한 정보나 자료를 나에게 의존한다.
3. 내 소속팀 팀원들의 업무들은 상호 연관성이 깊다.
4. 소속팀의 목표량이 나의 과업목표량에 직접적인 영향을 미친다.
5. 특정한 날의 내 업무활동은 그날 소속팀에 부가된 목표에 의해 좌우된다.

6. 나의 과업활동들 중에서 소속팀의 목표와 연관되지 않는 것을 거의 찾아보기 힘들다.
7. 소속팀 전체성과에 대한 피드백이 내 업무실적에 대한 피드백에 직접적인 영향을 미친다.
8. 내가 높은 고과를 받으려면 소속팀 전체의 업적평가 결과가 좋아야 한다.
9. 직무수행에 따른 보상(예: 임금, 승진 등)의 많은 부분들이 대체로 팀에 대한 나의 기여도에 의해 결정된다.

V. 다음은 귀하가 판단하는 스스로의 모습에 대한 질문들입니다. 아래의 척도를 바탕으로, 귀하께서 다음의 항목들에 얼마나 동의하시는지 표시하여 주십시오. (1=매우 그렇지 않다, 4=매우 그렇다)

1. 내가 성취한 것들은 창의적이다.
2. 내가 성취한 것들은 독창적이다.
3. 내가 성취한 것들은 새로운 것이다.

VI. 다음은 귀하의 리더에 대한 질문들입니다. 귀하께서 여태까지 귀하의 소속팀장에 대해 보시고 느끼신 것을 바탕으로, 다음 항목들에 귀하가 얼마나 동의하시는지를, 아래의 척도에 따라 표시해 주십시오. (1=전혀 안 그렇다, 2=아주 가끔 그렇다, 3=가끔 그렇다, 4=자주 그렇다, 5=아주 자주 그렇다).

1. 나의 리더는 기본적이며 중요한 가정들이 과연 적절한가 다시 검토한다.
2. 나의 리더는 자신의 가장 중요한 가치관과 신념에 대하여 이야기 한다.
3. 나의 리더는 문제를 해결할 때, 다른 관점들에서도 보려고 한다.
4. 나의 리더는 미래에 대하여 낙관적으로 이야기 한다.
5. 나의 리더는 같이 일할 때, 나에게 자긍심을 심어준다.
6. 나의 리더는 무엇을 달성해야 할 것인지에 대해서 열성적으로 이야기한다.
7. 나의 리더는 강한 목적의식을 가지는 것의 중요성에 대해 이야기 한다.
8. 나의 리더는 가르치고 코치하는 데에 시간을 할애한다.
9. 나의 리더는 그룹의 이익을 위하여는 자신의 이익을 희생한다.
10. 나의 리더는 단지 그룹의 일원으로 보다는, 하나의 개인으로서 나를 대해 준다.
11. 나의 리더는 남들로부터 존경받게끔 행동한다.
12. 나의 리더는 어떤 결정에 따르는 도덕적, 윤리적 결과를 고려한다.
13. 나의 리더는 힘과 자신감을 피력한다.
14. 나의 리더는 하는 일의 미래에 대한 비젼을 명확하게 알려준다.
15. 나의 리더는 나에게 남들과 다른 욕구및 능력과 야망이 있음을 고려한다.
16. 나의 리더는 나로 하여금 문제를 다양한 관점에서 보게끔 한다.
17. 나의 리더는 나의 장점을 개발하도록 도와준다.
18. 나의 리더는 어떻게 임무를 완성하는 지에 대해 새로운 길을 제시하여 준다.
19. 나의 리더는 임무에 대해 공동체적 사명감을 갖는 것이 중요하다고 강조한다.
20. 나의 리더는 목표 달성에의 자신감을 표현한다.

VII. 마지막으로 귀하의 리더에 대하여 한번 더 여쭈어보겠습니다. 귀하께서 여태까지 귀하의 팀장에 대해 보시고 느끼신 것을 바탕으로, 다음 항목들에 귀하가 얼마나

동의하시는지를, 아래의 척도에 따라 표시해 주십시오. (1=전혀 동의하지 않는다, 7=매우 동의한다).

1. 나의 리더는 우리에게 (나의 팀에게) 많은 권한을 부여한다.
2. 나의 리더는 우리가 (나의 팀이) 우리의 업무를 스스로 책임지게 한다.
3. 나의 리더는 의사결정시 우리에게 (나의 팀에게) 조언을 구한다.
4. 나의 리더는 의사결정시 우리의 (나의 팀의) 의견과 아이디어를 반영한다.
5. 나의 리더는 우리의 (나의 팀의) 활동을 상당부분 통제한다.
6. 나의 리더는 우리가 (나의 팀이) 맡은 업무를 스스로 결정하여 진행하는 것을 권장한다.
7. 나의 리더는 우리가 (나의 팀이) 스스로 우리의 목표를 설정할 수 있게 해준다.
8. 나의 리더는 우리가 (나의 팀이) 우리의 목표를 스스로 제안하도록 장려한다.
9. 나의 리더는 우리가 (나의 팀이) 자발적으로 문제를 해결하는 과정에 개입하지 않는다.
10. 나의 리더는 우리가 (나의 팀이) 우리가 지닌 문제의 원인과 해결책을 찾을 수 있도록 장려한다.
11. 나의 리더는 우리가 (나의 팀이) 잘 할 수 있다고 격려한다.
12. 나의 리더는 우리가 (나의 팀이) 높은 목표를 추구하도록 장려한다.
13. 나의 리더는 우리를 (나의 팀을) 신뢰한다.
14. 나의 리더는 우리의 (나의 팀의) 능력에 대해 확신을 가지고 있다
15. 나의 리더는 우리가 (나의 팀이) 외부의 간섭이 없이 일할 수 있도록 외부로부터의 압력을 줄여준다.
16. 나의 리더는 우리를 (나의 팀을) 외부의 간섭으로부터 보호한다.
17. 나의 리더는 우리가 (나의 팀이) 외부 관계자들로부터 지나치게 많은 정보나 요구에 시달리지 않도록 해준다.
18. 나의 리더는 다른 사람들에게 우리가 (나의 팀이) 하는 일의 중요성을 인식시킨다.
19. 나의 리더는 회사 내에서 우리의 (나의 팀의) 업무에 방해나 위협이 될 수 있는 요소들을 찾아낸다.
20. 나의 리더는 우리에 대해서 (나의 팀에 대해서) 외부에 긍정적으로 이야기한다.
21. 나의 리더는 다른 사람들이 우리의 (나의 팀의) 의사결정을 지원하도록 설득한다.
22. 나의 리더는 우리를 (나의 팀을) 위해서 필요한 자원들 (예: 돈, 직원, 도구)을 외부로부터 확보해온다.
23. 나의 리더는 우리의 (나의 팀의) 성과나 업무 진전 상황을 조직 상부에 보고한다.
24. 나의 리더는 회사내의 다른 사람들이 우리의 (나의 팀의) 활동을 지원하는지 혹은 반대하는지의 여부를 알아낸다.
25. 나의 리더는 우리에게 (나의 팀에게) 영향을 미칠 수 있는 회사의 전략이나 정치적인 상황에 대해 알아낸다.
26. 나의 리더는 회사내의 다른 팀에게 우리의 (나의 팀의) 업무에 대해 잘 알려준다.
27. 나의 리더는 업무 수행시 관련 부서와의 관계에서 발생하는 문제들을 해결한다.
28. 나의 리더는 외부 관련 부서와의 업무 활동을 조율한다.
29. 나의 리더는 우리가 (나의 팀이) 필요한 부분을 외부 관련 부서나 회사내의 다른 직원으로부터 확보해온다.
30. 나의 리더는 회사내의 다른 사람들과 프로젝트 완수기간/납기일을 결정할때 우리의 입장을 대변해준다.

31. 나의 리더는 외부 관련자들과 함께 프로젝트 계획을 검토한다.
32. 나의 리더는 우리와 (나의 팀과) 유사한 프로젝트를 진행하고 있는 다른 경쟁사나 경쟁집단이 무엇을 하고 있는지를 알아낸다.
33. 나의 리더는 마케팅 관련 아이디어나 전문지식을 얻기 위해 회사의 내부와 외부를 살펴본다.
34. 나의 리더는 우리 (나의 팀) 외부의 사람들로부터 기술적인 정보나 아이디어를 수집한다.
35. 나의 리더는 기술적인 아이디어나 전문지식을 확보하기 위하여 회사의 내부와 외부를 살펴본다.

APPENDIX G

<u>THE SECOND SURVEY FOR TEAM LEADERS IN THE U.S.</u>

I. Using the scale below, please indicate how strongly you agree to the following statements regarding the project team you are leading. (1 = strongly disagree, 7 = strongly agree)

1. Communicating is a problem in my project team.
2. Members of my project team inform each other about work-related issues.
3. The quality of information exchange in our project team is good.
4. I get new facts, insights, and ideas from my colleagues.
5. During work meetings, we tell each other what we know already and do not exchange new information.
6. We do not repeat ourselves during team meetings.
7. My project team members absorb outside pressures for the project team so it can work free of interference.
8. My project team members protect the project team from outside interference.
9. My project team members prevent outsiders from "overloading" the project team with too much information or too many requests.
10. My project team members persuade other individuals that the project teams' activities are important.
11. My project team members scan the environment inside your organization for threats to the product project team.
12. My project team members "talk up" the project team to outsiders.
13. My project team members persuade others to support the project team's decisions.
14. My project team members acquire resources (e.g., money, new members, equipment) for the project team.
15. My project team members report the progress of the project team to a higher organizational level.
16. My project team members find out whether others in the company support or oppose my project team's activities.
17. My project team members find out information on my company's strategy or political situation that may affect the project.
18. My project team members keep other groups in the company informed of my project team's activities.
19. My project team members resolve project problems with external groups.
20. My project team members coordinate activities with external groups.
21. My project team members procure things which the project team needs from other groups or individuals in the company.
22. My project team members negotiate with others for delivery deadlines.
23. My project team members review project plan with outsiders.

24.   My project team members find out what competing firms or groups are doing on similar projects.
25.   My project team members scan the environment inside or outside the organization for marketing ideas/expertise.
26.   My project team members collect technical information/ideas from individuals outside of the project team.
27.   My project team members scan the environment inside or outside the organization for technical ideas/expertise.

APPENDIX H

I. Based on your experiences of previous month in your company, please provide your perspective on the following statements, using the response scales provided. (1 = strongly disagree, 7 = strongly agree)

1. Creativity in teams is encouraged at our company.
2. Our ability as a team to function creatively is respected by the leadership.
3. The reward system here encourages creativity in teams.
4. Our company publicly recognizes creative teams.

II. This section consists of a number of words that describe different feelings and emotions. Read each item and then indicate to what extent you have generally felt this way during the past four weeks. (1 = not at all, 5 = extremely so)

1. interested
2. excited
3. strong
4. enthusiastic
5. proud
6. alert
7. inspired
8. determined
9. attentive
10. active

III. Using the scale below, please indicate how strongly you agree to the following statements regarding the project team you are working for. (1 = strongly disagree, 7 = strongly agree)

1. My project team has confidence in itself.
2. My project team can get a lot done when it works hard.
3. My project team believes that it can be very productive.
4. My project team believes that its projects are significant.
5. My project team feels that its tasks are worthwhile.
6. My project team feels that its work is meaningful.
7. My project team can select different ways to do the project team's work.
8. My project team determines as a team how things are done in the team.
9. My project team makes its own choices without being told by management.
10. My project team has a positive impact on this company's customers.
11. My project team performs tasks that matter to this company.
12. My project team makes a difference in this organization.

13. Communicating is a problem in my project team.
14. Members of my project team inform each other about work-related issues.
15. The quality of information exchange in our project team is good.
16. I get new facts, insights, and ideas from my colleagues.
17. During work meetings, we tell each other what we know already and do not exchange new information.
18. We do not repeat ourselves during team meetings.
19. My project team members absorb outside pressures for the project team so it can work free of interference.
20. My project team members protect the project team from outside interference.
21. My project team members prevent outsiders from "overloading" the project team with too much information or too many requests.
22. My project team members persuade other individuals that the project teams' activities are important.
23. My project team members scan the environment inside your organization for threats to the product project team.
24. My project team members "talk up" the project team to outsiders.
25. My project team members persuade others to support the project team's decisions.
26. My project team members acquire resources (e.g., money, new members, equipment) for the project team.
27. My project team members report the progress of the project team to a higher organizational level.
28. My project team members find out whether others in the company support or oppose my project team's activities.
29. My project team members find out information on my company's strategy or political situation that may affect the project.
30. My project team members keep other groups in the company informed of my project team's activities.
31. My project team members resolve project problems with external groups.
32. My project team members coordinate activities with external groups.
33. My project team members procure things which the project team needs from other groups or individuals in the company.
34. My project team members negotiate with others for delivery deadlines.
35. My project team members review project plan with outsiders.
36. My project team members find out what competing firms or groups are doing on similar projects.
37. My project team members scan the environment inside or outside the organization for marketing ideas/expertise.
38. My project team members collect technical information/ideas from individuals outside of the project team.
39. My project team members scan the environment inside or outside the organization for technical ideas/expertise.

APPENDIX I

THE SECOND SURVEY FOR TEAM LEADERS IN SOUTH KOREA

I. 다음은 귀하가 이끄시는 팀에 대한 의견이나 생각을 질문들입니다. 아래의 척도를
    바탕으로, 귀하께서 다음의 항목들에 얼마나 동의하시는지 표시하여 주십시오. (1=매우
    그렇지 않다, 7=매우 그렇다)

1. 내가 이끄는 팀은 의사소통에 문제가 있다.
2. 내가 이끄는 팀원들은 업무와 관련된 정보들을 서로 공유한다.
3. 내가 이끄는 팀에서는 원활하게 정보 교환이 이루어진다.
4. 내가 이끄는 팀원들은 서로로부터 새로운 사실이나 의견, 해결책 등을 얻는다.
5. 업무 회의시, 내가 이끄는 팀원들은 이미 알고 있는 것들을 논의하는 반면, 새로운
    정보들은 잘 교환하지 않는다.
6. 내가 이끄는 팀에서는 업무 회의시 팀원들이 각자의 주장을 반복해서 이야기하지
    않는다.
7. 내가 이끄는 팀원들은 스스로가 (팀이) 외부의 간섭이 없이 일할 수 있도록
    외부로부터의 압력을 줄이려고 노력한다.
8. 내가 이끄는 팀원들은 스스로를 (팀을) 외부의 간섭으로부터 보호한다.
9. 내가 이끄는 팀원들은 스스로가 (팀이) 외부 관계자들로부터 지나치게 많은 정보나
    요구에 시달리지 않도록 노력한다.
10. 내가 이끄는 팀원들은 다른 사람들에게 스스로가 (팀이) 하는 일의 중요성을
    인식시킨다.
11. 내가 이끄는 팀원들은 회사 내에서 스스로의 (팀의) 업무에 방해나 위협이 될 수 있는
    요소들을 찾아낸다.
12. 내가 이끄는 팀원들은 스스로에 대해서 (팀에 대해서) 외부에 긍정적으로 이야기한다.
13. 내가 이끄는 팀원들은 다른 사람들이 스스로의 (팀의) 의사결정을 지원하도록
    설득한다.
14. 내가 이끄는 팀원들은 스스로를 (팀을) 위해서 필요한 자원들 (예: 돈, 직원, 도구)을
    외부로부터 확보해온다.
15. 내가 이끄는 팀원들은 스스로의 (팀의) 성과나 업무 진전 상황을 조직 상부에
    보고한다.
16. 내가 이끄는 팀원들은 회사내의 다른 사람들이 내가 이끄는 팀의 활동을 지원하는지
    혹은 반대하는지의 여부를 알아낸다.
17. 내가 이끄는 팀원들은 스스로에게 (팀에게) 영향을 미칠 수 있는 회사의 전략이나
    정치적인 상황에 대해 알아낸다.
18. 내가 이끄는 팀원들은 회사내의 다른 팀에게 스스로의 (팀의) 업무에 대해 잘
    알려준다.
19. 내가 이끄는 팀원들은 업무 수행시 관련 부서와의 관계에서 발생하는 문제들을
    해결한다.
20. 내가 이끄는 팀원들은 외부 관련 부서와의 업무 활동을 조율한다.

21. 내가 이끄는 팀원들은 스스로가 (팀이) 필요한 부분을 외부 관련 부서나 회사내의 다른 직원으로부터 확보해온다.
22. 내가 이끄는 팀원들은 회사내의 다른 사람들과 프로젝트 완수기간/납기일을 결정할때 스스로의 입장을 설명하고 주장한다.
23. 내가 이끄는 팀원들은 외부 관련자들과 함께 프로젝트 계획을 검토한다.
24. 내가 이끄는 팀원들은 스스로와 (팀과) 유사한 프로젝트를 진행하고 있는 다른 경쟁사나 경쟁집단이 무엇을 하고 있는지를 알아낸다.
25. 내가 이끄는 팀원들은 마케팅 관련 아이디어나 전문지식을 얻기 위해 회사의 내부와 외부를 살펴본다.
26. 내가 이끄는 팀원들은 외부로부터 기술적인 정보나 아이디어를 수집한다.
27. 내가 이끄는 팀원들은 기술적인 아이디어나 전문지식을 확보하기 위하여 회사의 내부와 외부를 살펴본다.

APPENDIX J

THE SECOND SURVEY FOR TEAM MEMBERS IN SOUTH KOREA

I. 다음은 귀하가 지난 한달간 귀하의 회사에 대해 어떤 느낌이나 생각을 가지시게 되셨는지에 대한 질문입니다. 지난 한달간의 경험을 바탕으로, 귀하께서 다음의 항목들에 얼마나 동의하시는지 표시하여 주십시오. (1=매우 그렇지 않다, 7=매우 그렇다)

1.   우리 회사는 창의적인 것을 장려한다.
2.   우리 회사에서는 창의적인 직원들이 존경받는다.
3.   우리 회사는 혁신적인 것에 많은 보상을 한다.
4.   우리 회사의 혁신적인 직원들은 회사 내에서 공개적으로 인정받는다.

II. 다음은 귀하의 현재 정서적 경험에 대한 질문들입니다. 지난 한달간을 포함하여 현재 귀하는 업무중에 일반적으로 어떤 정서를 주로 느끼셨습니까? 각 항목마다 귀하의 생각과 가장 가깝다고 판단되는 것에 표시하여 주십시오. (1=전혀 그렇지 않다, 2=약간 그렇지 않다, 3=그저 그렇다, 4=약간 그렇다, 5=전적으로 그렇다)

1.   흥미로운
2.   신나는
3.   자신있는
4.   열정적인
5.   자랑스러운
6.   깨어있는
7.   고무된
8.   결의에 찬
9.   집중하는
10.   활기찬

III. 다음은 귀하의 현재 소속팀에 대한 믿음이나 느낌을 묻는 질문들입니다. 아래의 척도를 바탕으로, 귀하께서 다음의 항목들에 얼마나 동의하시는지 표시하여 주십시오. (1=매우 그렇지 않다, 7=매우 그렇다)

1.   우리는 (나의 팀은) 우리의 능력을 확신한다.
2.   우리가 (나의 팀이) 열심히 한다면 높은 성과를 낼 수 있다.
3.   우리는 (나의 팀은) 우리가 매우 생산적일 수 있다고 믿는다.
4.   우리는 (나의 팀은) 우리의 프로젝트가 중요하다고 믿는다.
5.   우리는 (나의 팀은) 우리의 업무가 가치있는 것이라고 느낀다.
6.   우리는 (나의 팀은) 우리의 업무가 의미있는 것이라고 느낀다.
7.   우리는 (나의 팀은) 업무를 수행하는데 있어서 다양한 방법을 선택할 수 있다.
8.   우리는 (나의 팀은) 어떻게 팀의 업무를 수행할 것인지를 우리 내부에서 결정한다.

9. 우리는 (나의 팀은) 회사 경영진의 지시없이 업무수행에 필요한 방법과 절차를 자율적으로 결정할 수 있다.
10. 우리는 (나의 팀은) 우리 회사의 고객들에게 긍정적인 영향을 준다.
11. 우리는 (나의 팀은) 우리 회사에 중요한 업무를 수행한다.
12. 우리의 (나의 팀의) 업무 결과에 따라 회사의 많은 부분이 바뀔 수 있다.
13. 우리 팀에는 의사소통에 문제가 있다.
14. 우리 팀의 멤버들은 업무와 관련된 정보들을 서로 공유한다.
15. 우리 팀에서는 원활하게 정보 교환이 이루어진다.
16. 나는 나의 (나의 팀의) 동료들로부터 새로운 사실이나 의견, 해결책 등을 얻는다.
17. 업무 회의시, 우리는 (나의 팀은) 우리가 이미 알고 있는 것들을 논의하는 반면, 새로운 정보들은 잘 교환하지 않는다.
18. 우리는 (나의 팀은) 업무 회의시 각자의 주장을 반복해서 이야기하지 않는다.
19. 우리는 (나의 팀은) 우리가 (나의 팀이) 외부의 간섭이 없이 일할 수 있도록 외부로부터의 압력을 줄이려고 노력한다.
20. 우리는 (나의 팀은) 우리 스스로를 (나의 팀을) 외부의 간섭으로부터 보호한다.
21. 우리는 (나의 팀은) 우리 스스로가 (나의 팀이) 외부 관계자들로부터 지나치게 많은 정보나 요구에 시달리지 않도록 노력한다.
22. 우리는 (나의 팀은) 다른 사람들에게 우리가 (나의 팀이) 하는 일의 중요성을 인식시킨다.
23. 우리는 (나의 팀은) 회사 내에서 우리의 (나의 팀의) 업무에 방해나 위협이 될 수 있는 요소들을 찾아낸다.
24. 우리는 (나의 팀은) 스스로에 대해서 (나의 팀에 대해서) 외부에 긍정적으로 이야기한다.
25. 우리는 (나의 팀은) 다른 사람들이 우리의 (나의 팀의) 의사결정을 지원하도록 설득한다.
26. 우리는 (나의 팀은) 스스로를 (나의 팀을) 위해서 필요한 자원들 (예: 돈, 직원, 도구)을 외부로부터 확보해온다.
27. 우리는 (나의 팀은) 우리의 (나의 팀의) 성과나 업무 진전 상황을 조직 상부에 보고한다.
28. 우리는 (나의 팀은) 회사내의 다른 사람들이 우리의 (나의 팀의) 활동을 지원하는지 혹은 반대하는지의 여부를 알아낸다.
29. 우리는 (나의 팀은) 우리에게 (나의 팀에게) 영향을 미칠 수 있는 회사의 전략이나 정치적인 상황에 대해 알아낸다.
30. 우리는 (나의 팀은) 회사내의 다른 팀에게 우리의 (나의 팀의) 업무에 대해 잘 알려준다.
31. 우리는 (나의 팀은) 업무 수행시 관련 부서와의 관계에서 발생하는 문제들을 해결한다.
32. 우리는 (나의 팀은) 외부 관련 부서와의 업무 활동을 조율한다.
33. 우리는 (나의 팀은) 우리가 (나의 팀이) 필요한 부분을 외부 관련 부서나 회사내의 다른 직원으로부터 확보해온다.
34. 우리는 (나의 팀은) 회사내의 다른 사람들과 프로젝트 완수기간/납기일을 결정할때 우리의 입장을 설명하고 주장한다.
35. 우리는 (나의 팀은) 외부 관련자들과 함께 프로젝트 계획을 검토한다.

36. 우리는 (나의 팀은) 우리와 (나의 팀과) 유사한 프로젝트를 진행하고 있는 다른 경쟁사나 경쟁집단이 무엇을 하고 있는지를 알아낸다.
37. 우리는 (나의 팀은) 마케팅 관련 아이디어나 전문지식을 얻기 위해 회사의 내부와 외부를 살펴본다.
38. 우리는 (나의 팀은) 외부로부터 기술적인 정보나 아이디어를 수집한다.
39. 우리는 (나의 팀은) 기술적인 아이디어나 전문지식을 확보하기 위하여 회사의 내부와 외부를 살펴본다.

TABLE 1. EMPIRICAL STUDIES OF THE ANTECEDENTS OF CREATIVITY FROM 1990 TO 2010 IN MANAGEMENT LITERATURES

	Author	Year	Publication
*	Firestien	1990	Small Group Research
	Murray et al.	1990	Journal of Personality & Social Psychology
	Caird	1991	British Journal of Management
	Shalley	1991	Journal of Applied Psychology
	Kabanoff & Bottger	1991	Journal of Organizational Behavior
*	Kelly & Karau	1993	Small Group Research
	Dollinger & Clancy	1993	Journal of Personality & Social Psychology
	Tetlock et al.	1993	Journal of Personality & Social Psychology
	Redmond et al.	1993	Organizational Behavior & Human Decision Processes
	Foxall & Hackett	1994	British Journal of Management
	Eisenberger & Selbst	1994	Journal of Personality & Social Psychology
	Whitney et al.	1994	Journal of Personality & Social Psychology
	Shalley	1995	Academy of Management Journal
	Helson et al.	1995	Journal of Personality & Social Psychology
*	McLeod & Lobel	1996	Small Group Research
	Amabile et al.	1996	Academy of Management Journal
	Oldham & Cummings	1996	Academy of Management Journal
	Hirt et al.	1996	Journal of Personality & Social Psychology
	Coopey et al.	1997	British Journal of Management
	Livingstone et al.	1997	Journal of Management
	Eisenberger & Armeli	1997	Journal of Personality & Social Psychology
	Simonton	1997	Journal of Personality & Social Psychology
*	Sosik et al.	1997	Journal of Applied Psychology
*	Rodriguez	1998	Small Group Research
*	Sosik et al.	1998	Small Group Research
	Chatman et al.	1998	Administrative Science Quarterly
	Zhou	1998	Journal of Applied Psychology
	Carnevale & Probst	1998	Journal of Personality & Social Psychology
	Eisenberger et al.	1998	Journal of Personality & Social Psychology
	Simonton	1998	Journal of Personality & Social Psychology

TABLE 1. (CONT'D)

	Author	Year	Publication
	Amabile & Conti	1999	Academy of Management Journal
	Buttner et al.	1999	British Journal of Management
	Arndt et al.	1999	Journal of Personality & Social Psychology
	Eisenberger et al.	1999	Journal of Personality & Social Psychology
*	Swann et al.	2000	Journal of Personality & Social Psychology
*	Paulus & Yang	2000	Organizational Behavior & Human Decision Processes
	Shalley et al.	2000	Academy of Management Journal
	Ford & Gioia	2000	Journal of Management
	Axtell et al.	2000	Journal of Occupational & Organizational Psychology
	Friedman & Förster	2000	Journal of Personality & Social Psychology
	Zhou & George	2001	Academy of Management Journal
	George & Zhou	2001	Journal of Applied Psychology
	Kickul & Gundry	2001	Journal of Management
	Eisenberger & Rhoades	2001	Journal of Personality & Social Psychology
	Friedman & Förster	2001	Journal of Personality & Social Psychology
	Shalley & Perry-Smith	2001	Organizational Behavior & Human Decision Processes
*	Polzer et al.	2002	Administrative Science Quarterly
*	Taggar	2002	Academy of Management Journal
	Madjar et al.	2002	Academy of Management Journal
	Tierney & Farmer	2002	Academy of Management Journal
	George & Zhou	2002	Journal of Applied Psychology
	Van Dyne et al.	2002	Journal of Organizational Behavior
	Elsbach & Kramer	2003	Academy of Management Journal
	Farmer et al.	2003	Academy of Management Journal
*	Grawitch et al.	2003	Group Dynamics: Theory, Research and Practice
*	Jaussi & Dionne	2003	Leadership Quarterly
*	Kahai et al.	2003	Leadership Quarterly
	Shin & Zhou	2003	Academy of Management Journal
	Swann et al.	2003	Personality and Social Psychology Bulletin
	Zhou	2003	Journal of Applied Psychology
	Carson et al.	2003	Journal of Personality & Social Psychology
***	Gilson & Shalley	2004	Journal of Management
*	Miura & Hida	2004	Small Group Research

TABLE 1. (CONT'D)

	Author	Year	Publication
*	Paletz et al.	2004	Small Group Research
***	Pirola-Merlo & Mann	2004	Journal of Organizational Behavior
	Tierney & Farmer	2004	Journal of Management
	Miron et al.	2004	Journal of Organizational Behavior
	Förster et al.	2004	Journal of Personality & Social Psychology
	Kuncel et al.	2004	Journal of Personality & Social Psychology
	Seibt & Förster	2004	Journal of Personality & Social Psychology
*	Beersma & De Dreu	2005	Journal of Personality & Social Psychology
*	Chirumbolo et al.	2005	Small Group Research
*	Choi & Thompson	2005	Organizational Behavior & Human Decision Processes
	Amabile et al.	2005	Administrative Science Quarterly
	Friedman & Förster	2005	Journal of Personality & Social Psychology
**	Hargadon & Bechky	2006	Organization Science
*	Goncalo & Staw	2006	Organizational Behavior & Human Decision Processes
	Fong	2006	Academy of Management Journal
	Perry-Smith	2006	Academy of Management Journal
	Alge et al.	2006	Journal of Applied Psychology
	Baer & Oldham	2006	Journal of Applied Psychology
	Ohly et al.	2006	Journal of Organizational Behavior
	Griskevicius et al.	2006	Journal of Personality & Social Psychology
	Kray et al.	2006	Journal of Personality & Social Psychology
**	Cohendet & Simon	2007	Journal of Organizational Behavior
***	Shin & Zhou	2007	Journal of Applied Psychology
	George & Zhou	2007	Academy of Management Journal
	Porath & Erez	2007	Academy of Management Journal
	Von Nordenflycht	2007	Academy of Management Journal
	Fleming et al.	2007	Administrative Science Quarterly
	Choi	2007	Journal of Occupational & Organizational Psychology
	Probst et al.	2007	Journal of Occupational & Organizational Psychology
	Eikhof & Haunschild	2007	Journal of Organizational Behavior
	Svejenova et al.	2007	Journal of Organizational Behavior
	Tschang	2007	Organization Science

TABLE 1. (CONT'D)

	Author	Year	Publication
	Fleming et al.	2007	Organization Science
	Pearsall et al.	2008	Journal of Applied Psychology
	Ng & Feldman	2008	Journal of Applied Psychology
	Janssen & Xu	2008	Journal of Management
	Thatcher & Greer	2008	Journal of Management
	Madjar	2008	Journal of Occupational & Organizational Psychology
	De Dreu et al.	2008	Journal of Personality & Social Psychology
	Hirt et al.	2008	Journal of Personality & Social Psychology
	Sivanathan et al.	2008	Organizational Behavior & Human Decision Processes
	Cattani & Ferriani	2008	Organization Science
*	Baruah & Paulus	2008	Small Group Research
	Neubert et al.	2008	Journal of Applied Psychology
	Gong et al.	2009	Academy of Management Journal
	Hirst et al.	2009	Academy of Management Journal
	Shalley et al.	2009	Academy of Management Journal
	Maddux & Galinsky	2009	Journal of Personality & Social Psychology
	Davis	2009	Organizational Behavior & Human Decision Processes
	Porath & Erez	2009	Organizational Behavior & Human Decision Processes
**	Seddon & Biasutti	2009	Small Group Research
***	Hülsheger et al.	2009	Journal of Applied Psychology
	Zhou et al.	2009	Journal of Applied Psychology
	Atwater & Carmeli	2009	Leadership Quarterly
	Zhang & Bartol	2010	Academy of Management Journal
**	Lingo & O'Mahony	2010	Administrative Science Quarterly
	Unsworth & Clegg	2010	Journal of Occupational & Organizational Psychology
	Thrash et al.	2010	Journal of Personality & Social Psychology
*	Giambatista & Bhappu	2010	Organizational Behavior & Human Decision Processes
*	Gino et al.	2010	Organizational Behavior & Human Decision Processes

TABLE 1. (CONT'D)

Author	Year	Publication
Byron et al.	2010	Journal of Applied Psychology

*   Studies on team creativity in laboratory teams

**   Studies on team creativity in ongoing teams with qualitative methodology

***   Studies on team creativity in ongoing teams with quantitative/statistical methodology

TABLE 2. CONCLUSIONS FROM PREVIOUS STUDIES ON TEAM CREATIVITY

Category		Conclusion	Related Studies
Team Leader Behavior Factors	1	Teams will generally be more creative when they are led by team leaders who engage in more rather than less "transformational" behaviors.	Shin & Zhou, 2007 Sosik et al. 1997
	2	Teams will generally be more creative when they are led by team leaders who engage in more rather than less "boundary-spanning" behaviors.	Lingo & O'Mahony, 2010
Team Emergent State Factors	3	Teams will generally be more creative when their team members have more rather than less positive affective experiences in their team – that is, when they have higher levels of "positive group affective tone."	Grawitch et al. 2003 Pearsall et al. 2008
	4	Teams will generally be more creative when their team members have stronger rather than weaker beliefs in their efficacy and independence while working as a team, as well as the importance and significance of their works in teams – that is, when they have higher levels of "team empowerment."	Shin & Zhou, 2007 Sosik et al. 1997
Team Process Factors	5	Teams will generally be more creative when their team members engage in more rather than less "information sharing" behaviors with their team members.	Gilson & Shalley, 2004 Hargadon & Bechky, 2006 Hülsheger et al., 2009 Seddon & Biasutti, 2009 Taggar, 2002
	6	Teams will generally be more creative when their team members engage in more rather than less "boundary-spanning" behaviors with members of other teams or outsiders.	Cohendet & Simon, 2007 Gilson & Shalley, 2004 Hülsheger et al., 2009

TABLE 2. (CONT'D)

Category		Conclusion	Related Studies
	7	Teams will generally be more creative when they have team members with stronger rather than weaker "creative ability".	Pirola-Merlo & Mann, 2004 Taggar, 2002 West & Anderson, 1996
Team Composition Factors	8	Teams will generally be more creative when they have team members with more positive rather than negative attitudes toward their team – that is, when they have higher levels of "preference for workgroup."	Gilson & Shalley, 2004 Hülsheger et al., 2009
	9	Teams will generally be more creative when they have team members with more rather than less diverse functional backgrounds and team tenure – that is, when they have higher levels of "job-related diversity."	Choi & Thompson, 2005 De Dreu & West, 2001 Hülsheger et al., 2009
Task Design Factors	10	Teams will generally be more creative whey they need higher rather than lower interdependence among team members to achieve their goals – that is, when they have higher levels of "team interdependence."	Gilson & Shalley, 2004 Hülsheger et al., 2009

TABLE 3. THE DEMOGRAPHIC CHARACTERISTICS OF INITIAL SAMPLE

	Total Team Leaders	Total Team Members	S.K. Team Leaders	U.S. Team Leaders	S.K. Team Members	U.S. Team Members
1. Age (yrs)	40.15 (5.87)	35.69 (5.95)	40.47 (3.68)	39.60 (8.49)	34.39 (3.79)	39.05 (8.67)
2. Team Tenure (months)	42.94 (40.76)	33.83 (26.79)	58.47 (43.77)	18.93 (18.65)	39.63 (26.29)	21.28 (23.54)
3. The Ratio of Males	100.0%	95.3%	100.0%	100.0%	95.1%	91.8%
4. The Ratio of Females	0.0%	4.7%	0.0%	0.0%	4.9%	8.2%
5. The Ratio of Doctors	53.6%	26.3%	76.5%	18.2%	27.2%	24.5%
6. The Ratio of Masters	25.0%	51.3%	17.6%	45.4%	55.4%	42.9%
7. The Ratio of Bachelors	21.4%	22.4%	5.9%	36.4%	17.4%	32.6%
8. The Ratio of Asian / Asian American	87.1%	90.2%	100.0%	63.6%	100.0%	67.7%
9. The Ratio of Caucasian	12.9%	6.8%	0.0%	36.3%	0.0%	22.4%
10. The Ratio of African American	0.0%	1.8%	0.0%	0.0%	0.0%	5.9%
11. The Ratio of Hispanic	0.0%	0.6%	0.0%	0.0%	0.0%	2.0%
12. The Ratio of Native American	0.0%	0.6%	0.0%	0.0%	0.0%	2.0%
13. Total Number	62	171	40	22	120	51

Note. The number in the parenthesis in the row of "Age" and "Team Tenure" shows standard deviation.
"S.K." refers to South Korea, "U.S." refers to the United States.

TABLE 4. THE DEMOGRAPHIC CHARACTERISTICS OF FINAL SAMPLE

	Total Team Leaders	Total Team Members	S.K. Team Leaders	U.S. Team Leaders	S.K. Team Members	U.S. Team Members
1. Age (yrs)	40.56 (6.04)	35.92 (6.10)	41.22 (3.48)	38.83 (9.12)	34.21 (3.57)	39.21 (5.29)
2. Team Tenure (months)	41.87 (39.56)	34.21 (28.41)	59.81 (42.02)	18.46 (18.36)	40.23 (24.84)	24.23 (23.84)
3. The Ratio of Males	100.0%	95.1%	100.0%	100.0%	93.7%	97.9%
4. The Ratio of Females	0.0%	4.9%	0.0%	0.0%	6.3%	2.1%
5. The Ratio of Doctors	54.0%	24.5%	78.1%	20.0%	23.9%	25.5%
6. The Ratio of Masters	24.0%	51.0%	15.6%	45.0%	55.2%	42.6%
7. The Ratio of Bachelors	22.0%	24.5%	6.3%	35.0%	20.9%	31.9%
8. The Ratio of Asian / Asian American	88.5%	90.2%	100.0%	65.0%	100.0%	70.3%
9. The Ratio of Caucasian	11.5%	7.0%	0.0%	35.0%	0.0%	21.3%
10. The Ratio of African American	0.0%	1.4%	0.0%	0.0%	0.0%	4.2%
11. The Ratio of Hispanic	0.0%	0.7%	0.0%	0.0%	0.0%	2.1%
12. The Ratio of Native American	0.0%	0.7%	0.0%	0.0%	0.0%	2.1%
13. Total Number	52	143	32	20	96	47

Note. The number in the parenthesis in the row of "Age" and "Team Tenure" shows standard deviation.
"S.K." refers to South Korea, "U.S." refers to the United States.

TABLE 5. RELIABILITY-WITHIN-GROUP (r_{wg}), ICC(1), and ICC(2)

Variable	Median r_{wg}	ICC(1)	ICC(2)
Team Leader Behavior			
Transformational Behaviors (Total)	0.895	0.226	0.682
Idealized Influence	0.886	0.235	0.648
Inspirational Motivation	0.862	0.229	0.658
Intellectual Stimulation	0.865	0.208	0.603
Individulized Consideration	0.863	0.231	0.601
Empowering Behaviors	0.885	0.231	0.530
Boundary-Working Behaviors (Total)	0.889	0.204	0.599
Ambassadorial Behaviors	0.874	0.198	0.603
Scouting Behaviors	0.847	0.221	0.528
Sentry Behaviors	0.795	0.197	0.565
Team Emergent State Factor			
Positive Group Affective Tone	0.856	0.188	0.572
Team Empowerment	0.863	0.142	0.438
Team Process Factor			
Team Information Sharing	0.877	0.197	0.652
Team Boundary-Work (Total)	0.892	0.178	0.442
Ambassadorial Behaviors	0.861	0.195	0.506
Scouting Behaviors	0.865	0.188	0.467
Sentry Behaviors	0.839	0.173	0.429
Contextual Factor			
Organizational Support for Team Creativity	0.868	0.122	0.302
Task Design Factor			
Team Interdependence			
Task Interdependence	0.831	0.108	0.324
Goal Interdependence	0.853	0.135	0.375
Interdependent Feedback and Rewards	0.867	0.161	0.418
Team Outcome			
Team Creativity	0.814	0.211	0.501

TABLE 6. MEANS, STANDARD DEVIATIONS, AND INTERCORRELATIONS FOR STUDY VARIABLES

Variable	Mean	s.d.	1	2	3	4	5	6	7
1 Team Member Creativity	2.861	0.437							
2 Preference for Workgroup	3.939	0.370	0.146						
3 Team Tenure Diversity	0.531	0.249	-0.020	.088					
4 Task Interdependence	3.651	0.472	0.290*	.283*	-.085				
5 Goal Interdependence	3.810	0.445	0.321*	.405**	.169	.616**			
6 Interdependent Reward and Feedback	3.780	0.486	0.160	.445**	.304*	.442**	.542**		
7 Leaders' Transformational Behaviors	3.319	0.528	-0.014	.588**	-.183	.300*	.197	.331*	**(0.926)**
8 Leaders' Empowering Behaviors	4.943	0.702	0.161	.493**	-.074	.241	.177	.292*	.717**
9 Leaders' Boundary-Spanning Behaviors	4.908	0.730	0.045	.489**	-.078	.228	.140	.198	.728**
10 Positive Group Affective Tone	3.535	0.414	0.078	.419**	-.055	.111	.188	.197	.358**
11 Team Empowerment	5.334	0.601	0.090	.366**	-.096	.261	.324*	.127	.413**
12 Team Information Sharing	3.644	0.493	0.017	.217	.040	.069	.058	.073	.400**
13 Organizational Support for Team Creativity	3.570	0.297	0.087	.491**	.051	.265*	.361**	.335*	.589**
14 Team Boundary-Spanning	4.884	0.788	0.165	.304*	-.144	.377**	.364**	.361**	.385**
15 Team Creativity	0.007	0.787	0.222	.265*	.129	.296*	.287*	.299*	.246

Note. Boldface elements on the diagonal represent the square root of the average variance extracted. Off-diagonal elements are correlations between constructs. For adequate discriminant validity, the elements in each row and column should be smaller than the boldfaced element in the row or column.
* $p < .05$, ** $p < .01$

TABLE 6. (CONT'D)

Variable	8	9	10	11	12	13	14	15
1 Team Member Creativity								
2 Preference for Workgroup								
3 Team Tenure Diversity								
4 Task Interdependence								
5 Goal Interdependence								
6 Interdependent Reward and Feedback								
7 Leaders' Transformational Behaviors								
8 Leaders' Empowering Behaviors	(**0.815**)							
9 Leaders' Boundary-Spanning Behaviors	.668[**]	(**0.902**)						
10 Positive Group Affective Tone	.304[**]	.194	(**0.752**)					
11 Team Empowerment	.425[**]	.352[**]	.514[**]	(**0.752**)				
12 Team Information Sharing	.306[*]	.351[**]	.377[**]	.476[**]	(**0.829**)			
13 Organizational Support for Team Creativity	.520[**]	.466[**]	.627[**]	.653[**]	.449[**]	(**0.821**)		
14 Team Boundary-Spanning	.471[**]	.516[**]	.249	.358[*]	.175	.337[*]	(**0.880**)	
15 Team Creativity	.204	.234	.391[**]	.241	.413[**]	.392[**]	.248	(**0.856**)

Note. Boldface elements on the diagonal represent the square root of the average variance extracted. Off-diagonal elements are correlations between constructs. For adequate discriminant validity, the elements in each row and column should be smaller than the boldfaced element in the row or column.
[*] $p < .05$, [**] $p < .01$

TABLE 7. INTERNAL AND CROSSLOADINGS OF THE ITEMS

	Leaders' Transformational Behaviors	Leaders' Empowering Behaviors	Leaders' Boundary-Spanning Behaviors	Positive Group Affective Tone	Team Empowerment	Team Information Sharing
Leaders' Idealized Influence	**0.910**	0.685	0.695	0.245	0.351	0.322
Leaders' Inspirational Motivation	**0.961**	0.671	0.728	0.373	0.337	0.367
Leaders' Intellectual Stimulation	**0.929**	0.649	0.657	0.475	0.383	0.365
Leaders' Individualized Consideration	**0.903**	0.678	0.671	0.337	0.378	0.321
Leaders' Empowering Behaviors #1	0.510	**0.803**	0.561	0.143	0.346	0.138
Leaders' Empowering Behaviors #2	0.413	**0.692**	0.373	0.192	0.176	0.118
Leaders' Empowering Behaviors #3	0.440	**0.751**	0.471	0.264	0.228	0.133
Leaders' Empowering Behaviors #4	0.518	**0.819**	0.621	0.329	0.324	0.244
Leaders' Empowering Behaviors #5	0.587	**0.801**	0.515	0.422	0.507	0.341
Leaders' Empowering Behaviors #6	0.554	**0.869**	0.496	0.263	0.350	0.230
Leaders' Empowering Behaviors #7	0.615	**0.851**	0.617	0.218	0.355	0.244
Leaders' Empowering Behaviors #8	0.616	**0.842**	0.604	0.307	0.378	0.295
Leaders' Empowering Behaviors #9	0.561	**0.813**	0.583	0.212	0.290	0.239
Leaders' Empowering Behaviors #10	0.660	**0.861**	0.630	0.097	0.307	0.147
Leaders' Empowering Behaviors #11	0.697	**0.783**	0.719	0.186	0.298	0.329
Leaders' Empowering Behaviors #12	0.775	**0.802**	0.644	0.450	0.426	0.312
Leaders' Empowering Behaviors #13	0.562	**0.857**	0.613	0.333	0.439	0.330
Leaders' Empowering Behaviors #14	0.616	**0.848**	0.625	0.349	0.472	0.251

Note. Boldface elements represent internal loadings.

TABLE 7. (CONT'D)

	Leaders' Transformational Behaviors	Leaders' Empowering Behaviors	Leaders' Boundary-Spanning Behaviors	Positive Group Affective Tone	Team Empowerment	Team Information Sharing
Leaders' Ambassadorial Behaviors	0.681	0.663	**0.928**	0.314	0.344	0.366
Leaders' Scouting Behaviors	0.627	0.632	**0.897**	0.284	0.310	0.357
Leaders' Sentry Behaviors	0.696	0.632	**0.882**	0.092	0.308	0.269
Members' Positive Affective Experiences #1	0.314	0.273	0.174	**0.809**	0.529	0.302
Members' Positive Affective Experiences #2	0.184	0.247	0.125	**0.721**	0.288	0.339
Members' Positive Affective Experiences #3	0.136	0.055	-0.026	**0.605**	0.129	-0.036
Members' Positive Affective Experiences #4	0.292	0.323	0.135	**0.761**	0.441	0.277
Members' Positive Affective Experiences #5	0.236	0.178	0.191	**0.832**	0.444	0.326
Members' Positive Affective Experiences #6	0.268	0.401	0.279	**0.813**	0.547	0.329
Members' Positive Affective Experiences #7	0.515	0.374	0.316	**0.751**	0.519	0.404
Members' Positive Affective Experiences #8	0.254	0.162	0.121	**0.720**	0.355	0.342
Members' Positive Affective Experiences #9	0.421	0.272	0.298	**0.802**	0.402	0.425
Members' Positive Affective Experiences #10	0.162	0.217	0.114	**0.673**	0.316	0.178
Members' Experiences of Team Empowerment #1	0.313	0.312	0.160	0.495	**0.736**	0.370
Members' Experiences of Team Empowerment #2	0.347	0.473	0.240	0.496	**0.738**	0.398
Members' Experiences of Team Empowerment #3	0.223	0.422	0.248	0.350	**0.765**	0.355
Members' Experiences of Team Empowerment #4	0.346	0.385	0.257	0.543	**0.831**	0.381
Members' Experiences of Team Empowerment #5	0.276	0.318	0.207	0.500	**0.863**	0.485

Note. Boldface elements represent internal loadings.

TABLE 7. (CONT'D)

	Leaders' Transformational Behaviors	Leaders' Empowering Behaviors	Leaders' Boundary-Spanning Behaviors	Positive Group Affective Tone	Team Empowerment	Team Information Sharing
Members' Experiences of Team Empowerment #6	0.336	0.340	0.294	0.488	**0.825**	0.439
Members' Experiences of Team Empowerment #7	0.327	0.452	0.370	0.320	**0.794**	0.445
Members' Experiences of Team Empowerment #8	0.288	0.300	0.436	0.388	**0.648**	0.364
Members' Experiences of Team Empowerment #9	0.153	0.153	0.309	0.163	**0.697**	0.325
Members' Experiences of Team Empowerment #10	0.407	0.414	0.281	0.544	**0.772**	0.269
Members' Experiences of Team Empowerment #11	0.293	0.235	0.221	0.428	**0.779**	0.319
Members' Experiences of Team Empowerment #12	0.131	0.126	0.133	0.180	**0.622**	0.241
Members' Information Sharing Behaviors #1	0.293	0.316	0.311	0.192	0.430	**0.775**
Members' Information Sharing Behaviors #2	0.410	0.247	0.369	0.400	0.383	**0.838**
Members' Information Sharing Behaviors #3	0.392	0.256	0.349	0.353	0.479	**0.891**
Members' Information Sharing Behaviors #4	0.246	0.267	0.263	0.486	0.480	**0.869**
Members' Information Sharing Behaviors #5	0.196	0.154	0.158	0.252	0.244	**0.716**
Members' Information Sharing Behaviors #6	0.315	0.300	0.365	0.353	0.411	**0.869**
Members' Ambassadorial Behaviors	0.445	0.447	0.396	0.571	0.572	0.377
Members' Scouting Behaviors	0.326	0.370	0.319	0.563	0.517	0.412
Members' Sentry Behaviors	0.514	0.398	0.439	0.423	0.545	0.324
Organizational Support for Team Creativity #1	0.343	0.394	0.416	0.168	0.322	0.266
Organizational Support for Team Creativity #2	0.301	0.445	0.472	0.212	0.352	0.137
Organizational Support for Team Creativity #3	0.350	0.369	0.475	0.285	0.229	0.143
Organizational Support for Team Creativity #4	0.358	0.431	0.475	0.234	0.253	0.096

Note. Boldface elements represent internal loadings.

TABLE 7. (CONT'D)

	Leaders' Transformational Behaviors	Leaders' Empowering Behaviors	Leaders' Boundary-Spanning Behaviors	Positive Group Affective Tone	Team Empowerment	Team Information Sharing
Team Creativity #1	0.327	0.263	0.348	0.428	0.313	0.399
Team Creativity #2	0.324	0.259	0.331	0.378	0.242	0.300
Team Creativity #3	0.066	0.088	0.080	0.318	0.137	0.295
Team Creativity #4	0.128	0.106	0.168	0.288	0.208	0.376
Team Member Creativity	-0.017	0.174	0.053	0.093	0.091	0.022
Preference for Workgroup	-0.014	0.061	0.076	0.021	0.104	0.087
Team Tenure Diversity	-0.173	-0.082	-0.028	-0.039	-0.068	0.031
Task Interdependence	0.195	0.187	0.173	0.212	0.328	0.052
Goal Interdependence	0.333	0.285	0.257	0.224	0.139	0.056
Interdependent Reward and Feedback	0.296	0.252	0.226	0.139	0.252	0.068

Note. Boldface elements represent internal loadings.

TABLE 7. (CONT'D)

	Team Boundary-Spanning	Organizational Support for Creativity	Team Creativity	Team Composition	Team Interdependence
Leaders' Idealized Influence	0.410	0.398	0.186	-0.049	0.355
Leaders' Inspirational Motivation	0.469	0.397	0.235	-0.101	0.338
Leaders' Intellectual Stimulation	0.541	0.371	0.311	-0.109	0.346
Leaders' Individualized Consideration	0.494	0.260	0.206	-0.090	0.249
Leaders' Empowering Behaviors #1	0.318	0.440	0.101	0.184	0.240
Leaders' Empowering Behaviors #2	0.290	0.438	0.165	0.048	0.256
Leaders' Empowering Behaviors #3	0.372	0.304	0.124	0.053	0.242
Leaders' Empowering Behaviors #4	0.472	0.445	0.181	0.070	0.277
Leaders' Empowering Behaviors #5	0.403	0.279	0.219	0.132	0.172
Leaders' Empowering Behaviors #6	0.373	0.423	0.173	0.134	0.245
Leaders' Empowering Behaviors #7	0.337	0.322	0.108	0.135	0.213
Leaders' Empowering Behaviors #8	0.479	0.299	0.075	0.128	0.149
Leaders' Empowering Behaviors #9	0.267	0.340	0.070	0.054	0.141
Leaders' Empowering Behaviors #10	0.303	0.447	0.161	0.002	0.229
Leaders' Empowering Behaviors #11	0.421	0.358	0.274	0.103	0.251
Leaders' Empowering Behaviors #12	0.536	0.459	0.275	0.066	0.407
Leaders' Empowering Behaviors #13	0.458	0.394	0.212	0.172	0.298
Leaders' Empowering Behaviors #14	0.438	0.415	0.246	0.045	0.281

Note. Boldface elements represent internal loadings.

TABLE 7. (CONT'D)

	Team Boundary-Spanning	Organizational Support for Creativity	Team Creativity	Team Composition	Team Interdependence
Leaders' Ambassadorial Behaviors	0.466	0.507	0.246	0.061	0.239
Leaders' Scouting Behaviors	0.476	0.455	0.340	0.100	0.300
Leaders' Sentry Behaviors	0.325	0.451	0.182	0.009	0.202
Members' Positive Affective Experiences #1	0.494	0.289	0.260	-0.018	0.115
Members' Positive Affective Experiences #2	0.415	0.120	0.163	-0.160	-0.175
Members' Positive Affective Experiences #3	0.210	-0.012	0.011	-0.101	-0.066
Members' Positive Affective Experiences #4	0.610	0.145	0.260	0.124	0.230
Members' Positive Affective Experiences #5	0.471	0.168	0.310	-0.027	0.127
Members' Positive Affective Experiences #6	0.563	0.250	0.387	0.297	0.303
Members' Positive Affective Experiences #7	0.508	0.193	0.361	-0.025	0.199
Members' Positive Affective Experiences #8	0.466	0.160	0.381	0.079	0.289
Members' Positive Affective Experiences #9	0.510	0.199	0.515	0.118	0.340
Members' Positive Affective Experiences #10	0.315	0.362	0.248	-0.007	0.155
Members' Experiences of Team Empowerment #1	0.520	0.191	0.342	0.078	0.281
Members' Experiences of Team Empowerment #2	0.521	0.097	0.246	0.153	0.176
Members' Experiences of Team Empowerment #3	0.484	0.173	0.262	0.179	0.226
Members' Experiences of Team Empowerment #4	0.484	0.176	0.015	-0.053	0.079
Members' Experiences of Team Empowerment #5	0.548	0.170	0.060	0.014	0.103

Note. Boldface elements represent internal loadings.

TABLE 7. (CONT'D)

	Team Boundary-Spanning	Organizational Support for Creativity	Team Creativity	Team Composition	Team Interdependence
Members' Experiences of Team Empowerment #6	0.531	0.162	0.168	-0.007	0.150
Members' Experiences of Team Empowerment #7	0.532	0.329	0.348	0.167	0.368
Members' Experiences of Team Empowerment #8	0.575	0.460	0.267	0.163	0.304
Members' Experiences of Team Empowerment #9	0.433	0.315	0.105	0.015	0.075
Members' Experiences of Team Empowerment #10	0.572	0.370	0.343	0.107	0.326
Members' Experiences of Team Empowerment #11	0.411	0.267	0.157	-0.056	0.157
Members' Experiences of Team Empowerment #12	0.293	0.261	0.001	-0.105	0.080
Members' Information Sharing Behaviors #1	0.270	0.165	0.241	0.033	0.123
Members' Information Sharing Behaviors #2	0.358	0.089	0.300	-0.050	-0.021
Members' Information Sharing Behaviors #3	0.412	0.143	0.318	0.096	0.078
Members' Information Sharing Behaviors #4	0.481	0.193	0.376	0.063	0.052
Members' Information Sharing Behaviors #5	0.278	0.011	0.356	0.132	0.118
Members' Information Sharing Behaviors #6	0.413	0.235	0.392	0.085	0.029
Members' Ambassadorial Behaviors	**0.900**	0.224	0.250	0.117	0.261
Members' Scouting Behaviors	**0.844**	0.208	0.298	0.243	0.259
Members' Sentry Behaviors	**0.703**	0.335	0.366	-0.193	0.387
Organizational Support for Team Creativity #1	0.305	**0.781**	0.124	0.126	0.401
Organizational Support for Team Creativity #2	0.291	**0.908**	0.171	0.147	0.370
Organizational Support for Team Creativity #3	0.219	**0.915**	0.234	0.009	0.376
Organizational Supprot for Team Creativity #4	0.290	**0.907**	0.309	0.084	0.412

Note. Boldface elements represent internal loadings.

TABLE 7. (CONT'D)

	Team Boundary-Spanning	Organizational Support for Creativity	Team Creativity	Team Composition	Team Interdependence
Team Creativity #1	0.421	0.261	**0.880**	0.241	0.389
Team Creativity #2	0.387	0.251	**0.871**	0.307	0.320
Team Creativity #3	0.215	0.144	**0.818**	0.324	0.279
Team Creativity #4	0.212	0.161	**0.855**	0.216	0.205
Team Member Creativity	0.085	0.159	0.242	**0.761**	0.282
Preference for Workgroup	-0.057	0.098	0.164	**0.515**	0.027
Team Tenure Diversity	0.079	-0.141	0.136	**0.429**	0.167
Task Interdependence	0.353	0.365	0.292	0.308	**0.820**
Goal Interdependence	0.325	0.357	0.305	0.262	**0.855**
Interdependent Reward and Feedback	0.240	0.377	0.283	0.174	**0.795**

Note. Boldface elements represent internal loadings.

TABLE 8. INTERNAL CONSISTENCY INDEX

	Items	AVE	Cronbach's Alpha	Composite Scale Reliability
Leaders' Transformational Behaviors	4	0.857	0.960	0.945
Leaders' Empowering Behaviors	14	0.664	0.965	0.961
Leaders' Boundary-Working Behaviors	3	0.814	0.929	0.886
Positive Group Affective Tone	10	0.565	0.928	0.915
Team Empowerment	12	0.565	0.939	0.929
Team Information Sharing	6	0.687	0.929	0.908
Team Boundary-Work	3	0.672	0.859	0.749
Organizational Support for Creativity	4	0.774	0.932	0.901
Team Creativity	4	0.733	0.916	0.879

Note. AVE represents average variance extracted.

TABLE 9. RESULTS FOR THE HYPOTHESIZED PATHS
(HYPOTHESES 1-6 AND HYPOTHESES 11-15)

Model Path	beta	s.d.	t statistic
Hypothesis & Proposed Path			
H1 Team Information Sharing → Team Creativity	0.316	0.148	2.056[*]
H2 Team Boundary-Work → Team Creativity	0.142	0.097	1.341[†]
H3 Positive Group Affective Tone → Team Information Sharing	0.224	0.117	1.793[*]
H4 Positive Group Affective Tone → Team Boundary-Spanning	0.394	0.084	4.580[**]
H5 Team Empowerment → Team Information Sharing	0.373	0.123	3.074[**]
H6 Team Empowerment → Team Boundary-Spanning	0.441	0.092	4.881[**]
H9 Leader's Transformational Behaviors → Positive Group Affective Tone	0.292	0.157	1.848[*]
H10 Leader's Transformational Behaviors → Team Empowerment	0.159	0.111	1.194
H11 Leader's Empowering Behaviors → Positive Group Affective Tone	0.194	0.123	1.204
H12 Leader's Empowering Behaviors → Team Empowerment	0.399	0.156	2.267[*]
H13 Leader's Boundary-Spanning Behaviors → Team Empowerment	0.157	0.119	0.045
H14 Organizational Support → Team Creativity	0.087	0.066	0.577
H15 Leaders' Boundary-Spanning Behaviors → Organizational Support	0.534	0.080	6.501[**]
Controls			
Team Composition → Team Creativity	0.255	0.099	2.225[*]
Task Design → Team Creativity	0.241	0.115	1.778[*]

Note. [†] p < .10 [*] p < .05 [**] p < .01, one-tailed.

TABLE 10. RESULTS OF MEDIATION TESTING (HYPOTHESES 7-8)

	Path (a → b → c)	Direct Effect Model (a → c)		Sobel t-test
		beta	t statstic	
H7	Positive Group Affective Tone → Team Information Sharing → Team Creativity	0.349	2.786	p < .10
	Positive Group Affective Tone → Team Boundary-Work → Team Creativity	0.349	2.786	p > .10
H8	Team Empowerment → Team Information Sharing → Team Creativity	0.008	0.079	p < .05
	Team Empowerment → Team Boundary-Work → Team Creativity	0.008	0.079	p < .10

## TABLE 11. CONCLUSIONS FROM MY DISSERTATION IN NEED OF FUTURE RESEARCH

| Category	Variable	Conclusion
Direct Antecedents		
Team Emergent State Factors	Positive Group Affective Tone	Teams will generally be more creative when their team members have more rather than less positive affective experiences in their team – that is, when they have higher levels of "positive group affective tone."
Team Process Factors	Team Information-Sharing	Teams will generally be more creative when their team members engage in more rather than less "information sharing" behaviors with their team members.
	Team Boundary-Spanning	Teams will generally be more creative when their team members engage in more rather than less "boundary-spanning" behaviors with members of other teams or outsiders.
Indirect Antecedents		
Team Leader Behavior Factors	Transformational Behaviors	Teams will generally be more creative when they are led by team leaders who engage in more rather than less "transformational" behaviors that generally facilitate teams' development of higher rather than lower levels of "positive group affective tone."
	Empowering Behaviors	Teams will generally be more creative when they are led by team leaders who engage in more rather than less "empowering" behaviors that generally facilitate teams' development of higher rather than lower levels of "team empowerment."
Team Emergent State Factors	Team Empwerment	Teams will generally be more creative when their team members have stronger rather than weaker beliefs in their efficacy and independence while working as a team, as well as the importance and significance of their works in teams – that is, when they have higher levels of "team empowerment" and thus are likely to engage in more rather than less "information sharing" and "boundary-spanning" behaviors.

TABLE 11. (CONT'D)

Category	Variable	Conclusion
Team Inputs		
Team Composition Factors	Team Member Creativity	Teams will generally be more creative when they have team members with stronger rather than weaker "creative ability".
	Preference for Workgroup	Teams will generally be more creative when they have team members with more positive rather than negative attitudes toward their team – that is, when they have higher levels of "preference for workgroup."
	Job-Related Diversity	Teams will generally be more creative when they have team members with more rather than less diverse functional backgrounds and team tenure – that is, when they have higher levels of "job-related diversity."
Task Design Factors	Team Interdependence	Teams will generally be more creative whey they need higher rather than lower interdependence among team members to achieve their goals – that is, when they have higher levels of "team interdependence."

FIGURE 1. THEORETICAL MODEL OF TEAM CREATIVITY
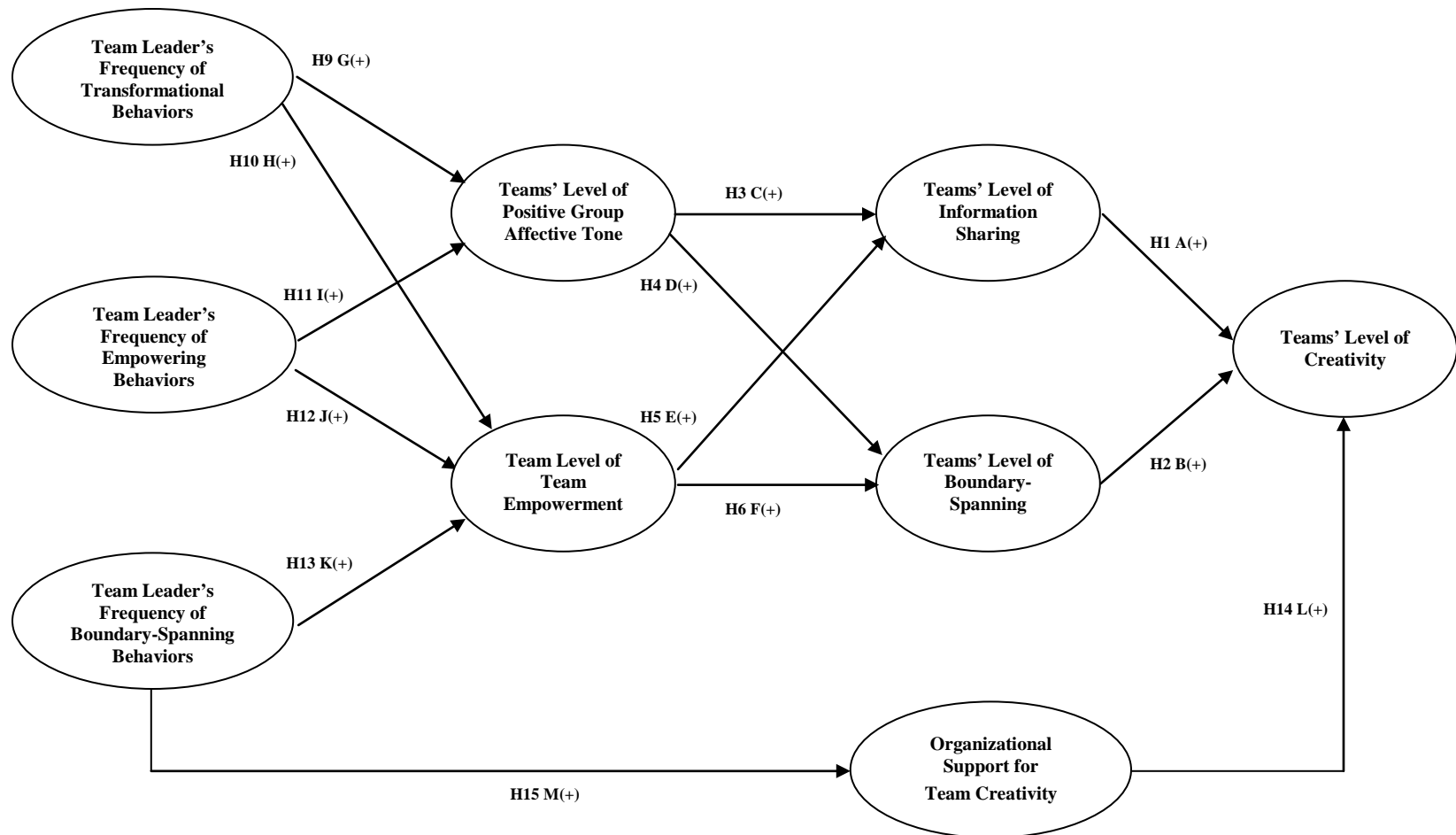
FIGURE 2. EMPIRICAL MODEL OF TEAM CREATIVITY
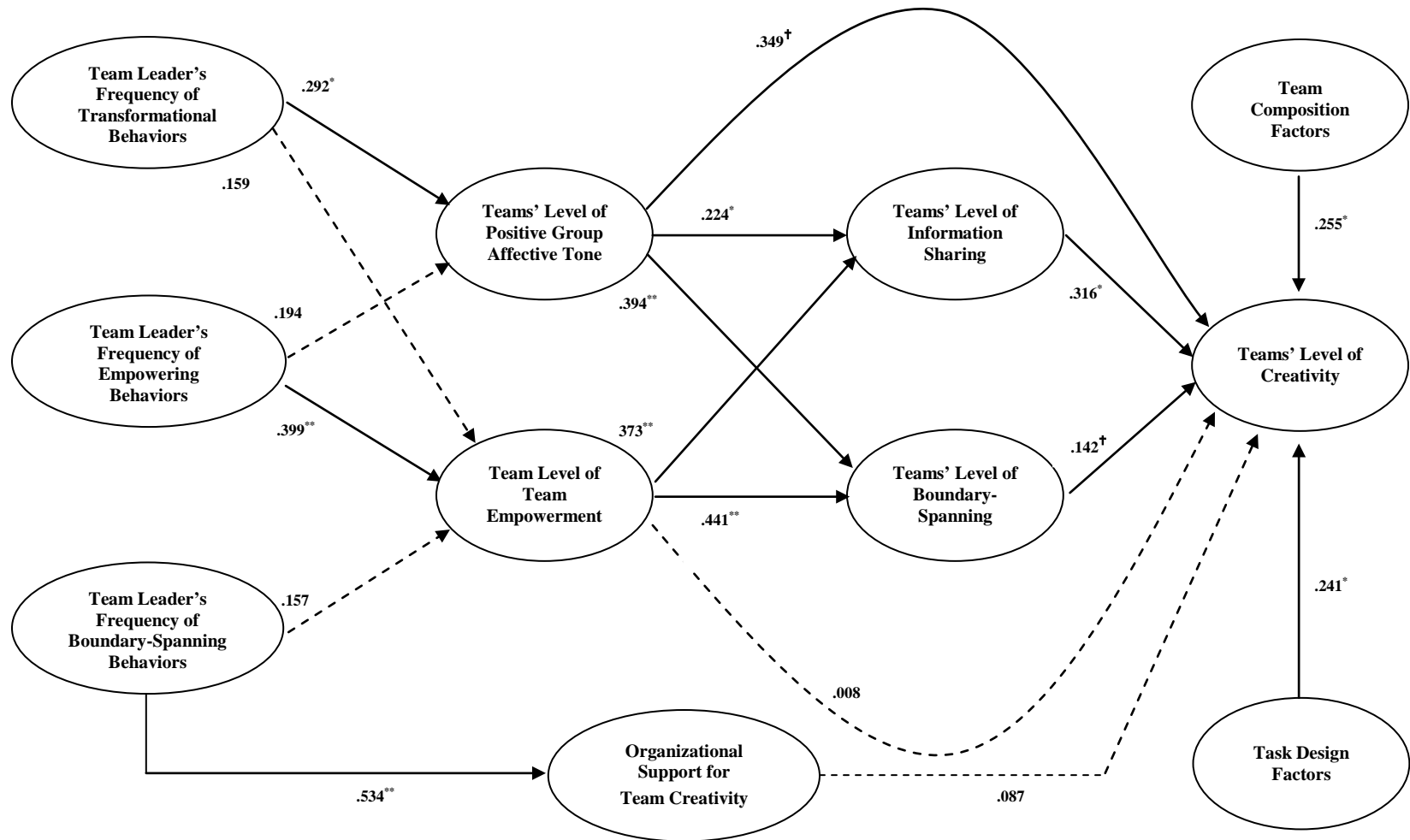
Note. Solid line represents significant linkages; dotted line represents insignificant (but hypothesized) linkages.
† p < .10 * p < .05 ** p < .01, one-tailed.

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