

# Managing for Innovation: Examination of a Climate-Centric Model for Organizational Creativity

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## Abstract

The strategic importance of organizational innovation is on the rise, as is a concomitant interest in organizational creativity. There has also been a recent resurgence of interest in work environments that favor creativity and innovation. This demands a focus on understanding the antecedent factors affecting the climate for creativity, which in turn, affect outcomes such as organizational innovation and productivity. More precise distinctions must be made among relevant constructs. This article offers an alternative integrative model, and provides a preliminary examination of the model's ability to account for relevant influences on the climate for creativity within the work environment. In order to examine the proposed model, content analysis was performed on over 6,000 phrases derived from 948 participants from five organizations. The elements within the model were examined and modifications were suggested in light of these findings. Implications for research and practice were also identified.

The strategic importance of creativity and innovation for organizations is at an all time high according to recent surveys of senior managers (Andrew, Haanaes, Michael, Sirkin & Taylor, 2008; Barsh, Capozzi, & Davidson, 2008). This increased emphasis underscores the importance of understanding the factors that facilitate or inhibit the likelihood of creative outcomes. Numerous models have been offered that outline these factors (Amabile, 1988; Woodman, Sawyer, & Griffin, 1993; Oldham & Cummings, 1996; Ford, 1996; Drazin, Glynn & Kazanjian, 1999; West, 2002; Martins & Terblanche, 2003; Schepers & van den Berg, 2007; O'Shea & Buckley, 2007). Concurrently, the research literature on organizational climate has surged and experienced a three-fold increase in articles published in the top management journals from 2000 through 2008 (Kuenzi & Schminke, 2009). Fortunately, recent efforts have attempted to synthesize and inte-

grate this growing body of literature (Agars, Kaufman, Deane, & Smith, 2012; Oldham & Baer, 2012; West & Sacramento, 2012).

Although previous models and literature have identified many diverse factors affecting the work environment for creativity, we still lack a coherent conceptual framework that can guide research and practice. Previous models do not clearly address the need to outline antecedent, intervening, and dependent factors; nor do they consistently define work environment or context, culture or climate. Further, previous models did not benefit from the more recent literature aimed at synthetic integration.

The purpose of this article is to examine a model that is aimed at identifying the factors likely to encourage or suppress the emergence and effectiveness of organizational creativity. Managers and leaders must have clear and useful "levers" they can

apply to engage in climate creation. The Model for Organizational Creativity (MOC) has been proposed to address the need to more clearly understand and differentiate those factors that function as antecedents to creative climate, and those dependent elements that result from such a climate (Isaksen & Akkermans, 2007; Isaksen, Lauer, Ekvall, & Britz, 2001). Further, the MOC positions creative climate as a central intervening construct. Since it is essential that models be subjected to tests of their content validity, the results from a preliminary content analysis will be presented to support the utility and validity of the model. The driving question for this study was: To what extent do the elements of the MOC cover the conceptual domain of the work environment for creativity?

#### THE CREATIVE CONTEXT, CULTURE, AND CLIMATE

Much of the literature is inconsistent in the way it defines and operationalizes the work environment construct. The work environment can be conceived as the aggregate of social and contextual factors that influence the lives of people who exist within organizations. It is a broad and inclusive concept and has often been used synonymously with other terms like organizational culture and climate (Ostroff, Kinicki, & Tamkins, 2003).

Similar to other organizational psychologists (James, Choi, Ko, McNeil, Minton, Wright & Kim, 2007; Kuenzi & Schminke, 2009; Pettigrew, 1990; Schneider & Gunnarson, 1991), Ekvall has differentiated the concepts of climate and culture. Ekvall (1991) defined climate as the observed and recurring patterns of behavior, attitudes, and feelings that characterize life in the organization. Culture reflects the deeper foundations of the organization and includes values, beliefs, deeply held assumptions, history, traditions, symbols and rituals. According to this distinction, culture provides the deeper foundation for patterns of behavior that are more readily observed, described, and changed (Denison, 1996). These patterns of observed behavior establish the climate within the organization. Climate is what members of the organization experience, while culture reflects what the organization values. Schein (2000) supports this differentiation by identifying climate as an artifact of culture.

The climate construct can also be approached by different theoretical perspectives and on different levels, depending on the unit of analysis and the aggregation of individual perceptions utilized (Ekvall, 1987; James, James, & Ashe, 1990). For example, psychological climate is the cognitive appraisal by an individual of environmental attributes in terms of their acquired meaning and personal values to the individual (James, et. al, 2007). When individual appraisals are aggregated, based on the belief that individuals in an organization have a sense of shared meaning or there is support for composing individual perceptions, the results are often referred to as either team (at the group level) or organizational climate (at the social system level). A related issue has been referred to as strength of climate – the less within-group variability, the stronger the climate (Schneider, Salvaggio, and Subirats, 2002).

Creativity and innovation are terms that have often been used interchangeably and both have been defined in a variety of ways. Although creativity and innovation are distinct constructs (Shalley & Gilson, 2004), there is an emerging consensus that creativity has to do with the generating and communicating of meaningful new ideas and connections, and innovation has more to do with the use and implementation of them (O'Shea & Buckley, 2007). Designing, inventing, developing and/or implementing new ideas would have its foundation in the creative process (Isaksen & Tidd, 2006; Woodman, Sawyer, & Griffin, 1993), and some would assert that creativity precedes innovation (West, 2002).

Organizational innovation depends, in large part, on a climate that supports creativity (Hosseini, Azar, & Rostamy, 2003; King, de Chermont, West, Dawson & Hebl, 2007). Numerous factors have been found to influence the climate for creativity within organizations (Ekvall & Ryhammer, 1998; Jung, Wu, & Chow, 2008; Mathisen, Mykletun, & Einarsen, 2007), and climate has been found to influence other organizational variables. Climate has been found to be both a moderator (Baer & Frese, 2003; De Hoogh, Den Hartog & Koopman, 2005; Ensley, Pearce & Hmielski, 2006) and mediator (Eisenbeiss, Knippenberg, & Boerner, 2008; Lindell & Brandt, 2000; Schepers & van den Berg, 2007) of

the relationship between various antecedent variables and organizational or group-level performance outcomes related to creativity and innovation.

Ekvall (1987; 1997; 2002) found that his measure of creative climate has significantly differentiated innovative from stagnated organizations (number of patents obtained, technical and market originality, business strategy, success in developing and launching new products and services). Mumford and Gustafson (1988) argued that even when individuals have the capability to innovate, their willingness to do so depends on the climate. Even when organizations don't have strong innovative capabilities climate plays an important role. Amabile and Conti (1999) found that the work environment mediated the relationship between downsizing and creative productivity.

Given the support for treating the climate for innovation and creativity as an intervening variable, researchers and practitioners concerned with assessing and developing this organizational capability need a model that views climate in this manner. Some models and research treat climate as an antecedent or independent variable (i.e. Parker, Baltes, Young, Huff, Altmann, LaCost, & Roberts, 2003). Others consider climate as a dependent variable (i.e. Sarros, Cooper & Santora, 2008). The case is made here that climate should be treated as an intervening concept (Baron & Kenny, 1986; Hull, 1943). As such, it provides the central construct for the model to be evaluated in this study.

#### **A MEASURE OF THE CLIMATE FOR CREATIVITY**

Models are operationalized through measurement, and there are a number of different assessments of climate for innovation and creativity (Amabile, Conti, Coon, Lazenby & Herron, 1996; Andersen & West, 1998; Mayfield & Mayfield, 2010). One measure of climate, the Situational Outlook Questionnaire® (SOQ), is the result of over 50 years of continuous research and development, initiated by Ekvall in the 1960's (Isaksen & Ekvall, 2007). The SOQ has been reviewed by a number of scholars (Hunter, Bedell, & Mumford, 2007; Mathisen & Einarsen, 2004) and its dimensions were chosen to form the central climate construct for this study.

The SOQ is an online questionnaire consisting of 53 closed-ended questions on a four-point Likert scale assessing nine dimensions of climate and three open-ended questions that allow respondents to indicate things that help and hinder in the creation of an organizational climate that supports innovation. A definition of each of the nine SOQ dimensions is presented in Table 1.

The dimensions of the SOQ have been shown to have adequate levels of internal reliability and stability over time (Ekvall, 1993; Isaksen, Lauer & Ekvall, 1999; Isaksen & Ekvall, 2007, Porter, 2010). The SOQ has also shown a coherent internal factor structure reflecting the nine dimensions it is designed to measure through a series of exploratory factor analyses (Isaksen, 2007; Isaksen & Lauer & Ekvall, 1999; Sample, 2010) and a more recent confirmatory factor analysis (Isaksen & Ekvall, 2010).

The SOQ has evidence on its relationship to other variables and measures. For example, the dimensions of the SOQ correlate significantly, and in expected directions, with the Survey of Creative and Innovative Performance (Puccio, Treffinger, & Talbot, 1995) and the Work Environment Inventory, an earlier version of KEYS (an alternative creative climate assessment, Ryhammer, 1996).

The SOQ has shown positive relationships to a number of outcome variables including: higher sales volume, market share, productivity and profitability, reported greater impact from implementing new social and technical systems (like self-managed teams), and improved ability to implement more complex work designs (Firenze, 1998). Davis (2000) conducted a global innovation survey and found that those organizations with better creative climates assessed by the SOQ dimensions had higher levels of growth in market capitalization, revenues from new products and services, and overall profitability.

The dimensions of the SOQ have been able to discriminate between best and worst-case work environments (Isaksen, Lauer, Ekvall, & Britz, 2001), most and least creative teams (Isaksen & Lauer, 2002), and levels of perceived support for innovation (Isaksen & Lauer, 2001; Montes, Moreno, & Fernandez, 2004). Research has demonstrated that the dimensions of the SOQ clearly and significantly discriminate levels of leadership support for

**TABLE 1: The Dimensions of the Situational Outlook Questionnaire**

Dimension	Definition
Challenge/ Involvement	The degree to which people are involved in daily operations, long-term goals, and visions. High Challenge/ Involvement implies better levels of engagement, commitment, and motivation.
Freedom	The degree of independence shown by the people in the organization. High levels of Freedom imply more perceived autonomy and ability for individual discretion.
Trust/ Openness	The emotional safety in relationships. In high Trust/Openness situations people feel more comfortable sharing ideas and being frank and honest with each other.
Idea-Time	The amount of time people can, and do, use for elaborating new ideas. When Idea-Time is high people can explore and develop new ideas that may not have been included in the original task.
Playfulness/ Humor	The spontaneity and ease displayed within the workplace. Good-natured joking and laughter and a relaxed atmosphere (lower stress) are indicators of higher levels of Playfulness and Humor.
Conflict	The presence of personal and emotional tensions (a negative dimension – in contrast to the debate dimension). When Conflict is high people engage in interpersonal warfare, slander and gossip, and even plot against each other.
Idea-Support	The way new ideas are treated. In a high Idea-Support situation people receive ideas and suggestions in an attentive and professional manner. People listen generously to each other.
Debate	The occurrence and open disagreement between viewpoints, ideas, experiences, and knowledge. In the Debating situation many different voices and points of view are exchanged and encouraged.
Risk-Taking	The tolerance of uncertainty and ambiguity. In a high Risk-Taking climate people can make decisions even when they do not have certainty and all the information desired. People can and do “go out on a limb” to put new ideas forward.

innovation, and levels of work-group and organizational innovation (Ekvall & Arvonen, 1994; Isaksen & Akkermans, 2011; Ismail, 2005; Retz, 2011). The SOQ dimensions have also been able to discriminate climates that are more stress free (Talbot, Cooper & Barrow, 1992), have higher levels of job satisfaction (Ślusarczyk, 2005; Turnipseed, 1994), and improved well-being (Brink & Embretsson, 2002; Norbergh, Sandman, & Asplun, 2002; Rasulzada & Dackert, 2009).

Erickson (2010) used the SOQ to study nurses' perceptions of climate in magnet versus non-magnet Veterans Administration hospitals. Nurses in magnet hospitals experience more empowerment, better support for clinical decision-making, and better patient outcomes (Lash & Munroe, 2005). Hospitals that achieve magnet status must demonstrate compliance with standards of care and professional performance. Erickson (2010) found significant differences favoring magnet hospitals on the Freedom, Idea-Time, Idea-Support, Debate,

and Risk-Taking dimensions of the SOQ.

The initial translation from Swedish, validation, and use of the SOQ focused exclusively on the quantitative assessment of its dimensions. Open-ended narrative questions were added in 1991, as a result of unexpected feedback from participants who returned the instrument with detailed handwritten comments. Explicit efforts were then taken to develop and add open-ended questions that would allow participants to provide more specific contextual narrative data concurrently to completing the closed-ended questions. The verbatim comments from participants could be used to elaborate, supplement, or clarify the numerical results; or to identify and describe emergent constructs that were directly grounded in each specific context. As such, the SOQ incorporated a mixed-method approach to research and practice (Johnson & Onwuegbuzie, 2004; Johnson, Onwuegbuzie, & Turner, 2007).

It was the inclusion of these open-ended questions that led to an examination of a larger and

more inclusive model to guide interpretation and application. The aim was to derive meaning from the narrative data supplemental to the quantitative data provided on the dimensions. The key insight was that the broader conceptual space of the construct of the work environment for innovation and creativity included much more than the nine dimensions of climate assessed by the SOQ.

This insight was entirely consistent with Ekvall's earlier work. Ekvall (1983) and Ekvall, Arvonen, and Waldenström-Lindblad (1983) had indicated that their initial climate assessment was surrounded by a larger social system. They asserted that organizational climate has its origins in the interplay between the people in the organization and the structure and environment that exists there. Ekvall and Tängeberg-Andersson (1986) outlined numerous antecedent factors influencing climate including the organization's culture, vision and goals, leadership, the nature of the work, and characteristics of employees. Ekvall (1996) outlined a broadened set of antecedent variables and offered a preliminary causal model that depicted climate as an intervening variable.

Ekvall summarized the etiology of climate as well as some of its consequences by indicating:

Climate affects organizational and psychological processes such as communication, problem solving, decision-making, conflict handling, learning and motivation, and thus exerts an influence on the efficiency and productivity of the organization, on its ability to innovate, and on the job satisfaction and well-being that its members can enjoy. The individual organization member is affected by the climate as a whole, by the general psychological atmosphere, which is relatively stable over time. No single separate event produced this more lasting influence on behavior and feelings; it is the daily exposure to a particular psychological atmosphere. It is because of this overall and lasting effect that the climate concept is of interest and importance to our understanding of organizational life. (1987; p. 183)

It is with this background in mind that the at-

tention now turns to the development and explanation of the proposed model for organizational change, innovation and creativity.

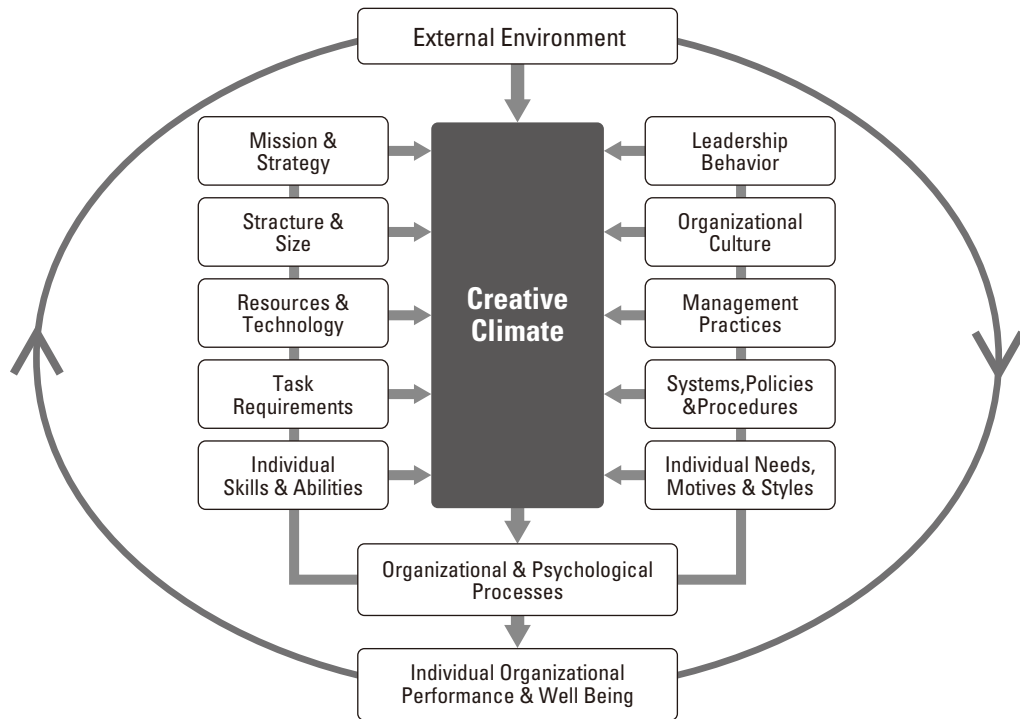
## A MODEL FOR ORGANIZATIONAL CREATIVITY

The Model for Organizational Creativity (MOC) provides the conceptual framework to help define climate as an intervening variable in influencing organizational creativity and innovation (see Figure 1). Based on a review of the literature and alternative models, the MOC outlines those salient organizational antecedents that influence climate, as well as those factors that climate influences (Isaksen, Lauer, Ekvall, & Britz, 2001; Isaksen & Tidd, 2006). Within this framework, climate is considered a key intervening variable that affects organizational and psychological processes that, in turn, affect the overall productivity and well-being of an organization. (See Table 2)

Climate is defined as recurring, persistent, and observable patterns of behavior – human interaction and information exchange – that characterize life within the organization and influences outcomes and performance related to creativity. Creative climate is operationalized through the nine dimensions described above (see Table 1). As such, climate is an important variable in understanding organizational performance and change (Hosseini, Azar, & Rostamy, 2003; Koene, Vogelaar & Soeters, 2002; Schneider, Brief, & Guzzo, 1996).

Organizational processes include group problem solving, decision-making, communication, planning and coordination, and organizational learning (Nicolini & Mezner, 1995). Psychological processes include individual and group learning, problem solving, creating, motivating, and committing (Ekvall, 1987). These components exert a direct influence on the performance and outcomes of individuals, working groups or teams (Bain, Mann, & Pirola-Merlo, 2001; Isaksen & Lauer, 2002) and the organization (Amabile & Gryskiewicz, 1987; Service & Boockholdt, 1998) and correspond well to those strategic and organizational processes identified as dynamic capabilities (Eisenhardt & Martin, 2000; Helfat, Finkelstein, Mitchell, Peteraf, Singh, Teece & Winter, 2007). Individual and organizational performance and well-being include the





**Figure 1: A Climate-Centric Model for Organizational Creativity**

actual outcomes or results (levels of job satisfaction, innovative productivity, etc.).

The outcomes or results function as indicators of the achievements and efforts of the organization and the people within it. The MOC displays the organization as a dynamic, open system and identifies the factors that are important to consider when introducing, managing, or understanding change, innovation, and creativity within an organizational context (Isaksen, Lauer, Ekvall & Britz, 2001; Isaksen & Tidd, 2006).

Information and interaction are the content that flows through this larger system. Information is the data and knowledge that are exchanged. Interactions are the relationships and interplay of behaviors between and among people. This includes patterns of communication and focuses on how the information is exchanged and transmitted, including the use of language to convey meaning (Pondy & Mitroff, 1979). The information and interaction form the “what” and “how” people perceive and observe – the basis for their assessment of the patterns of behavior.

Those elements closer to the external environ-

ment are more transformational than transitional or transactional (Bass, Avolio, Jung, & Berson, 2003). Each of the elements is consistent with other conceptual models reported in the literature, although few of these would include all the elements or place climate as the core intervening construct. Further, each element represents a broad domain within the management and psychological literature and is supported by empirical literature (Isaksen, In preparation). Elements of the MOC may be conceptually distinct, but there are a variety of potential inter-relationships among and between them. Each of the antecedents is defined below and these definitions provided the coding framework for this study.

## METHOD

The core construct within the MOC was climate as defined above and operationalized through the nine dimensions of the Situational Outlook Questionnaire (SOQ). The three open-ended questions that allowed participants to enter their narrative responses in open fields were:

1. What aspect of your working environment is

**TABLE 2: Elements of the Model for Organizational Creativity**

Element	Definition
External Environment	The organization exists in a broader context and is affected by and interacts with its external environment. Organizations effect their environments by producing both individual and organizational output, products, or performance. The external environment is any condition or situation that is outside the boundary of the organization (e.g., the market, global financial conditions, government, the larger political and social system, technological and scientific developments, physical geography and regional location), but can exert an influence on the other elements of the MOC, the climate, as well as the organization's performance.
Leadership Behavior	Leadership behavior, in the context of innovation and creativity, includes any actions initiated by leaders aimed at the transformative aspects of the organization. Acts of leadership occur whenever strategic problems are solved, decisions are made, or information exchanges result in actions. Leadership behavior has high visibility to individuals in the organization and impacts the climate especially during times of change. Leaders may be senior managers, supervisors, and others who hold formal positions of influence or those who demonstrate an informal influence on others. Leadership behavior has a major influence on the perceptions people have about the climate through their direct decision-making and how their behavior is perceived and observed by others.
Organizational Culture	Organizational culture includes the values, beliefs, history and traditions that reflect the deeper foundations of the organization. Over time, organizations develop a culture based on deeply entrenched norms and assumptions. These imbedded principles, values, and ethics influence patterns of interaction as well as choices and decisions people make. The culture determines the worldview or mindset for those who belong. It influences the way people behave, particularly how they respond to surprise, ambiguity, creativity, and change.
Management Practices	Management practices refer to the behaviors managers use to run the day-to-day business. Management practices are aimed at maintaining the stability and order of the organization by coordinating, communicating, controlling and planning the use of human, financial, and material resources. Typical management practices include conducting performance and business reviews, encouraging and monitoring individual and team goal setting, operational planning of projects, budgeting, and others. Many management practices are designed to help organizations with issues of efficiency and effectiveness, but some of these practices – sometimes referred to as dynamic capabilities– are more suitable for addressing areas that are more ambiguous. These include: supporting cross-functional teamwork, setting clear innovation objectives, identifying resources to support change and innovation, providing access and management of information resources, and a kind of monitoring that manages the balance between the need for autonomy and providing directional advice and input.
Systems, Policies and Procedures	Systems, policies, and procedures are the mechanisms that facilitate work and provide process structure for the organization. Systems are codified methods such as information, IT, or finance and reporting systems, and knowledge or idea management systems. Policies are explicit rules and guidelines for behavior such as hiring, performance management, reward and recognition, and providing access to information. Procedures are the actual processes and other methods deployed within the organization such as how payments are made, explicit processes for new product and service development, change management and strategic planning processes. Systems, policies, and procedures provide the checks and balances that keep things on track and prevent costly errors. They help establish repeatable processes, create stability, and prevent anarchy. How they are implemented and what people think about them has an influence on the climate as they prescribe certain kinds of behavior.

Element	Definition
Individual Needs, Motives and Styles	Individual needs, motives and styles provide the basic drive and source of energy for the organization. They are psychological factors that provide a sense of worth or desire for people's actions and thoughts. Needs for affection, belonging, and recognition influence what a person does. Their motives determine the kinds of tasks for which they have energy and commitment. Their preferred styles dictate the way they might like to work, think, solve problems, and manage change. Needs, motives and styles tell us how much energy people have for various kinds of work and will impact their behaviors, attitudes, and feelings.
Individual Skills and Abilities	Individual skills and abilities are the capabilities and knowledge held by people within the organization. The skills and abilities describe the level and kind of competence or expertise available to the organization. They determine how much talent is available within the organization to meet the requirements of the tasks. If a workplace is filled with highly qualified people, with more than sufficient talent to contribute to accomplishing the purpose of the organization, the climate will be positively affected.
Task Requirements	Task requirements are the mixture of skills, knowledge, and capabilities needed by the organization to perform assignments effectively. The kinds of tasks to be accomplished, and their corresponding demands, influence the selection of who needs to work on what jobs. Certain tasks may require cross-functional work; others may require cooperation across divisions. The demands made by these tasks influence the behaviors required by the organization to accomplish its purpose, and in turn, affects the climate.
Resources and Technology	Resources and technology are the basic tools an organization has at its disposal to complete business. These include the people, capital, machines, equipment, materials, patents and copyrights that the organization has acquired for use in its operations. The quantity of intellectual assets available to the organization is also a key resource. Resources and technology can impact the feelings and attitudes of people in the organization by either facilitating or inhibiting appropriate behaviors. A lack of key resources can often frustrate and provide barriers to creative thinking and limit initiative. Having and effectively using resources and technology can be a stimulant for the climate for creativity and change.
Structure and Size	Structure refers to the way people and functions are arranged. It deals with levels of responsibility, decision-making authority, and formal reporting relationships with others in the organization. Structures are usually designed to assure that the mission and strategy of the organization are effectively implemented. The structure and the size of the organization, and its working units, influence the use of power in making decisions and the scope of participation. It creates the pathways for the flow of information and guides the assumptions people make regarding relationships and interactions.
Mission and Strategy	Mission and strategy define what the business is going to do and subsequently how it will achieve its aim. The mission is the basic purpose of the organization, stated explicitly or implicitly. The strategy defines for them how this purpose will be achieved. The mission and strategy provide insight into the vision for the organization's desired future state. Mission and strategy also influence the perceptions of those who take initiatives and focus on implementation.



most HELPFUL in supporting your creativity?

2. What aspect of your working environment most HINDERS your creativity?
3. What is the most important action YOU would take to IMPROVE the climate for creativity in your working environment?

The first question was designed to acquire insights into those factors that were helping participants. A sample narrative response from this question is: "The support and freedom my manager provides me and my team to generally improve and innovate on a regular basis. Also, my job definition centers around being innovative." The second question focuses on identifying factors that were hindering participants. A sample narrative derived from this question is: "Inflexible and tight deadlines creating limited time to try out new ideas." The intention for these two questions was to be able to create an improved understanding of the work context by applying Lewin's force field analysis (Lewin, 1951). The third and final question asked participants to identify specific actions that could improve their working situation. A sample narrative derived from this question is: "Institute a formal tracking and recognition program for submitting requests for improvement to equipment functionality and efficiency." Participants were able to respond to these open-ended questions within open fields when completing the SOQ.

In addition to using the narrative comments derived from the open-ended questions for numerous practical applications of the SOQ, a few qualitative studies were conducted. For example, Sobieck (1996) examined 804 narrative responses from a sample of 286 respondents derived from six different organizational assessments of climate by conducting open coding and constant comparison. One of her key purposes was to find out how the narrative results might relate to the nine dimensions of climate assessed within the SOQ. Sobieck (1996) found clear support for the narrative data providing elaboration of the nine dimensions and also identified numerous other influential factors. For example, she identified resources, rewards and recognition, vision and strategy, leadership, and physical environment as themes falling outside the

nine dimensions of the SOQ.

Since the SOQ allows the concurrent collection of quantitative and qualitative data from respondents, this study sought to examine the extent to which the elements within the MOC are supported by the open-ended narrative comments from all three questions. Thus, participants provided narrative text in response to probes for what's helping or hindering innovation and creativity, and what actions would they take to make improvements. Content analysis was applied to these comments in order to code the responses (Krippendorff, 2004). This approach has been successfully applied in earlier climate research (Schneider, Wheeler & Cox, 1992). The definitions of the nine dimensions of the SOQ and the elements of the MOC provided the full categorical system for coding (Kohlbacher, 2006).

### *Sample*

Cross-site examination of the narrative comments provided by 948 respondents of the SOQ was drawn from five different samples. The organizations were chosen through purposive sampling (Patton, 2002; Teddlie & Yu, 2007). The goal was to assemble a diverse sample including organizations of different types and from participants from diverse geographical areas. The sample included: 334 participants from a global pharmaceutical company headquartered in Denmark that used the SOQ for a global survey of seven countries (Europe, Japan, China and North America); 130 senior managers from a global electronics, technology, and services provider as well as 91 middle managers from that same organization who were involved in a global innovation initiative drawn from six divisions across North America and Europe; 225 managers involved in a leadership development program within a global ERP provider drawn from North and Central America and Asia; and 168 members of a global non-profit organization headquartered in Boston. The samples included 187 females, 369 males, and 392 who chose not to disclose their gender. For the 596 who chose to disclose their age, the range was 19-66 with an average of 40.3 (SD = 8.0).

All five samples were derived from a larger database maintained by The Creative Problem Solving

**TABLE 3:**  
**Coding Frequency for Dimensions of the SOQ**

SOQ Dimension	Number of Times Coded
Challenge/Involvement	289
Freedom	292
Trust/Openness	265
Idea-Time	557
Playfulness/Humor	69
Conflict	88
Idea-Support	389
Debate	459
Risk-Taking	278
Total	2686

Group and were selected based on their diversity and size. The quantitative means for the samples were within error of the mean for the full database. The inter-rater reliability values on the nine dimensions for the full sample ranged from .77 to .91 (James, Demaree & Wolf, 1984) and the Cronbach alpha coefficients ranged from .71 to .89. The narrative data for each site was collected concurrently with the 53-item SOQ and was then compiled and prepared for content analysis. The data was collected between April of 2004, and April of 2009.

The narrative data from all three open-ended questions and from all five samples was compiled and provided 4,971 phrases in response to all three narrative questions from the SOQ yielding 232 pages of text for analysis. These phrases were examined and many included more than one meaningful sub-phrase, resulting in 6,019 phrases capable of coding. Tabulation or deductive content analysis was completed (Krippendorff, 2004) using the published definitions of both the SOQ dimensions and the MOC's elements (Isaksen and Akkermans, 2007). These were used to help formulate the coding agenda (Mayring, 2000). The full narratives and coding results are reported in Geurts (2009).

#### *Inter-Coder Reliability*

Inter-coder agreement (or reproducibility) is cen-

tral to the method of content analysis (Hayes & Krippendorff, 2007; Lombard, Snyder-Duch, & Bracken, 2002) and was established in two phases for this study. The first and formative phase examined an independent coding of the 334 participants from the global pharmaceutical company – the first and largest of the five samples – by a graduate student pursuing a Master's degree who had an interest in the climate for creativity (Geurts, 2009). Two additional coders, who have professional experience in qualitative analysis for the SOQ, independently coded the same complete data set. This formative data set included 1,670 narrative comments. The results were compared and the initial percentage of agreement was .91. Cohen's Kappa coefficient (Gwet, 2010) was computed and resulted in a strong level of inter-rater reliability ( $\kappa=.90$ ). Following the calculation of inter-coder reliability, the two analysts then discussed their coding results with the first coder in order to clarify the reasons for the differences, confirm the coding agenda, and to obtain consensus on future coding protocols. The coding was then completed for the other four data sets.

The second and summative phase of examination of reliability was conducted when the coding on the four additional samples was completed. Geurts (2009) completed the coding of the remaining narrative data and one additional analyst compared the results with the first, and obtained 92% agreement. Cohen's Kappa was computed and yielded a strong reliability coefficient ( $\kappa=.88$ ). Again, any differences were discussed post coding until complete agreement was reached for the final classification reported below.

#### **RESULTS**

The main focus of the study was on using the narrative comments to assess the ability of the MOC's elements and the 9 dimensions of the SOQ to adequately cover those aspects of the work environment that are related to organizational innovation and creativity. A related purpose was to compare the extent to which either the SOQ dimensions or the MOC elements adequately accounted for the meaning provided by the narrative responses to the open-ended questions.

Table 3 displays the frequency with which the narrative comments were coded by each of the di-

mensions of the SOQ. Overall, 44.6% of the total narrative comments were related to or provided elaboration regarding the nine dimensions of the SOQ. This finding indicates that the responses to the open-ended narrative questions do, in fact, provide elaboration on the SOQ dimensions.

The results of the content analysis for the elements of the MOC are displayed below in Table 4. Overall, 48% of the narrative comments were directly related to the elements of the MOC. This indicates that the elements of the MOC provide a fairly accurate outline of the key factors of the broader concept of the work environment for creativity, and can provide additional insight into those factors that can help or hinder organizational innovation.

Two additional coding categories emerged from this study. The first was called “other” and included 261 coded phrases. The results for this category are displayed in Table 5. The final category was identified as “not coded” due to incoherent or incomplete phrasing of the response itself. Only 181 phrases were unable to be coded, representing 3.6% of the total number of phrases available for coding.

The “other” category included a sub-category entitled general working climate or atmosphere including 117 of the 261 phrases (44.8%). Rather than relating to a specific dimension of the SOQ, subjects identified the molar aspect of climate as a help, hindrance, or area for action. The second largest category within “other” included phrases regarding physical space. This sub-category included 52 of the 261 phrases within the “other” category (19.9%).

## DISCUSSION

This study provided initial support for the ability of the nine dimensions of the SOQ and the 11 elements of the MOC to cover the content of the open narratives from a diverse sample. From the coded narratives that fell outside the SOQ and MOC the most frequent was a general attribution of climate, which would still fit within the MOC, as organizational climate is the central intervening element. The next most frequent element identified within the other category was physical space. The organizational space, or concrete physical environment, is emerging as a topic of interest within the domain of organizational and management theory (Clegg &

**TABLE 4:**  
**Coding Frequency for Dimensions of the MOC**

MOC Dimension	Number of Times Coded
External Environment	63
Leadership Behavior	195
Organizational Culture	45
Management Practices	222
Systems Policies and Procedures	380
Individual Needs, Motives and Styles	130
Mission and Strategy	325
Structure and Size	484
Resources and Technology	407
Task Requirements	416
Individual Skills and Abilities	224
Total	2891

**TABLE 5:**  
**Summary of “Other” from Content Analysis**

Element	Number of Times Coded
Climate in general	117
Physical environment	52
Geographic location	7
Job security	6
Work-life balance	5
e-mail	3
Seasonal conditions	3
Ethics	3
Situational assessments	2
Single others	63
Total	261

Kornberger, 2006) and, more recently, has become a subject within the creativity and innovation literature.

Kristensen (2004) pointed out that creativity takes place in a physical context and that there may be differences in specific spatial requirements depending on the stage of the creative process. For example, he asserted that a mix of communal and private spaces may be required during the preparation and verification stages, but private spaces provided to support the incubation stage. McCoy and Evans (2002) studied the degree to which elements in the physical environment influenced creative performance of college students. They found that spaces with spatial complexity, visual detail, natural views, use of natural materials (e.g. wood), socio-petal design (furniture allowing for interaction), and cool colors were significant physical predictors of improved creative performance. Others have offered case studies and frameworks for examining how physical space can help or hinder creativity (Lewis & Moultrie, 2005; Moultrie, Nilsson, Dissel, Haner, Janssen, & Van der Lugt, 2007).

The results from this study, and the existence of supportive literature, point out the need to integrate the concept of physical space within the MOC, and to be considered a relevant element within the work environment for creativity. Future descriptions of the MOC should include this construct.

Although this study supports the finding that the MOC accounts for most of the constructs identified from the open-ended narratives, there is a great more research that must be done. The narratives were coded using both the dimensions of climate and elements of the MOC whether or not it was mentioned as a supportive or unsupportive comment. Additional research should be conducted following the advice of Choi, Anderson and Veillette (2009) who recommended examining both positive and negative factors associated with the work context for creativity. This effort would certainly assist those who are attempting to manage for creativity and innovation.

Although the MOC may appear to violate Ockham's Razor, it was developed to embrace the call for more coherent complexity and richness in organizational research (Tsoukas & Dooley, 2011; Weick, 2007). The evidence and literature clearly

supports the inclusion of all the elements. However, any application of the model through assessment or intervention is more likely to focus only on those elements that are contextually salient. As a guide for further research, the model can and should serve to promote the development of more parsimonious hypotheses.

As pointed out earlier, elements of the MOC may be distinct conceptually, but there are likely strong inter-relationships among them. For example, teamwork was identified within the narratives, but this could be considered an organizational procedure, a preferred management practice, or leadership behavior. Depending on the context of the comment, it could be coded within any one of those. Further refinement of the definitions of the elements would promote clarity in future coding and could improve the future qualitative analysis and interpretation of the narratives. Although this examination provided preliminary evidence that the conceptual model had sufficient coverage of the domain, replication using other samples must be accomplished in order to provide additional support for its usefulness. Further examination of the model should utilize probability sampling and quantitative confirmatory studies (Teddle & Yu, 2007).

This study applied the nine dimensions of the SOQ to operationalize the climate construct. Future studies should include additional climate assessments – as long as they purport to assess patterns of behavior associated with innovation and creativity. This effort might allow comparative work across various dimensions and assessments. For example, Retz (2011) conducted a study within the aeronautic industry to examine the relative predictive ability of the SOQ dimensions for both radical and incremental innovation. He found that Idea-Time and Idea-Support were strong predictors for both kinds of innovation. Future research with assessments including other climate factors might uncover other dimensions that provide unique predictive power for both incremental and radical innovation. Ultimately, being able to compare and contrast results from a variety of creative climate dimensions could yield an improved taxonomy (i.e. Hunter, Bedell, & Mumford, 2005).

There is already some evidence that the MOC

might promote interactionist research that sheds some light on important relationships amongst its elements. For example, Isaksen and Aerts (2011) studied the relationships between differences in problem-solving style and perceptions of best and worst-case climates for innovation and creativity. They found significant interactions between two style dimensions and the different kinds of climate – promoting the notion that an individual's style can be considered an antecedent factor that influences the climate for innovation and creativity.

Improving our understanding and formation of the work environment that is conducive to innovation and creativity is an important undertaking. Given the increased interest in organizational innovation and creativity, and the importance of creating a climate for innovation and creativity within organizations, the field must make progress in defining an appropriate nomological network that enables integration of diverse research findings and improved professional practice.

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