# Adaptors and Innovators: Different Perceptions of the Psychological Climate for Creativity

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The purpose of this paper is to share some preliminary findings of research into the relationship of two distinct, yet complimentary assessment approaches. One of these approaches is the assessment of creative style and the other is creative climate. These approaches have been used respectively as measures of the creative person and place. Until recently, these two approaches have remained somewhat independent in the creativity literature; with a few references dealing with "cognitive climate" being the exception (Kirton & McCarthy, 1988). This study sought to determine if adaptors and innovators held different perception of the creative climate. The measure of creative style was the Kirton Adaption Innovation Inventory (KAI) and the measure of creative climate was the Creative Climate Questionnaire (CCQ).

Key words: creative style, creative climate

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It is quite plausible that individuals within the same work group would not assign similar meaning to their work environment. These differences in perception could be the result of a variety of variables including: different exposure to tasks, events, or other situational attributes; differences in social roles; or individual differences in personality (James & Sells, 1981). Understanding the relationship between a measure of cognitive style and psychological climate may help sort out exactly how individuals of different style may perceive their environments.

Anyone who has experience with organizations can probably observe differences in the spirit, energy level, and quality of the interactions between people. Organizations seem to have a rather distinctive atmosphere; something which can be observed even among different working groups within the larger organization. In attempting to understand organizations, researchers have examined a wide range of variables (Schneider, 1985). These variables have included the structure as well as the climate of the organization (Payne & Pugh, 1976).

One of the concepts used to understand the differences in atmosphere and behaviors has been called organizational culture. This is a rather broad concept having been defined by Shein (1984) as:

> …the pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaption and internal integration, and that have worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems (p. 3).

The concept of organizational culture has been viewed as the source of values, beliefs, traditions, and history which reflect the deeper foundations of the

organization. In effect, culture is seen as the root cause of much organizational behavior.

A more specific concept used to understand organizational life is organizational climate. This concept has been viewed as the recurring patterns which characterize life in the organization. As Ekvall (1987) has indicated, organizational climate can be understood according to the objectivistic or the subjectivistic viewpoints. The objectivistic views climate through behaviors, attitudes and feelings and sees the climate as existing independently as a part of organizational reality. The subjectivistic regards climate as a perceptual and cognitive structuring common to those who comprise the organization.

The concept of organizational climate is an important aspect to consider because it greatly affects the organization's ability to utilize its technical and human resources. Friedlander and Margulies (1969) indicated:

> Technical capability, of course, is essential to the success of the organization, but whether or not that capability is ever released or channeled into productive activity depends upon the climate (p. 173).

Differences within or between organization are often attributed to either traits and characteristics of the people or to the situation and aspects of the climate. However, some researchers believe that too much emphasis has been placed on either the characteristics of the person or the situation as the fundamental determinant of organizational behavior (Schneider, 1987). These researchers point to the issue of person-environment for as a more useful approach to an improved understanding of the causes of organizational behavior (Caplan, 1987; Pervin, 1987). In addition, neither of the narrowly-focused searches into the person or the

environment will provide a satisfactory approach to understanding the origins of meaning within the social situation. The individual and the environment have a mutualistic interaction, therefore sharp distinctions and entirely independent lines of inquiry may not be as fruitful as considering a more wholistic relationship between the two concepts (Epstein & O'Brien, 1985; Schneider & Reichers, 1983). In short, the person-environment fit issue is a joint function of what the individual has to offer as well as the situational factors which are relevant.

Other climate researches have drawn a distinction between organizational climate and psychological climate. In reviewing organizational climate research and theory, James and Jones (1974) identified the term psychological climate to be consistent with the measurement approach which asked individuals to report their perceptions of the work environment and the preferred term when these perceptions are used as the unit of analysis. They suggested that the term organizational climate should be used when referring to the organizational attribute and the term psychological climate should be used when referring to the individual characteristic. James and Sells (1981) defined psychological climate as:

> individuals' cognitive representations of relatively proximal situational events, expressed in terms that reflect the psychological meaning and significance of the situation to the individual. A central postulate of psychological-climate theory is that individuals tend to interpret situations in psychological terms; that is, to assign psychological meaning to environmental attributes and events… psychological climate is regarded as an attribute of the individual (p. 275).

Examining the climate conductive to creativity is an important theme in creativity research (Isaksen, 1987; Taylor, 1972). Research into understanding the

conditions of creativity has been undertaken for quite a few years (Fiedler, 1964). A recent approach to understanding the climate for creativity identified a number of stimulants and obstacles to creative productivity in the R&D setting (Amabile & Gryskiewicz, 1987). These findings have provided the foundation for assessing climates in larger organizations (Burnside, Amabile & Gryskiewicz, 1988). There is some evidence that this approach to assessing organizational climate for creative productivity may help organizations in assessing their norms for encouraging creative outcomes (Witt & Meorkrem, 1989).

Concern for the conditions of creativity is an aspect of creativity research that has been undertaken on an international level. Ekvall (1983, 1987) and Ekvall, Arvonen and Walderström-Lindblad (1983) have introduced the CCQ as an instrument which can validly and reliably discriminate between environments which have creative climates and those that are stagnated. This instrument has been used in Sweden to understand the psychological perceptions of individuals within organizations and how these explain the ability of the organization to develop and maintain structures and systems to support organizational innovation (Ekvall & Tangeberg-Andersson, 1986).

There are a number of benefits from an understanding of the climate for creativity which exists. On an individual level, understanding climate:

- helps an individual understand more clearly the perceptions of the environment… it makes the invisible a little more visible.
- may help individuals to identify and become more involved in shaping the climate within which they work.

- as a result of this improved understanding, individuals may be able to reduce certain negative aspects and focus upon the more positive aspects of their perceptions of working climate.

On a team level, understanding climate:

- helps to promote honest communication among team members.
- may uncover previously unknown, unappreciated, or unproductive perceptions of team members and promote effective problem solving to overcame these obstacles to productive group functioning.
- may uncover some previously unknown or unexpected strengths upon which a team can build.

On an organizational level, understanding climate:

- helps to determine the appropriateness of the climate to the success of the organization in its operating environment. (How well does the climate fit the tasks or purposes of the organization?)
- helps to determine the appropriateness of the climate to the well-being of the people of the organization. (How well does the climate match the needs of the human resources of the organization?)
- may allow the organization to better structure itself to allow a more productive workplace; building upon those structures that seem to be working well and modifying others. (What structures may help promote creativity and better meet the needs of the organization?)

Although understanding climates for creativity can be seen as a productive line of inquiry, it is clear that the situation or environment is only part of the challenge. If we are to understand the conditions for creativity, we must go beyond

the individual psychological perceptions of the social setting and consider the characteristics of the person as well. It is reasonable to assert that the very same social setting or event may be perceived very differently depending on the orientations of the persons involved (Hennessey & Amabile, 1988). Understanding individual differences can be helpful for those engaged in the creative problem solving (CPS) process (Isaksen & Treffinger, 1985) or its facilitation. Personal orientation may also have a great deal to do with better understanding the outcomes or products of creative performance and training (Besemer & O'Quin, 1988a).

There are many varied approaches to understanding individual differences in the creative person. These may be roughly divided into those which seek to understand the characteristics of the highly creative individual and those which seek to understand differences in how individuals show their creativity. This is referred to as the level-style distinction in the creativity literature (Goldsmith, 1987; Isaksen & Puccio, 1988b; Kirton, 1978).

Kirton (1987a & b) identified the KAI as an instrument designed to assess the different ways in which individuals approach problems or their style of problem solving. Adaptors tend to operate within the confines of the consensually-accepted paradigm while innovators are more liable to treat the enveloping paradigm as part of the problem. Adaptors are seen as resourceful, efficient, thorough, methodical, organized, precise, and preliable. They seek solutions to problems in tried and understood ways. Innovators are seen as ingenious, original, energetic, independent, unconventional, insightful and unique. It could be said that innovators discover problems and avenues for their solution. Innovators may see adaptors as dogmatic, compliant, timid, conforming and inflexible. Adaptors may

see innovators as unsound, impractical, abrasive, undisciplined and insensitive. These characteristic differences have implications for organizations. As Kirton (1980) indicated:

> The adaption-innovation theory posits that both adaptors and innovators have their own characteristic strengths and weaknesses (including a tendency not to see each others' point of view) which are respectively useful and harmful to organizations. Both types are needed by organizations, if only to cover each others' weaknesses, but of the two, the adaptor has a privileged position since it is the adaptive mode that must prevail more consistently (p. 214).

The KAI is viewed as a theory and measure of cognitive style. As such, a case can be made that the KAI theory and measure deal with aspects of the personality which can help to explain how individual differences effect consistent patterns of human behavior. Goldsmith (1989) indicated:

> …the distinctions highlighted by the A-I theory and measured by the KAI are the manifestation, at least in part, of deeper underlying differences in personality, that broad predispositions to behavior which shape many aspects of human life also interrelate to form the problem solving patterns termed 'adaptive' and 'innovative', and that these correlations may be measured validly and reliably via the KAI (p. 54).

There are also some benefits derived from an understanding of the cognitive style of people within the organization. These benefits can also be seen on three different levels. Some benefits of understanding style for the individual include:

- helps the individual to recognize and understand personal strengths and limitations.

- helps individuals to see patterns to the kinds of challenges or opportunities on which they prefer to work.
- tells individuals how they prefer to "find problems".
- may tell the individual about the kinds of methods and techniques to use, and the kinds of ideas he/she is likely to generate.
- helps individuals to communicate more effectively by modifying their solution or approach when necessary, to meet the needs or preferences of others.
- challenges individuals to look beyond their tendencies.

Some benefits of understanding a team's style include:

- helps people to understand each other better.
- helps to identify likely group "blindspots", as well as key areas of strength.
- adds another variable (beyond expertise) to consider for designating CPS teams.
- helps the team to decide what methods and techniques to use; and to have a common "language" for problem solving.
- helps to increase participation in the communication process.
- shapes the content and the method we use to share information.
- helps me to make appropriate contributions to team tasks.

Better understanding the organization's style include:

- helps to discover how well our personal resources match our mission, vision or purpose.
- helps in designing structures and systems which accommodate and validate differences.

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- helps in providing appropriate systems and structures for practicing and managing creativity.
- promotes a broad-based CPS training effort to meet a diversity of needs.
- broadens the comprehension base for all aspects of internal organizational communication.
- increase the quality of communication with clients, customers, suppliers, and others outside of the organization.
- helps the organization to maintain a competitive position, by increasing versatility and more effective use of human resources.

## Procedure

### *Sample*

An aggregated population of 634 subjects from eight different public and private organizations located in the North Eastern and Central United States participated in this study. The senior author had conducted programs with these organizations and the data were made available from the participants in accordance with the research policy of the Center for Studies in Creativity. Two hundred and fifty-six of these participants came from an entire rural school district and one suburban elementary school. Six different organizations provided 378 subjects (83 from a technical center

[Table One]

[Table Two]

within a large manufacturing company; 25 managers of a mid-west information company; 23 branch bank managers; 199 R&D managers within a large manufacturing company; 40 members of an R&D facility within a liquor manufacturing company; and 8 senior managers of a public service corporation). The subjects included about 54% males (n=342) and 46% females (n=290). The means and standard deviations for the entire population and for males and females on the KAI and the CCQ are provided in Table Two.

The subjects were sorted by identifying two groups each of which was one half of a standard deviation above or below the mean on the KAI. This resulted in one group identified as having a strong Innovator orientation (n=203) and another identified as having a strong Adaptor orientation (n=195).

*Sample*

The Kirton Adaption-Innovation Inventory (KAI( is a 32-item instrument on which respondents are asked to indicate the degree of ease or difficulty they have in maintaining specific adaptive or innovative behaviors over a long period of time. The range of scores is theoretically 32-160 on the KAI with a mean of 96. There is a great deal of literature regarding its validity and reliability (Kirton, 1987b; 1989). In reviewing 43 published reports, Mudd (1986) found a mean of 95.0, a standard deviation of 14.9 (n=1719), a reliability of .86 (internal consistency; n=27770 and consistent factorial composition into three subscales in four replications across several populations (composite n=1280). The three subscales include: sufficiency of originality; efficiency; and rule/group conformity.

*Originality* – A law score on this subscale indicates a preference to produce fewer original ideas, but these ideas are more likely to be viewed as useful and relevant. A high score indicates a preference to produce more original ideas, but these ideas are less likely to be accepted immediately.

*Efficiency* – A low score on this subscale indicates a preference for being thorough and efficient in handling tasks. A high score indicates less of a concern with efficiency, reliability or mastering the details of the task.

*Rule/Group Conformity* – A low score on this subscale indicates a preference to operate within rules and structures and prefer to conform to situational constraints. A high score indicates less of a concern with conforming to rules or building and maintaining a consensus.

Mudd (1986) also reviewed the status of inquiry into the validity of the KAI and reported that a variety of convergent and divergent validity studies showed the KAI to be independent of measures of intelligence, to relate to personality measures relevant to experience seeking and other measures of cognitive style, and to be more a measure of style than level of creativity. Additional information can be obtained in the manual for the KAI (Kirton, 1987).

The Creative Climate Questionnaire (CCQ) was developed by Ekvall (1983) and validated by Ekvall, Arvonen and Waldenström-Lindblad (1983). The CCQ was translated into English by Ekvall and the staff of the Center for Studies in Creativity in 1985. the version of the instrument used in this study has fifty questions; five questions for each of the ten dimensions. Each item is scored from zero to three; zero standing for "not at all applicable" and three for "applicable to a high degree". The dimensions of the CCQ include:

*Challenge* – The emotional involvement of the members of the organization in its operation and goals. A high-challenge climate is seen when the people are experiencing joy and meaningfulness in their job, and therefore, they invest much energy. Low challenge means feelings of alienation and indifference; the common sentiment and attitude is apathy and lack of interest for the job and the organization. (Cronbach's alpha .80; n=433).

*Freedom* – The independence in behavior exerted by the people in the organization. In a climate with much of this kind of freedom, people are making contacts to give and receive information and discuss problems and alternatives; they plan and take initiatives of different kinds and they make decisions. The opposite climate would include people who are passive, rule-fixed and anxious to stay inside the frames and established boundaries. (Cronbach's alpha .72; n=432)

*Dynamism/Liveliness* – The eventfulness of the life in the organization. In the highly dynamic situation, new things are happening all the time and alternations between ways of thinking about and handling issues often occur. There is a kind of psychological turbulence which is described by people in those organizations as "full speed", "go", "break neck", "maelstrom", and the like. The opposite situation could be compared to a slow jog-trot with no surprises. There are no new projects; no different plans. Everything goes its usual way. (Cronbach's alpha .77; n=427).

*Trust/Openness* – The emotional safety in relationships. When there is a strong level of trust, everyone in the organization dares to put forward ideas and opinions. Initiatives can be taken without fear of reprisals and ridicule in case of failure. The communication is open and straightforward. Where trust is missing, people are suspicious of each other and count on high expenses for mistakes that may come.

They also are afraid of being exploited and robbed of their good ideas. (Cronbach's alpha .79; n=431)

*Idea Time* – The amount of time people can use (and do use) for elaborating new ideas. In the high idea-time situation, the possibilities exist to discuss and test impulses and fresh suggestions that are not planned or included in the task assignment; and people tend to use these possibilities. In the reverse case, every minute is booked and specified. The time pressure makes things outside the instructions and planned routines impossible. (Cronbach's alpha .78; n=431).

*Playfulness/Humour* – The spontaneity and ease that is displayed. A relaxed atmosphere with jokes and laughter characterizes the organization which is high in this dimension. The opposite climate is characterized by gravity and seriousness. The atmosphere is stiff, gloomy and cumbrous. Jokes and laughter are regarded as improper. (Cronbach's alpha .77; n=429).

*Conflict* – The presence of personal and emotional tensions (in contrast to idea tensions in the debates dimension) in the organization. When the level of conflict is high, groups and single individuals hate each other and the climate can be characterized by "warfare". Plots and traps are usual elements in the life of the organization. In the opposite climate, they behavoe in a more mature manner; they have psychological insight and control of impulses. (Cronbach's alpha .81; n=431).

*Idea Support* – The ways new ideas are treated. In the supportive climate, ideas and suggestions are received in an attentive and kind way by bosses and workmates. People listen to each other and encourage initiatives. Possibilities for trying out new ideas are created. The atmosphere is constructive and positive. When idea support is low, the reflexive "no" is prevailing. Every suggestion is

immediately refuted by a counter-argument. Fault-finding and obstacle-raising are the usual styles of responding to ideas. (Cronbach's alpha .87; n-432)

*Debate* – The occurrence of encounters and clashes between viewpoints, ideas, and differing experiences and knowledge. In the debating organization, many voices are heard and people are keen on putting forward their ideas. Where debates are missing, people follow authoritarian patterns without questioning. (Cronbach's alpha .73; n=426).

*Risk-taking* – The tolerance of uncertainty exposed in the organization. In the high risk-taking case, decisions and actions are prompt and rapid, arising opportunities are taken and concrete trying is preferred to detailed investigation and analysis. In a risk-avoiding climate, there is a cautious, hesitant mentality. People try to be on the "safe side". They decide to "sleep on the matter". They set up committees and they cover themselves in many ways before making a decision. (Cronbach's alpha .78; n=433)

Ekvall, Arvonen and Waldenström-Lindblad (1983) cited two studies of the reliability of the CCQ and report Cronbach's alpha ranging from .70 to .92 with a mean of 82.6 for one study consisting of 192 individuals. The second study included 234 subjects and reported reliabilities ranging from .67 to .91 with a mean of 81.5. They also reported evidence of factor validity for 7 factors and the ability of the CCQ to differentiate between organizations or sub-organizations. Ekvall and his colleagues also reported a comparative study of three small industrial companies to illustrate the criterion validity of the CCQ. They found that the more innovative and commercially successful companies were described by their employees as having a more creative organizational climate. Ekvall (1986) also shares a

summary of research completed with 8 innovative, 15 average, and 4 stagnated companies. The results are shown below.

| **Variable** | **Innovative** | **Average** | **Stagnated** |
|---|---|---|---|
| Challenge | 2.35 | 1.90 | 1.64 |
| Freedom | 2.17 | 1.74 | 1.52 |
| Dynamism | 2.31 | 1.55 | 1.30 |
| Trust | 1.82 | 1.60 | 1.37 |
| Idea Time | n/a | 1.11 | n/a |
| Play/Humor | 2.16 | 1.69 | 1.29 |
| Conflict | 0.71 | 0.88 | 0.85 |
| Idea Support | 2.09 | 1.64 | 1.31 |
| Debate | 1.54 | 1.28 | 0.92 |
| Risk-taking | 2.34 | 1.12 | 0.94 |

The data supports Ekvall's earlier findings that the employees within the more innovative organizations describe their climates as more creative.

The reliability of the version of the CCQ utilized for this study ranged from .72 to .87 with a mean of .78. Specific Cronbach's alphas can be found following the description of each dimension. Additional work at the Center is concerned with replicating the reported Swedish validity findings with US populations and organizations. A variety of these theses and research projects currently underway

[Table Three]

include: studying the factorial composition of the CCQ, the inter-item reliability, examining the linguistic validity of the translation, and a variety of concurrent validity studies.

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## RESULTS AND DISCUSSION

Means and standard deviations for the entire group and the two selected groups on the KAI and CCQ are shown in Table One. These means and standard deviations are also reported by male and female groupings for each instruments in Table Two. Finally, the results of the discriminant analysis are shown in Table Three.

Since adaptors and innovators were sorted into two groups, they were examined via discriminant analysis to find the optimal set of predictor variables on the CCQ (Klecka, 1980; Norusis, 1985; Pedhazur, 1982). In examining the results of the discriminant analysis the optimal predictor variables for classification into the two groups are challenge and conflict.

Data from these two variables on the CCQ were then subject to two-tailed t-tests. Innovators and adaptors differ significantly with respect to their perception of challenge, with adaptors perceiving more challenge than innovators ($t=-2.52$; $p \geq .01$). Innovators perceive significantly more conflict than adaptors ($t=3.09$; $p \geq .002$).

These findings are consistent with the prediction made by Kirton and de Ciantis (1989) that innovators will be more likely to disagree with a consensus group. The differences indicated from these data also serve to extend the concept of cognitive climate proposed by Kirton and McCarthy (1988). In examining the interpersonal clashes which often occur between persons of very different cognitive style, it may be worthwhile to consider that the innovator may be more likely to see

these clashes as containing an element of personal attack while adaptors may see the same difference as being more challenging.

This preliminary study has a variety of methodological limitations including concerns about the validity and reliability of the CCQ, the manner in which the data were aggregated and analyzed, as well as the wide spectrum in the population. However, the relationships between these two very different assessments need to be explored much further.

In attempting to reach goals, solve problems or achieve some desired future state, it seems to be important to consider both the orientation of the individual who owns the challenge as well as the outlook on the situation (Isaksen & Treffinger, 1985). Understanding both the cognitive style of the individuals involved and the perceptions of the psychological climate may hold a number of benefits for individuals, teams and organizations.

Understanding style and climate may help individuals explain the differences they have in perceiving the same social situation. The increased awareness of these differences may assist individuals in selecting more appropriate coping behavior and increasing their effectiveness when working with others. Individuals may make better use of their existing strengths and broaden their repertoire of coping skills by choosing more appropriate learning opportunities.

While working groups within organizations may have a shared cognitive climate which is made up of the collective preferred style of the group's majority clustered around its mean or mode (Kirton & McCarthy, 1988), those who differ greatly from this style should have different ways of approaching challenges or concerns. Understanding differences in both style and climate can help teams reach a common perception of the challenges and concerns they face and better manage

their diversity. This improved understanding could reduce the unnecessary clashes or interpersonal tension within working groups and focus more positive energy on the use of the diversity of styles and perceptions to better obtain the goal or meet the challenge which faces the team (Kirton, 1980). Understanding these differences may also be useful for leaders who will need to learn different approaches for members of the same group.

It is likely that inter- and intra-organizational differences in both style and climate can be found. These differences would have implications for organizational policies and procedures for recruitment, selection, placement and training. Understanding these differences can help organizations to better leverage their human resources in accomplishing the variety of complex tasks people must successfully undertake in order to maintain and improve the organizational capacity for creativity.

## REFERENCES


Amabile, T. M. & Gryskiewica, S. S. (1987). *Creativity in the R&D laboratory*. Greensboro, NC: Center for Creative Leadership.

Besemer, S. P. & O'Quin, K. (1987). Creative product analysis: Testing a model by developing a judging instrument. In S. G. Isaksen (Ed.), *Frontiers of creativity research: Beyond the basics* (pp. 341-357). Buffalo, NY: Bearly Limited.

Burnside, R. M., Amabile, T. M., & Gryskiewicz, S. S. (1988). Assessing organizational climates for creativity: Methodological review of large company adults. In Y. Ijiri & R. L. Kuhn (Eds.), *New directions in creative and innovative management* (pp. 169-186). Cambridge, MA: Ballinger Publishing.


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Caplan, R. D. (1987). Person-environment fit theory and organizations: Commensurate dimensions, time perspectives and mechanisms. *Journal of Vocational Behavior, 31*, 248-267.

Ekvall, G. (1983). *Climate, structure and innovativeness of organizations: A theoretical framework and an experiment*. Stockholm, Sweden: The Swedish Council for Management and Organizational Behavior.

Ekvall, G. (1986). The current status of research on the creative climate questionnaire. A presentation made to the Center for Studies in Creativity, October, Buffalo, New York.

Ekvall, G. (1987). The climate metaphor in organization theory. In B. M. Bass & P. J. D. Drenth, *Advances in organizational psychology* (pp. 177-190). Beverly Hills, CA: SAGE Publications.

Ekvall, G. & Tangeberg-Anderson, Y. (1986). Working climate and creativity: A study of an innovative newspaper office. *Journal of Creative Behavior, 20*, 215-225.

Ekvall, G., Arvonen, J., & Waldenström-Lindblad, I. (1983). *Creative organizational climate: Construction and validation of a measuring instrument*. Stockholm, Sweden: The Swedish Council for Management and Organizational Behavior.

Epstein, S. & O'Brien, E. J. (1985). The person-situation debate in historical and current perspective. *Psychological Bulletin, 98*, 513-537.

Friedlander, F. & Margulines, N. (1969). Multiple impacts of organizational climate and individual value system upon job satisfaction. *Personnel Psychology, 22*, 171-183.

Fiedler, F. E. (1964). The effect of group climate on the leader's influence on creative group performance. In C. W. Taylor (Ed.), *Widening horizons in*

*creativity: The proceedings of the fifth Utah creativity research conference*(pp. 401-409). New York: John Wiley & Sons.

Goldsmith, R. E. (1987). Creative level and creative style. *British Journal of Social Psychology, 26*, 317-323.

Goldsmith, R. E. (1989). Creative style and personality theory. In M. J. Kirton (Ed.), *Adaptors and innovators: Styles of creativity and problem solving* (pp. 37-55). London: Routledge.

Hennessey, B. A. & Amabile, T. M. (1988). The conditions of creativity. In R. J. Sternberg (Ed.), *The nature of creativity: Contemporary psychological perspectives* (pp. 11-38). New York: Cambridge University Press.

Isaksen, S. G. (1987). Introduction: An orientation to the frontiers of creativity research. In S. G. Isaksen (Ed.), *Frontiers of creativity research: Beyond the basics* (pp. 1-31). Buffalo, NY: Bearly Limited.

Isaksen, S. G. & Puccio, G. J. (1988a). *A study of the impact of creative problem solving training within Procter & Gamble*. Cincinnati, OH: Corporate Training and Development.

Isaksen, S. G. & Puccio, G. J. (1988b). Adaption-innovation and the Torrance tests of creative thinking: The level-style issue revisited. *Psychological Reports, 63*, 659-670.

Isaksen, S. G. & Treffinger, D. J. (1985). *Creative problem slving: The basic course*. Buffalo, NY: Bearly Limited.

James, L. R. & Jones, A. P. (1974). Organizational climate: A review of theory and research. *Psychological Bulletin, 81*, 1096-1112.

James, L. R. & Sells, S. B. (1981). Psychological climate: Theoretical perspectives and empirical research. In D. Magnusson (Ed.), *Toward a psychology of*

*situations: An interactional perspective* (pp. 275-295). Hillsdale, NJ: Lawrence Erlbaum.

Kirton, M. J. (1978). Have adaptors and innovators equal levels of creativity? *Psychological Reports, 42*, 695-698.

Kirton, M. J. (1980). Adaptors and innovators in organizations. *Human Relations, 33*, 213-224.

Kirton, M. J. (1987a). Adaptors and innovators: Cognitive style and personality. In S. G. Isaksen (Ed.), *Frontiers of creativity research: Beyond the basics* (pp. 282-304). Buffalo, NY: Bearly Limited.

Kirton, M. J. (1987b). *Kirton adaption-innovation inventory (KAI) manual (2nd edition)*. Hatfield, Herts: Occupational Research Centre.

Kirton, M. J. (Ed.). (1989). *Adaptors and innovators: Styles of creativity and problem solving*. London: Routledge.

Kirton, M. J. & de Ciantis, S. (1989). Cognitive style in organizational climate. In M. J. Kirton (Ed.), *Adaptors and innovators: Styles of creativity and problem solving* (pp.79-96). London: Routledge.

Kirton, M. J. & McCarthy, R. M. (1988). Cognitive climate and organizations. *Journal of Occupational Psychology, 61*, 175-184.

Klecka, W. R. (1980). *Discriminant analysis*. Beverly Hills, CA: SAGE University Press.

Mudd, S. (1986). Analytic review of research on the Kirton adaption-innovation inventory (KAI). *Social and Behavioral Sciences Documents, 16*, Ms. No. 2775, 163 pages.

Norusis, M. J. (1985). *SPSS-X: Advanced statistics guide*. New York: McGraw-Hill Book Co.

Published in: *Studia Psychologica, 32*, 129-141

Payne, R. & Pugh, D. S. (1976). Organizational structure and climate. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1125-1175). Chicago: Rand McNally.

Pedhazur, E. J. (1982). *Multiple regression in behavioral research: Explanation and prediction*. (Second edition). New York: Holt, Reinhart and Winston.

Pervin, L. A. (1987). Person-environment congruence in the light of the person-situation controversy. *Journal of Vocational Behavior, 31*, 222-230.

Schein, E. H. (1984). Coming to a new awareness of organizational culture. *Management Review, 25*, 3-16.

Schneider, B. (1985). Organizational behavior. *Annual Review of Psychology, 36*, 573-611.

Schneider, B. & Reichers, A. E. (1983). On the etiology of climates. *Personnel Psychology, 36*, 19-39.

Taylor, C. W. (1972). *Climate for creativity*. Elmsford, NJ: Pergamon Press.

Witt, L. A. & Beorkrem, M. N. (1989). Climate for creative productivity as a predictor of research usefulness and organizational effectiveness in an R&D organization. *Creativity Research Journal, 2*, 30-40.

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