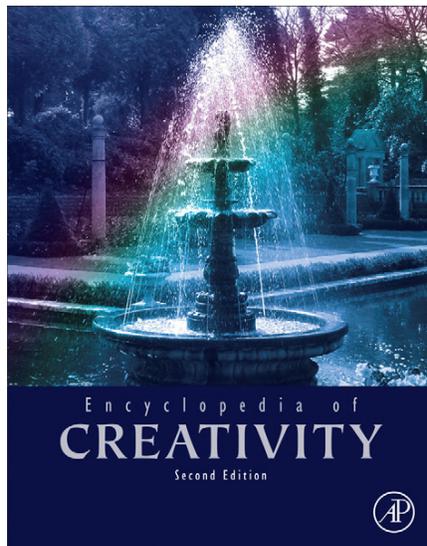


Provided for non-commercial research and educational use.
Not for reproduction, distribution or commercial use.

This article was originally published in *Encyclopedia of Creativity, Second Edition* published by Elsevier, and the attached copy is provided by Elsevier for the author's benefit and for the benefit of the author's institution, for non-commercial research and educational use including without limitation use in instruction at your institution, sending it to specific colleagues who you know, and providing a copy to your institution's administrator.



All other uses, reproduction and distribution, including without limitation commercial reprints, selling or licensing copies or access, or posting on open internet sites, your personal or institution's website or repository, are prohibited. For exceptions, permission may be sought for such use through Elsevier's permissions site at:

<http://www.elsevier.com/locate/permissionusematerial>

Basadur M. and Basadur T. (2011) Attitudes and Creativity. In: Runco MA, and Pritzker SR (eds.) *Encyclopedia of Creativity, Second Edition*, vol. 1, pp. 85-95 San Diego: Academic Press.

© 2011 Elsevier Inc. All rights reserved.

Attitudes and Creativity

M Basadur, McMaster University, Burlington, ON, Canada

T Basadur, University of Illinois at Chicago, Chicago, IL, USA

© 2011 Elsevier Inc. All rights reserved.

Glossary

Adaptability Organizing to change routines deliberately.

Characterized by anticipating problems and developing timely solutions, staying abreast of new methods with prompt and widespread acceptance of change.

Brainstorming A divergent thinking technique to generate ideas that encourages quantity, hitchhiking and freewheeling with no criticism allowed.

Convergent thinking Selecting best options from a broad range of possibilities.

Deferral of judgment Withholding judgment to allow for divergent thinking. Keeps divergent and convergent thinking separate.

Divergent thinking Generating information without applying judgment and without analyzing.

Efficiency Organizing for routine production; doing the routine well.

Flexibility Organizing to cope with temporary interruptions to routines, unpredictable work overloads or emergencies; 'fire fighting.'

Fuzzy situation An undefined problem or situation viewed from a deliberately neutral position.

Ideation-evaluation A two-step creative thinking process sequencing divergent thinking and convergent thinking.

Simplex A circular four-stage, eight-step process of creative problem solving involving ideation-evaluation in each step.

What Are Attitudes?

The concept of attitude has been a fundamental construct since the beginnings of systematic research in social psychology and has evolved into a field shared among various social sciences including sociology, organizational behavior, educational psychology, communications, political science, and marketing. Despite the long history of attitudes and attitudinal processes research, there is no consensus on precisely what an attitude is and how it can be identified. There is a general understanding that an attitude has, at its core, an element of evaluation. One might describe attitudes as summary judgments of a stimulus, object, or event which aid individuals in structuring their complex environments. As such, attitudes can be seen as items of social knowledge, built from experiences, beliefs, and feelings generated by an attitude object.

The literature suggests that attitudes consist of three response types: affective, cognitive, and behavioral. That is, an attitude consists of how we feel, what we think, and what we are inclined to do about something. This represents the so-called tripartite model of attitudes. Though related, there is evidence that the three types of responses are different. Thus an attitude could be thought of as the categorization of a stimulus object along a continuous evaluative dimension based upon three classes of information: (1) cognitive information; (2) affective information; and (3) experience information concerning past behaviors, separately or in combination.

The literature also suggests a one-component view, which proposes that affective responses to attitude stimuli or objects are based solely upon cognition. Describing the attitude concept as cognition is another way of stating that attitudes are, in fact, items of knowledge; however, it must be recognized that this knowledge has an important experiential base, heavily characterized with emotions and driven by how the individual has responded to the stimuli in the past. Thus the single component and tripartite views are not completely dissimilar.

Unlike personality, attitudes are expected to change as a function of experience, and there is evidence that attitudes based on direct experience predict behavior better than those based on indirect experience. There are numerous theories of attitude formation and change, including consistency theories, self-perception theory, persuasion, social judgment theory, balance theory, and processing models. Processing models are used to explain that true attitude change results when both affective and cognitive processing of information occur in parallel. Some attitudes are much easier to change than others. Trying to change a person's commitment to a long-held position, such as the value of family, religion or politics, is more difficult than changing one's perception of a new brand of chewing gum. Individuals' attitudes related to their creativity represent one such position which may be difficult to change. Such creativity attitudes have conceivably 'worked' for them in their life or career progression. As ego-involved attitudes, they represent parts of one's 'self-picture' and are often closely held.

However, there are ways to positively impact peoples' attitudes toward creativity without threatening their self-image and instead expanding their skills in using their personal creativity. For example, educational studies have consistently found that elementary school teachers typically have negative attitudes toward students with personality traits associated with creativity. However, experiments have demonstrated that creativity training can positively impact such teacher attitudes. Later in this article additional examples of creativity attitudes and change are provided.

The Importance of Creativity to Organizations

The importance of creativity to the well being of society is clear when one considers the degree to which globalization and economic conditions require individuals and organizations to adapt their resources to changing demands to remain

competitive. Creativity can facilitate and increase problem solving and adaptability skills. While many organizations pay lip service to creativity, the most effective organizations recognize its importance and develop positive attitudes toward it. Effective organizations are simultaneously efficient and creative. The efficient organization follows well-structured, stable routines to deliver its products or services in high quantities with high quality and at low cost. It reacts quickly to unexpected turns of events to maintain routines with minimal disruption and without becoming mired in bureaucracy. In a stable world, efficient organizations may be successful. But in a changing world, organizations also need creativity as an ongoing process.

While organizational efficiency implies mastering routine, organizational creativity requires mastering the process of deliberately changing routine. Organizational creativity is a proactive process: it allows the organization to deliberately and continually change and adapt. It entails deliberate discontent – discovering new problems to solve, finding new things to do, and adopting new technologies and methods before anyone else. Adaptability is disruptive. It requires looking outside the organization for new opportunities, problems, trends, technologies, ideas, and methods that may dramatically improve or completely change routines or introduce completely new products and services. Creative organizations anticipate problems and opportunities, and develop timely solutions and new routines. They deliberately and continually change routines to improve quality, raise quantities, reduce costs, and stay ahead of competitors. The people in such organizations exhibit positive attitudes and behaviors consistent with creativity. They accept new ideas and solutions promptly and the acceptance is prevalent across the entire organization. In short, they have a positive mindset, which includes positive attitudes toward creativity and creative work. This article focuses on increasing understanding of how attitudinal factors contribute directly to organizational creativity, as well as demonstrating how organizations can deliberately incorporate creativity into their culture, rather than just talk about it.

Organizational Creativity as a Process Requiring Positive Attitudes

Organizational creativity can be portrayed as a continuous, dynamic, circular three-phase process of finding good problems, solving them and implementing good solutions (see Figure 1).

Creative organizations demonstrate a positive attitude toward problems. In fact, they seek them out as opportunities for disruptive change. Unfortunately, in lesser organizations the word 'problem' is often perceived negatively. In the creative process of Figure 1, problems are anticipated and sought proactively. They are viewed with a positive attitude as opportunities for innovation and improvement. As solutions are implemented, new problems or opportunities are discovered. For example, top Japanese corporations place newly-hired research and development scientists and engineers into sales departments to begin their careers. The intent is for them to learn experientially how to discover the problems of the customer, and recognize that such learning is the beginning of innovation.

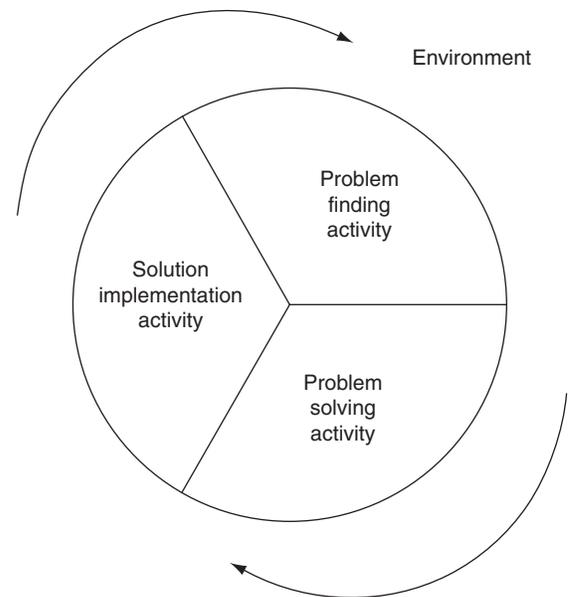


Figure 1 Creativity activity in an organization.

Thus, a positive mindset toward creativity begins with a positive attitude toward problem finding, meaning the behavior of continuously and deliberately discovering and formulating new and useful problems to be solved. In organizations, this includes anticipating new customer needs to generate new products or services, discovering new ways to improve existing products, services, procedures and processes, and identifying opportunities to improve the satisfaction and well-being of organizational members and pertinent groups outside the organization. On the other hand, problem solving means developing new, useful, imaginative solutions to these problems. Solution implementing means implementing such new solutions for successful change. Each implemented solution leads to new, useful problems to be discovered – hence the circular process. Research shows that effective organizations do what it takes to mainstream such a process (make it an everyday habit among its members) for continuous innovation and for intrinsic motivation. Positive outcomes for employees from increasing organizational creativity include greater motivation, job satisfaction and teamwork.

Research on Creativity Attitudes

It is important to realize that the study of creativity from any standpoint can be difficult and complex. For one thing, there is no single agreed upon definition of creativity. Another reason is that creativity is multi-faceted because so many factors contribute to its development and expression. These factors can be classified as personal (such as cognitive, motivational, and attitudinal), social, and environmental. While there is no lack of theorizing about attitudes associated with creativity, there has been only a small amount of empirical research attempting to operationalize these theories. Those few empirical studies can be divided into two different levels of analysis: macro and micro. Macro level studies investigate the role of attitudes

toward creativity at the organizational level while micro level studies attempt to understand their role at the individual level. But first, why has the subject of creative attitudes been so widely ignored in empirical research? One reason might be a perceived lack of applicability. Surprisingly, many researchers seem unaware of already existing research that establishes the significant role attitudes play in creative performance. However, a more likely reason is that changing attitudes of any kind is not an easy task. Perhaps no area of research in social psychology has been as active as the formation and change of attitudes. In fact, in many areas of study other than creativity, the linkage between attitudes and behaviors has been the subject of considerable research and controversy. The belief that attitudes have important implications for behavior in organizations is implicit in various areas of human resource research. Various balance theories predict that individuals who experience inconsistency among their feelings, beliefs, and behaviors are motivated to restore balance. An individual's sense of commitment to an organization as an attitude has been found to have numerous moderators beyond relevant work-related factors. There is only a small direct correlation between an individual's job satisfaction and performance on the job. In short, the relationship between attitude and behavior is complex and is an important area of research. A positioning of this missing relationship in creativity research is an objective of this article.

Macro Level Creativity Attitude Research

Macro level research on attitudes toward creativity can be categorized as being either 'attitudes toward change' or 'attitudes toward creativity.' A variety of measures of personality orientation toward change have been developed to understand the roles various groups play in an organization's adoption of change initiatives. For example, managerial attitudes toward change have been positively related to organizational innovation.

The second category of macro level empirical research consists of a program of field work by creativity researcher Min Basadur and his colleagues, who developed scales to measure the extent to which organizations do not value new ideas, have negative stereotypes of creative people, and whose employees feel too busy for new ideas. These provide an opportunity for innovation-minded managers to enhance creative behavior among staff by nurturing and developing specific positive attitudes. To the extent that employees value new ideas, believe that increased creative behavior and performance can be developed and is not the sole domain of a select few, and feel they are not too busy for new ideas, they are more likely to engage in creative thinking and to try to improve their creative performance.

Some theorists have offered conceptual models explaining how individuals' attitudes play important roles in creativity. For example, some theorists have argued that a negative attitude suppresses creativity but that creativity is enhanced through positive attitude adjustment. Thus organizational processes encouraging positive attitudes toward creativity would be expected to lead to greater engagement in creative activities and to be a requirement for organization-wide creative performance. Finally, some have proposed that a can-do attitude in

an organization's employees during crisis situations is a key factor determining whether or not executives adopt a crisis-as-opportunity mindset, and in turn perceive the opportunity presented in the crisis as attainable.

Empirical Micro Level Creativity Attitude Research

The role of attitudes in creativity can also be understood at the individual or micro level. At the end of the day, creativity is something that a person or team actually does. Creative behaviors produce creative results. Thus, mechanisms by which creative behaviors can be developed or triggered are important for organizations to learn if they truly want to achieve ongoing creativity and organizational effectiveness. In the sections below, empirical evidence is presented that creative attitudes open the doors to, and trigger, such creative behaviors and results. The important linkage between attitudes and behaviors in creativity was identified in field research by Basadur and his colleagues, George Graen and Stephen Green. They summarized the available organizational creativity research into three distinctly different types. The first was identification (of creative people), the second was organizational factors (affecting creativity) and the third was improvement. They undertook a direct test of improving creativity by training and tried to address two major questions: "Does creativity training work?" and "If it does, then how does it work?" Their literature search on improvement turned up seven significant opportunities to advance the research.

First, creativity training as a subset of organizational and industrial training had suffered from many of the problems of organizational training research in general, along with facing some unique problems. Research on 'laboratory training' (i.e., training intended to change behavior and/or skill) had provided no evidence about effects on individuals' problem-solving skills. Only a small number of research studies had dealt with any attempts to teach problem-solving and decision-making skills. Second, those studies that had been done on creativity training were mostly 'nonreal world' or fictitious in nature. Most often they involved asking college students to generate ideas for solving a fictitious, neutral problem such as imagining uses for a wire coat hanger. Only a very few studies concerning real-world problems were found in the literature and much like training research in general, very few had tried to assess behavior change back on the job. Third, most studies showed methodological weaknesses. Fourth, many of the problems in creativity-training research involved measurement issues. Compounding these problems was the difficulty in arriving at even a common definition of what creativity means.

Fifth, there had been no significant investigation of the mechanisms by which creativity training might work. The training had been done on a kind of black box basis; that is, provide training and check to see what came out at the other end, without attempting to find out what was going on inside in terms of intermediate attitudes and behaviors. Essentially, none of the research in creativity training had addressed the intermediate steps of the traditional training model: training develops Understanding to change Attitudes to change Behaviors to achieve superior Results. For example, most of the previous research had tested the brainstorming technique.

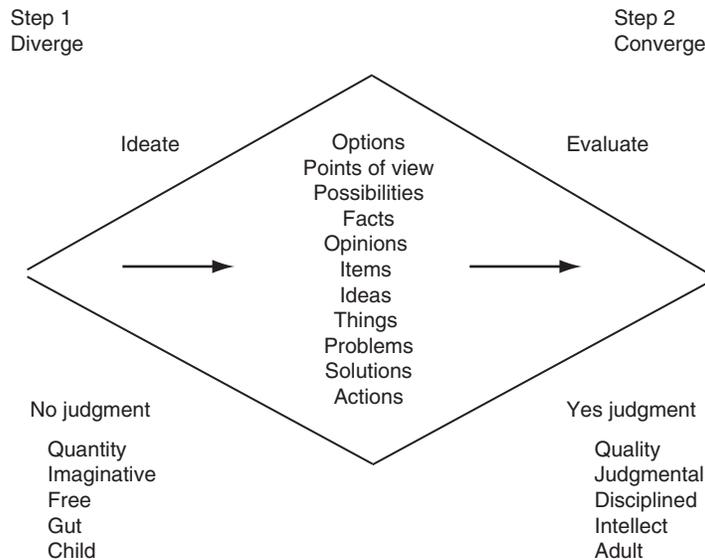


Figure 2 Ideation–evaluation: a sequential two-step creative thinking mini-process.

Brainstorming is the thinking tool most often used for the first half of a two-step thinking process labeled ideation–evaluation (see [Figure 2](#)). The ideation–evaluation process in [Figure 2](#) can be summarized as the deliberate separation of imaginative, nonjudgmental, divergent thinking from nonimaginative, judgmental, convergent thinking. The latter is delayed until the former has had an opportunity to be developed adequately. The emphasis is on doing both kinds of thinking, but separating the two. It is the deliberate use of both ideation and evaluation in a skilled, planned, orderly way.

None of the brainstorming research had attempted to measure to what extent the subjects actually accepted the value of ideation–evaluation and performed it skillfully during the brainstorming experiment or more permanently back in the real-world setting. To what extent brainstorming performance correlated with the attitude of willingness to accept ideation–evaluation and the behavior or skill in using it was never tested. In other words, in many of these earlier research studies, giving brainstorming instructions was all the training there was (as if this was sufficient to obtain sudden changes in brainstorming attitudes and behaviors). It is one thing to ‘nod your head’ to say you understand brainstorming rules. It is an entirely different thing to use the brainstorming rules skillfully, especially on real-world problems on issues that are important to participants.

Several laboratory experiments had indicated that inhibitory influences make training (giving brainstorming instructions) of groups less valuable than training of individuals, however, none of these experiments measured intermediate attitudinal or behavioral effects of such training. It seemed not only unlikely that simple brainstorming instructions would qualify as sufficient training, but also that many group participants would truly accept and use those instructions. They were more probably inhibited within the group and collectively lacked sufficient attitudes and skills in the ideation–evaluation mechanism. These groups should be called untrained, undertrained, or underdeveloped groups. Unless trainees significantly increase their acceptance of and skill in ideation–evaluation, neither they nor their groups should be

expected to improve their creative performance compared to untrained individuals or untrained or nominal groups. In other words, training in creative problem solving must be of sufficient quality, impact, and duration to effect real improvements in attitude toward (acceptance of) the mini-process of ideation–evaluation and its application (behavior). This line of thinking may explain why so few new management techniques become permanent and why many earn the ironic label of flavor of the month.

Sixth, among the few real-world creativity-training studies available, results had been conflicting. For example, one study suggested that such training is useful to managers and professionals in improving creative problem-solving performance on real-world problems, while another disagreed and suggested it only leads to ideas which are very similar to those produced without training. However, a major difference between the studies was that one provided much less training (1.5 hours) than the other (10 hours). One might speculate that the briefer training did not provide sufficient training to unfreeze and change participants’ attitudes and behaviors toward ideation–evaluation, or really induce participants to accept or practice the ideation–evaluation process when confronted with a real-world problem, whereas the other did.

Seventh, the value of training in a complete process of creative problem solving appeared virtually uninvestigated. Most studies involved only brainstorming, which is not a complete process of creative problem solving but rather one tool. Brainstorming is the generation of potential solutions without evaluation to a presented, predefined problem. The literature emphasized the need to study more complete processes of creativity. There were two aspects to this line of thought. First, most researchers in creativity agreed that (1) evaluation was an important aspect of the creative process; and (2) there are stages to the creative process above and beyond simply finding solutions to already identified problems. There was some discussion that finding new useful problems to solve is a separate and more important stage of the creative process than finding useful solutions to already

identified problems. To be of value to real world organizations, training in attitudes, behaviors, and skills requires a more complete process of creativity than a simple tool of ideation such as brainstorming.

Attitudes Are Needed to Make the Creative Process Work

Based on this analysis, Basadur, Graen, and Green set out to comprehensively test the effects of applied setting training featuring a complete process using ideation–evaluation in each step and taking into account many of the above described deficiencies in creativity research. The complete process trained, called Simplex, is described below and can be represented as eight ideation–evaluation steps within the four stages of [Figure 3](#). The problem-finding phase of [Figure 1](#) has been divided into two stages – problem generating and problem formulating – and the process is a circular, continuous, four-stage process of generating, conceptualizing (formulating), solving, and implementing.

Ideation–evaluation occurs within each of the eight steps of the Simplex process. Ideation, or active divergence, is the generation of options without evaluation (deferring judgment). Evaluation, or active convergence, is the application of judgment to the generated options to select the most significant options. Separating ideation from evaluation is a vital aspect of this two-step process. This mini-process must be executed skillfully.

The research systematically measured for the first time the impact of creative problem-solving training on individuals

both immediately after training, as well as later, after they returned to work. The researchers conducted a field experiment in which they expected that providing creativity impactful training would improve five variables: (a) acceptance of the ideation–evaluation thinking mini-process; (b) deliberate practice of the ideation–evaluation thinking mini-process; (c) problem-finding performance; (d) problem-solving performance; and (e) solution implementation performance. The first of these five variables is attitudinal, while the second is behavioral. The researchers suggested that these two attitudinal and behavioral variables were necessary antecedents of the three performance variables. Unless a positive change in attitudes and behaviors were achieved – motivating participants to separate divergent and convergent thinking and to deliberately apply divergent thinking – training would not improve ideation performance. The research tried to measure the extent to which a change in acceptance of (attitude) and practice of (behavior) ideation–evaluation could result from training, and the extent to which it could result in a change in performance. This link between training and actual change in acceptance and practice of the fundamental ideation–evaluation process had simply been assumed to occur in previous research. The expected training effects are modeled in [Figure 4](#).

[Figure 4](#) offers the starting point of a theoretical model to explain how training increases organizational creativity and innovation. This model postulates that, in order to achieve meaningful increases in problem finding, problem solving, or solution implementation performance and organizational results, the impact of training must be sufficient to increase acceptance (attitudes) and practice (behaviors) of the ideation–evaluation process. For simplicity's sake, the model excludes

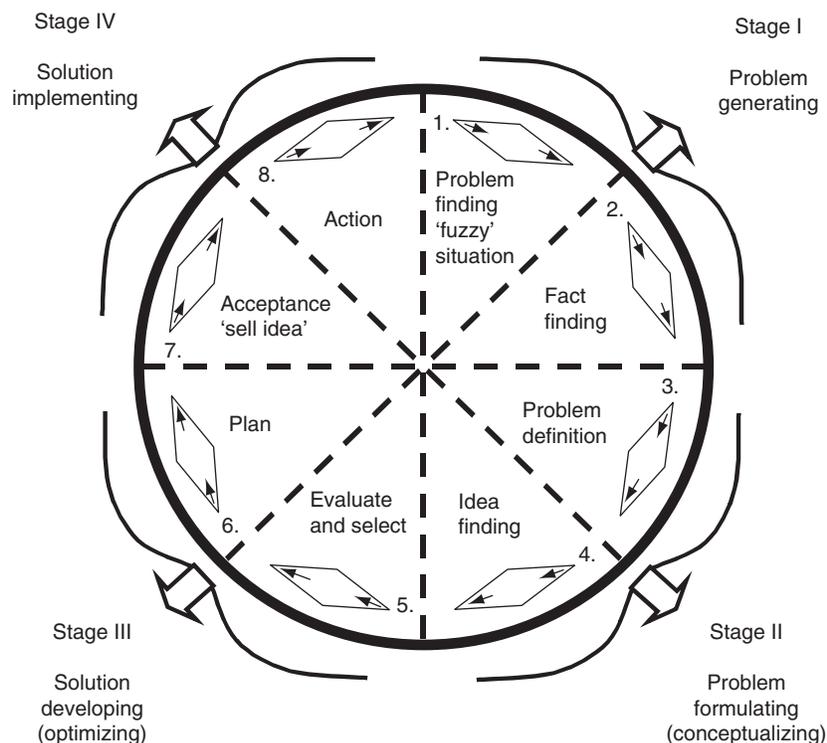


Figure 3 The Simplex creative process as a whole.

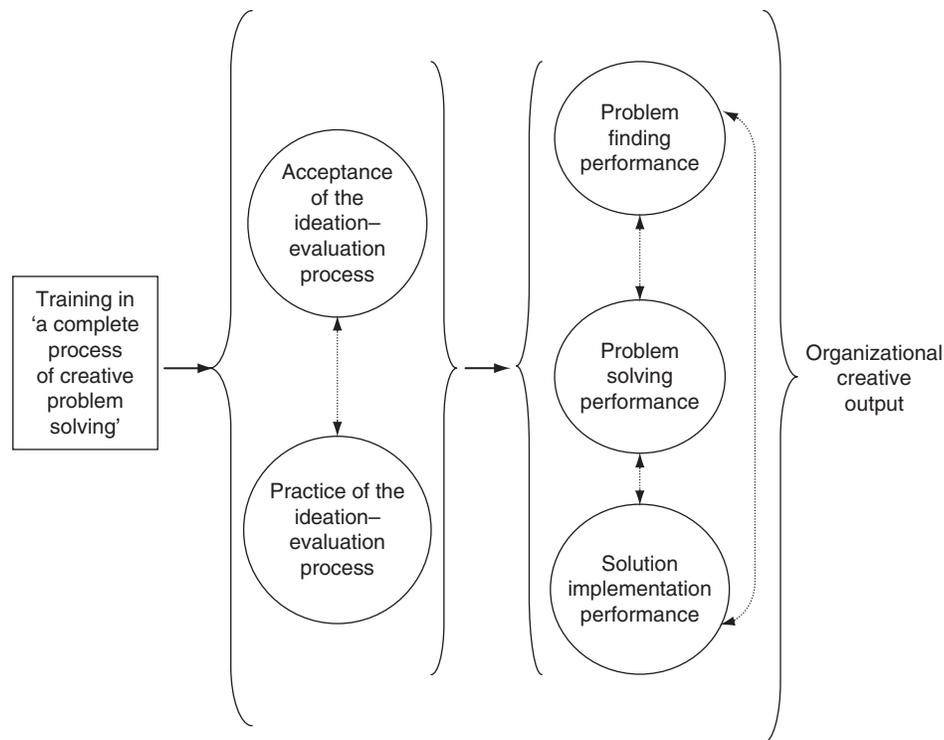


Figure 4 Effects of Simplex training on attitudes, behaviors, and performance.

various organizational, group and individual work-related factors that also affect creativity.

The research explored the effects and mechanisms concerning individual attitudes, behaviors, and performance in a real-world setting (rather than in a laboratory setting). What little previous research had occurred in relatively real-world settings had been limited to group variables. It was also suggested that, compared to simple brainstorming, a complete process such as Simplex would prove more useful and more credible (and less subject to the skepticism that often plagues creativity training) among participants from real-world business and other organizations. Unlike earlier research in which participants were asked merely to apply brainstorming rules without training, Basadur and colleagues stressed the importance of building attitudes and skills through at least two days of hands-on practice using real-world problems.

There were three premises underlying the training. The first was the recognition that, for most people, the ideation step is more difficult than the evaluation step of the process. Our society, including our school systems, tends to reward and hone our evaluation capabilities and preferences and promote their use virtually to the exclusion of ideation. Eventually that results in the dominance of evaluation skills. Engineering students have been found less able to use their imagination upon graduation than they were when they entered school four years earlier. The second premise recognized that, even within the above context, there are individual differences between people's relative preferences, aptitudes, and abilities in the two steps of the ideation-evaluation process. Some people may be relatively better in ideation or in evaluation. The third premise was that the training, while designed to strengthen both steps of the ideation-evaluation process, was

expected to have the most impact on the step of the ideation-evaluation process that was least developed in each trainee.

Research participants included staff drawn from the engineering department of a large consumer goods industrial company. The organization requested the training to promote an increase in creative performance in applied research. Two days of intensive training in creative problem solving (depicted in Figure 3) was primarily experiential and practice oriented and included a series of diverse tasks encouraging participants to discover concepts not considered before, such as ideation-evaluation and the value of both divergence and convergence in thinking. Using a 'learning by doing' model, the training was applied to real-world problems, in addition to case studies. For example, each person generated an individual work problem and then developed a solution and implementation plan before leaving the training session. These processes encouraged transference of creativity concepts to personal frames of reference. Within the design, delayed measures were constructed to reflect attitudinal and behavioral changes transported back to the regular work setting.

Compared to a control group, the experimental training group achieved significant increases in the acceptance and practice of ideation-evaluation and also in the performance variables measured. Multiple method measures, including on-the-job observation, demonstrated that employees made gains in attitudes and behaviors and were seen to be more open-minded to new ideas and approaches, less likely to jump to conclusions as to the nature of a problem, more positive in reaction to new, unusual product ideas, less prone to negative evaluation during idea generation, more capable of generating a good quantity and quality of problems, more likely to consider different problem definitions prior to choosing one as best, and more likely to try new, unusual approaches.

The results supported the model in [Figure 4](#). The model is primarily useful for identifying the key constructs that must be affected in order for training to succeed. In summary, the research suggested that unless attitudes toward divergent thinking are positive or become positive, divergent thinking as a behavior is not likely to be practiced on the job.

Development of Micro Level Creativity Attitudes and Measures

The research by Basadur and his colleagues subsequently led to more precise modeling of how divergent thinking attitudes enhance divergent (ideation) thinking behaviors and skills. In 1985, Basadur and fellow researcher Carl Finkbeiner created measures of two specific attitudes that enhance these process skills. They suggested that the ideation–evaluation process has both attitudinal and behavioral components, and unless the process is accepted attitudinally, it will not probably occur. Using a 14-item questionnaire, they measured two specific attitudes that indicate acceptance of ideation–evaluation: the tendency to (not) evaluate prematurely (preference for deferral of judgment) and the preference for ideation (active divergence). They suggested that these two attitudes enhance and encourage the practice of the two related behavioral skills. Encouraging active divergence leads to generation of more options and deliberate development of many points of view. Encouraging avoidance of premature convergence reduces the urge to prematurely judge or analyze a fledgling thought.

They also suggested that a low tendency toward premature convergence would trigger a high preference for active divergence. That is, the former, more passive attitude is a prerequisite trigger for the latter, more active attitude. When people become skilled in reducing premature convergence and increasing active divergence, they create more, higher-quality options. These two measures of the acceptance attitudes are used in various ways in the research reported in this article as explained later. For example, evidence has been gathered that individuals whose attitudes favor ideation do better on divergent tasks, those whose attitudes reflect a preference for evaluation do better on convergent tasks, while those whose attitudes reflect both perform equally well on both types of tasks. The work is modeled in [Figure 5](#).

Multi-Dimensional Creativity Attitudes

The research has also provided evidence that both the variables of (attitude) acceptance and (behavior) practice of ideation–evaluation are multidimensional rather than single dimensional. One's attitudes and behaviors in applying the ideation–evaluation two step process probably differ in each of the three–phases of the complete process. For example, someone may prefer to defer judgment and actively diverge in the solution-finding phase more than in the problem-finding phase, or vice versa. Later research provided evidence of different optimal ratios of ideation and evaluation in each of the phases for different fields of endeavor. Thus, six new

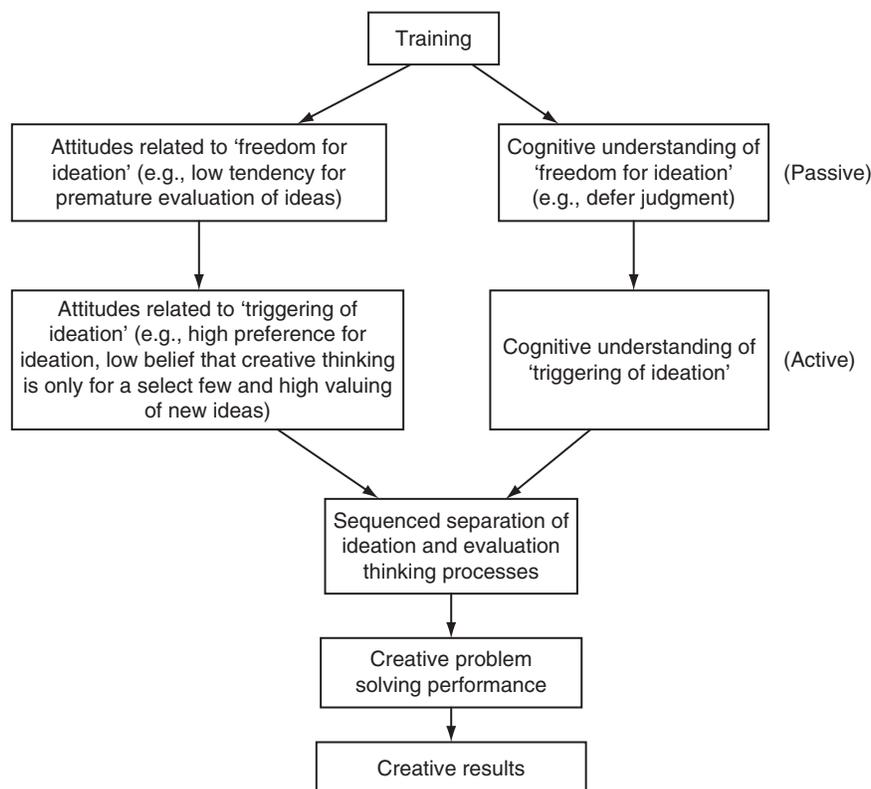


Figure 5 Speculative model of creative problem-solving training differentiating between 'ideation freeing' and 'ideation triggering.'

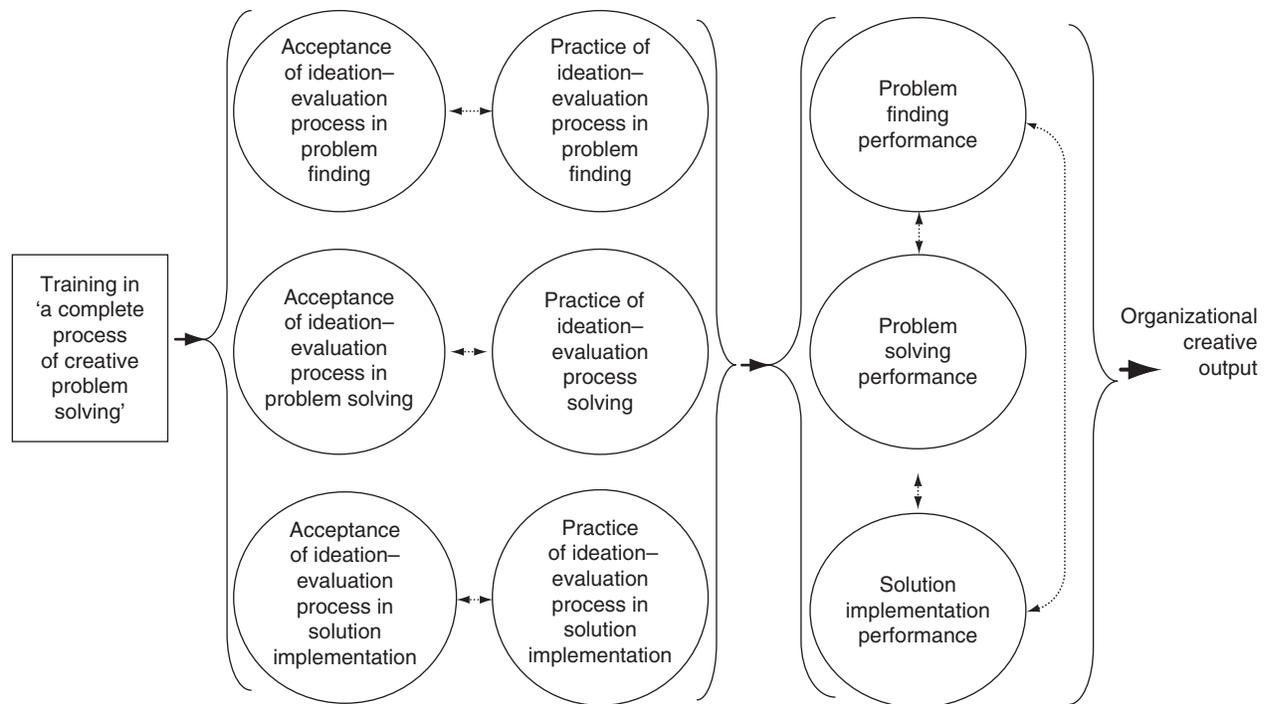


Figure 6 Revised model for training creative behavior in an organization.

antecedent variables replaced the two antecedent variables in [Figure 4](#). The attitudinal antecedents were labeled acceptance of ideation–evaluation in problem finding, acceptance of ideation–evaluation in problem solving, acceptance of ideation–evaluation in solution implementation. Similarly, the behavioral antecedents were labeled 'practice of ideation–evaluation in problem finding,' in problem solving, and in solution implementation. The revised model of training effects is shown in [Figure 6](#) which suggests that changes in acceptance of (attitude), and practice of (behavior) ideation–evaluation in each of problem-finding, problem-solving, and solution implementation are necessary antecedents to corresponding changes in performance.

Optimal Ideation–Evaluation Attitudinal Ratios

Basadur and colleagues' program next began exploring the relative contributions of ideation and evaluation at each of the three phases of the process of [Figure 2](#) in field research. For example, do these relative contributions differ by field of organizational endeavor? Perhaps different optimal ideation–evaluation ratios exist for any job or any organizational function. Perhaps in short-range, time-pressured, high implementation-oriented jobs, evaluation (convergence) is relatively more important than ideation (divergence). Perhaps in long-range, less time-pressured, less implementation-oriented jobs, the reverse is true. Perhaps jobs exist between these extremes in which ideation and evaluation are about equal in importance. Empirical testing was conducted of the idea that fields of endeavor with differing emphases on various phases of the complete creative problem solving process differ correspondingly in the ideation–evaluation preference

ratio of individuals working in these fields. The results supported the notion that people working in various different fields of endeavor in organizations have different ideation to evaluation (I/E) preference ratios corresponding to the varying relative amounts of problem finding, problem solving and solution implementation that their work entails. People working in fields favoring problem finding had higher I/E preference ratios than those working in fields favoring problem solving and solution implementation. People working in fields favoring problem solving had higher I/E preference ratios than those working in fields favoring solution implementation. For example, in manufacturing, characterized by short-term, clear-cut activities leading to action within specific time limits, participants favored an evaluational, converging approach over an ideational, diverging approach. This would be a solution implementation (SI) field of endeavor. In contrast, participants working in environments such as pure research, in which time is a less limiting factor, and action is secondary to understanding, favored a diverging approach over a converging approach. This would be a problem finding field (PF) of endeavor. Between these two extremes were various fields in which, based on problem finding already done by others, one develops solutions for others to implement. Here, moderate time limits for action exist, and favor diverging and converging about equally. This would be a problem solving (PS) field of endeavor including jobs such as administrative or marketing (see [Figure 7](#)).

Changing Creativity Attitudes

Many people who work in organizations may have negative attitudes toward creativity, divergent thinking, and new ideas.

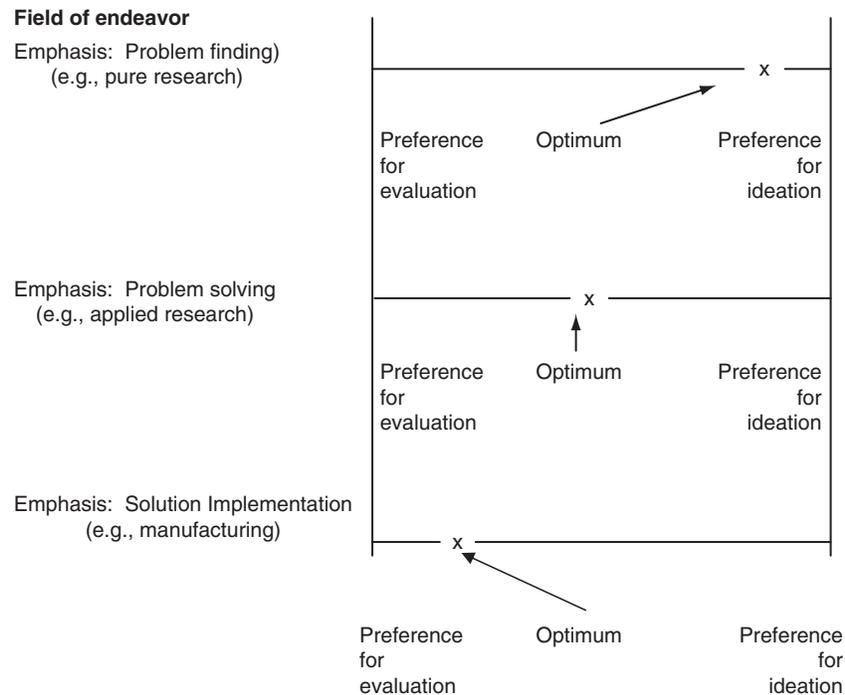


Figure 7 Different optimal ideation–evaluation attitudinal preference ratios for different fields of endeavor.

As a result, employees with more innovative styles are typically viewed with more mistrust and negativity by others. They encounter greater difficulty in getting their ideas accepted because they tend to propose more unusual solutions and may even redefine given problems in unexpected new ways. Others in the organization tend to have negative attitudes toward such divergent approaches inasmuch as the substantial changes they represent evoke feelings of discomfort and apprehension. Unless improvements in these attitudes can be achieved, efforts to increase divergent thinking and creativity may ultimately be fruitless. In 1986, Basadur, Graen, and Terri Scandura suggested that the attitudes of manufacturing engineers tend to be especially negative toward any form of divergent thinking and creative problem solving. They tend to see little room for creativity in their structured, implementation-oriented environment, where practicality is so highly valued.

Changing attitudes of any kind is not an easy task. Perhaps no area of research in social psychology has been as active as the formation and change of attitudes. In the 1986 study, the presentation of a multi-phase, complete process of creative problem solving based on synchronizing divergent and convergent thinking in each phase, was an attempt to persuade manufacturing engineers to engage in divergent thinking on their jobs and overcome their negative attitudes which might be a barrier to their use of creative problem solving. Hence, it was of interest to determine the extent to which the training (as a persuasive communication attempt) was able to effect changes in attitudes and the subsequent ability to incorporate creativity into the repertoire of job-related skills.

The research focused on the two attitudes toward divergent thinking identified by Basadur and Finkbeiner: (a) preference for ideation (active divergence), and (b) tendency to make

premature critical evaluations of ideas (premature convergence). For example, a person with a high preference for ideation (active divergence) in problem solving would probably find value in generating novel and varied solutions, considering multiple points of view and using initial solution suggestions as stepping stones to additional solution possibilities. A person with a high tendency to make premature critical evaluations of ideas (premature convergence) in problem solving would be quick to find a flaw in a solution offered and eliminate it from consideration, would probably display a high need to be decisive, would dislike wasting time with apparently nonproductive trains of thought, would feel each solution generated ought to be evaluated sequentially before proceeding to the next one, would not want to risk making a mistake, would believe there is one best way or one right answer to solve a problem, would have a low tolerance for ambiguity, and would prefer to optimize on one solution rather than explore multiple options.

The researchers hypothesized that training of the manufacturing engineers in the Simplex process (Figure 3) would lead to an increase in preference for ideation (active divergence) and a decrease in the tendency to make premature critical evaluations of ideas (premature convergence) in measurements taken five weeks after the training. The engineers were either trained as part of an intact work group or with other employees from various work units throughout the organization. The final results saw both measured attitudes toward creative problem solving (preference for ideation, and tendency to make premature critical evaluations of ideas) showing positive change after five weeks for the engineers trained in the intact work groups. However, the diffuse work groups showed statistically positive change in only one of the two measures

(tendency to make premature critical evaluations of ideas). Furthermore, there was some evidence of erosion of even the gain on the one measure in the first part after 10 weeks. Based on these results, it is possible that the engineers trained in intact work groups returned to their jobs along with others who had participated in the training and received peer support for divergent thinking in problem solving. In contrast, engineers in the diffuse work group returned to various work units throughout the organization and found less peer support for divergent thinking attitudes. The study showed that appropriate training can result in positive effects even in populations whose attitudes may be difficult to change, and that the use of intact work groups may enhance the impact of training.

A later experiment found that similar training was successful in affecting divergent attitudes in a wide range of employees. It also found that individuals with a natural preference for developing optimal solutions, as opposed to discovering new problems or playing with ideas, experienced significantly greater gains in attitudinal preference for active divergence following training.

Cross-Cultural Research on Creativity Attitude Change

With the development of the world economy and the erosion of cultural walls, organizations are seeing an increasing need for cross-cultural performance. The ability to learn, understand, problem solve and cooperate between cultures takes on greater importance. The more we know of how managers are similar or different in these respects, the more quickly and efficiently organizational creativity can be stimulated. Research into the impact of training on creativity attitudes and results has shown that it can offer the same successes with Japanese and South American managers as previously demonstrated with North American managers.

However, cultural factors can clearly have an impact on creativity attitudes. For example, the impact of training on the active divergence attitudes of Japanese managers was particularly strong. It is possible that the typical Japanese corporate reliance on consensus-style decision making and the value placed on harmony leads to a greater acceptance of the notion of avoiding premature judgment of others' ideas. This aspect of creative problem-solving training might be more compatible with their corporate culture than the process of actively diverging. In contrast, especially strong cultural forces may act against outrightly favoring active divergence on the job, since Japan is a shame culture. In order to save one's face and maintain personal security, one may try to avoid such thinking in particular. Impactful training in creative problem solving could have an especially high potential for improving attitudes toward active divergence under the consensus-and-harmony-oriented Japanese business culture.

Linking Creativity Attitudes, Behaviors, and Skills in a Causal Model

Additional research has demonstrated that training using the Simplex process significantly improves participants' evaluative skills, and those evaluative skills correlate positively with

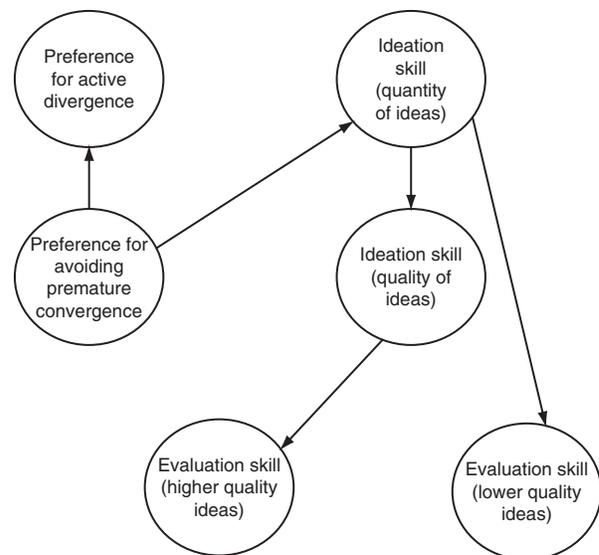


Figure 8 A causal model: how attitudes trigger ideational and evaluational skills.

ideational skills. This result is consistent with the theory that individuals with high ideational abilities have more opportunity to exercise evaluative skills. Additional work has found that the attitude of preference for avoiding premature convergence (deferring judgment) triggers the attitude of preference for active divergence. More importantly, this attitude of accepting deferred judgment is the more powerful attitude, and is significantly associated with the ideational and evaluational skill variables in [Figure 8](#). Increasing the preference for avoiding premature convergence encourages ideational skill in terms of quantity of ideas generated, which in turn translates directly into increased ideational skill in terms of quality of ideas generated and into evaluation skill in terms of more accurately recognizing lower quality ideas. The increased skill in ideation quality then translates directly to increased evaluation skill in terms of recognizing higher quality ideas.

Thus, the key appears to be the attitude of deferring judgment which triggers ideational skill in quantity of ideas generated. This skill, in turn, is strongly related to ideational skill in quality of ideas generated and also to evaluational skills. Interestingly, the increased preference for active divergence, which is triggered by the increased preference for deferral of judgment (avoiding premature convergence) did not play a direct role in enhancing ideational and evaluational skills. However, the possibility of an indirect role remains and raises the possibility of a moderating relationship that could be explored in further research. Additional research ideas follow below.

Future Research

There is ample opportunity for enterprising researchers to further understand the impact attitudes have on creativity at the individual, team and organizational levels while also providing real value to organizations willing to participate in empirical research. For example, the model in [Figure 6](#) invites increased

investigation of attitudes in the problem finding and solution implementing stages of the creative process. Also, no empirical testing has yet been done on the relationship between attitudes toward creativity and personality characteristics such as openness to experience and agreeableness. Given the current popularity of personality research in today's scientific management journals it would seem that this area of study holds much promise to bring creative attitudes to a broader audience. Finally, extending the cross-cultural research to additional important regions such as China and the Middle East would be most appropriate in our rapidly evolving world.

See also: Creative Products; Divergent Thinking; The Four Ps of Creativity: Person, Product, Process, and Press; Leadership; Problem Finding; Teaching Creativity.

Further Reading

- Basadur MS (1997) Organizational development interventions for enhancing creativity in the workplace. *Journal of Creative Behavior* 31(1): 59–72.
- Basadur MS and Finkbeiner CT (1985) Measuring preference for ideation in creative problem solving training. *Journal of Applied Behavioral Science* 20(1): 23–34.
- Basadur MS, Graen GB, and Green SG (1982) Training in creative problem solving: Effects on ideation and problem finding and solving in an industrial research organization. *Organizational Behavior and Human Performance* 20: 41–70.
- Basadur MS, Graen GB, and Scandura TA (1986) Training effects on attitudes toward divergent thinking among manufacturing engineers. *Journal of Applied Psychology* 71(4): 612–617.
- Basadur MS and Hausdorf P (1996) Measuring divergent thinking attitudes related to creative problem solving. *Creativity Research Journal* 9(1): 21–32.
- Basadur MS, Pringle PF, and Taggar S (1999) Improving the measurement of divergent thinking attitudes in organizations. *Journal of Creative Behavior* 33(2): 75–111.
- Basadur MS, Runco MA, and Vega LA (2000) Understanding how creative thinking skills, attitudes and behaviors work together: A causal process model. *Journal of Creative Behavior* 34(2): 77–100.
- Basadur MS, Wakabayashi M, and Graen GB (1990) Attitudes towards divergent thinking before and after training: Focusing upon the effect of individual problem solving styles. *Creativity Research Journal* 3(1): 22–32.
- Basadur MS, Wakabayashi M, and Takai J (1992) Training effects on the divergent thinking attitudes of Japanese managers. *International Journal of Intercultural Relations* 16: 329–345.
- Mumford MD and Gustafson SB (1988) Creativity syndrome: Integration, application, and innovation. *Psychological Bulletin* 103: 27–43.
- Plucker JA and Renzulli JS (1999) Psychometric approaches to the study of creativity. In: Sternberg RJ (ed.) *Handbook of Creativity*, pp. 35–61. London: Cambridge University Press.
- Puccio GJ, Firestien RL, Coyle C, and Masucci C (2006) A review of the effectiveness of CPS training: A focus on workplace issues. *Creativity and Innovation Management* 15(1): 19–33.
- Shalley CE and Gilson LL (2004) What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *Leadership Quarterly* 15(1): 33–53.
- Westby EL and Dawson VL (1995) Creativity: Asset or burden in the classroom? *Creativity Research Journal* 8: 1–10.
- Williams SD (2004) Personality, attitude, and leader influences on divergent thinking and creativity in organizations. *European Journal of Innovation Management* 7(3): 187–204.

Relevant Website

www.basadur.com – Basadur applied creativity - revolutionizing how people think!