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ABSTRACT

The componential theory of creativity is a comprehensive model of the social and
psychological components necessary for an individual to produce creative work. The
theory is grounded in a definition of creativity as the production of ideas or outcomes that
are both novel and appropriate to some goal. In this theory, four components are
necessary for any creative response: three components within the individual – domain-
relevant skills, creativity-relevant processes, and intrinsic task motivation – and one
component outside the individual – the social environment in which the individual is
working. The current version of the theory encompasses organizational creativity and
innovation, carrying implications for the work environments created by managers. This
entry defines the components of creativity and how they influence the creative process,
describing modifications to the theory over time. Then, after comparing the componential
theory to other creativity theories, the article describes this theory's evolution and impact.

FUNDAMENTALS

Creativity is the production of a novel and appropriate response, product, or solution to an open-ended task. Although the response must be new, it cannot be merely different; the nonsensical speech of a schizophrenic may be novel, but few would consider it creative. Thus, the response must also be appropriate to the task to be completed or the problem to be solved; that is, it must be valuable, correct, feasible, or somehow fitting to a particular goal. Moreover, the task must be open-ended (heuristic), rather than having a single, obvious solution (purely algorithmic). Ultimately, a response or product is creative to the extent that it is seen as creative by people familiar with the domain in which it was produced.

The componential theory of creativity was articulated by Teresa Amabile in 1983. A theory designed to be comprehensively useful for both psychological and organizational creativity research, it describes the creative process and the various influences on the process and its outcomes. Two important assumptions underlie the theory. First, there is a continuum from low, ordinary levels of creativity found in everyday life to the highest levels of creativity found in historically significant inventions, performances, scientific discoveries, and works of art. The second, related underlying assumption is that there are degrees of creativity in the work of any single individual, even within one domain. The level of creativity that a person produces at any given point in time is a function of the creativity components operating, at that time, within and around that person.

The Components of Creativity

In the componential theory, the influences on creativity include three within-individual components: domain-relevant skills (expertise in the relevant domain or domains), creativity-relevant processes (cognitive and personality processes conducive to novel thinking), and task motivation (specifically, the intrinsic motivation to engage in the activity out of interest, enjoyment, or a personal sense of challenge). The component outside the individual is the surrounding environment – in particular, the social environment.

The theory specifies that creativity requires a confluence of all components; creativity should be highest when an intrinsically motivated person with high domain expertise and high skill in creative thinking works in an environment high in supports for creativity. The following figure from Amabile's 1996 book, *Creativity in Context*, presents a simplified depiction of the theory.

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Domain-relevant Skills. Domain-relevant skills include knowledge, expertise, technical skills, intelligence, and talent in the particular domain where the problem-solver is working – such as product design or electrical engineering. These skills comprise the

raw materials upon which the individual can draw throughout the creative process – the elements that can combine to create possible responses, and the expertise against which the individual will judge the viability of response possibilities.

Creativity-relevant Processes. Creativity-relevant processes (originally called creativity-relevant skills) include a cognitive style and personality characteristics that are conducive to independence, risk-taking, and taking new perspectives on problems, as well as a disciplined work style and skills in generating ideas. These cognitive processes include the ability to use wide, flexible categories for synthesizing information and the ability to break out of perceptual and performance "scripts." The personality processes include self-discipline and a tolerance for ambiguity.

Task Motivation. Intrinsic task motivation is passion: the motivation to undertake a task or solve a problem because it is interesting, involving, personally challenging, or satisfying – rather than undertaking it out of the extrinsic motivation arising from contracted-for rewards, surveillance, competition, evaluation, or requirements to do something in a certain way. A central tenet of the componential theory is the intrinsic motivation principle of creativity: People are most creative when they feel motivated primarily by the interest, enjoyment, satisfaction, and challenge of the work itself – and not by extrinsic motivators. Because, as research has shown, salient extrinsic motivators can undermine intrinsic motivation, their presence or absence in the social environment is critically important. So, too, is the presence or absence of forces that can support intrinsic motivation.

The Social Environment. The outside component is the work environment or, more generally, the social environment. This includes all of the extrinsic motivators that have been shown to undermine intrinsic motivation, as well as a number of other factors in the environment that can serve as obstacles or as stimulants to intrinsic motivation and creativity. Research in organizational settings has revealed a number of work environment factors that can block creativity, such as norms of harshly criticizing new ideas; political problems within the organization; an emphasis on the status quo; a conservative, low-risk attitude among top management; and excessive time pressure. Other factors can stimulate creativity, such as a sense of positive challenge in the work; work teams that are collaborative, diversely skilled, and idea-focused; freedom in carrying out the work; supervisors who encourage the development of new ideas; top management that supports innovation through a clearly articulated creativity-encouraging vision and through appropriate recognition for creative work; mechanisms for developing new ideas; and norms of actively sharing ideas across the organization.

An Example: E Ink

The story of the invention and early development of the first stable electronic ink serves as an interesting illustration of the components of creativity in an organization. In this instance, two organizations were involved: the Media Lab at MIT (the Massachusetts Institute of Technology) and E Ink, the company that was founded to develop and commercialize the product. Although many people have never heard of this company,

most are familiar with the first e-readers, which relied on this product to produce the images of words on the screen: the Sony eReader and the Amazon Kindle.

The devices, marvels of the first decade of the 21st century, used a technology that was notably different from anything that had come before. Once the image was produced by electrical charges moving tiny black and white microcapsules of ink, the image remained stable without drawing additional power. Moreover, the image required no backlighting, and could be viewed clearly at any angle – much like words on paper. These two innovative features were unmatched by other electronic inks available at the time.

The concept for this type of e-book, and the original idea for the microcapsules, came from Joe Jacobson, an MIT Media Lab physicist. Jacobson's domain expertise in physics combined with the domain expertise of the two students who worked with him to develop the ink. Barrett Comiskey and J. D. Albert brought their respective skills in the domains of networks and mechanical engineering to the task, gaining expertise in chemistry, optics, and electronics as they went along. Given the responsibility of carrying out most of the experimentation in the lab, Comiskey and Albert relied on their creativity-relevant processes to take a rapid-iteration Edisonian approach; they experimented with multiple variables with great frequency as they attempted to zero in on the correct formulation. From the summer of 1995, when Jacobson had the initial idea, through January 1997, when Comiskey and Albert created the first working prototype, the three were fueled by a strong intrinsic motivation to develop something both astonishing and practical.

The environment of the MIT Media Lab was highly conducive to the team's work. Housing physical and social scientists from a wide array of disciplines, the lab fostered cross-pollination of ideas. There was a high degree of psychological safety, where people spouted "wacky" ideas without fear of ridicule. Moreover, a range of resources facilitated experimentation. Finally, even undergraduates in the lab enjoyed a great deal of autonomy to follow their hunches.

The Components and the Creative Process

As depicted in the figure, all four of the creativity components influence the creative process. The process consists of several sub-processes: analyzing and articulating the exact nature of the problem to be solved; preparing to solve the problem by gathering information and improving any required skills; generating ideas for solving the problem; testing or validating the chosen solution, and communicating that solution to others. This sequence is not rigid; the sub-processes can occur in any sequence and will often recur iteratively until a creative outcome has been attained.

Consider again the example of E Ink. Jacobson was relaxing on a beach one day in 1995, when he finished the book he was reading and realized that he had no additional reading material. This *problem identification* initiated the creative process. Jacobson spent the rest of the afternoon coming up with the basic concept of an electronic book that would wirelessly receive a book's contents in digital form and translate those electrical impulses into images using two-toned conductive particles. This *response generation* was the first

in a long series of ideas required for the invention. Jacobson's *preparation*, which enabled this idea, included his entire scientific education. Comiskey and Barrett drew on their own *preparation* in math and engineering, and then supplemented that with additional learning in related areas – throughout the entire time they were generating and trying out new ideas in the MIT Media Lab.

Repeatedly, over the months they worked on the problem, Comiskey, Barrett, and Jacobson would *test*, and fail to *validate*, an idea. Sensing that they were getting closer, however, they entered into the process again. Repeatedly, they came up with other ideas to try. Occasionally, they even partially *re-conceptualized the problem* they were solving. When, at last, they had their working prototype, they *communicated* their success to potential investors whose resources they needed to develop an actual product. The company that they founded, E Ink, brought in more individuals with their own blends of domain-relevant skills, their own creativity-relevant processes, and their own high levels of task motivation. In many ways, the founders also re-created the work environment of the MIT Media Lab that had so strongly facilitated their own initial creativity.

EVOLUTION

The componential theory of creativity was originally articulated in 1983 by Teresa Amabile as "the componential model of creativity." It has undergone considerable evolution since then.

In 1988, Amabile published an extension of the theory to encompass both creativity and innovation in organizations. The basic model of individual creativity stayed the same, but the assumption was added that the same four components influence the creativity of teams working closely together. More importantly, a parallel set of components was proposed for innovation. According to the expanded theory, innovation depends on (a) resources in the task domain (analogous to domain-relevant skills at the individual level); (b) skills in innovation management (analogous to an individual's creativity-relevant processes); and (c) motivation to innovate (analogous to individual task motivation). These components constitute the work environment impacting individuals and teams.

In 1996, Amabile published a revision of the original model of individual creativity, in a book that included updates by doctoral students and research associates Mary Ann Collins, Regina Conti, Elise Phillips, Martha Picariello, John Ruscio, and Dean Whitney. Research conducted in the first decade after the theory's publication suggested an important modification of one of the theory's most basic tenets: the intrinsic motivation principle. Although many extrinsic motivators in the work environment do appear to undermine intrinsic motivation and creativity, some may not. If rewards or other motivators are presented in a controlling fashion, leading people to feel that they are being bribed or dictated to, the undermining effects are likely to occur. However, if rewards confirm people's competence (for example, by recognizing the value of their work), or enable them to become more deeply involved in work they are excited about (for example, by giving them more resources to do the work effectively), intrinsic

motivation and creativity might actually be enhanced. This process is termed "motivational synergy" (Amabile, 1993).

In 2008, with Jennifer Mueller, Amabile published an additional modification of the theory based on new empirical evidence that affective state can significantly impact individual creativity. In this modification, affect, which can be influenced by the work environment, in turn influences creativity-relevant processes.

IMPORTANCE

Recognized as one of the major theories of creativity in individuals and in organizations, the componential theory has been used as a partial foundation for several other theories and for many empirical investigations. Amabile's earliest descriptions of the theory, in a 1983 article and a book the same year, have garnered nearly 2,000 citations in the academic literature. Of all of the theory's tenets, the most heavily disputed has been the intrinsic motivation principle. However, the majority of studies testing that principle have supported it – particularly when the notion of motivational synergy is taken into account. Although certain aspects of the theory remain unexplored empirically, research generally supports the inclusion of all three intra-individual components as well as the social-environmental component.

The Componential Theory in Context

The componential theory's basic elements, and the creative process it describes, are similar in the aggregate to other theories of creativity in both psychology and organizational studies, although with different emphases and somewhat different proposed mechanisms. At their core, all contemporary scholarly theories of creativity rely on the definition of creativity as a combination of novelty and appropriateness. Most theories describe a process by which an individual produces creative ideas, and most (but not all) include both skill and motivational elements. Some include the social environment.

The componential theory is distinctive in several respects: (a) its relatively comprehensive scope, covering skills and motivation within the individual as well as the external social environment; (b) its specification of the impact of the components at each stage of the creative process; (c) its emphasis on the social environment, and the impact of that environment on the individual engaged in the creative process – particularly the individual's intrinsic motivation. Moreover, unlike other psychologically-based theories of creativity, the componential theory was expanded to describe the process of organizational innovation; this expansion was based on a definition of innovation as the successful implementation of creative ideas within an organization. Thus, in later instantiations, the theory became truly multi-level, encompassing creativity in single individuals, teams, and entire organizations.

One shortcoming of the componential theory, as applied to organizations, is its focus on factors *within* an organization. Its failure to include outside forces, such as consumer preferences and economic fluctuations, limits the comprehensiveness of the theory in its current form. Moreover, the theory does not include the influence of the *physical* environment on creativity. Although recent research suggests that the physical environment has a weaker influence on creativity than the social-organizational environment, the effect is still measureable.

Application in Organizational Settings

Perhaps most importantly for practitioners, many managers have relied on tools and techniques developed from the theory to stimulate creativity and innovation within their organizations.

The theory applies to any realm of human activity, with the basic components and processes, and their mechanisms of influence, remaining the same. However, certain elements of the model are likely to be particularly distinctive in organizations. The work environment component in organizations contains features, such as team dynamics and top management behaviors, that are unlikely to be as important, or even present, in non-organizational settings. And it is likely that the creative process differs across realms of activity. In organizations, for example, the ways in which people identify problems or validate possible solutions are likely to be quite different from the ways in which those activities are carried out in the arts or in basic science laboratories.

Of the three intra-individual components, intrinsic motivation should be the most directly influenced by the work environment. (See figure.) However, it is also important to note that the work environment undoubtedly has effects on domain-relevant skills and creativity-relevant processes, in addition to its effects on intrinsic motivation.

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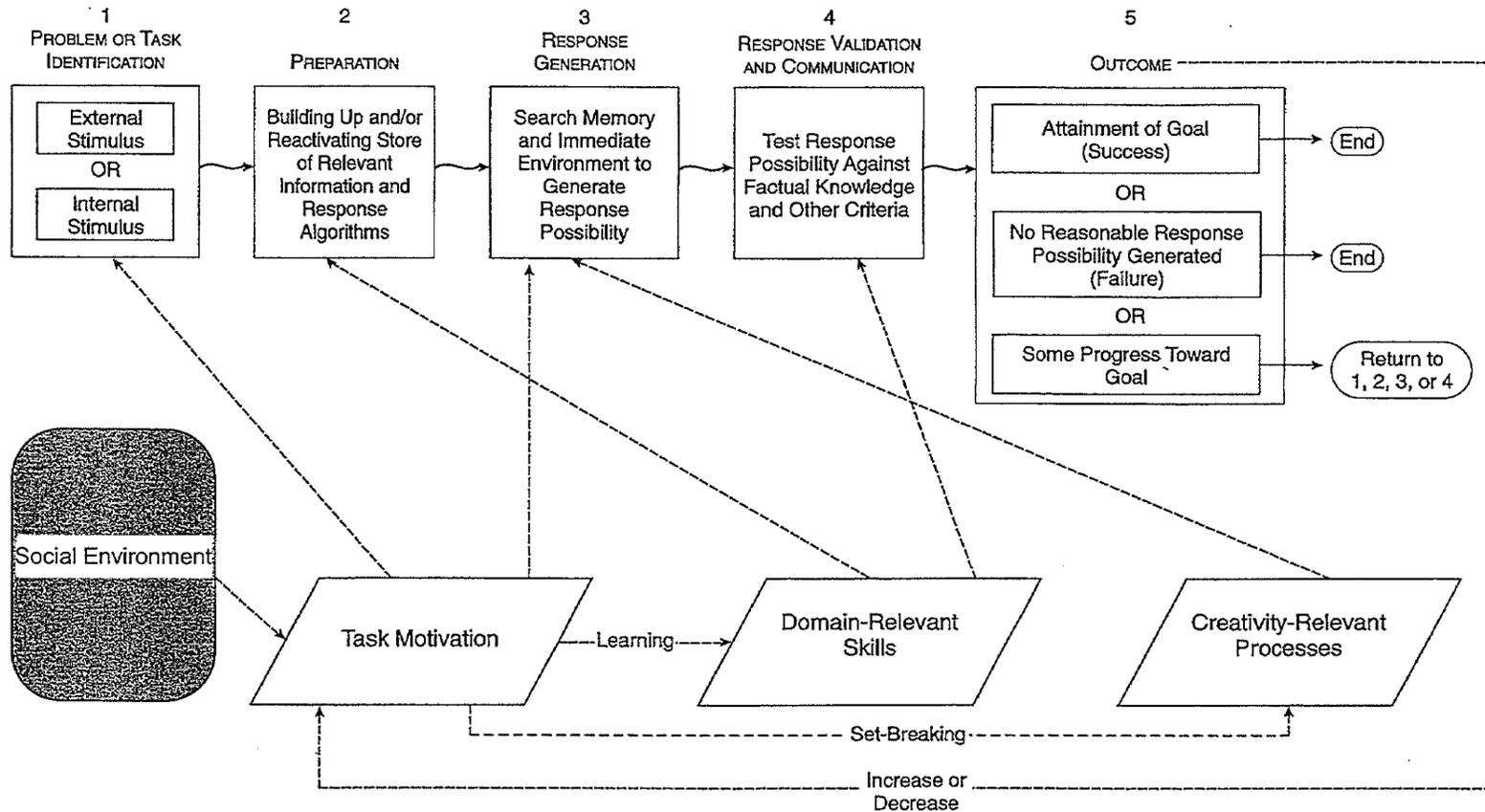
Figure. The componential theory of creativity. Broken lines indicate the influence of particular factors on others. Wavy lines indicate the steps in the process (where large variations in the sequence are possible). Only direct and primary influences are depicted.

(Source: From T. M. Amabile, *Creativity in Context* (1996, p.113). Boulder, CO: Westview Press (1996). Copyright 1996 by Westview Press. Reprinted by permission.)