

# The Creative Personality

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## ABSTRACT

The study of the creative personality has established itself as a major avenue of research on creativity and creative problem solving, other areas being creative process, product, and environment (or press). With respect to personality research, over the past 50-plus years, many studies have examined characteristics, attitudes, preferences, styles, and other personal qualities that appear to distinguish highly creative individuals. The purposes of this article are to review the accumulated body of creative personality research; describe the works of a few major researchers and their methods; briefly review theories that have been offered to explain why these personal qualities are causes, correlates, and/or outcomes of the creative process; and examine the relatively new construct of creative and problem-solving styles. Style assessment builds upon traditional personality research but holds substantial promise for talent identification and development for all individuals, not just those recognized as creatively gifted.

Creativity and creative problem solving have been argued to be essential to humanity's progress, even its very survival (Taylor, 1964; Taylor & Barron, 1963). Decades of research focused on the creative person have produced a substantial literature and long lists of characteristics associated with individuals who have produced many creative achievements. The skills and dispositions of creative problem solving among average, nonfamous, everyday individuals have received much less attention (Nicholls, 1972). Yet, if we are to maximize the talents in all of us, for progress large and small, we must know more about the "average" person engaged in the creative problem-solving process. A relatively new construct, creativity or problem-solving style, holds promise for greater

understanding of how all persons, regardless of the level of their creativity, solve problems of all kinds and, hopefully, can learn to be better problem solvers.

## PUTTING THE RESEARCH TO USE

Studies of personality characteristics of highly creative individuals have resulted in lists of hundreds of descriptors, which contain items that overlap and, at times, contradict one another. This has made efforts to identify students with potential for creative productivity difficult. The concept of style promises to help our understanding of these apparent contradictions while improving our ability to identify and develop creative talent.

Instead of asking, "How creative is this student?" a focus on style leads us to ask, "How is this student creative?" This lends itself to the assumption that all students have creative potential that can be identified and nurtured. Helping students appreciate their creative style can enable them to be more effective when employing their problem-solving skills in specific domains.

A student's level of creative problem-solving skill might be identified as "not yet evident," "emerging," "expressing," or "excelling." Each level calls for a different instructional approach. Guiding students through learning experiences appropriate for each level and offering them opportunities to produce in a particular domain of interest enables them to realize their innate creativity. Understanding style helps students to more effectively use their strengths and mitigate risks associated with their style when responding to the environment. Also, when instructors understand their own creative style, they broaden the lens through which they evaluate products and identify the creative spark glowing beneath the surface of the student's personality.

This article surveys research and theory on the characteristics of personality, including style, associated with creativity. We review various descriptions of the characteristics that may define the creative personality, a few of the major researchers, their methodologies and theories, a sample of the available creativity assessments, and the developing understanding of style as an important factor in determining how different individuals approach situations that require a creative response. The article concludes with a discussion linking our current understanding of creative style and other characteristics associated with creativity to talent identification and development in education.

At times in this review, the terms *creativity* and *problem solving* are used interchangeably. The intention is not to blur distinctions that others may feel are necessary; rather it is to reinforce the commonality between the two. Their respective literatures have historically been linked to both theory and findings. Undoubtedly, both terms share a common focus on the creation of new responses—new solutions—to problems and questions that heretofore had not been effectively answered.

## Guiding Principles

Two essential principles to the study of the creative personality are Field Theory (Lewin, 1936) and the importance of the affective domain. Field Theory suggests that human behavior is a function of the interaction of personality and the environment. Any study of the person must consider the environment (i.e., other people, organizations both effective and ineffective, the presence or lack of stimulation, rules, beliefs, attitudes, and expectations) in which the person functions. Secondly, we consider that the affective domain is as important to creativity as is the cognitive domain. While the literature contains numerous references to insight and serendipitous events, most creativity scholars regard the work of creative thinking and creative problem solving as difficult but energizing, often exciting, but usually requiring sustained engagement, dedication, and commitment (Amabile, 1989; Gruber, 1989; Russ, 1993; Torrance, 1967).

Because problems are often complex, creativity is not easy work. We must not assume that to be creative one need only “think,” or use certain “tools” or cognitive skills, to generate creative solutions. Logic, as well as neuroscience and brain research, offers strong evidence that emotional processes and cognition must interact if creativity is to occur. Consideration must be given to the

motivation “. . . and needs, interests, and attitudes that help the individuals to be productive creatively” (Guilford, 1967, p. 12). Bloom (1963) concluded that “personality and motivational factors are at least as important as aptitude in determining [creative] performance” (p. 252). Williams’ (1972) model for developing creative talent placed equal emphasis on cognitive and affective traits. Besides the cognitive abilities of ideational fluency, flexibility, originality, and elaborative thinking, Williams regarded the affective qualities of curiosity, courage, complexity, and imagination as critical to creativity. Renzulli, who has devoted decades to the discovery and encouragement of exceptional talent, has consistently pressed for wider views and broader definitions of giftedness that include far more than cognitive abilities. His recent “Houndstooth Model” (Renzulli, Sytsma, & Berman, 2000) recognizes the interaction of such affective qualities or traits as optimism, courage, absorption or passion for a topic, empathy, charisma, and vision or a sense of destiny.

## Creative Personality Theories

In order to frame a context for our understanding of the creative aspects of personality, it may be useful to refresh our memories about the major theoretical approaches to the subject. Even a brief description of dominant creativity theories reinforces the role of affect and the interaction of person and environment (press) in the creative process.

Table 1 lists some of the major Freudian-based theories beginning with the work of Freud himself, followed by theories focusing on self-growth and the positivist views of creativity beginning with Rank, and later developmental theories. Freud never directly formulated a theory of creativity. However, in one paper (Freud, 1908/1959), he did describe the artist’s creative process as one of conflict resolution or sublimation. This was enough to move the consideration of the creative personality forward. At first, the focus was on the unconscious mind, with creativity being tied to the id-instincts. Dynamicist thinking moved the focus to the preconscious and onto creativity’s transcendent qualities.

The classic psychoanalytic view of a struggle between fantasy and reality led many to think of creativity as involving the darker side of human nature. However, Rank (1932/1960) and other psychoanalytic psychologists regarded this struggle as the ideal state of human nature.

**Table 1**  
*Theories of Creativity*

Theory	Theorist(s)	Description
Psychoanalytic/ Psychodynamic	Freud (1908/1959)	Creative process as conflict resolution, or as "sublimation," the production of something new or original, resulting from the modification of id-impulses into something more acceptable.
	Lee (1940)	Creative productivity as an effort to overcome destructive, disabling emotions manifested from the id-instinct.
	Kris (1952)	"Regression in service to the ego" permits individuals to access the dynamic energy of the unconscious while seeking the unique positive qualities of fantasies.
	Jung (1923)	Individuals access the "collective unconscious" or "archetypes," representing the sum of all human existence when creating, perceiving some universal quality or truth from human history and translating that perception into some real creative product.
	Arieti (1970)	The "seat" of creativity is the preconscious mind, but the process that occurs "there" is a unique combination of both primary (fantasy, wish-fulfillment) and secondary (logical, structured) processes. Tertiary process thinking, directed by the ego, accesses and unites both realms, producing a unique outcome.
Self-growth, Developmental, Positivistic	Csikszentmihalyi (1996), Gowan (1975)	The creative enterprise represents a point where all elements are in harmony, working symbiotically and directed to a natural and inexorable conclusion rising above the normal experience.
	Rank (1932/1960)	The conflict between fantasy and reality is viewed as the ideal state of human nature, resulting in cognitive growth.
	Sinnott (1959)	Creativity is a natural, developmental life force. The nature of the conscious mind is inherently creative and directs the unconscious mind to action and ultimately forms and shapes our final products.
	Maslow (1968), White (1959)	The drive to create is the drive to actualization. Creativity is a "transcendent" or "peak" experience, representing the highest levels of achievement, leading to novel, original, or new ideas.
	Rogers (1954)	Creativity is the "emergence in action of a novel, relational product, growing out of the uniqueness of the individual . . . and the materials, events, people, or circumstances of his life . . ." (p. 71). Creative expression is enhanced by psychological safety and freedom.
	Abra (1997)	The need or impetus for self-expression is what unites creativity in all aspects of life (art or science, sports, religion, etc.). What consistently sets individuals engaged in the creative and problem-solving processes apart is their dedication, commitment, steadfastness, vigor, and intensity—or their motivation for creative work.
	Eysenck (1983, 1993, 1997)	Creativity is not an ability, but rather a personality variable.

They theorized that our species has progressed as a result of our collective creative imagination. The nature of the conscious mind is inherently creative. It directs the unconscious mind to action and ultimately forms and shapes our final products. This is equally true for paradigm-shifting creativity, as well as everyday small creative acts that incrementally and imperceptibly advance humankind, or one's satisfaction with life.

The rise of self-growth or developmental theories of creativity paralleled theories of child development, such as that of Swiss psychologist Jean Piaget (Flavell, 1963) who described cognitive growth as the result of a constant struggle between oppositional and natural processes, accommodation and assimilation. We are driven to seek out stimulation, expand our awareness, develop additional skills, and gain mastery of the environment. Maslow

(1968) described a hierarchy of human motives to action, from low-level, biological needs to higher level motives, such as knowledge and self-actualization. The drive to create is the drive to actualization. It leads us to novel, original, new ideas. But, it can be risky and dangerous behavior. Hence, our affective qualities become more important to creative productivity than intellectual abilities, sustaining us in our quest despite possible physical, social, and/or emotional dangers.

Rogers (1954) defined creativity as “. . . the emergence in action of a novel, relational product, growing out of the uniqueness of the individual . . . and the materials, events, people, or circumstances of his life . . .” (p. 71). Creativity involves openness, an internal locus of evaluation, and the self-confidence or courage to pursue ideas that one considers important, despite external discouragements. When acting creatively, individuals attend to their “inner voices” (see Table 2; Treffinger, Young, Selby & Shepardson, 2002), their personal beliefs about what is right or worthwhile, rather than being influenced by contrary views.

The importance of an internal locus of evaluation, or intrinsic motivation, has long been recognized in the creative process (Deci, 1975, 1980), as has the principle of withholding judgment when ideas are being generated (Osborn, 1963; Parnes, 1967). Premature external evaluation stifles one’s willingness to express new ideas and may destroy intrinsic motivation and self-confidence. Amabile and her colleagues (Amabile, 1983, 1990, 1996; Hennessy & Amabile, 1998; Hennessy & Zbikowski, 1993) demonstrated the inhibitory effects of external evaluation on creativity and the beneficial effects of classroom and personal motivational structures that stress the intrinsic value of task performance.

Creativity not only results from the interaction of cognition and personality, but also from interaction with the situation or environment. Recall Lewin’s (1936) Field Theory. As Rogers (1954) interpreted this principle, creative expression is enhanced by two main environmental conditions: psychological safety and freedom. Creative expression requires the courage to risk destroying well-established and favored ideas. When risking everything, the individual needs to know (or feel) that, even in failure, he or she will still be valued.

The absence of typically negative or irrelevant feedback permits individuals to follow their own instincts and notions of what is best. A psychologically safe environment reduces inappropriate external evaluation while communicating empathic understanding. This allows the true self to emerge in the creative enterprise and encour-

T a b l e 2

*Personality Characteristics Associated With Two Patterns of Creative Individuals*

Characteristics Associated With Openness and Courage to Explore Ideas	Characteristics Associated With Listening to One’s Inner Voice
<ul style="list-style-type: none"> <li>• Sensitivity to problems</li> <li>• Aesthetic sensibilities</li> <li>• Curiosity</li> <li>• Sense of humor</li> <li>• Playfulness</li> <li>• Fantasy thinking</li> <li>• Risk-taking</li> <li>• Tolerance for ambiguity</li> <li>• Tenacity</li> <li>• Openness to experience</li> <li>• Adaptability</li> <li>• Intuition</li> <li>• Willingness to grow</li> <li>• Openness to feelings</li> <li>• Unwillingness to accept authoritarian assertions without critical examination</li> <li>• Integration of dichotomies</li> </ul>	<ul style="list-style-type: none"> <li>• Self-awareness of creativeness</li> <li>• Persistence</li> <li>• Independence of thought</li> <li>• Self-disciplined</li> <li>• Self-directed</li> <li>• Autonomous</li> <li>• Self-confident</li> <li>• Reflective</li> <li>• Introspective</li> <li>• Internal locus of control</li> <li>• Rejecting of stereotypes</li> <li>• Energetic</li> <li>• Hard-working</li> <li>• Absorption in work</li> <li>• Unsociable</li> </ul>

ages one to put one’s all into the work. It also permits and promotes the freedom of symbolic expression (Rogers, 1954), experimentation, playfulness, and exploration. The environment must be responsive to the creative process, resources must be present, rewards for new thinking offered, and challenges and questions encouraged.

Abra (1997) argues that what unites creativity in art, science, or any area of human endeavor is motivation—the need or impetus for self-expression. True, there are positive and negative aspects to motivation, just as there are variable reactions from the external world in response to individuals’ efforts. But, what consistently sets individuals who successfully engage in the creative process apart from those who are less successful is their dedication, commitment, steadfastness, vigor, and intensity—their motivation for creative work. Eysenck (1983, 1993, 1997) reinforces this view by proposing that creativity is a personality variable, not an ability. His research and theory added to the foundation for the study of creative problem-solving style reported on by Selby, Treffinger, Isaksen, and Lauer (2004).

## Developing Our Contemporary Understanding of Creativity

Typically, creativity researchers begin their reviews with reference to Guilford's (1950) Presidential Address to the American Psychological Association, calling attention to psychology's neglect of creativity and the importance of developing creative talent. Another popular reference is to the classification by Rhodes (1961) of four major areas of creativity research that have grown since Guilford's call, known as the four "P's": creative process, product, press (the environment), and personality.

As for creative personality research, there is perhaps no greater amount of empirical research comparing creative and "less creative" individuals than that comparing their respective personality test scores. Several creativity researchers, whose respective and collective contributions have largely created the knowledge base, stand out. For more than a quarter century, beginning in the late 1940s, the Institute for Personality Assessment and Research (IPAR) at the University of California at Berkeley was a major center for creative personality research. MacKinnon (1962, 1970, 1978), the founder and long-time director of IPAR, with his students and colleagues, collected significant amounts of data through interviews and objective and projective test scores with samples of architects, writers, mathematicians, scientists, inventors, engineers, and individuals from other professions and occupations. Among his colleagues and collaborators at IPAR were Barron (1955, 1969, 1990, 1995), Helson (1965, 1966, 1967), and Gough (1979).

However, IPAR's "psychometric" approach was not the only methodology used to study creative personality. A substantial body of literature exists from biographical research as well (Abra, 1997; Gedo & Gedo, 1992; Gruber, 1989; Taylor & Ellison, 1967; Wallace & Gruber, 1989). Biographical case-study methods often provided richer, deeper insights through detailed analysis of individual life histories. Self-reports by some creatively productive adults indicated that their childhoods were not especially happy. Their home situations involved challenges and difficulties, including parental death or absences due to divorce or separation (Roe, 1952), that were greater than what one might consider the norm. As a consequence, these individuals may have learned to adapt by seeking ways to overcome adversity, and eventually succeeded in widely recognized creative achievements. There are indications that these individuals also

experienced a great deal of encouragement from parents or mentors to pursue their interests or talents.

Many authors continue to examine the lives of creatively productive individuals for insights to their thinking and working processes and characteristics of their creative works (Gardner, 1993; Oremland, 1997; Smith & Carlsson, 1990). While the bulk of the attention has focused on artistic creativity, there are also many biographical studies of scientists and others (Gedo & Gedo, 1992; Mansfield & Busse, 1981; Phillips, 1957; Wallace & Gruber, 1989).

## Creative Personality Characteristics

Lists of creative personality characteristics abound (Barron, 1955; Dellas & Gaier, 1970; Feist, 1999; MacKinnon, 1962; Stein, 1974; Vervalin, 1962). Many of these lists overlap, while others offer unique examples. Some listed characteristics are even contradictory. No one person can be expected to exhibit all of the characteristics that appear in the literature, nor will an individual who exhibits one or more of these characteristics necessarily exhibit that one or those characteristics all of the time. Among those suggested by Barron were preference for complexity, independence in judgment, self-assertion, less use of suppression as a defense mechanism, and greater tendency to express impulses. Vervalin listed a high level of broadly defined intelligence, openness to experience and emotion, freedom from inhibitions and stereotyped thinking, aesthetic sensitivity, flexibility, independence in thought and action, love of creation for creation's sake, and endlessly questing new challenges and solutions. MacKinnon's "more creative" compared to "less creative" architects scored higher on social presence, self-acceptance, dominance, self-confidence, freedom from conventional restraints and inhibitions, and willingness to admit unusual and unconventional self-views. They were lower on sense of well-being, responsibility, socialization, self-control, interest in achievement in conforming situations, or preoccupation with impressing others. Stein described the creative person as a curious, self-assertive, aggressive achiever, motivated by a need for order, who while being self-critical, conventional, self-sufficient, intuitive, and empathic, is also less inhibited. His creative person, while emotionally unstable, is capable of using instability effectively.

One recognized limitation of creative personality research has been that the majority of studies involved

only adult males. Dellas and Gaier's (1970) review was notable for its inclusion of research on creative women and children. Their results noted the expressed femininity of interests for males and expressed masculinity of interests for females. Additionally, research on female scientists (Helson, 1967) and curiosity and nonconformity in children (Starkweather, 1964, 1976) suggests that the "creative personality" crosses both gender and age.

Amabile (1989) added self-discipline about work, perseverance even when frustrated, the ability to wait for rewards, self-motivation, and willingness to take risks. Dacey's (1989) list is constructed around eight qualities of the creative mind, including tolerance for ambiguity, flexibility, androgyny (uninhibited by gender stereotypes), and delay of gratification. Feist (1999) categorized more than 100 references comparing artists and non-artists, scientists and non-scientists. His list, distinguishing "creatives" from "non-creatives," included imagination, impulsivity, lack of conscientiousness, anxiety, emotional sensitivity, ambition, norm-doubting, hostility, aloofness, unfriendliness, lack of warmth, dominance, arrogance, and autonomy.

McMullen's (1976) list illustrated "synergistic swings," or the combining of ideas in ways that at first glance seem impossible. Rothenberg (1971, 1990) referred to this synergistic process as Janusian thinking. Bruner (1973) called it "connectedness," a blending of apparent opposites and contradictions. Creative individuals present an array of "paradoxes." They are relaxed but attentive, confident but humble, disinterested but selfish, detached but involved, constructive but discontented, mindless but perceptive, convergent and divergent, and able to delay closure but able to stay with a decision once made (McMullen, 1976).

Csikszentmihalyi (1996) described these "polarities" even more explicitly. Creative individuals have a great deal of physical energy, yet they are often quiet and at rest. They are "smart," but can be naïve. They might appear playful and undisciplined but also exceptionally hard-working and responsible. They might alternate between "flights of fantasy" and a very "down-to-earth" sense of reality. Creative people seem to harbor opposite tendencies for introversion and extraversion, are at the same time humble and proud of their achievements, and are thought to be rebellious and independent, yet cannot create in the absence of the knowledge, rules, or conventions of their cultures. They have internalized the values of their domains while maintaining their instinct for questioning the "givens" and assumptions of those domains. Creative individuals are simultaneously passionate and objective about their work. Finally, their

openness and sensitivity exposes them to a great deal of suffering, as well as enjoyment.

After reviewing 120 definitions of creativity and conducting a wide search for characteristics associated with creative productivity drawing from over 100 articles, Treffinger et al. (2002) described four patterns of abilities, dispositions, styles, and personal characteristics. The creative individual generates ideas (using divergent and metaphorical thinking); "digs more deeply" into ideas (using convergent and critical thinking); is open to and has the courage to explore ideas; and, to a greater degree, is willing to listen to his or her inner voice. These last two categories are lengthy and are summarized in Table 2. These two patterns gather many of the personality characteristics listed over the years. The authors note that the characteristics that they found in the literature include not only cognitive abilities and personality traits, but also past experience.

### Measuring the Creative Personality

To develop the long lists of creative personality characteristics, researchers and theorists have constructed and used an array of instruments designed to assess aspects of human personality. Many of these personality profiles, inventories, questionnaires, or checklists are self-report measures. Some are "objectively scored" and others are projective measures requiring considerable training and experience to score and interpret. Still other measures are more like experimental tasks than tests. Starkweather (1964, 1976), for example, created several creativity measures for preschool children to assess conformity/nonconformity by having them match (or not match) shapes that they were told were selected for their parents. In her Target Game, Starkweather assessed children's risk-taking by their choice of distance from a target in a bowling-type game.

Houtz and Krug (1995) and Treffinger et al. (2002) provide extensive reviews of creativity assessment instruments and methods. Several well-known instruments include the California Personality Inventory, the Sixteen Factor Personality Questionnaire, and the Minnesota Multiphasic Personality Inventory. These instruments were designed to assess a broad array of needs and/or personality traits and are administered to individuals who generally would be characterized as exhibiting "normal" behavior. Instruments such as the Rorschach Test and the Thematic Apperception Test are more subjective, pre-

senting subjects with rather ambiguous stimuli and relying upon individuals' "projections" of unconscious motivations or feelings.

A number of self-report inventories are more specific to the assessment of creativity or creative potential. For example, the Something About Myself (SAM) and What Kind of Person Are You (WKOPAY; Khatena, 1971) together make up the Creative Perception Inventory (Khatena & Morse, 1994; Khatena & Torrance, 1976). The SAM asks individuals to check-off activities that they have engaged in that might be indicative of creative potential. Items include hobbies, taking trips, writing poems or plays, and inventing. Other items on the SAM ask individuals to agree or disagree with certain self-descriptors, such as "I am talented in many different ways" or "I am resourceful." The WKOPAY asks individuals to check personality traits or characteristics that they feel typify their behavior.

Another well-known checklist is Gough's (1952, 1979) Adjective Checklist (ACL) of 300 descriptors, of which Domino (1970) identified 59 that formed a Creativity Scale. Some of the 59 included absentminded, disorderly, logical, artistic, idealistic, restless, curious, insightful, sensitive, demanding, spontaneous, egotistical, sarcastic, assertive, energetic, and clever. A useful scale for children that can be completed by teachers was developed by Renzulli, Hartman, and Callahan (1975). Pupils' behavioral traits are rated in such areas as curiosity, fluency, risk-taking, intellectual playfulness, humor, sensitivity to beauty, conformity, individualism, and tenacity.

Davis and Rimm (1982; Davis, 1998) collaborated on the development of a number of inventories for children, adolescents, and college students. Davis (1975) described six major trait clusters in the creative personality that appear from the items on these scales: energetic originality; creative interests and activities; creative writing and attraction to the complex; self-confidence and sense of humor; freedom and flexibility together with a belief in psychical phenomenon; and arousal seeking, risk-taking, and playfulness.

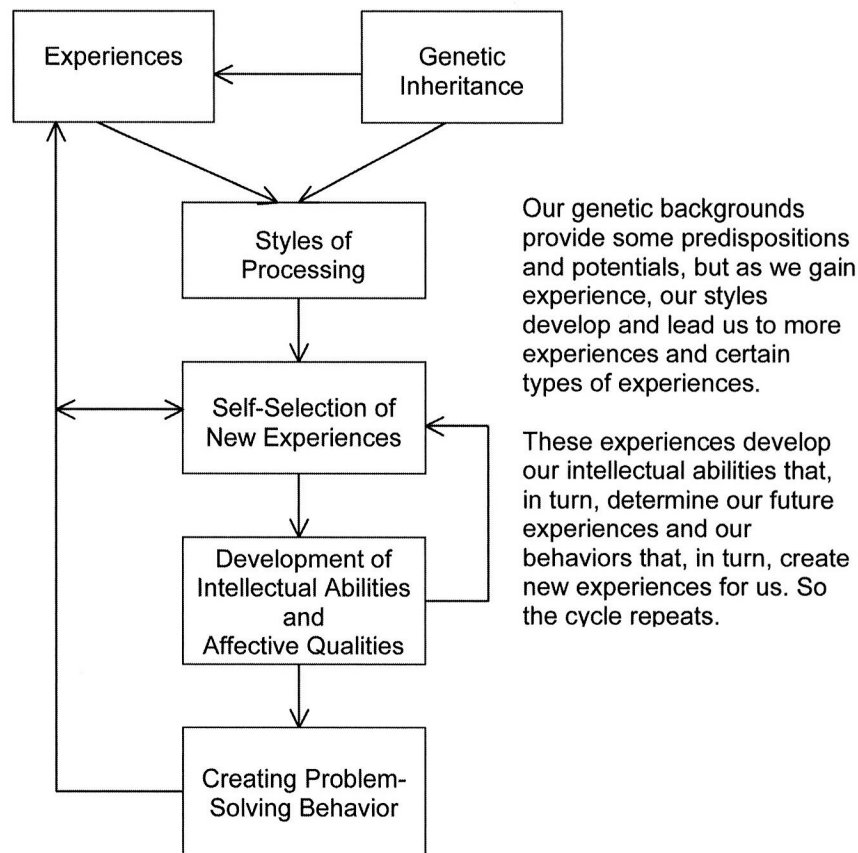
The Barron-Welsh Art Scale (Welsh & Barron, 1963), a portion of Welsh's Figure Preference Test, presents individuals with pairs of line drawings. One drawing of each pair is more "balanced or symmetrical," using straighter, more regular lines. The second is more asymmetrical, irregular, ambiguous, using more curved lines or "ill-defined" boundaries. Individuals with more artistic talents or aspirations and individuals with greater demonstrated creativity prefer the complex drawings.

The Myers-Briggs Type Indicator (MBTI; Briggs & Myers, 1976; Kroege & Thueson, 1988; Myers & McCaulley, 1985; Myers & Myers, 1980) is a self-report measure designed to assess individuals' preference for different types of information processing along four affective dimensions. From a series of forced-choice items, individuals are rated on introversion-extraversion, intuitive-sensing, thinking-feeling, and perceiving-judging. There is a body of literature suggesting a pattern among the four dimensions most closely associated with creativity: introversion, intuitive, thinking, perceiving (Houtz, LeBlanc, & Butera, 1994; Houtz et al., 2003; Houtz, Tetenbaum, & Phillips, 1981).

## Creative Style

This review of the creative personality is not the first, nor will it be the last. But, what is new since a number of prior reviews is the emergence of the construct of creative or problem-solving style. This and other creative personality reviews have clearly established the important role of affective traits or characteristics in the creative process. To establish this principle, data from numerous studies employing a variety of personality measures have been collected. However, the reader is reminded again of the first principle of the current review—that human behavior results from the interaction of personality and the environment. A significant limitation of decades of creative personality assessment research has been that environmental factors have not been a part of the data gathering. Despite the arguments of the developmental, positivist creativity theories, affective characteristics are still presented as static entities, described in terms of amounts (scores) possessed or not possessed by individuals, which may or may not come into play during creative problem solving.

The construct of creative style has begun to change this view of the role of affect in the creative process. Rather than focusing on the level of creativity exhibited by a child or an adult, creative style research identifies differences in the ways people approach problems they encounter in their environments. Attention is directed less at how much creativity an individual displays, but on how individuals use their creative skills in response to the conditions confronting them. By shifting the focus from "how much" to "in what ways," the focus of research also shifts. We see that many of the characteristics listed above are manifestations of style that might promote or prohibit creative productivity, depending on the environment. It is fair to say that creative style research has been a concur-



**Figure 1. The influence of style on complex behavior**

rent development along with the growing literature of the past 20 years on learning and thinking styles (Jonassen & Grabowski, 1993; Sternberg, 1997).

A theory of the influence of style on complex behaviors such as creative problem solving is diagrammed in Figure 1. Both genetics and experience affect the development of styles of information processing, which in turn influence how the individual responds to the environment and selects new experiences. Experiences then lead to the development of new skills and reinforce styles again. This process is interactive; each step is influenced by the prior steps. Of course, experiences can lead to reinforcement, successful problem solving (i.e., a positive change in one's environment), or failure (i.e., no change or a change for the worse). With respect to creativity styles, this theory suggests that when confronted with a problem, individuals may act differently according to the style they have developed and currently prefer to follow. These actions will result in different types of experiences that, in turn, will lead individuals to different choices yet again.

Style research is a promising area for educators for at least two reasons. First, the construct of style allows for an explanation of the personality polarities described earlier and often cited by creativity researchers. During the interactive, back and forth, give and take problem-solving process, where both divergent and convergent thinking and their affective correlates or concomitants are required (Treffinger, Isaksen, & Dorval, 2000), it could be expected that successful individuals would learn to modify their styles to the demands of the situation. Thus, "synergistic swings," as Williams (1973) noted, or even contradictory traits or characteristics (Csikszentmihalyi, 1996), would be exhibited. Individuals who, through the instructional process, come to understand their style can learn how to stretch beyond their preferences and to activate appropriate responses to the environment that they would otherwise leave unexplored.

The second reason is that creative or problem-solving style applies to all persons, not just the creatively gifted. Everyone solves problems—simple, mundane, everyday problems; therefore, the assumption is that everyone can be a better problem solver. Educators need



not think of creativity only as a “gift.” Rather, it is a natural survival trait like the ability to run. Focusing on individuals who are creatively productive at a high level leads to the perception that only people who in some way match the characteristics of highly creative individuals have creative potential. We do not make the same assumption about running ability. We do not expect all children to become Olympic runners, yet we expect all normally healthy children to be able to run. We also assume that, with training and practice, any child can improve his or her running time. It is well established (Niu & Sternberg, 2003; Sternberg, 2000; Treffinger et al., 2002) that an individual’s creative productivity can be improved through instruction.

Style research focuses on identifying the ways individuals prefer to process information, generate new ideas, test them, and put them into practice. With knowledge of styles, teachers can better individualize instruction. Researchers and curriculum builders can look for methods, techniques, and activities that complement student preferences. Strong preferences can guide learning activities and weaker, less developed styles can be strengthened.

Several researchers have developed measures of creativity styles. Kirton (1976) proposed that some individuals prefer to adapt to external conditions and solve problems within existing rules, while others prefer to bend, ignore, or break rules to generate new ideas. The Kirton Adaption-Innovation Inventory (Kirton, 1976, 1994) has been used to identify two problem-solving styles. Adaptors are individuals who define and approach problems within existing frameworks and structures. Innovators “solve problems by creating a new framework. . . . They are original, energetic, individualistic, spontaneous, and insightful” (Selby, Treffinger, Isaksen, & Powers, 1993, p. 224).

Basadur (1994) described individuals as generators, conceptualizers, optimizers, or implementers, resulting in four distinct styles of approaching problems. In the Creative Problem Solving Profile Inventory (CPSP; Basadur, Graen, & Wakabayashi, 1990), individuals are presented with 18 sets of four adjectives. They rank order the adjectives in each set as to their appropriateness as descriptive of themselves. The idea is that the entire creative problem-solving process requires a variety of preferences associated with all four styles, but individuals may exhibit clear preferences of one style or another.

VIEW, a recent measure of problem-solving style (Selby, Treffinger, Isaksen & Lauer, 2002), identifies individuals who prefer working within existing rules or

structures and are very interested in details and proceeding at a careful, deliberate, gradual pace. Solving problems within a system may make the system work better, enhance its value, and lead to many benefits. These individuals are termed Developers (Selby et al.). Other individuals may feel constrained and uncomfortable with the current organization and its structures and may want to approach problems by ignoring the rules completely rather than simply bending them. They prefer breaking new ground or going off in new directions. If successful, their efforts actually may change an old system or create a completely new system. These individuals are referred to as Explorers.

The Explorer-Developer designation refers to an individual’s orientation to change. Individuals who have a well-defined Explorer style often generate ideas and possible solutions. They find imposed structure, authority, and rules confining. They are comfortable working on many open-ended tasks at once and often show little concern with closure. To them, deadlines are fluid and flexible. On the other hand, individuals who have a well-defined Developer style prefer to generate “just enough” workable ideas that will serve to make things better. They are enabled by structure, authority and rules, and maintain energy by persisting until a task is completed, working out the details of follow-through and implementation. They seek, accept, and meet given deadlines.

Two other VIEW dimensions are manner of processing information and one’s decision-making focus during problem solving. One’s manner of processing can be characterized as Internal (“I need to think about this.”) or External (“I need to talk to other people about this.”). This dimension addresses how individuals use their inner energy and resources, how they manage information, and how and when in the problem-solving process they share their thoughts.

Those with an External style prefer processing information in a social setting that allows engagement with the outer environment. They learn and work best when interacting, listening, and talking with others. Externals share options freely with a broad range of people. They seek a great deal of input before reaching or agreeing to closure. They tend to press for immediate action, at times without thought or taking any time for reflection. Internals prefer private processing and often become engrossed with inner events and ideas. They work and learn best alone, in a quiet environment, and will take advantage of opportunities for quiet concentration. This quiet concentration and reflection is a

source of energy for them. After taking time to think their ideas and suggestions through, they are ready to share them with others, usually beginning with those with whom they have established trust and confidence. They prefer to think before they act. This may, at times, result in inaction.

An individual's focus when making decisions falls on a continuum from Person ("How will these ideas affect others?") to Task ("What is necessary to get the job done?"). This dimension addresses where an individual prefers to start in arriving at a decision, what is given first priority, and what trade-offs might be made when weighing the demands of the task or those people involved in or affected by the situation. It should not be construed that those whose focus is on people do not think about the task, or that those who focus on the task do not think about people. Rather, those with a Person Focus work along the lines that if people and their needs are fully addressed, the task will get taken care of, while those with a Task Focus work along the lines that if the task is addressed completely and logically, people will be taken care of.

When deciding, those with a Person Focus set priorities based on their judgments on personal and emotional criteria. They tend to consider the personal impact or consequences of a decision. They attend to relationships and seek harmony and consensus. They try to avoid conflicts or tense situations, sometimes at the expense of their own needs, and may skim over facts or information in order to maintain harmony. They often become the mediators or peace-makers between those with strong but opposing positions. When considering an option they tend to first consider what's good, attractive, or pleasing about it. At times they might put people's feelings over the quality of the outcome.

Those whose focus is on the Task when making decisions prefer well-reasoned conclusions and impersonal judgments. They choose criteria that are authoritative, verifiable, and objective. They may address conflicts or tense situations at the expense of others' feelings, focusing solely on facts and information while ignoring emotions. They prefer rigor and/or quality over feelings and emotion. When considering an option they tend to first consider what is wrong, what is lacking, or what improvements are needed.

The preferences described for the six styles on VIEW's three dimensions, and most other style measures, become more pronounced as an individual's score or rating moves away from the mean. Those whose preferences are closer to the mean, or more moderate, may prefer one

style more than the other, but that preference is often not strongly developed or sharply differentiated (Selby et al., 2004). Such individuals may find it easier to understand and empathize with the other style in that dimension than a person whose style was more strongly developed.

There is also a social aspect to style. For instance, an individual with a moderate Developer style on VIEW's Orientation to Change Dimension, when working with a group with pronounced Developer preferences, may be seen by the group as more of an Explorer. The same individual working with strong Explorers might be seen by that group as a pronounced Developer. The individual has not changed, but the social environment has and therefore, so has the way that individual's style is seen and reacted to. What also might change is the amount of stress the individual experiences as a result of the disconnect between the social environment and his or her style.

Each style preference represents certain strengths that, when employed appropriately, can help to move the problem-solving process forward. However, there are also risks associated with each style that, if not mitigated or attended to, could disrupt the process. When students (Selby, 1997) and adults (Esposito et al., 2004) understand their style they are able to enter and move through the process of problem solving more efficiently and effectively.

No style is "better" than another, and each has a role in any component or stage of creative problem solving. Understanding style enables one to build on strengths and become a more effective problem solver. Understanding each other's character strengths and limitations can help teams work together successfully and productively. Lack of understanding may allow minor differences to become insurmountable obstacles. People tend to see the world through the lens of their own style. Talking about style and how each group member experiences change, processes information, and decides on a course of action will help build smooth relationships, allowing differences to become assets.

## Implications for Talent Development in Education

The construct of creative style provides researchers and educators with another tool to use to help optimize creative expression. Because the creative style construct rests on the principle that all persons solve problems, it is well suited to the needs and requirements of designers and planners of instruction. As mentioned earlier, despite

significant and important contributions, a great deal of creative personality research has ignored the concept of "average creativity" by focusing only on the very creative individuals who have helped to change the world through their great discoveries, productions, or ideas. Creativity style research holds great promise for affecting everyone's creativity.

Torrance (1987) long argued that through skilled instruction, students can learn to be more effective creative problem solvers. With knowledge of their students' creative problem solving styles, teachers are in a better position to foresee potential student difficulties in response to new learning situations and develop alternative learning experiences that will match particular styles. Treffinger et al. (2002) advocate first identifying a learner's present level of performance with multiple data sources. Possible performance levels are described as "not yet evident," "emerging," "expressing," or "excelling." The level at which one is functioning provides a starting point for determining the educational programming that help develop the student's natural creative abilities (Treffinger, Young, Nassab, & Wittig, 2004).

An individual whose skills are "not yet evident" might receive instruction designed to build foundational skills in a domain and a foundational understanding of creative tools, techniques, and process. By attending to this student's learning style, we might expect that such instruction will be more effective (Dunn, Beaudry, & Klavas, 1989). By attending to students' problem-solving style and helping them understand their own preferences and the implications of their style, we might expect students to be better able to efficiently and effectively navigate the problem-solving process and employ idea-generating and -focusing tools (Schoonover, 1996; Selby, 2000). As a result, the teacher might have more opportunities to note special areas of interest that would call for the creative applications of these skills. Also, by using knowledge of their own style, instructors might widen the lens through which they evaluate the creative level of student products and thereby identify products whose creative spark might have gone unnoticed.

A learner whose creative ability is "emerging" might receive help in practicing domain skills and the use of certain tools and creativity skills. Interest might be further pursued in independent study, small group assignments, clubs, and other domain-specific activities. While practicing problem-solving skills, the student has an opportunity to further understand the implications of his or her style when working with a team or preparing a product for a specific audience. Instructors who under-

stand and work to include that understanding into their planning increase their opportunities to notice growing competence on the part of their students by trying to look at student products on the basis of criteria driven by differing styles.

This in turn may aid instructors in identifying those learners who are developing the knowledge, skills, and passion needed in a particular domain that will enable them to successfully express themselves through higher-level creative works. Learners identified as "expressing" might need help applying the tools and skills to problems and challenges that are realistic and manageable. While these opportunities might offer some real-life challenges, they would carry a low level of risk.

Finally, those who are identified as "excelling" may benefit from opportunities to work with real, self-initiated and self-directed challenges, identifying and applying the skills, process, and tools they have studied to a variety of tasks both individually and in groups. Again, style comes into play in terms of how learners approach and deal with the levels of risk and responsibility required for the successful real-world application of their talents in their domain, and how they manage problems and change within that domain.

## Conclusion

Creative personality research continues to be an active and useful endeavor. Two principles are likely guides for future research. The first is that personality research may yield its most productive results when conducted together with the study of cognitive abilities and environmental conditions within which individuals function. Time and again, researchers focused on intellectual abilities and steeped in "cognitive traditions," have come to recognize the importance of personality traits or characteristics in describing and explaining creativity.

Similarly, divergent creativity personality theories appear to converge on the importance of environmental interaction with individual characteristics. "What is honored in a culture will be cultivated there," a dictum attributed to Plato, appears now to have much evidence to support it. Whether we refer to large blocks of time in the history of a country or a culture (see Simonton, 1987, 1988), or we refer to an individual's family history, educational background, or workplace conditions, it seems clear that behavior is influenced by the "match" or "mismatch" of personality and environment.

As creative personality research advances, however,

the “level-style” distinction offers new opportunities to understand and encourage the creative process. We cannot deny that all types of individuals, with different skills, working in different environments, solve problems every day. Creativity, or problem-solving, styles offer an integration of traditional personality theory, environmental influences, and attention to the creative and problem-solving performance of all individuals, not just those recognized as exceptionally talented. Creativity or problem-solving styles may very well prove key in the search for effective instructional approaches designed to develop creativity skills and modify environments to enhance creative problem solving. It may also be an aid in the identification and development of talent that might otherwise have gone unnoticed.

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## End Note

1. For greater detail concerning creativity theories, the reader is referred to Houtz (2003) and Runco and Albert (1990).

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