Foundations of the VIEW Model

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Foundations of the VIEW Model of Problem Solving Style

Executive Summary

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This booklet describes and discusses the theoretical foundations of the VIEW model, illustrating its unique integration of a variety of theories and concepts. The report also explains and discusses each of the three dimensions of the model, and summarizes the specific rationale for each dimension. It provides the foundational information to enable trained professionals to understand, analyze, and interpret the model and the measure that operationalizes the model.

The three dimensions of VIEW (Orientation to Change, Manner of Processing, and Ways of Deciding) were selected deliberately because they reflected our combined understanding of problem-solving style. Each dimension efficiently and practically brings together important constructs from a wide variety of theoretical approaches. We found that these three dimensions could easily be the basis for meaningful individual and group feedback, that is managed and used constructively. Each dimension is based on our research and experience and reflects the ways in which people act when engaged in the problem-solving process. We also noted that the strength of a specific preference varies from individual to individual. For some one style may be very clear, and well defined. For others that same style may be more moderate.

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Foundations of the VIEW Model of Problem Solving Style

There are many style-related models and theories. Some lack any scientific evidence or support while others are based on extensive research and field experience. This resource describes a model that falls into the second category: the VIEW model of problem solving style. This booklet describes and discusses the theoretical foundations of the VIEW model, reviewing contributions from several areas. We also discuss each of the three dimensions described by the model, and summarize the specific rationale for each dimension. This booklet, along with its companion pieces, provides both the foundational information and psychometric data necessary to enable trained professionals to understand, analyze, and interpret the model. These resources also address implications for research, development, and practice in relation to creative problem solving and change management. Finally, the goal of this booklet is to link the model to the development and use of the VIEW Assessment of Problem Solving Style, which was created to operationalize the model.

VIEW is Based on Deep Theoretical Foundations

Before exploring the conceptual model for VIEW, it is important to review its deeper theoretical foundations. We can start with our definition of problem-solving styles as:

Consistent individual differences in the ways people prefer to plan and carry out generating and focusing activities, in order to gain clarity, produce ideas, and prepare for action.

This definition is based on two broad areas of theory. The first is referred to as psychology of the person, and includes the aspects of individual differences (including style). The second is creativity and creative problem solving.

Consistent Individual Differences

VIEW is based on the principle that people possess a variety of characteristics or qualities that form a person's character and propel them to think, feel, and behave in certain consistent ways. This is very close to how the field of behavioral science defines personality. There is no universally- accepted theory of personality which has led to a variety of theories (Feist, Feist & Roberts, 2018; Schultz & Schultz, 2016).

One well-known theory (McCrae & Costa, 1997; McCrae, Terracciano, & 78 members of the Personality Profiles of Cultures Project, 2005) attempts to explain of personality in terms of five factors (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) that are common to all human groups. However, even this "Big Five" theory and model may not be invariant across all human societies (Gurven, von Rueden, Massenkoff, Kaplan, & Vie, 2013).

Most theorists would agree that the deeper aspects of personality are stable (Guilford, 1959), there is also strong support for the notion that personality develops dynamically as individuals respond to their environment (Murray, 1938; 1951).

$$B_f(P, E)$$

Once important perspective was provided by Lewin (1935, 1951) who asserted that all behavior is a function of people and their environment. Many forces and factors combine and interact to influence human behavior. More recently, this idea has been referred to as person-environment (P- E) fit – and asserts that behavior, attitudes, and well-being are determined jointly by the person and his or her environment. P-E fit has to do with the compatibility that occurs when individual and environment characteristics are well matched (Edwards, Caplan, & Harrison, 1998; Kristof-Brown & Guay, 2011). There is no single, over-arching theory of P-E fit, rather there is a wide breadth of theoretical perspectives comprised within the general area (Caplan & Harrison, 1993; Edwards, 2008; van Vianen, 2018) – a family of theory.

The theoretical foundations of VIEW are more specifically based on the following:

- Individuals constantly engage in appraising their environments and adapting their behavior, stemming from both the environment and their personality, in order to pursue their well- being (*Cognitive-Motivational-Relational Theory*, Lazarus, 1991; 1993; 1999; Lazarus & Smith, 1988).
- Human functioning is based upon a dynamic interplay of intrapersonal influences, the behavior people actually engage in, and environmental forces that affect these (*Social Learning/Social Cognitive Theory*, Bandura (1969; 2001; 2018).
- The social environment catalyzes intra- and interpersonal individual differences in relation to peoples' needs for competence, relatedness, and autonomy (*Self-Determination Theory/Cognitive Evaluation Theory*, Deci & Ryan, 2008; Deci, Olafson, & Ryan, 2017; Ryan & Deci, 2000).
- Feeling and thinking are inextricably linked. Positive emotions and belief in oneself broadens cognitive capability (*Positive emotion and upward spirals*, Fredrickson, 2013; Fredrickson & Joiner, 2002 & 2018; *Self-efficacy theory*, Bandura, 1977). *"Feelings…because of their inextricable ties to the body…come first in development and retain a primacy that subtly pervades our mental life…since what comes first constitutes a frame of reference for what comes after, feelings have a say on how the rest of the brain and cognition go about their business"* (Damasio, 2005:159-160).
- Individuals are capable of monitoring and controlling their thinking, emotions, and actions (*Metacognitive Theory* – Flavell, 1979; 2004; Schraw & Moshman, 1995). When individuals collaborate, they are capable of controlling, monitoring, and improving each other's knowledge, thinking, emotions, and actions (*Social meta-cognition* – Chiu & Kuo, 2009; Jost, Kruglanski, & Nelson, 1998; *Zone of Proximal Development* – Frawley, 1997; Vygotsky, 1978).

From the perspective of the psychology of the person, many factors influence behavior. Style operates between deeper aspects of the personality and conscious thinking, feeling, and behaving.

In the Ways people prefer to…

We define problem-solving style as a preference. Within the broad field of the behavioral sciences, and cognitive psychology in particular, the idea that style belonged at the intersection of deeper aspects of personality and observed behavior has a long history. Allport (1937), was one of the earliest scholars to use the term "style" within his broader work on personality. He described style as a person's typical or habitual mode of problem solving, thinking, perceiving, and remembering. Witkin, Moore, Goodenough, and Cox (1977) characterized styles as individual differences in the ways people perceive, think, solve problems, learn, and relate to others.

Kogan (1973:160) indicated that:

"…styles can be most directly defined as individual variations in modes of perceiving, remembering, and thinking, or as distinctive ways of apprehending, storing, transforming, and utilizing information. It may be noted that abilities also involve the foregoing properties, but a difference in emphasis should be noted: Abilities concern level of skill—the more and less of performance— whereas cognitive styles give greater weight to the manner and form of cognition."

Kogan (1973) developed a three-fold theoretical classification of styles. The first of these were style theories and measures that were directly linked to accuracy of performance. The second were those that did not directly link to accuracy of performance or ability, but held a value distinction – that one style may be better or more valued than another. The third category included those styles that were purely stylistic – in that they did not imply a value judgment.

- Our theoretical basis for problem-solving style rests on the fundamental theory of style (Kagan & Kogan, 1970; Kozhevnikov, Evans, & Kosslyn, 2014; Messick, 1994), as well as the theoretical distinction provided by Kogan (1973). We aim to approach problem-solving style within the pure and value-neutral

style orientation so that the model and measure are considered inclusive, and that all styles are considered potentially valuable.

There are many (some assert, too many) notions, models, or concepts of style. As a result of our Cognitive Styles Project (detailed later) we settled on, and then integrated three main concepts: psychological type, cognitive style, and learning style.

Carry out generating and focusing in order to gain clarity, generate ideas, and prepare for action.

This aspect of our definition of problem-solving style relates to the general area of creativity and the ubiquitous nature of creative problem solving (CPS). There are many theories of creativity (e.g. Runco & Albert, 1990; Treffinger, Isaksen, & Firestien, 1983). One family or category of creativity theory is referred to as cognitive, rational, and semantic. It includes those theories that outline certain cognitive skills and abilities associated with creativity (Guilford, 1959; Mumford & Gustafson, 1988; Ward, Smith, & Vaid, 1997), theories of mental association (Koestler, 1964; Mednick, 1962; Rothenberg, 1971), how language is linked to thinking and problem solving (Ogden & Richards, 1927; Upton, 1941; Lakoff & Johnson, 1999), and those who put forward a phasal notion of the creative process (Hadamard, 1945; Rossman, 1931; Wallas, 1926). This family of creativity theory is most closely associated with the main purpose of this booklet.

Carl Rogers (Rogers, 1962, 65) offered a theory of creativity aimed at explaining the creative process. He stated: *"My definition, then, of the creative process is that it is the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other."*

He linked the need for creativity to societal demands, laid out inner and environmental conditions that foster creativity, and identified a series of hypotheses that would put the theory to work. As with many other theories of creativity, Rogers (1962) places creativity at the intersection of the individual with his or her environment, and emphasizes the role of process.

The cognitive, rational, and semantic theories provide a deep foundation for approaches to the creative process. The most well-known of these is creative problem solving (CPS). Osborn (1953) is credited with the initial description of CPS, and was a well-known practitioner within the field of advertising. There are some who assert that CPS has no theoretical foundations – it's all about practice. However, in an earlier publication Osborn (1948) identified a number of his theoretical antecedents, including Crawford (1937), Dewey (1910), O'Connor (1945), Spearman (1931), and Wallas (1926), among others. What all of these sources have in common is a theoretical orientation to adjusting and adapting to the tension between the way things are, and the way people want them to be – a basic tenet of problem solving (MacNair & Elliott, 1992).

- Creativity can be productively defined and deliberately developed.
- The creative process involves both generating (divergent thinking) and focusing (convergent thinking) operating within a dynamic balance (e.g. Treffinger, Schoonover, & Selby, 2013).
- The current approach to Creative Problem Solving is one way to unleash creative talent for individuals, groups and teams, and within organizations (e.g. Isaksen, 2020).

The Conceptual Model for VIEW

The VIEW Model of Problem Solving Style draws upon, and uniquely integrates, theory and research from the psychology of the person and creativity and creative problem solving. The Cognitive Styles Project was an applied research project that integrated these two deep theoretical areas, and focused on the three main constructs of learning style, cognitive style, and psychological type. The dimensions of VIEW include a unique integration of these constructs. The VIEW model of problem-solving style is presented in Figure 1. (Note— because we are always asked: VIEW is not an acronym; it is the name of the model.)

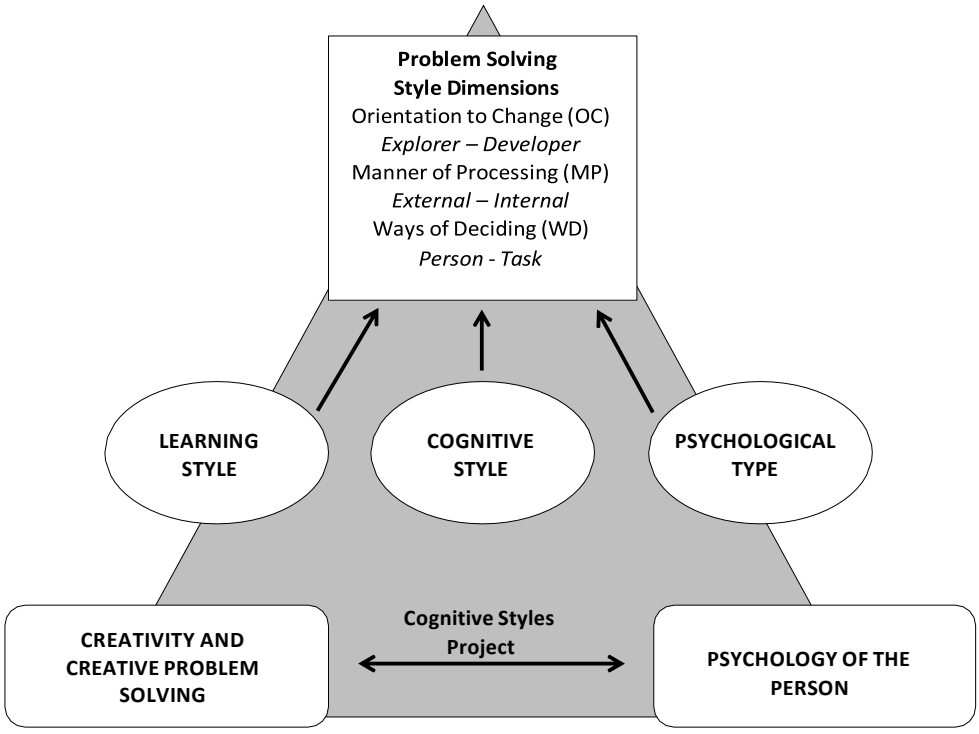

Figure 1. Conceptual Model for VIEW

These threads of theory, research and experience began to coalesce around a program of research called the Cognitive Styles Project initiated by Isaksen and Treffinger in 1982 that involved more than two decades of inquiry. The major goal of the program was to improve our understanding of the connection of person and process in the study and practice of creativity.

The program investigated the conceptual and practical relationships between aspects and characteristics of the creative person, and the operations of the creative process. The research is described in more detail in Isaksen (1987, 1995, 2004), Isaksen and Dorval (1993), or Isaksen and Treffinger (1985). Emerging from that foundation were three important components or "building blocks" in the development of our model: learning style, psychological type, and cognitive style. Figure 1 illustrates the theoretical and conceptual structure for our work on style: the foundations, the building blocks, and the three dimensions of problem solving style described by the VIEW Model: Orientation to Change (OC), Manner of Processing (MP), and Ways of Deciding (WD). At the base of Figure 1 (above), are the expanding and dynamic CPS framework itself, an understanding of the psychology of the person, and their interactions. These form the core foundation of the VIEW Model.

Foundation: Creativity and CPS

Osborn's work provided the early foundation for the development of numerous creativity development programs and courses, and was guided by the available psychological knowledge of the time. One important outgrowth of Osborn's work involved the development of an instructional program (Parnes, 1967; Parnes, Noller & Biondi, 1977) and the testing of its effectiveness (Parnes, 1987; Parnes & Noller, 1972, 1973a, 1973b, 1974; Reese, Treffinger, Parnes & Kaltsounis, 1976).

Although Osborn's most well-known contributions emphasized the practical application of human imagination, he also drew clearly upon knowledge and literature about the psychology of the individual and the nature of creativity in the person.

For more than three decades, much of our work at both the Center for Creative Learning and the Creative Problem Solving Group has focused on the development, delivery, evaluation, and improvement of problem-solving methods and tools. Through the continuing collaboration between our organizations, the CPS framework (Isaksen, Dorval, & Treffinger, 2011; Treffinger, Isaksen, & Stead-Dorval, 2006) is widely applied throughout the world, in both educational and organizational settings, by individuals and groups of all ages— from young children through adulthood. The CPS

framework has evolved through more than 60 years of research, development, and implementation (Isaksen & Treffinger, 2004; Treffinger & Isaksen, 2005), and is supported by extensive evidence for its impact and effectiveness (you can download a compendium of evidence containing more than 1000 studies from www.cpsb.com). Through training in CPS, individuals and groups working in organizational settings can become more proficient when solving problems or managing change.

The literature supports the conclusion that the skills needed for creative thinking and creative problem solving can be taught or nurtured through practice (e.g., Basadur & Hausdorf, 1996; Isaksen & Treffinger, 1991; Isaksen & De Schryver, 2000; Torrance, 1987; Treffinger, Schoonover, & Selby, 2013).

Our current approach to CPS (CPS Version 6.1™; Isaksen (2020), Isaksen, Dorval, & Treffinger, 2011; Treffinger, Isaksen, & Stead-Dorval, 2006) is a multi-dimensional system. Although it provides a variety of powerful, cognitive, rational tools and strategies for solving problems and managing change, it also involves explicit consideration of the person, the context, and the need. Thus, the manner in which one learns these skills, the application of those skills, the manner in which one approaches the situation and tools, and one's level of creative productivity, acting alone or in groups, are all influenced, at least in part, by the individual characteristics people bring to the learning or problem-solving situation (Schoonover, 1996; Martinsen & Kaufmann, 1999). Being able to identify a learner's style and differentiate instruction based on that information is effective in promoting greater retention, application, and transfer of content (Dunn, Beaudry, & Klavas, 1989). An individual's or a group's creative productivity can likewise be enhanced if there is an understanding of the individual creative styles involved (e.g., Basadur & Head, 2001; Main, Delcourt, & Treffinger, 2019; Selby, 1997b; Treffinger & Selby, 1993).

Individuals view problems and their solutions differently, based on their style. There is no "one right way" to apply CPS that can be prescribed for all people or for all opportunities and challenges; today's understanding of the flexibility and the power of CPS, for individuals or for groups, begins with respect and support for the diversity and uniqueness of people and their ability to personalize the ways in which they apply any process methodology. Indeed, it would be strangely inconsistent to

discuss “Creative” Problem Solving as a prescriptive set of steps that must be learned and applied in a fixed or uniform way by everyone!

We recognize, then, that all individuals may approach the tasks of clarifying opportunities and challenges, generating ideas, and preparing for creative action in very different ways. Some individuals seek out originality, others respond cautiously. Some search for data, understanding and solutions very broadly, following tangents wherever they lead; others search following a planned focused path. Some proliferate ideas; others produce just enough promising ideas to keep the process moving. While some individuals prefer a methodical, in-depth approach, others look for immediate action. These differences can be beneficial or detrimental to the problem-solving success of individuals and groups. Gaining an understanding and appreciation of one’s style is an important first step in the development of the metacognitive skills needed to choose behaviors, tools, and strategies, and to apply techniques that contribute to productivity. This understanding is also consistent with contemporary understandings of complex human learning and with the ways in which people construct meaning and become effective, self-managing learners and creative producers.

Foundation: Psychology of the Person

In planning and developing the VIEW Model, we realized that a variety of theoretical and research approaches would contribute to our work in unique ways. Therefore, the VIEW Model of Problem Solving Style builds on theory and research from several broad areas, and draws from three concepts in particular (represented in the center row of Figure 1 above); these are *learning style, cognitive style,* and *psychological type.* From learning styles we were particularly interested in the idea that learning preferences, when really important to the learner, can become key factors in one's success when trying to learn new and difficult material. From an extensive study of cognitive style, we were challenged to broaden our understanding of problem-solving style and to separate creative level from creative style. From psychological type we were particularly interested in the constructive use of differences and the functions of perception and judgment.

Learning Style

Hilgersom-Volk (1987) defined learning styles simply as the *"unique internal processes that guide how we take in information from our environment"* (p. 9). Gregorc (1979) described learning styles as *"mind-qualities that serve as mediators as we learn from and act upon our environment"* (p. 19). Vital to our survival, these mind-qualities persist even as goals and content change. Kolb (1981) looked at preferences along two intersecting continua: Converger/Diverger and Accommodator/Assimilator. These represent the major ways in which people differ as they perceive and process information. Convergers perceive through thinking or abstract conceptualization and process through active experimentation or doing. Divergers perceive through concrete experience and process through reflective observation. Accommodators are individuals who also prefer to take in information through concrete experience but who process using active experimentation. Lastly, Assimilators have preferences for reflective observation and abstract conceptualization. Gregorc (1985) also viewed style as the influence of preferences along two intersecting continua: concrete to random, and abstract to sequential (with four possible combinations representing styles). Gregorc viewed these stylistic characteristics as *"powerful indictors of deep underlying psychological forces that help guide a person's interactions with existential realities* (1985, p. 54)."

Dunn and Dunn (1978; Dunn, 1984) considered style to be multi-faceted. Their model includes 21 elements of style distributed in the categories of environmental, emotional, sociological, physical, and psychological. Of special interest in the development of the VIEW model were the elements involving the need for structure, the need for proximity to authority, persistence, working alone or in groups, and the psychological elements of analytic/global and reflective/impulsive. The Dunns noted that some individuals learn best in well-structured environments following a well-structured plan while others find that their ability to absorb new and difficult information is limited by structure. Likewise, working close to authority figures enables some individuals, whereas others find the proximity of an authority disabling. The importance of the need for (and the response to) authority and structure in

understanding an individual's problem-solving and change-management style were reinforced by the findings of Houtz, Selby, Esquivel, Okoye, Peters, and Treffinger (2003a) and Alter (2000).

A key understanding from the learning style research of Dunn and Dunn (1978) is that each element impacts learners at one of three levels of intensity. Some individuals are not affected at all by some of the elements. For these individuals, the presence or absence of the element plays no part in the individual's ability to learn new and difficult material. Other elements may enhance learning, although learning will continue even if the element of style is not addressed. However, when that element is addressed, the individual's performance might improve. The Dunns described this level as a *preference*. For some persons, there are other elements of style that *must* be addressed appropriately if new and difficult material is to be learned successfully; such an element is a *factor* in the person's style. We theorized that the various elements of problem-solving style also have varying levels of impact on an individual's productivity. For some, in some situations, a certain element may have little or no impact, while other elements may represent preferences, and a few may be so essential for the person that, if they are not addressed appropriately, productivity may be extraordinarily difficult to attain. For instance, if a person prefers to work with a well- established structure and none is provided, he or she might focus all available energy on establishing structure before even considering a given problem.

Psychological Type

The concept of type can be traced back to the Ancient Romans and Greeks (Vernon, 1973). Jung's (1923, 1971) typology may have been influenced by the classical division of the temperaments, but was certainly supported by his psychoanalytic practice and empirical research. He developed his theory of psychological type over many years and focused initially on preferences for introversion and extraversion (which Myers, McCaulley, Quenk, & Hammer [1998] described as complementary attitudes and orientations of energy or the direction in which a person's interest flows). Is the individual's focus on the outer world of actions, objects and people, or the inner world

of concepts and ideas? These preferences influence when, during the process of problem solving, an individual will choose to engage others and the environment, and the preference for verbal vs. non-verbal interaction. Extraverts tend to engage others and the environment verbally and actively from the outset, modifying ideas as information is received and exchanged. Introverts tend to engage the world actively after reflection on non-verbal input, after ideas have carefully and quietly considered.

Jung (1923, 1971) extended this initial interest by defining two opposing perceptual functions: sensation and intuition, referring to information gathering processes. These functions addressed the question: does the individual base perception on the immediate, real facts of experience and life, or the possibilities, relationships, and meanings of experience? Those with a well-developed preference for sensing tend to focus on details and what is practical. They seem to be careful and specific, preferring to begin with the concrete facts of the case and then move to the formation of more abstract ideas. Those with a well-developed preference for intuition tend to focus on inspiration and meaning. They look for insight, patterns and general concepts, beginning with abstract ideas from which will emerge concrete plans.

Jung (1923, 1971) also theorized two opposing judging functions: thinking and feeling. These referred to the ways in which individuals make decisions and reach conclusions. Are an individual's decisions made objectively and impersonally, considering causes and logical outcomes, or subjectively and personally, weighing values of each choice and how it will affect others? People with a thinking orientation prefer to stay detached from emotion during problem solving while they search for well-reasoned conclusions or solutions. They tend to stress logical principles, order, standards, and rigor. They prefer to begin by offering a critique, finding the flaws in a plan or idea, and mastering the material. Those with a feeling orientation prefer to stay tuned to emotions. They attend to personal relationships, seeking harmony in their outcomes. Their judgments are based on their appreciation of people and things.

Type theory was expanded (Myers & McCaulley, 1985; Myers, et. al., 1998) with the addition of two attitudes to the outer world: judging and perceiving. These orientations influence how one approaches the other three dimensions described by the theory. Does the individual prefer a decisive, planned, and orderly way of life, aimed at regulating and controlling events, or a spontaneous, flexible way of life, aimed at understanding life and adapting to it? Those with a judging orientation prefer to begin the problem-solving process with a clear structure and to work with an orderly, consistent, predictable plan until they reach closure. Those with a perceiving orientation seem to prefer dynamic structure and planning, marked by open exploration through which structure emerges, but is ever fluid, stimulated by new and different ideas, and experience.

Lawrence (1996, 1997) looked at the connections between type and learning styles. He went beyond an emphasis on the behaviors, representing strengths and possible blind spots associated with each type, and added an emphasis on the values and priorities that provide the motivating energy that supports behavior. He proposed that individuals of a particular type exhibit very clear learning preferences. If those preferences are not respected and addressed appropriately during instruction or training, students may well be unable "*to bring their best energies and effort to the learning tasks* (1996, p. 15)." Understanding type enables a learner to choose the learning tools and techniques that will provide the best results. Teachers and trainers who develop instructional approaches with type and learning preferences in mind may be expected to offer learners varied opportunities to maximize their energies.

Psychological type theory and research guided us in refining and articulating our definition of problem-solving style and in formulating the basic structure and organization of constructs that are important to assess in a measure of problem-solving style. While psychological type theories and measures provide a rich and deep understanding of important clusters (or "types") in personality studies, we sought to examine important constructs that focused more specifically on problem solving and change management, but were absent from other approaches to cognitive style or creativity style. We were also influenced by the emphasis in the psychological type literature on the constructive use of human differences.

Cognitive Style

Systematic inquiry and development in the area of cognitive style may date back to a symposium at the 1949 American Psychological Association conference on "Personal and Social Factors in Perception" (Witkin & Goodenough, 1981). Areas of investigation were: constricted-flexible control, leveling-sharpening, equivalence range, tolerance of unrealistic experiences, and field dependence-independence. Guilford (1980) also discussed field dependence-independence. Field independence has value to creativity in as much as it involves a preference for transformation seeking. Guilford (1986) also noted that when dealing with different kinds of operations, some individuals seemed to prefer divergent thinking while others preferred convergent thinking.

According to Martinsen and Kaufmann (1999), cognitive style involves the overlap of the independent constructs of personality and cognition, and can be located where cognition and personality intersect. The existence of this intersection was most recently supported in a study involving Cattell's 16 PF (Isaksen, Kaufmann, Bakken, in preparation). Several other studies support this view. Gryskiewicz (1982), Carne and Kirton (1982), Tefft (1990), Jacobson (1993), and Gryskiewicz and Tullar (1995) all noted significant correlations between assessments of cognitive style and psychological type, specifically the Kirton Adaption Innovation Inventory (KAI; Kirton, 1976, 1999) and the Myers-Briggs Type Indicator (MBTI®; Myers, et al., 1998). Of particular note, Adaptors, as identified by the KAI, seemed to identify strongly with Sensing and Judging type preferences, as identified by the MBTI®, while Innovators identified more strongly with Intuition and Perceiving preferences (Isaksen, Lauer, & Wilson, 2003).

Cattell, Eber, and Tatsuoka (1970) looked at style along several continua or "Factors." "Factor G" placed an individual on continuum between preferences for the Expedient or Conscientious. Those whose behavior indicated an Expedient preference disregarded rules and felt few obligations toward others, while those with a conscientious orientation behaved in a preserving, moralistic, or rule-bound manner. "Factor M" had to do with preferences along the Practical/Imaginative dimension, with the Practical being defined as careful, conventional, and regulated by external

realities, while the Imaginative was defined as careless in practical matters, unconventional, and absentminded. The Conservative/Experimenting dimension was labeled "Factor Q1." Conservatives demonstrated respect for established ideas and tolerance of traditional difficulties. Experimenters were described as liberal and analytical, with preferences for innovation and radicalism. The tendency to be Shy or Venturesome was addressed by "Factor H." A Shy individual was restrained, threat-sensitive, and sensitive, while one who was Venturesome was socially bold, uninhibited and spontaneous. Tough-Minded individuals who were self-reliant, realistic and no-nonsense types were described by "Factor F," in contrast with the Tender-minded, who were intuitive, unrealistic and sensitive. Lastly, the Reserved—detached, critical, cool and impersonal—and the Warmhearted, who were outgoing, interested in people, and easy-going, represented the "Factor A" scores.

Efforts to understand management initiatives led Kirton (1961) to his study of cognitive style and the development of Adaption-Innovation (AI) theory. He noted two types of managers. One type initiated change that generally remained within the framework of the current paradigm. These individuals understood the system. They were able to use the system and current structure to get things done. He referred to these managers as adaptors. Adaptors were resourceful, efficient, organized, and dependable; but were sometimes also viewed as closed-minded and dogmatic. In groups they supplied stability, order, and continuity. Innovators, on the other hand, initiated change that was often considered radical by others. They often viewed the current paradigm as the source of the problem. They were original, energetic, individualistic, spontaneous, and insightful, but were sometimes viewed by others as impractical, abrasive, and the source of confusion. Innovators offered many varied and unusual ideas and suggestions but often were not strong in selecting the most promising idea and having it implemented.

Martinsen and Kaufmann (1999) proposed two preferred approaches to creativity along a single continuum. Their Assimilator-Explorer (A-E) theory was influenced by cognitive psychology and the developmental psychology of Piaget. Their approach was based on the observation that some subjects "*spontaneously vary their solution strategies without any prompting by task requirements or instructions. These*

subjects were labeled Explorers. Those who followed the pre-specified algorithm throughout were labeled Assimilators" (p. 227). Martinsen and Kaufmann's work differed from Kirton's in that Kirton set the distinction between Adaptors and Innovators in the context of problem solving in general and based his work on observations of change processes in organizations, while A-E theory was located within the more specific domain of creativity.

Theory and research on cognitive style influenced our work on the development of our model in several ways. One major influence involved separating people's *level* of creativity from their *style* of creativity, with the resulting emphasis on people's preferred ways of accessing, expressing, and applying their creativity. In addition, scholarship on cognitive style emphasized the importance and value of looking beyond isolated personality traits alone, and emphasizing "higher-order" variables relating to information-processing strategies. Work on cognitive style (as well as learning style) also supported our emphasis on the importance of using value-neutral style labels and descriptions.

Linking Person and Process

Several important areas of psychological theory and research contributed to our conceptual work. These included, for example, contemporary work on personality, individual differences, the construction of meaning, and metacognition. Numerous approaches and models focus on a psychological understanding of the person or personality (e.g., Cattell & Gibbons, 1968; Cattell, Eber, & Tatsuoka, 1970; Costa & McCrae, 1985; Eysenck, 1947; Guilford, 1975; Guilford, Zimmerman & Guilford, 1976; McCrae & Costa, 1987; McCrae & John, 1992; Tellegen, 1982, 1985). Some suggest that personality traits can be viewed as hierarchically arranged, with narrow and specific traits at lower levels, and global or broader trait dimensions or domains above (Goldberg, 1993; Costa & McCrae, 1995). Other views of personality focus on the "Big Five" dimensions of characteristics or traits: extraversion, agreeableness, conscientiousness, emotional stability, and openness (e.g., Bayne, 1995, Costa & McCrae, 1992; Digman, 1990; Howard & Howard, 1995; McCrae, 1992; Norman, 1963). Goldberg (1992) reviewed the emergence of the 'Big Five' factors of personality

theory with the comment that, *"…an age-old scientific problem has begun to look tractable* (p. 26)." Goldsmith (1994) divided the broad concept of personality into three main types of individual difference variables: intellectual and spatial abilities, personality traits, and cognitive styles.

Scholarly interest in individual differences has also been well established (Dillon, 1985; Dillon & Schmeck, 1983; Willerman, 1979) as a fundamental concern in psychological studies of the person. Creativity researchers have used two main approaches to investigate such differences (Selby, Shaw, & Houtz, 2005). Researchers interested in creative abilities, competence, and degree of performance focused primarily on *level* of creativity (e.g., Albert, 1983; Guilford, 1986; Spearman, 1927, 1931; Terman, 1925; Thurstone, 1927; Torrance, 1979), that is, how creative the individual is or was. Others have been more concerned with the mode, manner, preference or *style* of creativity (e.g., Kirton, 1987; Kogan, 1973; Messick, 1976) referring to the ways in which a person is or was creative.

It is now widely accepted that people bring a wide breadth of abilities, potentials, and style preferences to learning and to the application of what is learned (e.g., Armstrong, 1994, 1998; Brooks & Brooks, 1993; Harmin, 1994). The ability to be self-managing and self-motivating is recognized as vital to the success of an actively involved learner (Harmin, 1994). How one manifests these abilities is a function of style. Research has also provided us with a neurological understanding of cognitive style and the emotional consequences when the problem solving or change management context is in conflict with an individual's style (Sylwester, 1995; Wolfe, 2001). In discussing why otherwise "intelligent" people fail, Sternberg (1986) cited 20 impediments such as: lack of motivation, lack of impulse control, the inability to complete tasks and to follow through, the failure to initiate, procrastination, excessive dependency, and distractibility. Each of these 20 impediments can be viewed as resulting from manifestations of style preferences or psychological type, in which strengths are not understood or are not employed in the service of productivity.

A study carried out by Treffinger, Young, Selby, and Shepardson (2002) reviewed and synthesized the key personal characteristics associated with creativity. They summarized the important characteristics in four areas: *generating ideas, digging*

deeper into ideas, exploring ideas with openness and courage, and *listening to one's inner voice.* The characteristics involving generating lead to the production of promising options, while those involving focusing lead to workable solutions and action plans. One conclusion of this study was that personality, style, type, and cognitive skills all play important roles in the specific behavior of every individual problem solver, and the ways in which the individual engages in the problem-solving process.

Our experience with various approaches to the question of style, especially when working with students and professionals (e.g., Alter, 2000; Houtz, Selby, Esquivel, Okoye, Peters, & Treffinger, 2003a, b; Isaksen, Babij, & Lauer, 2003; Isaksen, Lauer, & Wilson, 2003; Selby, 1997a; Selby, 1997b; Selby, Treffinger, Isaksen & Powers, 1993) led us to recognize the need for an approach more closely related to Creative Problem Solving. Such an approach might enable teachers, trainers, group leaders, or individual problem solvers to be more effective when learning, applying, or facilitating CPS. It would help them to apply CPS in a natural, flexible way, consistent with their own personal strengths (rather than feeling that they must conform to some presumed "correct way" to apply CPS). Style theorists commonly propose that knowledge of style allows us to work from strength, while developing areas of weakness, thereby becoming more balanced in approaching change and solving problems. Responsiveness to and knowledge of style is theoretically sound, and can have considerable practical value for learning and application that is engaging, challenging, and above all, successful (Armstrong, 1987; Dunn, Dunn, & Treffinger, 1992).

The Cognitive Styles Project

Our interest in the linkages between person and process led us to a key question that had significant impact on our research; it is a question that still influences our inquiry into the effective and efficient presentation and application of CPS. It is: "*What approach to CPS works best, for whom, and under what circumstances?*" Posing this question led to the series of studies regarding the impact of learning CPS (Isaksen & DeSchryver, 2000), as well as to the development of the extended research initiative mentioned above, the Cognitive Styles Project (Isaksen, 2004).

The studies conducted during the Cognitive Styles Project used a variety of measures

of learning styles (Corbett-Whittier, 1986; McEwen, 1986; Wittig, 1985), cognitive styles (Hurley, 1993; Selby, 1991; Selby, Treffinger, Isaksen & Powers, 1993; Puccio, 1987; Wheeler, 1995; Zilewicz, 1986), and psychological type (Tefft, 1990). Other studies examined the relationships between and among various stylistic measures (e.g., Joniak & Isaksen, 1988; Isaksen, Lauer, & Wilson, 2003), between measures of style and level of creativity (e.g., Dorval, 1990; Isaksen, Dorval & Kaufmann, 1992; Isaksen & Puccio, 1988), and between measures of style and various manifestations of creative behavior (Franklin, 1997; Holmes, 1995; Isaksen & Pershyn, 1994; Pershyn, 1992; Puccio, Treffinger & Talbot, 1995). Finally, there were studies that investigated the relationship between cognitive style and psychological climate (Isaksen, 2009; Isaksen & Kaufmann, 1990; Isaksen & Lauer, 1999) and the impact of these relationships upon organizational behavior (Dutcher, 1997; Isaksen & Aerts, 2011; Kaufmann, Isaksen & Lauer, 1996).

The research initiatives, in interaction with our expanding perspectives on the need for flexibility and personalization of the CPS framework, led us to approach the person-process connections in new ways. We had many opportunities to observe that creative productivity is the result of the combined influence of the characteristics an individual or group brings to the problem- solving situation (person) and the operations that are performed by the individual or group (process), as well as the context (press) in which the problem exists and from which a solution will be produced, and the type of outcomes that will meet the needs of the problem solvers.

In relation to problem-solving skills and creativity, then, the question of style led us in new directions for research, training, and practical applications. Instead of asking, *"How creative is this person?"* we learned to ask: *"How is this person creative? This shift paved the way for a number of new questions for research, including: What are her strengths? How does he learn best? What is unique about each individual? What type of learning or working environment will bring out the person's best? How do people channel and direct their creative energies? In what ways do people depend on each other's strengths? What strengths does each individual offer?"*

Three Dimensions of Problem-Solving Style

The inquiry described above led us to a model of problem solving style that described three important, but separate, dimensions of style. Two seemingly opposite problem solving styles anchor each dimension. To clarify our thinking along these lines, we define problem-solving styles in terms of behaviors and activities related to the problem-solving process and management of change:

> Problem-solving styles are consistent individual differences in the ways people prefer to plan and carry out generating and focusing activities, in order to gain clarity, produce ideas, and prepare for action. An individual's disposition towards change management and problem solving is influenced in part by mindset, willingness to engage in and respond to a situation as presented, and the attitudinal dimensions of one's personality. Preferences are natural leanings that support productivity.

In this definition, *generating* refers to seeking many, varied, or unusual possibilities, or adding details and expanding on existing possibilities. *Focusing* refers to deliberate efforts to take many options and draw them together toward a single goal, result, or action (Treffinger, Isaksen, & Stead- Dorval, 2006). In the following sections, we will briefly describe each of the three dimension of VIEW (Orientation to Change, Manner of Processing, and Ways of Deciding), the preferences associated with each, and the conceptual, research, and experiential foundations for each dimension.

Orientation to Change (OC)

This dimension describes the person's perceived preferences and dispositions for responding to and managing structure, novelty, authority, and the search for information when managing change and solving problems creatively. Two styles fall along a continuum from well-defined "Explorer" to well- defined "Developer." The principal issues and themes of this dimension are:

- Preferences for dealing with novelty and originality
- Preferences for and reactions to structure and authority

- Preferred strategy for searching for data, options, and understanding

This dimension also involves the individual's overall approach when dealing with complex, ambiguous, important, and open-ended tasks and challenges. Three Elements contribute to a person's overall Orientation Change: a preference for responding to and managing Structure and Authority, Novelty, and one's Search Strategy.

Preferences for Orientation to Change	
When solving problems or managing change well-defined **Explorers** may:	When solving problems or managing change well-defined **Developers** may:
• Break away from the system, and redefine the problem • View structure as limiting, confining • Challenge authority, "bend" the rules • Emphasize originality and uniqueness • Press for extensive change and commitment to action • Know the newest trends and possibilities • Tend to be ingenious and/or unconventional • Tend to be spontaneous and free-flowing in their ideas • Emphasize starting new tasks and looking at the "big picture" • Often resist closure • Produce ideas that others may not understanding easily • Emphasize generating • Seek or try to establish a high level of autonomy • Search broadly for data, understanding of the challenge, and exciting solutions	• Stay within the existing paradigm or system, follow rules and procedures as given • Find benefits and support in structure • Emphasize improvement and usefulness • Focus on gradual, incremental change that leads to improvement to the current situation • Emphasize finding "just enough" new ideas • Be seen as resourceful, dependable, consistent, precise, thorough and efficient • Provide sound planning and organization early in the process • Emphasize thorough completion of tasks and attention to details • Seek closure • Emphasize focusing • Know how to get ideas accepted by others • Seek external guidance and approval, and only limited autonomy • Conduct a planned, focused search for data, understanding, and workable solutions

Three Elements or Sub-Scales. Orientation to Change is the most complex construct of the three dimensions. Research over the last decade has allowed us to expand the model in this regard. There is now clear evidence that three elements contribute to one's overall Orientation to Change: Preference for Novelty, Structure and Authority,

and Search Strategy. The inclusion of these elements has offered new insight in understanding the two OC styles (Selby, 2013).

In terms of Preference for Novelty, Explorers prefer to find or construct options that are highly unusual or original. They find new, uncharted, directions appealing. They seek to generate many, unique, and varied ideas. Developers prefer to identify or construct improvements based on precedent or experience, working carefully to improve on the familiar. They prefer identifying "just enough" new ideas to meet the challenge.

When considering preferences for Structure and Authority, Explorers prefer self-derived efforts, working in their own way to enable structure to emerge. They prefer to hold authority at a distance, limiting imposed control while preferring autonomy in their approach – defining their own approach and assuming approval. Developers seek the guidance of existing structure, with authority close at hand offering guidance and direction – to ensure that what they produce will fit into the existing boundaries. They find the presence of Structure and Authority enabling as they work to meet a challenge.

Explorers prefer to engage in a Search Strategy that allows them to follow data and ideas wherever they may lead. They search widely, with few or no limits or constraints as they search for promising possibilities so as to ensure a broad array of sources, and a wide range of connections. Developers prefer to follow a Search Strategy that is focused, well-planned, and deep. They tend to seek practical, relevant data, and results that are workable, realistic, and efficient.

Moderate Preferences. Keep in mind that each dimension represents a continuum from one style to its opposite (in this case Explorer to Developer). In order to clearly describe the characteristics of style on this and the other two dimensions of VIEW, it is necessary to discuss those whose styles are well-defined, those whose preferences approach the specific styles that anchor the ends of each of the three continua. The styles that anchor each of these dimensions are clear, but seemingly opposite. Towards the center of each continuum is a broad area of "Moderate" preferences. Individuals with preferences that are more moderate may reflect one style or the other, but in a less sharply differentiated manner. In general, those with a Moderate

preference may be able to understand and have empathy for the opposite style in that dimension beyond that experienced by a person whose style preference is more pronounced. Moderates *may* undertake a "bridging" role. Even so, an individual will usually have more in common, on a specific dimension, with those who share their style preference, and less in common with those with the opposite style preference.

Those with moderate preferences may be influenced by the tasks on which they are working or the people with whom they are working.

Problem solvers with a Moderate Explorer preference may be more motivated and influenced by tasks that involve novel goals or opportunities, while appreciating both the need for novelty and the importance of practicality. They may seek novel and varied data sources and viewpoints, but show an appreciation for a balance between variety and relevance. They may feel stress when trying to seek a balance while advocated for ideas and positions or more well defined Explorers or Developers. They may seek novel ways to make ideas workable, avoiding getting caught up in too many details that might stifle novel solutions.

Individuals with a Moderate Developer style tend to seek tasks that are practical and realistic. They appreciate the importance of practicality and the need for novelty and encourage a balanced approach. They may search for practical, relevant resources that consider variety and novel sources. They often can appreciate the approach of both well-defined Developers and well-defined Explorers and advocate for each at appropriate times in the process. This may cause stress, especially when seeking both balance and closure.

Those with moderate preferences on the OC dimension can use their understanding of the contributing three elements to better understand the unique features of their style. Those whose preferences are less well-defined may have traits that fall on the other side of the dimension and may display behaviors associated with both Explorer and Developer preferences. For instance, a Moderate Explorer whose preferences for Novelty and Structure reflect that style, but whose Search Strategy is more in-line with a Developer style, may find common ground with Developers (Selby, 2013). Understanding their three element preferences allows both Moderate Explorers and Moderate Developers to "*take a more nuanced approach when thinking about their own style*" (p.7) and the preferences of others.

Conceptual Foundations for OC

In developing the OC dimension, we drew from the work of Cattell and the IPAT group (1979), Dunn & Dunn (1978; Dunn, Dunn, & Price, 1991, 1993); Gough (1964; Gough & Bradley, 1996), Jung (1923, 1971), Kirton (1976), and from theory, research, and experience in creativity and Creative Problem Solving. More recently, depth was added to our understanding of this dimension based on work reported in Isaksen, Kaufmann & Bakken (in preparation), Isaksen (2012) and Selby (2013).

From Cattell's 16PF. VIEW's foundation drew upon several factors in this model, including G, M, and Q1.

Factor G Expedient-Conscientious. The expedient individual is portrayed as one who disregards rules, feels few obligations, with weaker superego strength. The conscientious individual is viewed as persevering, proper, moralistic, rule-bound, and with stronger superego strength. People who score low on Factor G tend to be unsteady in purpose. They are often causal and lacking in effort for group undertakings and cultural demands. As with Explorers in the VIEW Model, their freedom from group influence may lead to antisocial acts, but at times makes them more effective, while their refusal to be bound by rules causes them to have less somatic upset from stress. Like Developers in the VIEW Model, people who score high on Factor G tend to be exacting in character, dominated by sense of duty, persevering, responsible, and planful. They are usually conscientious and moralistic, and they prefer hard-working people to witty companions.

Factor M Practical-Imaginative. Practical implies careful, conventional, and regulated by external realities; imaginative suggests: careless in practical matters, unconventional, and absent- minded. Low scorers on Factor M tend to be anxious to do the right things. They share traits with Developers, in that they are attentive to practical matters, and subject to the dictation of what is obviously possible. They are concerned over detail, able to keep their heads in emergencies, but are sometimes unimaginative. High scorers on Factor M share some Explorer traits. They tend to be unconventional, unconcerned over everyday matters, self-motivated, imaginatively creative, concerned with "essentials," often absorbed in thought, and oblivious of particular people and physical realities. Their interests sometimes lead to unrealistic

situations accompanied by expressive outbursts.

Factor Q1 Conservative-Experimenting. The conservative factor involves respecting established ideas, being tolerant of traditional difficulties, and conservatism. Experimenting involves: liberal, analytical, likes innovation, and radicalism. Low scorers on this factor might be compared to Developers in that they are confident in what they have been taught to believe, and accept the "tried and true," despite inconsistencies, when something else might be better. They are cautious and compromising in regard to new ideas. Thus, they tend to oppose and postpone change, are inclined to go along with tradition, and more conservative in religion and politics, and tend not to be interested in analytical or "intellectual" thought. High scorers tend to be more like Explorers.

They may be interested in intellectual matters and to have doubts on fundamental issues. They are skeptical and inquiring regarding ideas, either old or new. Usually they are more well informed, more inclined to experiment in life generally, and more tolerant of inconvenience and change.

Isaksen (2012) and Isaksen, Kauffman & Bakken (2016) confirmed these expectations. In a comparison with Cattell's 16 PF Developers tended toward conformity and being rule bound, being less abstract and less open to change. They preferred more structure and solution oriented ideas, while displaying an attachment to the familiar, and a focus on perfectionism and taking an organized approach to problem-solving and change. Developers exhibited tough-mindedness, prudence, self-restraint, and more self-control. Explorers were found to be more flexible in their approach, more tolerant of disorder, and more non-conforming. They tended to be idea oriented, intuitive, more independent, more animated and spontaneous, and more impulsive and open to change.

From Dunn and Dunn. The dimensions and elements from Dunn and Dunn that were most highly related to our conception of Explorer and Developer included: structure, persistence, and the need for authority. Explorers prefer to minimize the impact of structure and see it as confining. If they experience an increase in structure and authority they will see it as constrictive. Developers in the VIEW model want structure, and see it as enabling. Developers have a desire for both structure and authority and

if it is absent the gap may be a strong factor in their performance. This work suggests that the structure variable is only in part concerned with "presence or absence;" the variable also concerns your response or reaction to structure, the way you behave under varying degrees or kinds of structure, and your preference for using structure and authority as aids to your problem- solving activities.

From Gough's California Psychological Inventory. VIEW's foundation for OC draws on three scales from the CPI: the Ac, Ai, and Fx scales.

Ac Scale (Achievement via conformance). This scale involves the factors of interest and motivation that facilitate achievement in any setting where conformance is a positive behavior. Those with high scores tend to be seen as capable, cooperative, efficient, organized, responsible, stable, and sincere, as being persistent and industrious, and as valuing intellectual activity and intellectual achievement. They reflect many of the traits associated with Developers in the VIEW Model, while those with low scores tend to be more aligned with the less positive aspects of the Explorer style. They may be seen as coarse, stubborn, aloof, awkward, insecure, and opinionated, easily disorganized under stress or pressures to conform, and pessimistic about their occupational futures.

Ai Scale (Achievement via independence). This scale seeks to identify those factors of interest and motivation that facilitate achievement in any setting where autonomy and independence are positive behaviors. Those with high scores tend to be seen as mature, forceful, strong, dominant, demanding, foresighted, independent, and self-reliant, and more closely align with Explorers in the VIEW Model. Those with low scores, as with some Developers, tend to be seen as inhibited, anxious, cautious, dissatisfied, wary, and as submissive and compliant before authority.

Fx Scale (Flexibility). This scale indicates the degree of flexibility and adaptability of a person's thinking and social behavior. Those with high scores may reflect the Explorer style in the VIEW Model. They tend to be seen as insightful, informal, adventurous, confident, humorous, rebellious, idealistic, assertive, egoistic, sarcastic and cynical, and as highly concerned with personal pleasure and diversion. As with Developers, those with low scores tend to seen as deliberate, cautious, worrying, industrious, guarded, mannerly, methodical, rigid, formal or pedantic in thought, and

overly deferential to authority, custom, and tradition.

From Jung. Aspects of OC also built on the Jungian sensing and intuition and judging and perception dimensions.

Sensing and Intuition. From Sensing, we derived the focus on: practical, concrete, detail, careful, specific, moving from the concrete to the abstract, soundness, present orientation as traits that might also be associated with a Developer style. From Intuition, we derived a focus on: inspiration, meaning, working between the lines, insight, general concepts, patterns, and future orientation. These aligned with the Explorer style

Judging and Perception. We drew from the Judging orientation when considering the Explorer style. We focused on the need for: a clear structure (to start), completion, closure, orderly plan, consistency, and predictability. For the Developer style we drew from the Perceiving attitude focusing on: dynamic structure and planning, open exploration moving to an emergent structure, being stimulated by new and different ideas, gathering more information, and openness to new experience.

From Kirton's Adaption-Innovation Theory. Kirton built his theory from experiences of organizational change, and the cognitive style aspects of individuals' preferences or use of structure or paradigms. More adaptive individuals tend to over use structure, while more innovative individuals tend to underuse structure. The Explorer prefers the proliferation of new ideas, embraces novelty, and prefers change that is on the edge and doing things differently. The Developer is concerned more with: efficiency, consistency, thoroughness and predictability, sufficiency of originality, being cautious about novelty, preferring incremental improvement, and doing things better.

From the creativity literature. Based on our experience with problem-solving groups in many settings, and drawing on the literature involving personal creativity characteristics (e.g., Treffinger et al., 2002), we identified many factors related to the OC dimension of VIEW. These included: divergent dispositions; openness to experience (cautious versus embracing); tolerance of ambiguity (closure, clarity, certainty and control and minimizing risk versus acceptance of uncertainty, lack of

control and willing to risk); originality (desire for high originality versus constrained); fluency (seeking high quantity versus limited numbers); spontaneous or adaptive flexibility. When "digging deeper" or focusing, the Explorer prefers immediate action, "getting it over with," spontaneity, closure that emerges in progress, and breadth. The Developer prefers depth of analysis and prefers to be methodical, planful, and certain of closure.

Manner of Processing

This dimension describes preferences for working externally (i.e., with other people throughout the process) or internally (i.e., thinking and working alone before sharing ideas with others) when managing change and solving problems. It addresses dispositions for how and when personal inner energy and resources, the energy and resources of others, and the environment are used. Two styles fall along a continuum from well-defined "External" to well-defined "Internal." The principal issues and themes of this dimension are:

- Preferences for managing information and flow when problem solving
- Preferences for when and how during the problem-solving process personal ideas and thoughts are shared
- The impact of interacting with others, does it build or deplete energy?

Preferences for Manner of Processing	
When solving problems or managing change well-defined **Externals** may:	When solving problems or managing change well-defined **Internals** may:
• Start talking about options and ideas right away • Put ideas out tentatively, ready to revise and reformulate along the way • Derive energy from interaction with others. • Find reflection, especially early in the process, challenging • Urge immediate action • Share ideas freely with a broad range of people • Seek a great deal of input from others and the environment before reaching closure • Be seen as filled with energy, rushing into things • Be seen as impatient if asked to think too long about things	• Want to think about options and ideas before discussing them • Share ideas with others after having time to reflect and polish them • Draw energy from reflection and quiet • Feel challenged if pressured to talk about ideas quickly and/or without reflection • Seek action after giving it careful consideration • Share ideas with others after establishing trust and confidence • Build ideas personally, then seek feedback selectively • Be perceived as quiet, pensive or withdrawn • Be perceived as impatient if press to share too soon

Moderate Preferences. Individuals with a more moderate Manner of Processing may find it easier to flex between certain aspects of each style on this continuum. They may understand and see the value of the approach of the opposite preference. They may find other factors such as the nature of the task, motivation, or the situation to be stronger influences on their behaviors and interactions when engaged in problem solving or managing change.

Moderate External processors may be able to balance the External and Internal factors when considering possible opportunities and challenges. When generating ideas, they may emphasize those involving social activities and interaction. While they enjoy a lively exchange, they are able to balance that with a need for reflection, often choosing a blend of active, social and contemplative activities. They may be more sensitive to the needs for Internal processors to have time to quietly reflect on and develop their ideas. They may find it challenging to draw out those Internal participants when more well defined Externals are pushing for immediate action.

When solving problems or managing change Moderate Internal processors tend to balance Internal and External factors in most tasks. They identify challenges, solutions and possible plans of action through careful quiet reflection and analysis balanced with an open exchange of ideas early in the process. They may work on their own to seek and use data, but readily share sources and the direction that their search is taking. They may need help to find appropriate opportunities to share their thinking with others. While they enjoy thoughtful reflection, they find value in group discussions when evaluating ideas.

Conceptual Foundations for MP

In developing this dimension, we drew from the work of Cattell (IPAT, 1979), Costa and McCrae (1985, 1992, 1995), Dunn and Dunn (1978), Eysenck (Eysenck & Eysenck, 1963, 1991), Gough (1964), Jung (1923, 1971), and from the creativity literature.

From Cattell's 16PF. VIEW's foundation for MP drew Cattell's Factor H, which involves: Shy (restrained, threat-sensitive, timid) and Venturesome (socially bold, uninhibited, spontaneous). Individuals who score low on this trait tend to be shy, withdrawing, cautious, retiring, "wallflowers." They usually have inferiority feelings and tend to be slow and impeded in speech and in expressing themselves. They dislike occupations with personal contacts, prefer one or two close friends to large groups, and are given to keeping in contact with all that is going on around them. We have identified some of these traits as risks for Internal processors in the VIEW Mode. Like External processors, individuals who score high on Factor H are often sociable, bold, ready to try new things, spontaneous, and abundant in emotional response. Their "thick-skinned" nature enables them to face wear and tear in dealing with people and grueling emotional situations, without fatigue.

However, they can be careless of detail, ignore danger signals, and consume much time talking. Reporting on a study with 167 Norwegian students who completed both VIEW and the 16PF, Isaksen (2012) noted that Internal processors were less socially bold and more hesitant. They were also more careful, more prone to self-doubt, individualistic, self-reliant and more solitary. They also had a tendency toward perfectionism, social inhibition, and were more reserved. On the other hand External

processors were more socially bold, group oriented, and outgoing. They tended toward extraversion and dominant behavior.

From Costa & McCrae's five factor model of personality. The extraversion (or "sugency") factor includes sociability, activity, dominance, and the tendency to experience positive emotions, in contrast with quiet, reserved, or withdrawn. Howard and Howard (1995), drawing on work by Costa & McCrae, characterized this dimension in relation to six "facets" through which introversion and extraversion might be compared; these were:

Facets	***Introvert***	***Extravert***
Warmth	Reserved, formal	Affectionate; friendly; intimate
Gregariousness	Seldom seeks company	Gregarious; prefers company
Assertiveness	Stays in background	Assertive; speaks up; leads
Activity	Leisurely pace	Vigorous pace
Excitement-Seeking	Low need for thrills	Craves excitement
Positive Emotions	Less exuberant	Cheerful, optimistic

From Dunn and Dunn. The elements drawn from the work of Dunn and Dunn include noise, in that the external prefers to have noise present, while the internals prefer quiet. Externals prefer learning with peers, internal prefer to learn alone. When it comes to proximity of authority, externals prefer to have them near and talking, internals prefer to have them absent. Externals prefer to learn in several ways, internals prefer to have one best way. Externals prefer an auditory mode (hear it and talk about it). Internals prefer a visual mode (look and read). Externals prefer mobility, and internals do not.

From Eysenck. One of the three higher order scales is extraversion (Eysenck & Eysenck, 1963; Eysenck & Eysenck, 1991; Guilford, 1977). It includes active-inactive, sociable-unsociable, expressive-inhibited, assertive-submissive, ambitious-unambitious, dogmatic-flexible, and aggressive-peaceful, to represent this scale.

From Gough's California Psychological Inventory. VIEW's MP dimension also drew upon constructs from two CPI scales.

The Sy Scale. Identifying persons of outgoing, sociable, participative temperament. Those with high scores tend share traits with Externals. They may be seen as outgoing, enterprising, and ingenious; as being competitive and forward; and as original and fluent in thought. Again, those with low scores may reflect risk factors associated with Internal processers. They tend to be seen as awkward, conventional, quiet, submissive, unassuming, detached and passive in attitude, suggestible, and, overly influenced by others' reactions and opinions.

The Sp Scale. Assessing factors such as poise, spontaneity, and self-confidence in personal and social interaction. Like Externals in our model, those with high scores tend to be seen as clever, enthusiastic, imaginative, quick, informal, talkative, active and vigorous, and having an expressive, ebullient nature. Low scores on this scale may also reflect Internal traits. Individuals with low scores tend to be seen as deliberate, moderate, patient, self-restrained, vacillating and uncertain in decisions, literal, and unoriginal in thinking and judging.

From Jung. In the MP dimension of VIEW, we also drew about the Extraversion and Introversion dimension of Jung's work. The particular aspects of extraversion that are relevant to the External style on this dimension include: talking to help thoughts form and become clear; physical engagement of the environment; preference for verbal and non-verbal interaction; attention focused outward to objective events; acting first, reflecting later; thinking out loud and using discussion to clarify ideas; and, awareness of the ideas of others. The particular aspects of introversion related to the Internal style on this dimension include: preference for quiet reflection; keeping thoughts to oneself; attention that flows inward; being engrossed in inner events, ideas and concepts; learning in private, individual ways; reflecting first, acting later; working privately and then checking with someone who is trusted; private processing; processing at one's own pace; and, polishing one's thoughts before sharing or presenting them.

From the creativity literature and our experience in the field. Several characteristics commonly associated with creativity appear to be relevant to the Processing

dimension. One set of characteristics identified by Treffinger et al. (2002) was *"Listening to one's own inner voice."* In this area, the Internal starts inside (with the *"inner voice"*) and then goes outside to others, while the External moves in the opposite direction. We have often observed this when people are applying CPS, and particularly in the Understanding the Challenge and Preparing for Action components. In relation to team collaboration, internals look to collaborate in order to extend the refining and development they already started in their own reflection. Externals look to collaborate for the initial creation and development of options, and prefer to reflect later. In groups applying CPS, Internals are concerned if they do not have time to think, while Externals prefer to use their time to test and shape, retest and develop their thoughts.

Ways of Deciding (WD)

The third VIEW dimension deals with how individuals prefer to balance task concerns with personal or interpersonal needs. What is emphasized when focusing or moving towards decisions and action? Two styles fall along a continuum from well-defined "Person" to well-defined "Task." The principal issues and themes of this dimension are:

- The factors that get first priority when focusing or deciding
- What starting point is preferred
- How are trade-offs considered and made

Preferences for Ways of Deciding	
When solving problems or managing change **Person**-focused deciders may:	When solving problems or managing change **Task**-focused deciders may:
• Work to promote harmony and positive interpersonal relationships • Choose criteria that are personal and/or sensitive to people's feelings • Choose criteria that are more subjective • Give primary attention to what is good, attractive, or pleasing about an option • Emphasize the personal or inter-personal impact or consequences of a proposed decision • Seek solutions or decisions that all concerned can buy into • React to ideas as being one with the person • Prefer softer lit, more congenial and informal environments and/or workspaces	• Emphasize what is logical or rational • Choose criteria that they consider objective, authoritative, and verifiable • Give primary attention to what is wrong with an option, or what its needs in order to be implemented • Look first to standards, rigor or quality of outcomes or results • Welcome "letting the chips fall where they may ..." • Seek the best solution or response • React to ideas as being separate from the person • Prefer well-lit and more formal environments and/or workspaces

Moderate Preferences. Those individuals whose preferences for Ways of Deciding are more moderate may find that their behavior varies depending on the situation of context. This may make understanding or describing one's style difficult. Moderates on this dimension may find it easer to understand the outlook and preferences of either the Person or Task style, and to communicate with those who demonstrate an opposite preference.

Moderate Person deciders may have patience with those who exhibit the characteristics of the Task style and may demonstrate an understanding of the benefits of objectivity. They often prefer to identify possible opportunities and challenges in ways that relate to people and human concern, but also consider important task factors. Those with a moderate Person Way of Deciding may be willing, in the right circumstances to consider putting "human factors" second to a well-reasoned conclusion. Their approach to deciding may be more influenced by factors such as motivation, the situation or the flow of information. They may appreciate and generate problem statements, ideas, and coursed of action that

address human or interpersonal issues and relationships, but that are also logical and justifiable.

Those whose style reflects a Moderate Task preference may identify possible challenges, opportunities, ideas, and courses of action that relate to important task factors, but also consider people. When discussing possible courses of action that may strive to balance the task factors with consideration of person type issues. They are more willing to consider human factors as part of the "bottom line" and can be more patient with the need of those with a Person style to seek consensus. Task deciders may be helpful when working gin groups by looking logically and rigorously at options while also deferring judgment and acting constructively with other people.

Conceptual Foundations for WD

In developing this dimension, we drew from the work of Cattell (IPAT, 1979), Costa and McCrae (1985, 1992, 1995), Gough (1964), Jung (1923, 1971), and from the creativity literature.

From the "Five Factor" Theorists. One of the "Big 5" factors is often described as agreeableness or likability. It includes such elements as agreeable, friendly, kind, trusting, helpful, praising, sympathetic, diplomatic, docile, good-natured, on the one pole, and cold, quarrelsome, hard- hearted, critical, indifferent to others, and disagreeable, on the other. Howard and Howard (1995), drawing on Costa and McCrae's work, suggested five important facets: *trust* (cynical, skeptical versus sees others as honest and well-intentioned); *straightforwardness* (guarded, stretches truth versus straightforward, frank); *altruism* (reluctance to get involved versus willingness to help others); *modesty* (feeling superior to others versus self-effacing, humble); and *tender-mindedness* (hardheaded, rational versus tender-minded, easily moved).

From Gough's California Psychological Inventory. In both of the scales below, a high score might be aligned with both the positive traits and risk factors of a Person focus on decision-making in the VIEW model, while low scores might be associated with a Task focus.

The Py Scale. Measures the degree to which the individual is interested in, and responsive to, the inner needs, motives, and experiences of others. Those with high scores tend to be seen as observant, spontaneous, quick, perceptive, talkative, resourceful, changeable, verbally fluent and, socially ascendant, and rebellious toward rules, restrictions, and constraints. Those with low scores tend to seen as apathetic, peaceable, serious, cautious, and unassuming, slow and deliberate in tempo, and overly conforming and conventional.

The Gi Scale. Identifying persons capable of creating a favorable impression, who are concerned about how others react to them. Those with high scores tend to be seen as cooperative, enterprising, outgoing, sociable, warm, helpful, concerned with making a good impression, diligent, and persistent. Those with low scores tend to be seen as inhibited, cautious, shrewd, aloof, resentful, cool and distant in the relationships with others, and self-centered or too little concerned with the needs and wants of others.

From Jung: Thinking and Feeling. From Jung's conception of thinking types we draw upon the following characteristics when developing traits associated with a Task focus on this dimension: making impersonal judgments; reaching "detached," well-reasoned conclusions; seeking objective truth; emphasizing logical principles and order; analyze; staying cool and free from emotion; readily finding flaws and offering critiques; preferring clarity; striving for mastery over material; emphasizing cause and effect, standards, rigor, and best solutions. From Jung's conception of feeling types we drew upon the following characteristics when developing traits associated with a Person focus: caring judgments; taking motives and personal values into account; attending to relationships; seeking harmony; personalizing to set priority; staying tuned to emotions; appreciating people and things; caring deeply with a human angle; learning through personal relationships; warm and friendly; helping and responding to needs; rapport.

From the creativity literature. Task and Person preferences are clearly related to the ways individuals define tasks and problems. Task-oriented deciders structure challenges and problem statements that are sound, analytic, and clearly consistent with facts and evidence. Person-oriented deciders identify challenges and problem

statements that address personal feelings and needs or interpersonal harmony and relationships. When preparing for action, individuals with a Task preference prefer precise, detailed solutions that can be justified and verified objectively.

Individuals with a People preference give greater attention to personal responsibilities for action, collaboration, and support. When using criteria and focusing their thinking, Task-oriented deciders prefer explicit criteria, while People-oriented deciders prefer implicit criteria. Task-oriented individuals tend to drive toward completion and results (investing their energy in systematic implementation) and people-oriented deciders focus on climate creation and creating opportunities for people to grow.

Conclusion

Our work in developing the VIEW Model of Problem Solving Style was based on decades of research and field experience in the areas of cognitive style, learning style, psychological type, and applied creative problem solving. A basic principle of that work is that problem solving is a natural human trait, and that each individual has creative potential. Individuals can move more effectively towards realizing that potential with training, instruction, practice, and self-understanding. We began by exploring the issues surrounding problem-solving style, drawing from an extensive review of the literature. This led to preliminary outlines of our model and to the development of a supporting measure. *VIEW: An Assessment of Problem Solving Style* (Selby, Treffinger, & Isaksen, 2007). Both the VIEW Model, and the assessment, are founded in our work with the CPS process as described by Alex Osborn (1948, 1953) and those who followed in his footsteps.

Individuals engaged in problem solving need to be able to work through the three main components (gaining clarity, producing ideas, and preparing for action) by working through such stages as gathering data, framing the problem, identifying and refining promising solution or options, and devising a plan of action which will address the challenge (Treffinger, Isaksen, & Stead- Dorval, 2006). They will also use various tools and techniques to generate and focus their ideas and thinking. Effective problem solvers need to be able to use any of these tools and techniques, and work through the appropriate components and stages of the process. They should believe that they can do so successfully and effectively. There is no specific way for applying the process, people can, and will, use the components, stages, and tools in ways that are unique to them, and still be effective. One style does not mean that a person cannot generate ideas, and another does not mean that thinking cannot be focused. But, by understanding their individual style, people can learn to engage in the entire process, or employ appropriate tools and techniques, in ways that are most effective for them.

The three dimensions of VIEW were selected deliberately because they reflected our combined understanding of problem-solving style. Each dimension efficiently and

practically brings together important constructs from a wide variety of theoretical approaches. We found that these three dimensions could easily be the basis for meaningful individual and group feedback, feedback that be managed and used constructively. Each dimension is based on our research and experience and reflects the ways in which people act when engaged in any problem-solving process. We also noted that the strength of a specific preference varies from individual to individual. For some one style may be very clear, and well defined. For others that same style may be more moderate. To aid individuals in gaining an understanding of their unique style we developed an assessment instrument to represent the six styles of the VIEW model in a practical, operational manner. The VIEW Model can provide a meaningful foundation that can enable individuals to gain greater self-understanding, and to help teams and organizations become more effective and efficient.

One important consideration in our development of an assessment problem-solving style was the extent to which the measure should be conceptually focused not only on style, but include a specific creative process framework within its scope. We have found that different VIEW styles have clear preferences for various aspects and tools of CPS (e.g. Isaksen & Geuens, 2007), but this does not mean that VIEW is a direct measure of process. We have observed that some other style measures link their assessment to a specific creative process framework (Basadur & Basadur, 2011; Basadur, Graen & Wakabayashi, 1990; Puccio, 1999; Puccio, Wheeler & Cassandro, 2004) implying that style should be conceptually integrated with a particular description of the creative process.

The challenge with these approaches is that they may confound measurement, and there is a danger that individuals get the idea that they are only competent in one part of the creative process.

Regardless of their preferred style, problem solvers need to be able to productively approach all stages and aspects of any particular model of the creative process. Some researchers have argued that process should remain distinct from elements of style and level (De Ciantis & Kirton, 1996; Hayes & Allison, 1998). The value of keeping these distinct is that individuals can and do apply cognitive strategies that are less

congenial to their preferred approaches (Dane, Pratt, Baer & Oldham, 2011; Messick, 1984). This sort of coping behavior may be sustained by motivation and the perception of the importance of the task at hand. The amount of energy an individual puts into this coping behavior could be minimized by learning and applying alternative creative thinking strategies, tools, and techniques. Problem-solving style could be a useful tool for metacognitive monitoring, control, and modification of problem-solving strategies (Flavell, 1979).

Another practical implication of the style-process distinction may apply when individuals must collaborate and work together creatively and cooperatively. When working in groups and teams, it may be possible for problem-solving style to play a supportive role in social metacognition (Frith & Frith, 2012; Jost, Kruglanski & Nelson, 1998). For example, if individuals were aware of their preferences when working together on a creative problem-solving task, they could arrange their work so that the individuals with the appropriate style preferences could take the lead on the elements of the task with the most congenial fit. Some experimental research supports this assertion (e.g. Main, Delcourt, & Treffinger, 2019). The potential benefit of this sort of coverage should also be the subject of further research and should be linked with the emerging concept of social metacognition.

References

Allport, G. W. (1937). *Personality: A psychological interpretation*. New York: Hold & Co,

Albert, R. S., (Ed.). (1983). Genius and eminence: The social psychology of creativity and exceptional achievement. New York: Pergamon.

Alter, C. E. (2000). *Creativity styles and personality characteristics*. (Unpublished dissertation) New York: Fordham University, Graduate School of Education.

Armstrong, T. (1987). *In their own way: Discovering and encouraging your child's personal learning style*. Los Angeles: Jeremy P. Tarcher, Inc.

Armstrong, T. (1994). *Multiple intelligences in the classroom*. Alexandria, VA: Association for Supervision and Curriculum Development.

Armstrong, T. (1998). *Awakening genius in the classroom*. Alexandria, VA: Association for Supervision and Curriculum Development.

Bandura, A. (1969). Social learning theory of identificatory processes. In D. A. Goslin (Ed.), *Handbook of socialization theory and research* (pp. 213-262). New York: Rand McNally.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*, 1-26.

Bandura, A. (2018). Toward a psychology of human agency: Pathways and reflections. *Perspectives on Psychological Science, 13*, 130-136.

Basadur, M.S., & Basadur, T. (2011). Where are the generators? *Psychology of Aesthetics, Creativity, and the Arts, 5,* 29–42.

Basadur, M.S., Graen, G.B., & Wakabayashi, M. (1990). Identifying individual differences in creative problem solving style. *Journal of Creative Behavior, 24*, 111–131.

Basadur, M, & Hausdorf, P. (1996). Measuring divergent thinking attitudes related to creative problem solving and innovation management. *Creativity Research*

Journal, 9, 1, 21-32.

Basadur, M. & Head, M. (2001). Team performance and satisfaction: a link to cognitive style within a process framework. *Journal of Creative Behavior, 35*, 227-248.

Bayne, R. (1995). *The Myers-Briggs Type Inventory: A critical review and practical guide*. London: Chapman and Hall.

Brooks, J. & Brooks, M. (1993). *The case for constructivist classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.

Caplan, R. D., & Harrison, R. V. (1993). Person-environment fit theory: Some history, recent developments, and future directions. *Journal of Social Issues, 49*, 253-275.

Carne, G. C., & Kirton, M. J. (1982). Styles of creativity. Test-score correlations between the Kirton Adaption-Innovation Inventory and the Myers-Briggs Type Indicator. *Psychological Reports, 50*, 31-36.

Cattell, R. B., Eber, H. W., & Tatsuoka, M. M. (1970). *The handbook for the Sixteen Personality Factor Questionnaire*. Champaign, IL: Institute for Personality and Ability Testing.

Cattell, R. B., & Gibbons, B. D. (1968). Personality factor structure of the combined Guilford and Cattell personality questionnaires. *Journal of Personality and Social Psychology, 9*, 107-120.

Chiu, M. M., & Kuo, S. W. (2009). From metacognition to social metacognition: Similarities, differences, and learning. *Journal of Educational Research, 3*, 1-19.

Corbett-Whittier, C. (1986). The relationship of learning style preferences by high school gifted students on the Torrance Tests of Creative Learning. Unpublished master's thesis, Buffalo State College, Buffalo, NY.

Costa, P. T. & McCrae, R. R. (1985). Concurrent validation after 20 years: Implications of personality stability for its assessment. In J. N. Butcher & C. D, Spielberger (Eds.), *Advances in personality assessment* (Vol. 4, pp. 31-54). Hillsdale, NJ: Lawrence Erlbaum.

Costa, P. T., & McCrae, R. R. (1992). Four ways five factors are basic. *Personality and*

Individual Differences, 13, 653-665.

Costa, P. T. & McCrae, R. R. (1995). Primary traits of Eysenck's P-E-N system: Three and five factor solutions. Journal of Personality and Social Psychology, 69, 308-317.

Carne, G. C., & Kirton, M. J. (1982). Styles of creativity. Test-score correlations between the Kirton Adaption-Innovation Inventory and the Myers-Briggs Type Indicator. *Psychological Reports, 50*, 31-36.

Crawford, R. P. (1937). *Think for yourself*. New York: McGraw-Hill.

Dane, E., Pratt, M.G., Baer, M., & Oldham, G.R. (2011). Rational versus intuitive problem solving: How thinking off the beaten path can stimulate creativity. Psychology of Aesthetics, Creativity, and the Arts, 5, 3–12.

Deci, E. L., Olafson, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior, 4*, 19-43.

Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology, 49*, 14-23.

De Ciantis, S.M., & Kirton, M.J. (1996). A psychometric reexamination of Kolb's experiential learning cycle construct: A separation of level, style, and process. *Educational and Psychological Measurement, 56*, 809–820.

Dewey, J. (1910). *How we think*. Boston: D. C. Heath.

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology, 41*, 417-440.

Dillon, R. (Ed.), (1985). *Individual differences in cognition - volume two*. Orlando, FL: Academic Press. Dillon, R., & Schmeck, R. (Eds.), (1983). *Individual differences in cognition - volume one*. Orlando, FL:

Academic Press.

Damasio, A. (2005). *Descartes' error: Emotion, reason, and the human brain*. New York: Basic Books.

Dewey, J. (1910). *How we think*. Boston: D. C. Heath.

Dorval, K. (1990). *The relationships between level and style of creativity and imagery*. Unpublished master's thesis, Center for Studies in Creativity at Buffalo State College, Buffalo, NY.

Dunn, R. (1984). How should students do their homework? *Research vs. opinion. Early Years/K-8*, 15 (4), 43-45.

Dunn, R., Beaudry, J. & Klavas, A. (1989). Survey of research on learning styles. *Educational Leadership*, 46, 6, 50-58.

Dunn, R., & Dunn, K. (1978). *Teaching students through their individual learning styles: A practical approach*. Englewood Cliffs, NJ, Prentice-Hall.

Dunn, R, Dunn, K. & Price, G. (1991) *Productivity Environmental Preference Survey*. Lawrence, KS: Price Systems, Inc.

Dunn, R, Dunn, K. & Price, G. (1993) *Learning Style Inventory*. Lawrence, KS: Price Systems, Inc.

Dunn, R., Dunn, K. & Treffinger, D. J. (1992). *Bringing out the giftedness in your child*. New York: John Wiley & Sons.

Dutcher, A. J. (1997). *Understanding the relationship of vision to creative climate and leadership practices*. Unpublished master's thesis, Center for Studies in Creativity at Buffalo State College, Buffalo, NY.

Edwards, J. R. (2008). Person-environment fit in organizations: An assessment of theoretical progress. *Academy of Management Annals, 2*, 167-230.

Edwards, J. R., Caplan, R. D., & Van Harrison, R. (1998). Person-environment fit theory: Conceptual foundations, empirical evidence, and directions for future research. In C. L. Cooper (Ed.), *Theories of organizational stress* (pp. 28-67). Oxford: Oxford University Press.

Eysenck, H. J. (1947). *Dimensions of personality*. London: Routledge & Kegan Paul.

Eysenck, S. B. G., & Eysenck, H. J. (1963). On the dual nature of extraversion. *British Journal of Social and Clinical Psychology, 2*, 46-55.

Eysenck, H. J. & Eysenck, S. B. G. (1991). *Manual of the Eysenck Personality Scales (EPS*

Adult). London: Hodder & Stoughton.

Feist, J., Feist, G. J., & Roberts, T-A. (2018). *Theories of personality* (9th ed.). New York: McGraw- Hill.

Flavell, J. H. (1979). Metacognition and cognitive monitoring. *American Psychologist, 34*, 906-911. Flavell, J. H. (2004). Theory of mind development: Retrospect and prospect. *Merrill-Palmer Quarterly, 50*, 274-290.

Franklin, J. (1997). *A study of the relationship between cognitive style of creativity and the characteristics of creative products*. Unpublished master's thesis, Center for Studies in Creativity at Buffalo State College, Buffalo, NY.

Frawley, W. (1997). *Vygotsky and cognitive science: Language and the unification of the social and computational mind*. Boston: Harvard University Press.

Frith, C.D., & Frith, U. (2012). Mechanisms of social cognition. *Annual Review of Psychology, 63*, 287–313.

Fredrickson, B. L. (2013). Positive emotions broaden and build. *Advances in Experimental and Social Psychology, 47*, 1-53.

Fredrickson, B. L. & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science, 13*, 172-175.

Fredrickson, B. L., & Joiner, T. (2018). Reflections on positive emotions and upward spirals. *Perspectives on Psychological Science, 13*, 194-199.

Goldberg, L. R. (1992). The development of markers for the big-five factor structure. *Psychological Assessment, 4*, 26-42.

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist, 48*, 26- 34.

Goldsmith, R. E. (1994). Creative style and personality theory. In: M. J. Kirton (Ed.). *Adaptors and innovators: Styles of creativity and problem solving*. (pp. 34-50). London, Routledge.

Gough, H. G. (1964). *The California Psychological Inventory manual*. Palo Alto, CA: Consulting Psychologists Press.

Gough, H. G. & Bradley, P. (1996). *CPI Manual (3rd ed.)*. Palo Alto, CA: Consulting Psychologists Press.

Gregorc, A. F. (1979). *Gregorc Style Delineator: A self-assessment instrument for adults*. Columbia, CT: Gregorc Associates, Inc.

Gregorc, A. F. (1985). Matching teaching and learning styles. *Theory into Practice, 23* (1), 51-55.

Gryskiewicz, S. S. (1982). *Creative leadership development and the Kirton Adaption-Innovation Inventory*. Paper presented at the British Psychological Society Conference.

Gryskiewicz, N. & Tullar, W. L. (1995). The relationship between personality type and creativity style among managers. *Journal of Psychological Type, 32*, 30-35.

Guilford, J. P. (1959). *Personality*. New York: McGraw-Hill.

Guilford, J. P. (1975) Factors and factors of personality. *Psychological Bulletin, 82*, 802-814.

Guilford, J. P. (1977). Will the real factor of extraversion-introversion please stand up? A reply to Eysenck. *Psychological Bulletin, 84*, 412-416.

Guilford, J. P. (1980). Cognitive styles: What are they? *Educational and Psychological Measurement, 40*, 715-735.

Guilford, J. P. (1986). *Creative talents: Their nature, uses and development*. Buffalo, NY: Bearly Limited.

Guilford, J. S., Zimmerman, W. S., & Guilford, J. P. (1976). *The Guilford Zimmerman Temperment Survey Handbook: Twenty-five years of research and application*. Orange, CA: Sheridan Psychological Services.

Gurven, M., von Rueden, C., Massenkoff, M., Kaplan, H., & Vie, M. L. (2013). How universal is the big five? Testing the five-factor model of personality variation among forager-farmers in the Bolivian amazon. *Journal of Personality and Social Psychology, 104*, 354-370.

Hadamard, J. (1945). *An essay on the psychology of invention in the mathematical*

field. Princeton, NJ: Princeton University Press.

Harmin, M. (1994). *Inspiring active learning: A handbook for teachers*. Alexandria, VA: Association for Supervision and Curriculum Development.

Hayes, J.R., & Allison, C.W. (1998). Cognitive style and the theory and practice of individual and collective learning in organizations. *Human Relations, 51*, 847–871.

Hilgersom-Volk, K. (1987). Celebrating students' diversity through learning styles. *OSSC Bulletin*, 30, 9.

Holmes, K. (1995). Profiling creativity: An innovator's pathway. Unpublished master's project. Center for Studies in Creativity, Buffalo State College, Buffalo, NY.

Houtz, J., Selby, E. Esquivel, G. Okoye, R., Peters, K., & Treffinger, D. (2003a). Comparison of two creativity style measures, *Perceptual and Motor Skills, 96*, 288-296.

Houtz, J., Selby, E. Esquivel, G. Okoye, R., Peters, K., & Treffinger, D. (2003b). Creativity styles and personal type, *Creativity Research Journal. 15(4)*, 321-330.

Howard, P. J. & Howard, J. M. (1995). The big five quickstart: An introduction to the five-factor model of personality for human resource professionals. (Available on-line at http://www.centacs.com/quickstart.htm#background).

Hurley, C. (1993). *The relationship between Kirton Adaption-Innovation style and the use of Creative Problem Solving*. Unpublished master's thesis, Center for Studies in Creativity, Buffalo State College, Buffalo, NY.

IPAT (1979). *Administrator's Manual for the 16PF*. Champaign, IL: Institute for Personality and Ability Testing

Isaksen, S. (Ed.), (1987). *Frontiers of creativity research: Beyond the basics*. Buffalo, NY: Bearly Limited.

Isaksen, S. G. (1995). *The progress and potential of the level-style distinction: Implications for research and practice*. Paper presented at the British Psychological Society Occupational Research Conference, University of Warwick, UK.

Isaksen, S. G. (2004). The progress and potential of the creativity level-style

distinction: Implications for research and practice. In: W. Haukedal & B. Kuvas, (Eds.). *Creativity and problem solving in the context of business management.* (pp. 40-71). Bergen, Norway: Fagbokforlaget.

Isaksen, S. G. (2009). Exploring the relationship between problem-solving style and creative psychological climate. In P. Meusburger, J. Funke, & E. Wunder (Eds.), *Milieus of creativity: An interdisciplinary approach to spatiality of creativity* (pp. 169-188). Dordrecht: Springer Science.

Isaksen, S. G. (2012). VIEW's foundations in personality. *Creative Learning Today, 19* (2), 2-4.

Isaksen, S. G. (2020). Unleashing creative talent in organizations – Linking learning and creativity through creative problem solving. In M. D. Mumford, & E. M. Todd (Eds.), *Creativity and innovation in organizations* (pp. 345-398). New York: Routledge.

Isaksen, S. G., & Aerts, W. (2011). Linking problem-solving style and creative organizational climate: An exploratory interactionist study. *International Journal of Creativity and Problem Solving, 21*(2), 7-38.

Isaksen, S. G., Babij, B. J., & Lauer, K. J. (2003). Cognitive styles in leadership practices: Exploring the relationship between level and style. *Psychological Reports, 93*, 983-994.

Isaksen, S. G., & DeSchryver, L. (2000). Making a difference with CPS: A summary of the evidence. In: S. G. Isaksen (Ed.). *Facilitative leadership: Making a difference with CPS*. (pp. 187-249). Dubuque, IA: Kendall/Hunt.

Isaksen, S. G. & Dorval, K. B. (1993). Toward an improved understanding of creativity within people: The level-style distinction. In: S. G. Isaksen, M. C. Murdock, R. L. Firestien, & D. J. Treffinger (Eds.). *Understanding and recognizing creativity: The emergence of a discipline*. (pp. 299-330). Norwood, NJ: Ablex.

Isaksen, S., Dorval, K., & Kaufmann, G. (1992). Mode of symbolic representation and cognitive style. *Imagination, Cognition and Personality*, 11, 271-277.

Isaksen, S. G., Dorval, K. B., & Treffinger, D. J. (2011). *Creative approaches to problem*

solving: A framework for innovation and change (3rd ed.). Los Angeles: SAGE.

Isaksen, S. G., & Geuens, D. (2007). An exploratory study of the relationship between an assessment of problem-solving style and creative problem solving. *The Korean Journal of thinking and Problem Solving, 17*, 5-26.

Isaksen, S., & Kaufmann, G. (1990). Adaptors and innovators: A discriminant analysis of the perceptions of the psychological climate for creativity. *Studia Psychologica, 32*, 129-141.

Isaksen, S. G., Kaufmann, A. H., & Bakken, B. T. (2016). An Examination of the personality constructs underlying dimensions of creative problem-solving style. *Journal of Creative Behavior, 50*, 268-281.

Isaksen, S., & Lauer, K. (1999). Relationship between cognitive style and individual psychological climate: Reflections on a previous study. *Studia Psychologica*, 41, 177-191.

Isaksen, S., Lauer, K., & Wilson, G. (2003). An examination of the relationship between personality type and cognitive style. *Creativity Research Journal, 15*, 343-354.

Isaksen, S., & Pershyn, G. (1994). Understanding Natural Creative Process using the KAI. *KAI International*, 3, 5.

Isaksen, S., & Puccio, G. (1988). Adaption-innovation and the Torrance Tests of Creative Thinking: The level-style issue revisited. *Psychological Reports, 63*, 659-670.

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

Isaksen, S. & Treffinger, D. (1991). Creative learning and problem solving. In: Costa, A (Ed.). *Developing minds - a sourcebook for teaching thinking; Volume II: the programs*. Alexandria, VA: ASCD.

Isaksen, S., & Treffinger, D. (2004). Celebrating 50 years of reflective practice: Versions of creative problem solving. *Journal of Creative Behavior, 38* (2), 75-101.

Jacobson, C.M. (1993) Cognitive styles of creativity: Relations of scores on the Kirton

Adaption- Innovation Inventory and the Myers-Briggs Type Indicator among managers in USA. *Psychological Reports, 72*. 1131-1138

Joniak, A. J., & Isaksen, S. G. (1988). The Gregorc Style Delineator: Internal consistency and its relationship to Kirton's Adaptive-Innovative Distinction. *Educational and Psychological Measurement*, 48, 1043-1049.

Jost, J. T., Kruglanski, A. W., & Nelson, T. O. (1998). Social metacognition: An expansionist review. *Personality and Social Psychology Review, 2*, 137-154.

Jung, C. G. (1923). Psychological types. (H. B. Baynes, Trans.). New York: Harcourt, Brace.

Jung, C. G. (1971). *The portable Jung*. (R. F. C. Hull, Trans.). NY: Viking.

Kagan, J., & Kogan, N. (1970) Individual variation in cognitive processes. In: P. H. Mussen (Ed.), *Carmichael's Manual of Child Psychology* (3rd ed.), (pp 230-267). New York: Wiley.

Kaufmann, G., Isaksen, S., & Lauer, K. (1996). Testing the Glass Ceiling effect on gender differences in upper level management: The case of innovator orientation. *European Journal of Work and Organizational Psychology*, 5, 29-41.

Kirton, M. J. (1961). *Management initiative*. London: Action Society Trust.

Kirton, M. J. (1976). Adaptors and innovators: A description and measure. *Journal of Applied Psychology*, 61, 622-629.

Kirton, M. J. (1987). Cognitive Styles and creativity. In S. G. Isaksen (Ed.), *Frontiers in creativity research: Beyond the basics*. (pp. 282-304). Buffalo, NY: Bearly Limited.

Kirton, M. J. (1999). *Kirton Adaption-Innovation Inventory manual (3rd ed.)*. Berkhamsted, UK: Occupational Research Centre.

Koestler, A. (1964). *The act of creation*. New York: Macmillan.

Kogan, N. (1973). Creativity and cognitive style: A life-span perspective. In P. B. Baltes & K. W. Schaie (Eds.), *Life span development psychology: Personality and socialization* (pp. 145-178). New York: Academic Press.

Kolb, D. (1981). Learning style inventory. "Disciplinary inquiry norms and student

learning styles: Diverse pathways for growth." In A. Chickering (Ed.). *The Modern American College*, San Francisco: Jossey Bass.

Kozhevnikov, M., Evans, C., & Kosslyn, S. M. (2014). Cognitive style as environmentally sensitive individual differences in cognition: A modern synthesis and applications in education, business, and management. *Psychological Science in the Public Interest, 15*, 3-33.

Kristof-Brown, A. L., & Guay, R. P. (2011). Person-environment fit. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology – Volume 3: Maintaining, expanding, and contracting the organization* (pp. 3-50). Washington, DC: American Psychological Association.

Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to Western thought.* New York: Basic Books.

Lawrence, G. (1996). *People types & tiger stripes*. Gainesville, FL: CAPT

Lawrence, G. (1997). *Looking at type and learning styles*. Gainesville, FL: CAPT

Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford: Oxford University Press.

Lazarus, R. S. (1993). Coping theory and research: Past, present, and future. *Psychosomatic Medicine, 55*, 234-247.

Lazarus, R. S. (1999). *Stress and emotion: A new synthesis*. New York: Springer.

Lazarus, R. S., & Smith, C. A. (1988). Knowledge and appraisal in the cognitive-emotion relationship. *Cognition and Emotion, 2*, 281-300.

Lewin, K. (1935). *A dynamic theory of personality*. New York: McGraw-Hill.

Lewin, K. (1951). *Field theory in social science*. New York: Harper Brothers.

MacNair, R. R., & Elliott, T. R. (1992). Self-perceived problem-solving ability, stress appraisal, and coping over time. *Journal of Research in Personality, 26*, 150-164.

Main, L. F., Delcourt, M. B., & Treffinger, D. J. (2019). Effects of group training in problem-solving style on future problem-solving performance. *Journal of Creative Behavior, 53*, 274-285.

Martinsen, O., & Kaufmann, G. (1999). Cognitive style and creativity. In M. A. Runco, & S. R. Pritzker (Eds.), *Encyclopedia of creativity* (Vol. I)(pp. 273-282). New York: Academic Press.

McCrae, R.R. (Ed.). (1992). The five-factor model: Issues and applications (Special issue). *Journal of Personality, 60(2).*

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology,52,* 81-90.

McCrae, R. R., & Costa, P. T. (1997). Personality trait structure as a human universal. *American Psychologist, 52*, 509–516.

McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality, 57*, 17-40.

McCrae, R. R., Terracciano, A., & 78 Members of the Personality Profiles of Cultures Project (2005). Universal features of personality traits from the observer's perspective: Data from 50 cultures. *Journal of Personality and Social Psychology, 88*, 547-561.

McEwen, P. (1986). *Learning styles: Ability and creativity*. Unpublished master's thesis, Buffalo State College, Buffalo, NY.

Mednick, S. A. (1962). The associative basis of the creative process. *Psychological Review, 69*, 220- 232.

Messick, S. (1976). *Individuality in learning: Implications of cognitive styles and creativity for human development*. San Francisco: Jossey-Bass.

Messick, S. (1984). The nature of cognitive styles: Problems and promise in educational practice. *Educational Psychologist, 19*, 59–74.

Messick, S. (1994). The matter of style: Manifestations of personality in cognition, learning and teaching. *Educational Psychologist, 29*, 121-136.

Mumford, M. C., & Gustafson, S. B. (1988). Creativity syndrome: Integration, application, and innovation. *Psychological Bulletin, 103*, 27-43.

Murray, H. A. (1938). *Explorations in personality*. New York: Oxford University Press.

Murray, H. A. (1951). Toward a classification of interaction. In T. Parsons, & E. A. Shils (Eds.), *Toward a general theory of action* (pp. 434-464). Cambridge, MA: Harvard University Press.

Myers, I., & McCaulley, M. (1985). *Manual: A guide to the development and use of the Myers-Briggs Type Indicator.* Palo Alto, CA: Consulting Psychologists Press.

Myers, I. B., McCaulley, M. H., Quenk, N. L, & Hammer, A. L. (1998). *MBTI manual: A guide to the development and use of the Myers-Briggs Type Indicator* (3rd ed.) Palo Alto, CA, Consulting Psychologists Press, Inc.

Norman, W. T. (1963). Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal and Social Psychology, 66*, 574-583.

O'Connor, J. (1945). *Ideaphoria*. Boston: Human Engineering Laboratory.

Ogden, C. K., & Richards, I. A. (1927). The meaning of meaning: A study of the influence of language upon thought and of the science of symbolism. New York: Harcourt, Brace & Co.

Osborn, A. F. (1948). *Your creative power*. New York: Scribners.

Osborn, A. (1953). *Applied imagination: The principles and procedures of creative problem-solving*. NY: Scribners.

Parnes, S. J. (1967). *Creative behavior guidebook*. NY: Scribers.

Parnes, S. (1987). The creative studies project. In S. G. Isaksen (Ed.), *Frontiers in creativity research: Beyond the basics* (pp. 165-188). Buffalo, NY: Bearly Limited.

Parnes, S. J., & Noller, R. B. (1972). Applied creativity: The creative studies project. Part II– Results of the two-year program. *Journal of Creative Behavior, 6*, 164-186.

Parnes, S. J., & Noller, R. B. (1973a). Applied creativity: The creative studies project. Part IV– Personality findings and conclusions. *Journal of Creative Behavior, 7*, 15-36.

Parnes, S. J., & Noller, R. B. (1973b). *Toward supersanity: Channeled freedom*. Buffalo, NY: DOK.

Parnes, S. J., & Noller, R. B. (1974). *Toward supersanity: Channeled freedom. (Research Supplement.)* Buffalo, NY: DOK.

Parnes, S. J., Noller, R. B., & Biondi, A. M. (1977). *A guide to creative action*. NY: Charles Scribner.

Pershyn, G. (1992). *An investigation into the graphic depictions of natural creative problem-solving processes*. Unpublished master's project, Center for Studies in Creativity at Buffalo State College, Buffalo, NY.

Puccio, G. J. (1987). *The effects of cognitive style on problem-defining behavior*. Unpublished master's thesis, Center for Studies in Creativity at Buffalo State College, Buffalo, NY.

Puccio, G.P. (1999). Creative problem solving preferences: Their identification and implications. *Creativity and Innovation Management, 8*, 171–178.

Puccio, G. J., Treffinger, D. J., & Talbot, R. J. (1995). Exploratory examination of relationships between creativity styles and creative products. *Creativity Research Journal*, 8, 157-172.

Puccio, G.P., Wheeler, R.A., & Cassandro, V.J. (2004). Reactions to creative problem solving training: Does cognitive style make a difference? *Journal of Creative Behavior, 38*, 192–216.

Reese, H. W., Treffinger, D. J., Parnes, S. J., & Kaltsounis, G. (1976). Effects of a creative studies program on structure of intellect factors. *Journal of Educational Psychology, 68*, 401-410.

Rogers, C. R. (1962). Toward a theory of creativity. In S. J. Parnes, & H. F. Harding (Eds.), *A sourcebook for creative thinking* (pp. 63-72). New York: Charles Scribner's Sons.

Rossman, J. (1931). *The psychology of the inventor*. Washington: Inventors Publishing.

Rothenberg, A. (1971). The process of Janusian thinking in creativity. *Archives of General Psychiatry, 24*, 195-205.

Runco, M. A., & Albert, R. S. (Eds.), (1990). *Theories of creativity*. Newbury Park, NY: SAGE.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78.

Schoonover, P. (1996). The preference for and use of Creative Problem Solving tools among adaptors and innovators. *Creative Learning Today: Center for Creative Learning Newsletter,* 6, 3, 10-11.

Schultz, D. P., & Schultz, S. E. (2016). *Theories of personality* (11th ed.). Boston: Cengage Learning.

Schraw, G., & Moshamn, D. (1995). Metacognitive theories. *Educational Psychology Review, 7*, 351-371.

Selby, E. C. (1991). *The Kirton Adaption-Innovation Inventory as a tool for assessing problem solving styles in eighth grade students*. Unpublished doctoral dissertation, Walden University, Minneapolis.

Selby, E. C. (1997a) Adaptors and Innovators in the middle school setting. Unpublished presentation to the International Conference: *Understanding and Nurturing Creativity in People*. An international Conference hosted by the Center for Studies in Creativity, Buffalo State College, Buffalo, New York.

Selby, E. C. (1997b). Lucy and Michael: Case studies of creative styles in teenagers. *Creative Learning Today: Center for Creative Learning Newsletter*, 7, 2, 4-6.

Selby, E. C. (2000). Helping gifted children appreciate their problem-solving style. *Parenting for High Potential*, September, 18-22.

Selby, E. C. (2013). A closer look at orientation to change: Three elements. *Creative Learning Today, 19* (4), 4-7.

Selby, E., Shaw, E., & Houtz, J. (2003). Construct validity of VIEW: An assessment of problem solving style. *Creative Learning Today, 12* (3), 4-7.

Selby, E. C., Shaw, E., & Houtz, J. C. (2005). The creative personality. *Gifted Child Quarterly, 49* (4), 300-314.

Selby, E. C., Treffinger, D. J., & Isaksen, S. G. (2007). *Technical manual – VIEW: An*

assessment of problem solving style (3rd ed.) Sarasota, F. Center for Creative learning, Inc.

Selby, E., Treffinger, D., Isaksen, S., & Powers, S. (1993). Use of the Kirton Adaption-Innovation Inventory with middle schools students. *Journal of Creative Behavior, 27* (4), 223-235.

Spearman, C. (1927). *The abilities of man*. NY: Macmillan. Spearman, C. (1931). Creative mind. NY: D. Appleton.

Sternberg, R. J. (1986). *Intelligence applied*. NY: Harcourt Brace Jovanovich.

Sylwester, R. (1995). *A celebration of neurons: An educator's guide to the human brain*. Alexandria, VA: Association for Supervision and Curriculum Development.

Tefft, M. (1990). *A factor analysis of the TTCT, MBTI, and KAI: The creative level style issue re- examined*. Unpublished master's thesis, Center for Studies in Creativity at Buffalo State College, Buffalo, NY.

Tellegen, A. (1982). *Brief manual for the differential personality questionnaire*. Minneapolis: University of Minnesota.

Tellegen, A. (1985). Structures of mood and personality and their relevance to assessing anxiety with an emphasis on self-report. In: A. H. Tuma & J. D. Maser (Eds.). *Anxiety and the anxiety disorders*. (pp. 681-706). Hillsdale, NJ: Erlbaum.

Terman, L. M. (1925). *Genetic studies of genius: Mental and physical traits of a thousand gifted children*. Palo Alto, CA: Stanford University Press.

Thurstone, L. (1927). *The nature of intelligence*. NY: Harcourt, Brace.

Torrance, E. P. (1979). *The search for Satori and creativity*. Buffalo, NY: Creative Education Foundation.

Torrance, E. P. (1987). Teaching for creativity. In S. G. Isaksen, (Ed.) *Frontiers of creativity research: Beyond the basics*. Buffalo, NY, Bearly Limited.

Treffinger, D. J. (2008). *VIEW 2008 Technical Report and Update*. Sarasota, FL: Center for Creative Learning.

Treffinger, D. J. (2009). *VIEW 2009 Technical Report and Update*. Sarasota, FL: Center

for Creative Learning.

Treffinger, D. J. (2010). *VIEW 2010 Technical Report and Update*. Sarasota, FL: Center for Creative Learning.

Treffinger, D. J. & Isaksen, S. G. (2005). Creative problem solving: The history, development, and implications for gifted education and talent development. *Gifted Child Quarterly, 49* (4), 342- 353.

Treffinger, D. J., Isaksen, S. G., & Firestien, R. L. (1983). Theoretical perspectives on creative learning and its facilitation: An overview. *Journal of Creative Behavior, 17*, 9-17.

Treffinger, D. J., Isaksen, S. G., & Stead-Dorval, K. B. (2006). *Creative problem solving: An introduction (4th ed.)*. Waco, TX: Prufrock Press.

Treffinger, D. J., Schoonover, P. F., & Selby, E. C. (2013). *Educating for creativity and innovation*. Waco, TX: Prufrock Press.

Treffinger, D., & Selby, E. (1993). Giftedness, creativity and learning style: Exploring the connections. (In) Milgram, R., Dunn, R., and Price, G. (Eds.). *Teaching and counseling gifted and talented learners for learning styles: An international perspective*. Westport, CT: Praeger.

Treffinger, D. J., Young, G. C., Selby, E. C., & Shepardson, C. A. (2002). *Assessing creativity: A Guide for educators*. Storrs, CT: National Research Center on the Gifted/Talented, University of Connecticut (RM 02170).

Upton, A. (1941). *Design for thinking: A first book in semantics*. Palo Alto, CA: Pacific Books.

Van Vianen, A. E. (2018). Person-environment fit: A review of its basic tenets. *Annual Review of Organizational Psychology and Organizational Behavior, 5*, 75-101.

Vernon, P. E. (1973). Multivariate approaches to the study of cognitive styles. In J. R. Royce (Ed.), *Multivariate analysis and psychological theory* (pp. 125-148). London: Academic Press.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological*

processes. Cambridge: Harvard University Press.

Wallas, G. (1926). *The art of thought*. London: Butler & Tanner.

Ward, T. B., Smith, S. M., & Vaid, J. (Eds.). (1997). *Creative thought: An investigation of conceptual structures and processes*. Washington, DC: American Psychological Association.

Wheeler, J. (1995). *Exploratory study of preferences associated with creative problem solving*. Unpublished master's project. Center for Studies in Creativity, Buffalo State College, Buffalo, NY. Willerman, L. (1979). The psychology of individual and group differences. San Francisco: W. H. Freeman.

Witkin, H. A., Moore, C. A., Goodenough, D. R., & Cox, P. W. (1977). Field dependent and field independent cognitive styles and their educational implications. *Review of Educational Research, 47*, 1–64.

Witkin, H. A., & Goodenough, D. R. (1981). *Cognitive styles: Essence and origins*. Madison, WI: International University Press.

Wittig, C. (1985). *Learning style preferences among third graders high or low on divergent thinking and feeling variables*. Unpublished master's thesis, Center for Studies in Creativity at Buffalo State College, Buffalo, NY.

Wolfe, P. (2001). *Brain matters: Translating research into classroom practice*. Alexandria, VA: Association for Supervision and Curriculum Development.

Zilewicz, E. (1986). *Cognitive styles: Strengths and weaknesses when using CPS*. Unpublished master's project, Center for Studies in Creativity at Buffalo State College, Buffalo, NY.