Insights into the creativity process

John Munro

Personality and motivational theories of creativity

Do particular motivational and other emotionally-related characteristics in children's lives promote adult creativity ? For many years it has been argued that creative individuals are more likely to have experienced particular environments during childhood that lead to the development of personality characteristics that emerge as strategies for coping (Olszewski-Kubilius, 2000). These individuals frequently have

- an ability to cope with high levels of anxiety or tension,
- a well developed ability to use intellectual activities to fulfill emotional needs
- freedom from conventionality, and
- a preference for solo working and for spending time alone.

These conditions are often linked with stress in the family.

Personality and motivational theories of creative achievement

Personality and motivational attributes of an individual are more important than cognitive or affective elements for discriminating creative achievement from other individuals; ".. geniuses and innovators... share an unwillingness or inability to strive for goals everyone else accepts-their refusal to live by a presented life theme." (Csikszentmihalyi, 1985, p. 114). "After a certain point, levels of ability play a less important role than personality and motivational factors." (Winner , 1996, p. 283). Ochse (1993) says, "It is consistently recognized that the creators most salient characteristic is persistent motivation."(p. 133). Many gifted children don't become creative adults (Subotnik & Steiner, 1994), not because they lack the intellectual capacity or opportunity but because of their environmental conditions. The families of creative achievers often have

- tense family relationships, and are more likely to have parental dysfunction or parental loss and
- unconventional parenting and socialization practices (Albert , 1978).

Family conditions lead to a motivation to obtain power, which results in creativity. There are two aspects or qualities of family status that you need to look at : these are

- the socioeconomic status (SES), which determines the resources such as money and parental time available in the family for talent development (Albert, 1994, Olszewski-Kubilius, Kulieke & Buescher, 1987); more resources typically allow for greater support for talent development.
- marginality, the degree to which the family is separated or isolated from the social context of its neighbourhood (Albert, 1994) and may be due to race or ethnicity, SES, or religion. It can free families from a preoccupation with status and convention (socially sanctioned ways of doing things).

Families low in both socio-economic status and marginal see the traditional routes to success and achievement as less accessible (Albert, 1994), They are more likely to

- encourage their children to make optimal use of early talent, or
- ignore societal conventions and participate in groups with which they identify and that support them socially (Ogbu, 1992).

Characteristics of the Child that create stress, alter family interactions and determine the context for talent development:

- birth order; creative individuals are more likely first borns (Olszewski-Kubilius et al, 1987).
- gender affects fostering of talent (Arnold, Noble & Subotnik, 1996); usually males (Albert, 1980).
- physical disabilities create dynamics in the family which can develop talent by resulting in a child
  - pursuing a talent due to a preference for solitude with further opportunities for acquiring skills and knowledge.
  - turning inward to fantasy for problem solving and coping, facilitating creativity (Ochse, 1993).
  - feeling free psychologically from parents, leading to a unique identity, a critical component of the creative personality (Albert, 1994) .
  - feeling motivated to achieve at a high level to gain attention and admiration (Ochse, 1993).

Stress Eminent individuals had a variety of stressful circumstances as children:

- parental loss (3x more than average and equal to that of juvenile delinquents, Albert, 1983);
- stem discipline;
- rejection by parents or other children;
- overprotection;
- loneliness;
- loss of a sibling;
- insecurity due to poverty, parental neglect, or dysfunction;
- physical disabilities or deformities (Ochse, 1993), and
- parental conflict (Koestner, Walker, and Fichman, 1999).

How does stress in childhood affect the development of creativity?

disruptive dysfunctional parental relationships

↓

childhood stress, anxiety (Homey, cited in Ochse, 1993)

↓

- reduce parent - child bonds
- withdraw, seek self sufficiency and independence in more controllable situations, solo intellectual activities, prefer time alone
- give greater latitude to follow own destiny, free from conventionality, create an identity different, from parent's, and pursue novel and unconventional paths
- willing or tolerant to be different in adulthood (Albert)
- ability to cope with tension and marginality and seek it (Gardner, 1994)

↓

creative adults (Ochse, 1993), allow intense emotions, solace and relief to be expressed (Piirto, 1992)

Talented children who experience stress don't always become creative adults. Different types of lead to different outcomes (Therival, 1999a). Contexts which elicit antagonism, such as parental or teacher domination or abuse, typically lead to creativity that is directed to lifestyle and mannerisms, but not substantive work. Rhodes (1997) distinguishes between D-Creativity and B-Creativity.

D-Creativity	B-Creativity
creativity due to low acceptance, love and respect may initially exist, due to childhood environmental circumstances, can turn into B-Creativity	creativity following intrinsic motivation, emotional needs are met, healing occurs, and skill in "controlling both the symbol systems used for expression and the environment

Characteristics of Creative Individuals These people

- prefer time alone and spent a lot of time alone as children (Ochse, 1993). They have time to read a lot (Simonton, 1994) practice, or acquire skills relevant to the talent area (Winner, 1996). Reduced opportunity to spend time alone during adolescence restricts talent development and developing strategies for handling anxiety during adolescence (Csikszentmihalyi, Rathunde, and Whalen, 1993).

- develop a rich fantasy life; they have fewer peers with whom to play and exceptional imaginational capacities (McGurdy, as cited in Albert, 1983) and learn to use of imagery and visualization techniques to solve complex intellectual problems.

- can endure high levels of anxiety, tension and marginality (Simonton 1994: Gardner, 1994), asynchrony (Gardner, 1994)), risk taking (Gardner (1994, Simonton, 1992), or discordance (Feldman, 1994) and dissatisfaction with the status quo (Gardner, 1994). They can handle tension well because of:

    - being marginalised from their social groups due to their race, religion, socio-economic status, or work;

    - asynchrony due to disparities between their abilities in different areas

    - discordances due to less than optimal conditions in the environment for talent development e.g. the lack of supportive conditions within the family;

    - marginality re the field because one is working; two seemingly disparate fields or on the cutting edge of a field; and

    - risk taking when pursuing ground breaking work or expert critique and review of one's work.

- seek pleasure by reducing or anticipating tension. They find that challenging tasks lead to reduced tension and pleasure. They prefer high levels of tension and anxiety (Gardner, 1994).

- tend to pursue their own interests and may pursue unusual occupations because they are not interested in societal conventions. They tolerate mistake and may desire to be different and stir up the status quo (Albert, 1994).

- are highly motivated to achieve because their intellectual and creative activities fulfill a basic emotional need that stems from childhood stresses. They engage in the activities to

    - avoid the stressful circumstances; the engagement is emotionally soothing (Ochse, 1993) .

    - make up for childhood loss or rejection through achievements that bring respect or attention from others or power over others (Simonton, 1994).

- balance social injustice experienced in childhood by using one's work or career . This way of coping has three main components:

    - an unconscious belief that you control your destiny and your own resources are sufficient to cope with any situation,
    - a focus on the world outside oneself so that frustrations and one's own desires have less of a chance of being disruptive, and
    - an ability to find new solutions by identifying or removing obstacles or setting new goals.

Childhood stress and trauma are not necessary for creativity (Csikszentmihalyi, 1993; Therival, 1999a); a balance of support and tension within the family is conducive (Csikszentmihalyi , 1993). Studies have not identified balanced families and focused on dysfunctional families. Balanced family contexts are both

integrated (members are connected and support one another); this --> well adjusted, competent individuals neither necessarily creative or talented	and	differentiated (parental high expectations that individual children would develop their talents); this --> development of talent.

Inborn talent or the desire to overcome personal tragedy and disability might explain the development of eminent individuals who do not have supportive families. High levels of talent may require the motivation of childhood stress and unmet psychological needs while other levels of talent result from a more balanced blend of tension and support.

Therival's (1999a) model includes genetic endowment (G), parental or other confidence building assistances (A), and misfortunes (M). Creativity can develop in individuals who experience great misfortunes, as long as there are assistances present. He distinguishes between

dedicated creators (high level of genetic endowment, many assistances in youth, no major misfortunes)	<->	challenged creators (high genetic endowment, some assistances, some misfortunes), more driven to prove themselves and to get recognition (Therival, 1999b)

Some children who experience traumatic events turn to achievement while others to crime and delinquency due to

- constitutional factors; some individuals can withstand more stress.

- access to support or assistance in one's life. Strong support, from an extended family or siblings, may make a tragedy disturbing, not devastating, and highly motivating. Families of creative individuals have more disharmony and tension, but are also well ordered, structured, and organized and partially buffer stress (Olszewski-Kubilius et al, 1987).

Individuals both reject societal traditions and conventions and seek approval and acceptance of their work from others. Childhood conditions may point to one of the characteristics over the others but all are present at some minimal level in creative producers. Examples of these are as follows:

childhood conditions	individual characteristics
foster a high ability to cope with tension and marginality but do not motivate using intellectual activities to satisfy emotional needs	individuals able to take risks and produce novel, path breaking work, but erratic, inconsistent, and lack focus.
foster freedom from conventionality	individuals produce novel work but do not care whether it is accepted by others
creative production and intellectual pursuits meet emotional needs, but childhood conditions did not support a high ability to cope with tension or marginality or freedom from conventionality	high achievers but not necessarily creative, not prepared to take the big risks, intellectually or socially, or bear the criticism, offered by their colleague

The Primacy of Motivation in Creativity In the theory of the motivated mind (Rea, 2001), the potential for giftedness is due to the interaction of intelligence, creativity, and achievement motivation. It offers a complex-adaptive system's version of Renzulli's (1978, 1986) conception of giftedness by transforming the static intersection of the three rings into an emergent spiral of talent development that has the capacity to evolve and maximize its adaptability (Langton, 1992; Lewin, 1992; Kauffman, 1991, 1995). Under suitable conditions, the three interacting elements can self organize at a higher systems level and show emergent and adaptive properties not reducible to the individual elements (Langton, 1992; Lewin, 1992; Kauffman, 1991, 1995; Waldrop, 1992).

The motivated-mind theory --> the roots of creativity are not in the mental mechanisms of convergent or divergent thinking but in the motivational dynamics of the personality (Amabile, 1996; Csikszentmihalyi, 1996; Hudson, 1966; Rea, 2000a). Extraordinary mental accomplishments require extraordinary achievement motivation (Bloom, 1985; Terman & Oden, 1959). Many students do not fully evolve their giftedness because they do not know how to maximize their motivated minds. The primary problem of the underdevelopment of talented students (Baum, Renzulli, & Herbert, 1994; Silverman, 1993) is a lack of appropriate motivation (Csikszentmihalyi et al., 1993; Whitmore, 1986).

The theory identifies two contrasting but complementary aspects of achievement motivation, that activate and drive the mental functioning of creativity; serious-mindedness and fun-mindedness. The more often students experience the complex motivation of serious fun, the more likely they will develop the enhanced capacity of creative intelligence (Csikszentmihalyi et al., 1993; Rea, 2000a).

Intelligence and creativity are complex-- interdependent aspects of a unitary form of mental functioning (Cropley, 1994, 1999; Haensly & Reynolds, 1989; Rea 2000a). Both are necessary but insufficient to explain how the other. Theories of creativity that neglect either the intelligent or motivational aspects of creativity are insufficient (Amabile, 1996; Cropley, 1994, 1999; Haensly & Reynolds, 1989: Hudson, 1966

Students' motivated minds comprise two co-evolving psychological subsystems (Finke & Bettle, 1996; Oakerman, 1997; Rea, 1997; Stacey, 1996) that represent complementary but contrasting ways of expressing the interaction of intelligence, creativity, and achievement motivation:

- cold-order thinking expressed as serious intelligence and
- hot-chaotic thinking expressed as fun creativity.

When these subsystems become fully differentiated and integrated, students develop a capacity for fluid-adaptive thinking, a serious-fun experience of creative intelligence that leads to giftedness (Csikszentmihalyi, 1996; Csikszentmihalyi, Rathunde, & Whalen, 1993; Rea, 2000a). Students are playfully creative at times and seriously intelligent at others.

• Motivationally, cold-ordered thinking is serious, deliberate, calm (anxiety-avoidance), work-oriented, goal-directed (Apter, 1982, 1989; Finke & Bettie, 1996; Rea, 2000a). • Mentally, it is convergent, literal, analytical, deductive, and critical (Finke & Bettle, 1996; Weaver & Prince, 1990). • serious-intelligent thinking, enables students to clearly define, solve, and evaluate close-ended problems for single-best solutions. • Stimulates and provides the means for attaining serious mastery of fun challenges for talent-related activities (Rea, 2000a). • People specialized in sciences such as physics, chemistry, engineering, and mathematics appear to prefer and excel it (Hudson, 1966).	• Motivationally hot-chaotic thinking is fun, spontaneous, exciting, playful, and activity-involved (Apter, 1982, 1989; Finke & Bettle, 1996; Rea, 2000a). • Mentally, it is divergent, imaginative, holistic, inductive, and speculative (Finke & Bettle, 1996; Weaver & Prince, 1990). • fun-creative thinking, enabling students to find good problems and to explore multiple solutions for open-ended problems. • Stimulates and provides the means for seeking and exploring fun challenges for talent-related activities (Finke & Bettle, 1996; Rea, 2000a). • People specialized in arts such as poetry, acting, painting, and music appear to prefer and excel in this style of thinking (Hudson, 1966).

Evidence of this complexity :

- eminent scientists and artists show complex personalities and thinking processes (Csikszentmihalyi (1996, pp. 59-63). During productive creativity, they can fully integrate opposites such as playfulness vs discipline, imagination vs rooted sense of reality, and divergent vs convergent thinking.

- most original scientists "possesses some of the divergent qualities of the artist" and the most successful artist "enjoys some of the rigour and dedicated single-mindedness of the scientist" (Hudson, 1966 p. 110).

- military officers-identified as both highly intelligent and highly creative can intelligently inhibit their impulses as well as to creatively use their impulses in order to achieve required goals (Barron , 1968, pp. 222-223) .

- related but not as highly integrated, young children, identified as both highly intelligent and highly creative, were capable of both control and freedom, serious adult like and playful child-like kinds of behavior, and convergent and divergent modes of thinking (Wallach & Kogan, 1965, pp. 303, 316).

integrating the differentiated capacities for playful creativity and serious intelligence	--->	the emergence of a higher level of adaptability and giftedness; more complex capacity for giftedness	-->	fluid-adaptive thinking

fluid-adaptive thinking is the continuous interplay of creative problem finding and intelligent problem solving that leads to adaptive solutions for ill-defined problems, the balanced interaction of fun-challenge seeking and serious-mastery attainment that optimizes talent development. It is

- motivationally inspiring, engaging, captivating, absorbing, and flowing (Csikszentmihalyi, 1975, 1988, 1996; Csikszentmihalyi et al., 1993).

- mentally transformative, metaphorical, abductive and insightful (Haensly & Reynolds, 1988; Holland, 1998; Prawat, 1999; Weaver & Prince, 1990).

fluid-adaptive thinking is a serious-fun experience of creative intelligence	
motivational aspect serious -fun balance of the spontaneity of fun and the rigidity and purpose of seriousness give direction to fun's meandering (Rathunde & Csikszentmihayi, 1993; Rea, 2000a; Wassermann, 1992).	***mental*** aspect, creative intelligence intelligence <-balanced interplay--> creativity (Cropley, 1994, 1999; Haensly & Reynolds, 1989; Rea 2000a); it combines short-term adaptability of convergent processing + long-term adaptability of divergent processing. • serious intelligence without fun creativity ---> constricted thinking • fun creativity without serious intelligence ---> uncontrolled speculation (Rea, 2000a; Weaver & Prince, 1990). Balanced interplay --> criticalness of intelligence counterbalances creativity's unbridled speculation.

The mental mechanisms of creativity and intelligence are self-regulated by the complex motivations of serious fun. Contemporary theories of motivation note the influence of serious effort in the self-regulation of mental processes but neglect spontaneous fun. Both are necessary for optimal self-regulation (Csikszentmihalyi, 1996; Rathunde & Csikszentmihayi, 1993; Rea, 2000a).

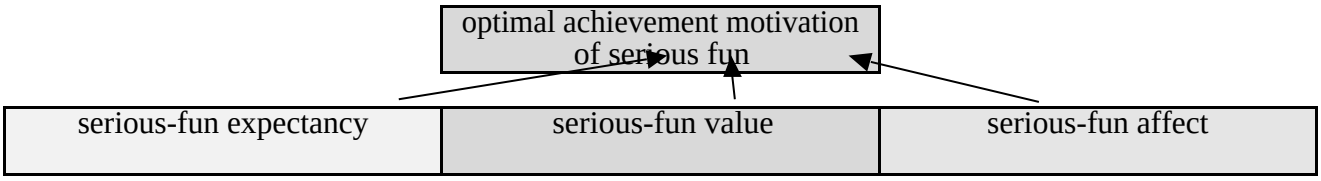
Operationally, seriousness and fun are the motivational attractors of intelligence (ordered thinking) and creativity (chaotic thinking) respectively (Rea, 1997, 2000a). Hence,

- serious personalities draw on ordered thinking because it provides the mental stability and structure for attaining the preferred emotional state of "cool" calmness.
- fun-loving personalities draw on chaotic thinking because it provides the mental variability and openness for attaining the preferred emotional state of hot excitement.

Serious-fun personalities flexibly draw on any of the three types of thinking (ordered, chaotic, and adaptive) according to situational demands and emotional preferences for excitement and/or calmness. Most students develop a preference for either the fun or the serious motivational styles but switch between them depending on internal satiation and situational demands (Apter, 1982; 1989). Ideally, students learn how to self-regulate the interplay of both of these types of motivation and to experience their higher-order integration (Csikszentmihalyi, 1996; Rea, 2000a).

Motivational Controls for Self-Regulating the Motivated Mind The personal factors that assist students to self-regulate their motivation (Rea, 2000a) can be described using the expectancy-value-affect formula of achievement motivation (Good & Brophy, 1991; Pintrich & De Groot, 1990). Students can self-regulate and switch between the three types of motivation (fun, serious fun, seriousness) by managing the three factors. The three factors and the control conditions necessary students to experience the optimal achievement motivation of serious fun are as follows:

The three factors for achievement motivation	control conditions for serious fun
the personal expectancy of succeeding /, mastering a challenging task (expectancy)	serious-fun expectancy: tasks offer high challenge seeking and mastery attainment
the subjective value of the task, the importance and interest of the task (value)	serious-fun value: tasks have both high future importance and high present interest
the perceived affective pleasantness of the task, the excitement and relaxation linked with it (affect).	serious-fun affect: tasks are both highly relaxing and highly exciting.



When the three controls are

- balanced between highly interesting tasks that offer exciting opportunities for challenge seeking and highly important tasks that allow calm opportunities for mastery attainment ----> serious fun that generates optimal motivation for fluid-- adaptive thinking (Rea, 2000a). Optimal motivation for serious fun when

interesting tasks that offer a challenge	<----------> balanced interaction	important tasks that allow calm opportunities for mastery

Balancing fun activities and serious reflections	-->	dynamic flow of ideas	-->	enriched mental complexity, enhanced capacity for motivated-mind functioning

The more students can experience serious fun in their talent areas, the more likely they are to develop creative intelligence in those areas (Csikszentmihalyi et al., 1993; Rea, 2000a).

- when students' thinking is insufficiently balanced, it can lead either to serious or fun thinking.

serious thinking outcomes	fun thinking outcomes
• serious expectancy in which tasks allow high mastery attainment but low challenge; • serious value in which tasks have high future importance but low present interest; • serious affect in which tasks are highly relaxing but offer low excitement.	• fun expectancy in which tasks allow high challenge but low mastery attainment; • fun value in which tasks have high present interest but low future importance; • fun affect in which tasks are highly exciting but offer low relaxation.
Motivationally, students are optimally serious when tasks are personally important and allow calm opportunities for mastery attainment. Serious tasks stimulate cold-ordered thinking.	Motivationally, students have optimal fun when tasks are interesting and give exciting opportunities for challenge seeking. These fun tasks stimulate hot-chaotic thinking.

Teaching styles that foster the motivated mind A participatory teaching style that combines the directive and supportive styles assists students to self-regulate their motivational controls to use fluid-adaptive thinking (Iannone, 1995; Rea, 1995). It supports fun challenges and high expectations for seriousness mastery.

Participatory teachers create learning environments in which students have opportunities to playfully seek challenges and to seriously master them. During the

- challenge phase, they do fun tasks such as creative designs, open-ended inquiries, dramatic productions, simulations, and field trips (Rea, 1995, 1999, 2000b; Wassermann, 1992).

- mastery phase, students seriously reflect on and discuss what they have learned from the challenging tasks (Rea, 1995, 1999, 2000b; Wassermann, 1992). They learn to meet challenges and engage in complex learning (Csikszentmihalyi, 1990; Rea, 2000a; Van der Molen, 1985).

They vary the openness of fun learning activities depending on the maturity of students:

- less mature students have focused-fun activities (educational rhymes and songs, review games, controlled simulations, guided discovery, etc.) structured for serious mastery (Rea, 1995, 1999,

2000b; Wassermann, 1992) with explicit guidelines and ongoing direction so that they do not become excited or frustrated. However, fun activities are not structured too rigidly.

- more mature students have open-fun activities (creative design or invention projects, open-ended inquiries or investigations, student-directed debates, student-planned field trips, etc.) (Rea, 1995, 1999, 2000b; Wassermann, 1992). Students find their optimal levels of challenge and mastery. When fun challenge and serious mastery are matched and coordinated, students can experience the effortless flow of fluid- adaptive thinking (Csikszentmihalyi et al.. 1993: Rea. 2000a)

Directive teaching style that restricts developing talent	Supportive teaching style that fosters developing talent
• provides high expectations for serious mastery but doesn't support fun challenges, • is task oriented, encourages students to finish their work asap and to show their competency • in extreme, ---> authoritarian leadership style (Flach, 1988; Iannone, 1995; Rea, 1995, 2000a, 2000b). • a demanding authoritarian style that lacks support may ---> talented students becoming excessive perfectionists who are driven compulsively to avoid failure, to look perfect (Covington, 1992; Parker, 1997) and --> burnout, apathy, and rebellion (Csikszentmihalyi et al., 1993; Rea, 2000a).	• provides high support for fun challenges but low expectation for serious mastery. • creates a safe and secure environment for exploration and risk-taking. • stresses giving a variety of exciting challenges. In extreme---> permissive leadership style (Flach, 1988; Iannone, 1995; Rea, 1995, 2000a, 2000b). • overly permissive style that lacks high expectations, may ---> talented students becoming excitement seekers and dabblers who never finish what they start (Csikszentmihalyi et al., 1993; Rea, 2000a; Redding, 1989).

Teachers of serious classrooms are directive, controlling and authoritarian while teachers of fun classrooms were overly supportive of uncontrolled play activities or permissive (Rea, 1995).

Teachers can help students optimize their motivated minds by adopting a flexible leadership style that meets students' situational needs for talent development. Some students, depending on the situation and their maturity level, will require more direction and others more support. Ideally, teachers will strive for a participatory style that provides both high support and high expectations. The participatory style offers the ideal social conditions for the emergence of giftedness.

To get optimal task motivation teachers need the three factors noted above: