A multivariate approach is used to study developmental and cross-cultural differences in creativity. We propose that cultures shape the development of creativity differently through their influence on children’s cognitive development, personality development, and the environment in which children grow. We start an overview of recent work on the development of creativity in children. Then we turn to how cultures shape creativity through different definitions of creativity, by differential emphasis on creative activity, and by channeling creativity into some sectors more than others. Finally, we examine how culture interacts with development to shape creativity differently in the west and in the east. We conclude that creativity training needs to take into account cultural differences that may foster or inhibit creativity, in order to build on the strengths and compensate for the limits of each culture to better foster children’s creative development.

Since Guilford’s (1950) presidential address to the American Psychological Association, the topic of creativity in the fields of psychology and education has received increasing attention. There is wide agreement that creativity represents an important facet of human
behavior, which is potentially relevant to nearly every domain of activity (for example, artistic, scientific, economic, religious, everyday life domains). Thinking and research on creativity has developed, as in most scientific fields, using a divide-and-conquer strategy. The topic of creativity has been split into manageable chunks. For example, one popular division was proposed by Rhodes (1961) who identified the “4 P’s” of creativity: the creative product, the creative person, the creative process and the creative environment (called “press”). Another line of attack has been to study creativity within one or another sub-field of psychology. Thus, we find the cognitive approach, the social-psychological approach, the developmental approach, the cross-cultural approach, the psychoanalytic approach, and the list continues. In the last twenty years, several authors have sought a more integrated conception of creativity in which different approaches, different pieces of the puzzle come together. An example of this line of work is the multivariate approach to creativity, which proposes that creativity depends on cognitive, conative, and environmental factors that combine interactively (Amabile, 1983, 1996; Lubart, 1999; Sternberg & Lubart, 1995).

According to this view, there is a continuum of creative ability from very low levels (non-creative individuals) to very high levels (eminent cases of creativity, such as Confucius, Dostoyevski, Einstein, Freud, Ghandi). Individual differences in creativity result from the combination of the different cognitive, conative, and environmental factors. Results of recent empirical studies have begun to provide support for this multivariate approach (Conti, Coon & Amabile, 1996; Lubart & Sternberg, 1995). Other recent integrative approaches, such as the systems view of creativity have also been proposed (Csikszentmihalyi, 1988). Case studies show that a combination of person-centred and environment-centred variables is involved for each eminently creative person (Gardner, 1993).

In the presentation that follows, we seek to move further toward an integrated view of creativity. The multivariate approach will serve as a basis on which developmental and cross-cultural studies of creativity will be overlaid. This chapter consists of three parts. First, we will present an overview of the development of creativity in children. Our approach is multivariate in the sense that cognitive factors, personality-motivational
factors and the child’s environment are considered important for the emergence of creativity. Second, we will look at ways that creativity is affected by culture. In particular, we suggest that the definition of creativity, the extent to which creativity-related behaviors are valued, which in turn influences the quantity of creative activity, and the domains in which creativity is promoted vary across cultures. Third, we explore how cross-cultural differences in creativity may mesh with its’ development. It is proposed that differences in the definition of creativity condition the cognitive developmental factor. The extent to which originality is valued is linked, in particular, to the personality-motivational factor. The set of domains in which creativity is allowed is specified through the environmental factor. In conclusion, implications of this combined developmental, cross-cultural approach are proposed.

1. Developmental issues

1.1. What is creativity in this approach?

In work concerning the development of creativity, most authors define creativity as the capacity to produce novel, original work that fits within task constraints (Lubart, 1994). Work refers to all types of ideas and productions. This work must be novel in the sense that it goes beyond a replication or copy of that which exists. The extent to which the work produced is novel can vary from being original only for the person who completed the work (this is the notion of re-inventing ideas known already in the larger social context) to being original for a limited social group, to being original for all of humanity. The second component in the definition concerns the fit with constraints. We distinguish creative ideas from bizarre ideas, which are also novel, because creative ideas take into account the parameters of a situation, the constraints. Depending on the field of endeavour, such as art, science, literature, or engineering and design, the weight given to the two components, novelty and constraint satisfaction, varies.
Operationally, creativity in children is often measured through divergent thinking tests, evaluations of specific productions such as drawings or stories, or parent/teacher nominations (Lubart, 1994; Sternberg & Lubart, 1992). Divergent thinking tests for creativity, such as the Torrance Tests of Creative Thinking or the tests proposed by Wallach and Kogan, require children to produce as many original ideas (uses of an object, questions, consequences, titles for a picture) as possible concerning a stimulus (Torrance, 1974; Wallach & Kogan, 1965). This stimulus may be a hypothetical situation (e.g., strings attached to clouds), a drawing (e.g., picture of a boy who looks in the water), an object (e.g., a box, a paperclip), or other things. These tests are usually time limited (5 to 10 minutes for a task). Divergent thinking tasks provide three indices of performance: fluency which is the number of ideas produced; flexibility, which is the number of different categories from which the ideas are drawn, and originality of the ideas (see Mouchiroud & Lubart, 2001). Some divergent thinking tasks take into account the elaboration of ideas, or the number of details included in the productions. An alternative to divergent thinking tests is the use of integrated production tasks in which the child must produce an elaborated idea, such as a short story, a drawing, a collage, or a musical composition. This production is then evaluated by adult judges for its creativity. Finally, creativity may be measured by asking parents or teachers to nominate children who show creative thinking in their actions at school or at home. Of course, each of these three types of creativity measures has its strengths and weaknesses (Lubart, 1994).

1.2. Cognition and development

Several intellectual abilities are considered important for creativity. These include selective encoding – the ability to notice relevant stimuli in the environment, selective comparison ability allowing for analogical and metaphorical thought, selective combination ability to facilitate the generation of complex ideas from disparate elements, and divergent thinking to generate numerous alternatives when facing an impasse. These abilities develop with age. In our recent work, we have devised
specific measures of some of these capacities and examined their development. For example, we constructed a test of sensitivity to cognitive change using visual stimuli, which relates to selective encoding capacity. In this test, a child sees a series of images that change slightly each time (e.g., the face of a lion that becomes a face of a monkey). The child must indicate what is portrayed and we score when the child notes that the initial object or animal displayed has become something different. This test correlates with children’s creativity in diverse tasks, such as the Urban-Jellan drawing test (Georgsdottir, Jacquet, Pacteau & Lubart, 2000; Lubart, Jacquet, Pacteau, & Zenasni, 2000).

It is important to note that the development of cognitive abilities particularly involved in creative thinking, such as divergent thinking, is not isolated from the development of other cognitive abilities, such as logical reasoning. In fact, some of our research suggests that there may be temporary slumps in creative development when other aspects of cognition that require contrasting types of thinking are put into place. We conducted semi-longitudinal research with 8- to 12-year-old children, examining how performance changes with age on the verbal subtests of the Torrance Tests of Creative Thinking and storytelling tasks. We found a temporary slump in performance for certain tasks around 9- to 10-years old, in particular the tasks that involved finding unusual uses for familiar objects (a box and a string). Interestingly, using modified Piagetian tasks, we observed in our sample that certain modes of logical thinking became fully operational after 9 years old (Lubart & Lautrey, 1995).

Two other empirical studies on 8-, 9-, and 10-year-old children focused on the development of the flexibility component of creative thinking and its relationship to cognitive development (Georgsdottir, Ameel & Lubart, 2002). The first study showed that cognitive flexibility decreased around age 9, and then increased again around age 10, whereas logical thinking develops in particular around 9 years old. In this study, cognitive flexibility was measured by a repeated categorization task, in which the child was required to regroup the same material in many different ways (relating to selective combination capacity) whereas logical thinking reflected the tendency to classify items into taxonomic categories rather than schematic categories in a forced-choice categorization task. For an item such as “sled – ski – snow”, an example
In the second study, cognitive flexibility was measured in two different ways in order to grasp both the spontaneous and the adaptive aspect of flexible thought. Spontaneous flexibility was measured by a free-association task in which the child was asked to name all the ideas he or she could think of in response to the word “airplane”. The number of different conceptual categories present in the answers indicated spontaneous flexibility in the sense that individuals will produce more or less diversified ideas without any suggestion that they be flexible. Adaptive flexibility was measured by Duncker’s (1945) candle task, which involves putting a candle on a wall without the wax spilling on the floor using only a box of matches, a box of tacks and a few candles. Here, flexibility is demonstrated by breaking out of the mental set or the functional fixedness of seeing the boxes only as containers. The solution is to empty one of the boxes, fixing it to the wall with some tacks and put the candle on top of it. In this study logical thinking was measured with a logical implication task (Light, Blaye, Gilly & Girotto, 1989), in which children were presented with two picture cards (a flower and a mushroom) facing down on a violet cardboard with a green center. A rule was introduced: the mushrooms must be placed outside of the center. The task was to say which card needed to be turned over in order to verify if the rule had been broken or not (only the centre card needs to be turned over in order to verify the rule). The findings confirmed the results of the first study. We observed a pause in the development of both spontaneous and adaptive flexibility between ages 8 and 9, and then a progression between 9 and 10 year old, whereas logical thinking progressed rapidly between ages 8 and 9, but then the development seemed to stagnate for the 10 year old children. Taken together, these studies indicate that the development of cognitive processes involved in creative thinking (in particular, divergent thinking and flexibility) are related, at times in an alternating way, with the development of certain other cognitive abilities. These results are consistent with Karmiloff-Smith’s (1994) model of the development in which she postulates that acquisition of new skills can lead to temporary regressions in performance, followed by restoration of the capacity. Once new ways of
In addition to basic information processing skills, the acquisition of knowledge is also important. Knowledge is the raw material on which creative thinking draws. Due, in part, to their limited level of knowledge, it seems that children are not ready from day 1 to be creative in the same way as adults. For example, very young children, such as 2-year olds who are just learning to speak, may produce unusual utterances without really understanding the sense of the words that they have put together; is this creativity in the same sense as an adult who purposively breaks with linguistic tradition to express a new idea through modern poetry?

Knowledge provides a platform from which creative ideas can be generated. In this vein, Sir Isaac Newton noted that his achievements were due, to a great extent, because he had “stood on the shoulders of giants”, the predecessors in his field. When we speak of knowledge, we include the accumulated facts, theories and personalized experiences that concern various content domains, but also an understanding of task-relevant constraints and other implicit parameters that play a role in problem solving. It seems specially important to be aware of constraints in order to distinguish creative ideas from simply eccentric ones. The capacity for evaluative thinking, which has been shown to relate to children’s and adult’s creative performance (Runco, 1992), depends on the development of one’s knowledge base in a domain. Of course, as with most things, too much of a good thing can become detrimental; the negative side of acquiring substantial knowledge on a topic is that it can lead to rigid, “fossilized” thinking.

In summary, creativity-relevant cognitive abilities develop with age, and their development seems to be linked to other developing abilities. Divergent thinking declines temporarily between 9- to 10 years of age, whereas logical thinking shows a spurt around the same age. Knowledge also accumulates with age, which, up to a certain point can facilitate creativity if used in a flexible way.

1.3. Conation and development
Creativity is more than a purely cognitive phenomenon. Certain personality traits are particularly relevant for original, adaptive thinking develop during childhood. In particular the traits of risk taking, openness, individuality, perseverance and tolerance of ambiguity seem to play a role in creativity (Sternberg & Lubart, 1995). Consider, for example, the traits of risk taking and openness.

Clifford (1988) examined children’s risk taking and failure tolerance in academic situations. She asked children at various grade levels (8- to 12-year olds) to solve problems of their own choice in verbal, mathematics, and other academic domains. The problems were clearly labelled as being appropriate for average children of various ages (age 6 to 14 years old). The results were somewhat surprising and disturbing. Fourth-grade children selected problems that were approximately six months below their ability level; fifth graders selected problems that were on average one year below their level, and for sixth graders differences reached up to 1.5 years between real age and the age-level of the problems selected. This shows that children were increasingly risk averse with age, which is smart for getting good grades in school. This result, which was originally obtained in a study of American children has been replicated in Mainland China (Clifford, Lan, Chou, & Qi, 1989), in Taiwan (Clifford & Chou, 1991) and with somewhat different tasks in our own work in France. The basic finding can be considered disturbing because creative thinking involves taking risks, going against standard ideas, and exposing oneself to failure and negative comments from peers, teachers, or parents. In research with adults, we have found that people who respond to hypothetical domain-specific situation scenarios in a way that shows willingness to take risk tend to produce more creative work in tasks in the domain examined (Lubart & Sternberg, 1995). These considerations among others led to the development of what we call the investment approach to creativity (Sternberg & Lubart, 1995). In this view, many people are not creative because they are unwilling to pursue unknown or little valued ideas, they don’t “buy low.” “Buying low” involves investing one’s energy and resources in new, risky or low-valued ideas. Some of these ideas may turn out to be worth the investment. Being creative is, in part, a philosophy of life, which is acquired through childhood experiences.
Openness to new experiences is another creativity-relevant trait that develops. In an empirical study of 8-, 9-, and 10-year-old children, we correlated scores on the unusual uses for a cardboard box task from the Torrance Test of Creative Thinking with a Openness-to-experience questionnaire drawn from a big-five personality inventory for children (Little & Wanner, 1998). We found a positive relationship between openness to experience and creativity in the 10-year-old group that was not present for the younger groups (Georgsdottir & Lubart, 2002). Perhaps the relationship between openness and creativity that has been found in adult populations (McCrae, 1987) emerges only after a certain level of cognitive development has been attained.

In addition to personality traits, motivational variables have also been shown to be important for creativity. Motivation refers to the force that drives an individual to engage in a task. There are both intrinsic motivators, such as curiosity and the enjoyment gained from expressing one’s self through visual or verbal modes, as well as extrinsic motivators, such as social recognition from peers or teachers. Research in which motivation is manipulated by role-modelling, training, or rewards suggests that children’s motivation for work, intrinsic or extrinsic, develops over time based on the experiences provided by their environment. Intrinsic motivation is considered more conducive for creativity although extrinsic motivation can also contribute in certain circumstances (Amabile, 1996).

In summary, the development of personality traits, such as risk-taking and openness, may influence how creativity develops. The motivation for creative work can also evolve as a result of the rewards and values which are proposed.

1.4. Environment and development

Several authors have proposed that one of the key influences on creative development is the physical and social environment of the child. In this section, we consider the family, school, and societal spheres of the environment.
The family environment may provide cognitive (e.g., intellectual stimulation) and affective (e.g., emotional security) support for creativity as well as providing the physical setting in which a child grows (Harrington, Block & Block, 1987). For example, families that provide stimulating settings with many books, magazines and cultural activities tend to foster creative thinking (Simonton, 1984). Carl Rogers (1954) suggested that a warm, secure family will serve as a base from which creative work can be attempted. Other authors, have explored a social-cognitive dimension of the family environment, the “structure of family rules” for daily life.

Using basic intellectual tasks from the Piagetian and psychometric traditions, Lautrey (1980) and other authors showed that families that have established rules to guide children’s behavior but modify occasionally these rules provide both the structure and the perturbations of this structure that foster cognitive development. These families with “flexible” rules can be contrasted with those having “rigid” rules and those that lack rules in general. In a series of studies with Parisian children (7 to 12 years old), we examined how these variations in family rule systems are related to creativity (Lubart & Lautrey, 1998). Children completed creativity tasks from the Torrance battery and parents responded to a questionnaire on family life. This parental questionnaire contained 20 items that measured whether each family’s system of rules for children was rigid, flexible, or unstructured. The questionnaire also assessed demographic and socioeconomic status. A sample question is:

When your child plays at home:

(a) Your child can play only in certain places that you specified. (rigid rule)

(b) You have specified places for playing games but your child can play outside of these areas under certain circumstances. (flexible rule)

(c) Your child plays wherever he/she wants. (lack of rule)

To characterize the family environment, we used two types of scores: (a) the number of questionnaire responses indicating a flexible rule structure (a continuous variable). (b) a categorization of each family as either predominantly flexible in its rule structure or predominantly rigid (a categorical variable). We found that the number of “flexible” rule
responses (by parents) correlated positively with creative performance (Fluency) of children (correlations ranging from .12 (n.s.) to .46 (p<.01) depending on the sample, and the creativity task). The analysis of contrasted groups confirmed the correlational trends and showed that children from families with mainly “rigid” parental rules were, on average, less creative than families characterized mainly by “flexible” rules. Analyses concerning socioeconomic status (SES) showed three results. First, creative task performance is related to SES (high SES, greater fluency). Second, family rule structure is related to SES (high SES associated with flexible rules and low SES associated with rigid rules). Third, and most importantly, the positive relationship between flexible family rules and creative task performance occurs at each level of SES. Thus, our research studies indicate that there is a positive relationship between the flexibility of family rules and creative task performance in children (measured by the number of ideas produced). This result seems to hold across socioeconomic levels and remains after intelligence-related variables (such as factor g) are controlled statistically. In summary, the results suggest that family rule structure may be one of the components of the environment that influences the development of creativity in children showing a small but consistent relationship to creative task performance.

In addition to the family setting, the school environment plays a crucial role in the development of creativity, or its lack of development in many cases. First, children acquire cognitive abilities and knowledge in school. Often schools emphasize convergent thinking, finding the “correct” answer to problems proposed by the teacher. Sometimes, however, divergent thinking is encouraged and children are allowed to struggle with ill-defined problems. In terms of knowledge, information is often transmitted in a compartmentalized way, with an emphasis on memorization and recall. However, some curricula emphasize the dynamic, context-specific nature of knowledge, using knowledge in diverse ways, and building links across different content areas.

Second, teachers serve as role models for children. Teachers may value or de-value the expression of creative ideas in the classroom. Work on teachers’ conceptions of the ideal student show that teachers often value characteristics that are socially important but not specially relevant
for creativity. For example, Verkasalo, Tuomivaara and Lindeman (1996) studied 124 Finnish school teachers and found a conception of the ideal pupil as honest, broad-minded, valuing self-respect, family security, true friendship and meaning in life. A study done among 127 Nigerian teachers showed that they valued pupil characteristics such as industry, sincerity, obedience, courtesy, consideration, self-confidence, and health (Ohuche, 1987). Other studies have shown that teachers favour quiet, conforming behaviors rather than intellectually provocative ones, which may question the teacher’s authority. Working with teachers on their attitudes towards creative behaviors in the classroom is important as they are in a privileged position to stimulate or stifle creativity. Cropley (1997) has identified some common characteristics of teachers who foster creativity in the classroom, they encourage independent learning, have a cooperative teaching-style, motivate students to learn the facts in order to have a solid base for divergent thinking, encourage flexible thinking, delay judging students’ ideas until they have been fully considered, promote self-evaluation of ideas, take students questions and suggestions seriously, offer opportunities to work with a variety of materials in varied conditions, and help students to cope with frustration and failure in order to build the courage to pursue new ideas.

Third, school structures children’s lives and serves as an important context for socialization. Torrance (1962, 1968) and other authors have suggested that some temporary slumps in creative divergent thinking task performance, observed at age 6 and 13 in developmental studies using the Torrance Tests of Creative Thinking, can be explained by school-related circumstances. In particular, around age 6, most children enter the formal school system. They encounter a structured world with many new rules to master and structured learning activities to accomplish. It is not surprising, therefore, that creativity is affected. At approximately age 13, a second slump is often observed in the average developmental curve. This age corresponds in many cases to a change from elementary school to secondary school, which certainly requires some time for children to adjust. Also, age 13 corresponds to adolescence, a period specially marked by peer pressure and identity development.

Beyond the local, school setting, the macroscopic social environment conditions creative development in numerous ways. For example,
cultural activities such as concerts, artistic expositions, museums, and television shows on diverse topics can all contribute to children’s creative development. Historiometric studies have shown that the presence of eminent role models (such as great scientists or writers) in one generation (g) tends to predict the creative accomplishments of future generations (g+1, g+2) in the same domain (Simonton, 1984, 1996). The proximity of a city, state or country with respect to other, different cultural centres also seems to have an influence through the potential for stimulation and cross-fertilization of ideas (Simonton, 1975, 1984).

To sum up, the environment can influence creativity through the family, the school, or on a broader societal level. Flexible family rules seem to be more nurturing to creativity than a rigid structure. Schooling is also important, as teachers can either encourage or discourage creativity through their ways of transmitting knowledge and attitudes towards pupils. On a broader level, opportunities to encounter creative work and creative role models in the environment also foster creativity. In the following section, we develop in detail how culture may influence creativity.

2. Cross-Cultural Issues

Culture refers to a shared system of cognitions, behaviors, customs, values, rules, and symbols concerning the manner in which a set of people interact with their social and physical environment (Reber, 1985; Triandis, 1996). Culture is learned and socially transmitted from generation to generation; cultures are dynamic and may evolve over time. Cross-cultural analyses suggest that the definition of creativity, the level of creative activity and the domains in which creativity is promoted vary across cultures.

2.1. Definition

The definition of creativity proposed earlier in this chapter – creativity as the ability to produce work that is novel and appropriate – dominates the
literature and may be referred to as the “Western” view. An important feature of creativity in this perspective is the link to an observable product. This product can be assessed by an appropriate group of judges, either peers or experts (Amabile, 1983). Divergent thinking tests require the production of ideas, which are then counted to obtain the fluency score, categorized for the flexibility score or situated with respect to other ideas produced in a population for originality scores. This product-centered conception of creativity seems to fit with the Western perspective on cosmic creation, which involves a linear movement toward a new point (see von Franz, 1995). For example, the book of Genesis states that creation of the world took six days of labor and each day resulted in observable progress (such as the formation of land, creation of animals, etc) (Mason, 1988; Wonder & Blake, 1992). There was a finite beginning and the process ended with a tangible product, the world, which the divine creator found satisfying.

In contrast to the Western conception of creativity, it is possible to distinguish an alternative, traditional Eastern or Oriental view (It should be noted that within the Eastern and Western camps, there are cross-national differences, such as those between China, Japan, and Korea which are part of the Eastern group). The Oriental conception of creativity seems more focused on the authenticity of the discovery process than the output of innovative products. Creativity is often discussed with respect to a state of personal fulfillment, a connection to a primordial realm, or the expression of an inner essence or ultimate reality (Chu, 1970; Mathur, 1982; Raina, 2002). Meditation is relevant to creativity because it helps one to see the true nature of the self, an object, or an event (Chu, 1970; Onda, 1962). Illustrating this view, an anthropological field study of traditional painters in India found that the creative artist is one who contacts the “psychic reality within the depths of himself, ...strive[s] to make it manifest, ... to become one with it, integrating it through differentiation, meditation, and self-realization. In a very real sense, the artist is enjoined to re-create, or reactivate, what is already latent in his unconscious” (Maduro, 1976, p. 135). The Oriental view of cosmic creation has been characterized as “an ongoing process – a developing, an unfolding” (Sinclair, 1971, p. 83). In parallel terms, the traditional, Oriental concept of creativity is sometimes described as the
successive reconfiguration of an initial totality, the reinterpretation of traditional ideas – finding a new point of view – more than a dramatic break with tradition (Kristeller, 1983). This conception of creativity is thus linked to the idea of a natural process of producing and renewing (Niu & Sternberg, 2002).

Recent studies of people’s conceptions of creativity in Western settings as well as in Asian societies (Mainland China, Hong Kong, Japan, Korea, Singapore, Taiwan) suggest that the notion of novel, original thinking is present in each case (Lim & Plucker, 2001; Niu & Sternberg, 2001; Rudowicz & Yue, 2000; Soh, 1999; Tan, 2000). It is debatable, however, whether the notion of “novelty” has the same nuances in these diverse cultures. In line with Sternberg, Kaufman & Pretz’s (2002) work on types of creative contribution, an idea may be novel, for example, because it (a) reiterates a known idea in a new way, (b) moves a field forward along its current trajectory, (c) moves a field forward in a new direction, or (d) leads to an integration of diverse trends in a field. Certain forms of novelty (b, c) seem to fit well the western view of creativity whereas other forms fit within the eastern view (a, d).

In the same vein, Li (1997) contrasted “vertical” creative domains, such as Chinese ink-brush paintings in which novelty builds on certain fundamental elements, with “horizontal” creative domains such as modern Western painting in which novelty can occur in nearly any aspect of the work.

Finally, Niu and Sternberg (2002) compared studies concerning peoples’ implicit theories about the creative person in Western and Eastern societies. They found many similarities in the conceptions of creativity between the two cultures, such as: originality imagination, intelligence, independence, and high energy. The Eastern and Western conceptions were not identical however, as the Eastern view of creativity did not emphasize humor and aesthetic sensitivity as did the Western view, but did emphasize social and moral aspects of creativity.

2.2. Cultural context and the amount of creative activity
Creativity may be stimulated or hindered in general by cultural features such as the tendency toward individualism or collectivism and the value placed on conformity or tradition (Williams et al., 1995). For example, cultures characterized by individualism, such as North American and Western European ones, define the self as autonomous. Collectivist cultures, such as mainland Chinese and Taiwanese cultures, define the self within a social context such as the family with its norms and obligations (Sodowsky, Macquire, Johnson, Ngumba & Kohles, 1994; Triandis, 1996). According to Triandis et al. (1993), individualist cultures value independence and self reliance, which are positive factors for creativity whereas collectivist cultures emphasize obedience, cooperation, duty and acceptance of an in-group authority. More recently, Ng (2001a) proposed that the individualism-collectivism dimension can explain to a large extent differences in creative activity levels for Westerners and Asians. He argued, in particular, that task-focused motivation, relevant for creativity, is related to individualism (Ng, 2001a, 2001b). However, in the highly dynamic present-day eastern societies such as the People’s Republic of China, this cultural emphasis may be subject to change.

In related work at the person-level rather than the cultural level, the traits of individuality and individuation – the willingness of a person to differentiate him- or herself from others – have been linked to creative activities and behaviors such as offering a new, original opinion compared to a majority view (Maslach, 1974; Sternberg & Lubart, 1995; Whitney, Sugrestano, & Maslach, 1994). In this vein, Burns and Brady (1992) found that American and Malaysian students differed on their expressed need for uniqueness, the desire to be stand out from the crowd, which relates in turn to the use of “rare”, innovative products and the promotion of idiosyncratic ideas or behaviors.

In addition to the individualism-collectivism dimension, cultures vary on the extent to which they value conformity and tradition (Mann, 1980). Some cultures more than others accept deviation (at least in certain domains). For example, Silver (1981) reports that Ashanti “wood carvers refrain from overtly criticizing their peers. In general they praise attempts at anything new under the assumption that the innovation may prove popular, whereas at worst it may fail harmlessly” (Silver, 1981, p.
Of course there is a range of permissiveness across cultures (Berry, Poortinga, Segall, & Dasen, 1992). Ho and Lee (1974) propose that the traditional Chinese family is characterized by authoritarianism, submission and value placed on conventional behavior patterns, which are features antithetical to creativity. A few cross-cultural studies show links between levels of conformity or dogmatism/openmindedness and creativity (see Aviram & Milgram, 1977; Marino, 1971; Strauss & Strauss, 1968). The previously mentioned study of traditional Indian painters also provides evidence on the link between conformity to tradition and creativity (Maduro, 1976). Interviews with the painters revealed that the level of conformity to tradition demanded by their jati had a conscious impact on creativity. One subgroup of painters, the Adi Gaur jati, follows the traditions, restrictions, and orthodox customs of the priestly Brahmin caste. The second group of painters, the Jangira jati, identifies with the supreme creator Vishvakarma and shows greater flexibility and tolerance in its’ practices. Seventy percent of the painters ranked creative by the whole artistic community were Jangiras even though there were twice as many Adi Gaurs in the community.

In addition to the value placed on conformity and tradition, numerous other cultural characteristics may influence creativity. For example, cultures vary on the extent to which they value perseverance, tolerance of ambiguity, and risk taking, identified as important for creativity (Berry et al, 1992; Blinco, 1992; McDaniels & Gregory, 1991). Additionally, cultures may possess beliefs or attitudes that can foster or hinder creativity. For example, Krippner (1967) and Adams (1986) identify several beliefs that may work against creativity. Some are: “Fantasy and reflection are a waste of time”; “Playfulness is for children only”; “There is a right answer”; “Reason, logic, numbers, utility, and success are good - intuition, emotions, qualitative thinking, and failure are bad” (Adams, 1986, p. 53-64; Krippner, 1967, p. 144-156). A given culture, of course, may contain some elements that foster creativity and others that stifle it.

In summary, culture can influence the amount of creativity through its emphasis on individuality as opposed to collective interests, through its tolerance of deviance as opposed to emphasis on conformity, and through cultural values and beliefs that favor creativity. These aspects can also differ between subgroups within the same culture.
2.3. Cultures channel creativity

Beyond the conception of creativity, culture influences the manifestation of creativity in terms of the preferred forms and domains of its expression. Culture encourages creativity in some situations and for some topics but discourages it for others. For example, Mar'i and Karayanni (1983) observed that many Arab students' responses to the question, “What would happen if mules and other animals which help us plow the farm cease to exist?,” were elaborate and original. However, a religious question, “What would happen if worship places cease to exist?,” yielded shallow responses or those that rejected the question. For the Ashanti, an African group, creativity is encouraged in the carving of secular objects but discouraged for objects depicting religious motifs (Silver, 1981). For traditional Indian painters, Pichwai paintings of the Shri Nathji idol or other religious topics are the most important genre. Depiction of a fundamental motif is not open to change but creativity can play a role in the depiction of subthemes. In landscape paintings, a greater degree of stylistic variation is permitted. Paintings produced for popular calendars, a third genre, are seen as a leisure-time form of painting and show the most creativity (Maduro, 1976). Taken together these instances of selectivity for creativity suggest that the level of creativity permitted on a topic is often inversely related to the topic’s role in the maintenance of deep cultural patterns. That is, for topics related to religion or considered as sacred in some way, there seems to be much more reluctance to change, than for topics that are taken less seriously in the culture and for which less obedience is expected. Ludwig (1992) draws on Margaret Mead’s studies of Bali to illustrate this idea: In Bali, “the more serious the art form, like sculptures of gods or ritual dances, the less the permitted change, and the less serious the art form, like carvings of kitchen gods, the theatrical performances of clowns, the playing of instruments or the weaving of containers, the greater the originality can be” (p. 456). In general, although creativity is possible for topics such as social organization, economics, and religion, it may be relatively rare because these topics are involved in maintaining basic cultural patterns (Bascom, 1969).
Within a culturally-selected domain, the expression of creativity may be further specified. For example, in Bali music is seen as a group endeavor in religious rituals. Groups of musicians can differ in style from each other. Individual musicians, however, are expected to be stereotyped, anonymous contemporaries with regard to creativity (Colligan, 1983; Gaines & Price-Williams, 1990). This type of channeling effect on creativity may derive from a culture’s position on an individualism-collectivism dimension. In some societies, collectivism could be expressed through maintaining the status quo in religious art, as religion plays a role in maintaining social order in the society. The Kaluli of Papua New Guinea illustrate another way that musical creativity depends on social structure. In this case the focus is on gender-based groups. Men and women can both be creative but in different musical genres. For women, songs that express the personal emotions of the singer are valued, such as songs in which an individual’s sorrow for a loved one’s death is expressed. For men, songs that provoke a collective emotional response are valued, such as those that incite the audience to cry or even to attack the singer (Brenneis, 1990).

In summary, culture channels creativity by permitting more or less variation in the interpretation of themes. Themes that are central to maintaining deep cultural patterns, such as religious themes, seem to be less open to individual creative expression than more popular themes.

3. Integrating developmental and cross-cultural perspectives

In this section, we explore how cross-cultural differences may influence the development of creativity, being transmitted from one generation to the next. Following the analysis presented in the preceding section, we will examine the definition of creativity and how children’s definitions of creativity emerge during childhood, the amount of creative activity that is fostered in different cultures and the ways in which different cultures channel creativity into selected activities.

3.1. Ways that culture defines creativity during development
First, children learn about creativity through examples provided by their social environment. When parents or teachers remark that an idea, a drawing, a story or any other behavior is “creative”, children develop an implicit definition. Equally important are eminent role models that the culture offers as examples of creativity (Simonton, 1984, 1996). Artists, writers, scientists, inventors, business people, musicians and others may receive special attention in the media, in expositions, or in school programs as historical or contemporary cases of eminent creativity. To the extent that cultures differ on their conceptions of creativity, we can expect that the examples noted by parents and teachers as well as the eminent cases identified in the public arena will differ.

Second, the extent to which creativity represents a break with tradition or, on the contrary, an extension and renewal of cultural traditions is transmitted during children’s development. According to the “Western” conception of creativity, children can be creative without much knowledge because creativity involves discovery and breaking away from that which exists. In fact, knowledge may limit imagination and lead children to repeat existing ideas (Soh, 1999). Thus, even young children can be creative, and schools educate the creativity out of many children by filling their heads with information that constrains and standardizes their thinking. This attitude toward creativity is reflected in the belief that a child may produce a creative idea without even realizing it’s novelty. For example, a child who strings words together in a novel way to express an idea because he or she does not know the commonly – used vocabulary term can be considered to be creative linguistically in a western perspective.

In contrast, an “Eastern” view implies an initial mastery of existing ideas in order to refine, extend or rework these ideas (Gardner, 1997). Education is a necessary first step for creativity. Exercises such as copying masterworks (for example, paintings) will help develop creativity according to this perspective. Thus, children must first acquire a body of existing knowledge before being able to contribute potentially new ideas. In line with this conception, Soh (2001), based on children’s artistic productions compared to those of mature creative artists, suggested that children may be spontaneous, producing novelty without knowledge or attention to task constraints, but this does not qualify as
creativity. Furthermore, the Japanese concept of “satori”, a flash of enlightenment similar to the “aha” experience in Western creators accounts, is described as requiring a long period of preparatory activity, with constant practice, persistence, and the acquisition of domain expertise (Torrance, 1980). Finally, a comparison of educational views of Singaporean teachers who were trained either in traditional Chinese schools or in western-oriented teacher colleges showed that the traditionally-trained group believed significantly more than did the western-trained group that basic skills must precede creativity (Soh, 1999).

In summary, culture influences children’s emerging definitions of creativity in several ways, for example, through family influences, schooling or available role models. The definition each culture has of creativity also influences if children’s productions are regarded as creative or not.

3.2. Ways that culture influences the amount of creativity during development

The development of children’s tendencies to engage in creative behavior is influenced through cultural variables such as the level of conformity required in family and school settings, the consequences of failure in school, and the type of reinforcement offered (intrinsic or extrinsic rewards) for good work. Creativity-relevant personality traits and motivation, which are important for productivity and originality, are shaped over time. In this regard, cross-cultural comparisons of parental values and practices shows that European-American parents compared to Chinese-American and Taiwan-Chinese parents differed in several key ways; the traits of politeness, calmness, neatness, concentration and precision were rated as significantly more important for preschool children by Taiwan-Chinese and Chinese-American parents than by European-American parents (Jose, Huntsinger, Huntsinger & Liaw, 2000). Taiwan-Chinese and Chinese-American parents exerted more control through directive behaviors and emphasized academic achievement more than European-American parents. In principle, these
different parental profiles should impact on the tendency for creative behavior in children. In line with these results, Rudowicz and Yue (2000) examined concepts of creativity in Chinese undergraduates from Beijing, Guangzhou, Taipei and Hong Kong. Although there were some differences across the four groups of subjects, certain characteristics judged consistently as important for being a creative person (having original ideas, being innovative, imaginative and individualistic) were also judged as having a relatively low value for a Chinese person to possess.

Also related to individuality and conformity, Torrance (1973) conducted an interesting study in which he asked children from different cultural settings to provide an ending to stories in which the main character deviated from expected norms (for example, a lion that won’t roar, a boy who wants to be a nurse). American children, in general, wanted to “cure” the character, to convince the lion to roar or the boy to choose another profession. French children wrote stories in which the character accepted being different. Greek children’s stories focused on understanding character’s differences. A recent study of Korean’s conceptions of creativity showed that the non-conformist, “creative loner” notion was present in their implicit theories. This non-conformity was described, however, in mainly negative terms, such as “is indifferent to other’s opinions”, “makes conflicts when working in groups”, “seems to be abnormal”, or “is rude” (Lim & Plucker, 2001); as these descriptors of creative people contrast with the importance placed on social responsibility in Korean society, the development of creativity may be negatively affected.

With regard to risk taking, Clifford, Lan, Chou and Qi (1989) studied American and Chinese students aged 8- to 11-years old (3rd to 5th grades). First, they observed that, in general, tolerance for failure declines with schooling in both cultures. Second, they noted that academic risk-taking was, on average, higher for American students compared to Chinese students. Third, within the Chinese sample (from Beijing), there was less risk taking by children from government-employee settings than by children from industrial settings. These findings may be due to differential cultural reactions (by parents and teachers) associated with academic failure. Another important difference is the existence of
competitive exams in China (but not in the United States) at the end of 6th grade for admission to college-oriented high schools. In particular, students from government-employee settings are concerned by these exams.

It is worth noting that cultural influences on variables such as risk taking can be complex. Weber, Hsee and Sokolowska (1998) examined proverbs commonly used in the United States or China concerning risk taking. In contrast to the cross-cultural trend for academic risk taking, risk taking was considered more negative in the financial domain according to American proverbs than according to Chinese ones. This result can be explained by the “cushion” effect, according to which the collectivist nature of Chinese culture reduces the negative impact of financial risk taking because the family and community can cushion failure. This study suggests that creativity-relevant factors such as risk taking may be domain specific with development linked to numerous co-existing personality dimensions that develop as well.

In addition to long-term, behind-the-scene influences that a culture can exert on creative development, societies decide sometimes to specifically stimulate creativity for political or economic reasons. For example, after the launch of Sputnik by the former Soviet Union, many politicians and educators in the United States called for programs to enhance students’ scientific creativity to enhance national competitiveness. Government and private sectors in Chinese societies (Mainland China, Hong Kong, Singapore and Taiwan) have recently stressed the importance of developing creativity (Wu, 2001). For example, in Singapore, from the 1980s a number of educational initiatives were introduced to foster creative thinking in students and sensitise teachers. The prime minister’s speeches (1996-1999) noted the necessity of enhancing creativity. Since 1999, student teachers are assessed, in part, on their ability to promote creative thinking (Tan, 2000). Educational policy, however, does not always correspond to general political objectives. Wu (2001) suggests that many people involved in the Chinese educational sector continue to emphasize authority figures, exam results and standard answers, “nice boy and girl” behavior, memorization of knowledge, and seriousness. Tan (2001) notes that despite an emphasis on creative thinking, Singaporean elementary
Schools are strongly influenced by the preparation for streaming exams (age 10 and 12, grades 4 and 6), which lead to an emphasis on structured questions, textbook activities and memorization.

In summary, culture can stimulate or hinder development of creativity in children several ways. Parents and teachers value creativity-related personality traits differently across cultures. These values can be transmitted to children as either positive or negative ideas about creative children. Risk taking and tolerance also differs between cultures, but these differences could be somewhat domain specific, depending on the specific circumstances in each culture.

3.3. Ways that culture channels creativity during development

There are at least three ways in which children can learn that creativity is relevant to some activities more than others. First, parents and schools provide opportunities for creative development in some sectors more than others. For example, in many schools graphic-expressive activities such as drawing and painting are given more attention than musical creation and improvisation; creative activities in dance and choreography are even rarer. In science classes, questioning is encouraged whereas in religious settings an attitude of acceptance is preferred. Research suggests that societies differ as well on preferences for leisure activities; for example, Beaty, Jeon, Albaum and Murphy (1994) found that young adults in France and Denmark compared to those in United States and New Zealand showed a greater interest in aesthetic-intellectual leisure activities, such as reading, whereas the opposite trend was observed for sport activities.

Second, creativity is channelled through emulation of eminent role models that exist in the society. Role models may be available in certain domains more than others (e.g., creative artists, scientists, and entrepreneurs more than creative politicians, educators and economists). In a culture where some areas of creativity are much more valued than other, children may consider only the instances that belong to these areas as creative and overlook creative productions in other domains. For example, in Bengal, creative endeavour in literature, music, mysticism
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and metaphysics, as well as architecture, sculpture and painting are highly valued, whereas the scientific and mathematical domains have received less attention. Anisuzzaman (1981) explains this difference by the fact that, in Bengal, creativity was closely related to social status. Literary creativity was mostly practiced among the high caste groups, who relegated other art forms to lower caste levels. This produced a situation in which recruitment into the valued branches of arts occurred through status at birth rather than through excellent performance in the art practiced. In the case of technological advancement, new methods of working benefited mostly farmers and craftsmen – members of the working class – who were in the position of having to render all surplus production to the ruling order, a situation that does not encourage increased production. The result of this system is a definition of creativity that corresponds above all to the elite’s activities and devalues the creative activities of other social classes. According to Rudowicz and Yue (2000), variations in the preferred domains for creative activity are also observed in comparisons between mainland China and Hong Kong. Creativity-relevant books, workshops and educational materials in mainland China favour examples of scientific and technological creativity whereas in Hong Kong, creativity in business and financial sectors is highlighted.

Third, social events or competitions, such as the Olympics of the Mind competition, are organized at the local, national or international level that promote certain domains of creative activity. These competitions, which focus usually on scientific, musical or artistic creativity, provide a structured setting in which children receive materials, instructions, supervision and motivation and, social recognition for their efforts.

In summary, culture can channel creativity into some domains rather than others. First, cultures provide different amount of opportunities for different domains of creative activity. Second, eminent role models will be more visible in different domains depending on the culture, and third, types of social events aimed at stimulating creativity will differ depending on the domain of creative activity valued in each culture.
Conclusions

Cultural differences in creativity are implemented through indirect environmental pressure on cognitive development, indirect pressure on conative (personality-motivation) development, or through the direct effect of the activities proposed to children or the availability of role models. Thus, the impact of education can be very important for creative development. Education includes both (a) the activities, learning experiences provided to students, and (b) the education of parents and teachers concerning the nature of creativity and how it may be fostered or hindered. Furthermore, society’s leaders may act to promote creativity or inhibit it through their governmental policies. These include funding some sectors of activity more than others (art vs. science), investing directly in the educational system to promote creative thinking skills to young children, and fostering diversity and individualism or, on the contrary, conformity. As creativity is, at least in part, a culturally-defined psychological construct, the educational programs that foster indigenous creativity in one context may be quite different from those that foster creativity in other contexts. We suggest that creativity can be best developed, specially during childhood, through learning activities that are tailored to the cultural context and promote abilities or traits that are habitually underdeveloped but important for creativity within the cultural setting (see Tan, 2000). In this optic, creative skill training programs developed in one culture will not be very effective when transplanted to another culture because children’s needs in relation to their existing cognitive and conative profiles will probably be quite different (Ng, 2001a). For example, in eastern cultures, the emphasis on obedience could be reduced in the educational system, whereas in western cultures, the emphasis on a logical approach to problems at the expense of intuition could be decreased.

A good understanding of the context in which creativity develops, and the aspects of each culture likely to either hinder or foster creativity are essential in order to build on the resources already existing in each culture to foster creativity.

References


**Suggested Key Words for Subject Index**

Creativity
Development
Cross-cultural issues