CREATIVITY IN ADULTHOOD

by

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(Under the Direction of Mark A. Runco)

ABSTRACT

This review of literature focused on the creativity in adulthood. Specifically, several issues were addressed including how creativity changes in adulthood, relationship between childhood and adulthood creativity, creative style in later years, influences of creativity on adults, and promoting creativity in adulthood. Although earlier theories suggested a decline in creativity in later years, recent perspectives viewed creativity as a lifelong process with some qualitative changes by age. Studies also indicated that worldplay, having an imaginary companion, and parental attitudes in the childhood were predictors of creativity in the later years. Studies also showed that creative people had more positive attitudes toward aging and saw their lives as more meaningful than their noncreative counterparts. They felt themselves successful and productive. The successful strategies enhancing creativity in adults included providing a supportive work environment, giving constructive feedback, developing training programs, incubation, setting goals, using synectics, brainstorming and mindfulness.

INDEX WORDS: creativity, adulthood, strategies
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This thesis is dedicated to my mother, Yıldız Çayırdağ, who did her best to support my education, and to my little son Burak Acar who let me experience the miracle of my life.
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CHAPTER 1
ADULTHOOD CREATIVITY: ITS CHANGE, RELATIONSHIP WITH CHILDHOOD, AND INFLUENCES

Creativity is influenced by many factors, including social, environmental, genetic, and developmental ones. Approaching from a developmental point of view, creativity is exhibited in different forms, rates and qualities at different phases of life. Adulthood is the most productive period of life and creativity is an important ability for individuals’ productive capability. On the other hand, creative ability also shapes the way people live in their adulthood. Indeed, there are many dimensions of the expression of creativity in adult years. This review of literature basically focuses on promoting creativity in adult years. Before discussing strategies to promote creativity, it is important to understand creativity in adulthood in general. This paper addressed the following questions:

1. Does creativity change in adulthood?
2. What is the relationship between childhood and adulthood creativity?
3. What is the creative style in later years?
4. How does creativity influence lives of the adults?
5. How can creativity be promoted in adulthood?

Does creativity change in adulthood?

Most of the studies about creativity in adulthood have focused on the later years and whether or not creativity change over time. Levy and Langer (1999) categorized theories about creativity in later years into two models. The first model is the peak and
decline model. According to this model, creativity is a single concept and a characteristic of younger people. Creativity peaks in early adulthood until the age 30s and then declines. This model aims to operationalize creativity based on the number of creative products. So if there is a change in creativity, it can occur in quantity, but not in quality. As a result, when there is a decline in the quantity of creative products, a decline is assumed in creativity. There are several empirical studies that support the peak and decline model.

McCrae, Arenberg and Costa (1987) examined the differences in creativity by age with a cross-sectional, longitudinal, and cross-sequential study. The sample of the study was 825 men, aged 17 to 101, who received tests of creativity between 1959 and 1979. Also, longitudinal analyses were conducted with a subset of 278 men after 6 years. Creativity was measured by several divergent thinking tests: associational fluency, expressional fluency, ideational fluency, word fluency and consequences. Simple correlations between tests and age revealed that there was a negative correlation between divergent thinking and age. Longitudinal analyses showed that ideational fluency significantly increased, but word fluency and remote consequences decreased after six years. In addition, the youngest group’s divergent thinking score increased, whereas the oldest group’s decreased. In general, those results implied that creativity declines as people get older.

Ruth and Birren (1985) compared three age groups, 46 young, 54 middle aged and 50 old non- eminent persons. Creativity was measured by two non-verbal (patterns and inkblots) and two verbal (uses of objects and just suppose) creativity tests. Results showed significant differences in creativity among age groups. The difference between
the young and the middle-aged groups were greater than the difference between the middle-aged and the old-aged groups. Ruth and Birren (1985) explained that the decrease in creativity with increasing age was due to three factors. First, fluency may decrease because of the slowing down in the central nervous system. This slowing causes the production of fewer ideas in a certain amount of time. Second, flexibility may decrease because of the concentration difficulties and difficulties in activating information from long-term memory. Information processing is less complex in old age individuals than in the young. Third, originality may decrease because of the reduced willingness to take risks. Old people are more careful in problem solving, and because of the over-socialization through life, they are more tied to social expectations.

Chauhan, Jain, and Chauhan (1983) examined the decline in creativity by age in their multi-group control group design study. The older group consisted of people who are 58 years old or older. The control group consisted of 100 young people who were below 20 years. All the subjects were male Hindus. They measured creativity by Catell’s 16PF Questionnaire (Hindi version A and B). Results showed a significant difference between groups. According to mean comparisons, the young group’s creative score was significantly higher than the scores of the older group.

Alpaugh, Parham, Cole and Birren (1982) studied the creative writing process and products among 61 younger and older women, who ranged 20 to 83 year-old. Subjects were grouped as younger (aged 20 to 38) and older (aged 60 to 83). There were not significant differences between groups in terms of intelligence, education and interest in writing. Creativity was measured by Guilford’s Uses of Objects, Consequences and Pilot Titles instruments. Subjects also wrote an original story about a prisoner. Results showed
both qualitative and quantitative differences between groups. Younger adults had higher scores than older ones in fluency, originality, and flexibility scores of creativity tests and creative story writing.

Jaquish and Ripple (1981) grouped 218 adult participants from different age groups as young adults (18-25 years), adults (26-39 years), middle adults (40-60 years) and older adults (61-84 years) to compare their cognitive creative abilities. Creativity was measured by a free-response divergent thinking exercise in three abilities: fluency, flexibility and originality. Group comparisons showed that young adults, adults, and middle adults were significantly more fluent than older adults. Young adults and middle adults were also more flexible than older adults and middle adults were significantly more original than older adults.

In another study, Jaquish and Ripple (1984) examined the developmental changes in ideational fluency, flexibility and originality in both the Chinese and American cultures. The 316 Chinese participants were grouped based on their ages: children (9-12 years), adolescents (13-17 years), young adults (18-25 years), adults (26-39 years) and middle adults (40-60 years). Creative was assessed through an auditory exercise in divergent thinking and rated for fluency, flexibility and originality. There were significant differences between the age groups in terms of creativity. The adolescents and young adults had the highest mean scores for fluency and flexibility. Adults and middle-aged adults had the highest score for originality. In comparing the Chinese sample with the American sample, the data obtained from previous American samples were used. There was a clear distinction between the two cultures in fluency and flexibility scores. Middle adults had the highest fluency and flexibility scores in the American sample.
Originality was the least differentiated area by age and showed similar patterns in both cultures. Middle-aged adults, young adults and adults had the highest scores in originality in the American sample.

In another cross-sectional and cross-cultural study, Ripple and Jaquish (1982) compared four age groups (children, adolescents, young adults and adults) in South Africa and the United States in terms of fluency, flexibility and originality. There were 63 South African and 63 American participants. The general pattern was an increase from childhood to adolescence to young adulthood. Then there was a decrease from young adulthood to adulthood. This pattern was true for all three domains in both cultures.

Chown (1961) examined the relationship between age and rigidity. She used several flexibility and rigidity tests in addition to intelligence tests. Factor analysis yielded two factors: intelligence and age. The age factor involved two of the adaptive flexibility tests which were loaded negatively. Two of the adaptive flexibility tests decreased consistently with age. In addition, on the tests that measure spontaneous flexibility, scores increased with age until age 40 and decreased after the late 50s.

The studies that have been summarized so far were mostly psychometric. They used some measures of creativity or divergent thinking. However, the psychometric approach to the peak and decline model is still open to debate. Runco and Charles (1997) discussed the reactions to tests and testing as one of the reasons for these differences between young and older people in terms of creativity. One reason might be that old people are slower in testing, so they have lower scores on creativity tests. Another reason might be the familiarity with test topics. Because older people are more familiar with certain questions and stimuli, they most likely think about responses that were developed
before. So, they have less original responses than the younger people. Third, old people’s lack of familiarity to testing might be a disadvantage to their creativity scores. The young have many testing experiences during their education, so they still recall testing strategies. They also may be more comfortable during the assessment than older people.

Another critique to the peak and decline model concerns the research design. Usually studies that reported declines were conducted with cross-sectional designs. In this type of research design, differences across age groups might also stem from changes across generations rather than the influence of aging. Indeed, Kim (2011) showed that creativity scores are declining since 1990 as measured by TTCT. This actually implies a reverse “Flynn effect”, which refers to the increments in IQ in recent generations. Therefore, results of the cross-sectional studies should be analyzed with some caution.

A general criticism to cross-sectional studies is a possible cohort effect. Keyes, Utz, Robinson and Li (2010) defined cohort effect as the historical influences on a particular birth group that are unique to this group. Those influences, then, yield a set of characteristics unique to this generation. The cohort effect is different from the age effect. Age effect is the physiological changes that are caused by aging. Cohort effect, on the other hand, involves social changes based on the common experiences of life. The increase of creativity in the young group could be explained by the cohort effect. Namely, frequent use of creativity tests could lead to test-wiseness. This could seriously influence studies using psychometric tests. Another factor behind the cohort effect might be the role of education. Levy and Langer (1999) focused on the educational differences between old and young generations. Older people had less opportunity to receive formal education than the young people, and more education could inflate the test scores.
Another criticism to psychometric tests is that divergent thinking is less emphasized in older years than young generations. In youth it is a desirable talent to come with many ideas to a question. They try to distinguish themselves from others to strength their identity. However, old people have already developed their identity. They tend to have a more mature thinking based on the integration of their own experiences (Levy & Langer, 1999).

Its focus on productivity as a criterion for creativity is another criticism of the peak and decline model. According to Levy and Langer (1999), productivity is not equivalent to quality. There might be many other reasons that affect productivity. For instance older people have less income and fewer social networks. If they are not retired, usually they have more professional obligations. Achieving success in the field may also decrease their motivation to create new things.

Beyond all these critiques, a new model for creative development is suggested. The life-span developmental model claims that there is not decline in creativity by age. Instead, there is a difference in productivity. Creativity and productivity are not same concepts. This model offers qualitative analysis of creative people over time (Levy & Langer, 1999). Although society usually believes that old people do not have enough energy and resources to act creatively, creativity does not disappear with time. On the contrary, imagination might increase by age, because people can turn to their inner worlds (Hickson & Housley, 1997).

Lindauer (1993) examined the relationship between age and creativity in three studies. In the first study, art works of 21 highly creative old artists (age 79 or older) were examined. Three kinds of records were acquired: the complete works of 7 artists,
representative works of 5 artists and the best works of 9 artists. According to the results, the most productive years of the artists were their 30s, 40s, and 50s. The lowest productive years were 20s, 60s, and 70s. In the second study, differences between male and female artists were discussed. Although female artists had more works than male artists, the difference between groups was not significant. But, there were differences between groups in terms of their productive ages. Female artists were mostly productive in the early years (20s and 30s). However, men produced more in the later years (60s to 70s). The aim of the final study in Lindauer (1993) was to reveal the ages at which the most creative products were produced. For this purpose, up to 100 artists with longer and shorter lives were examined, and it was established that artists were at least in their mid to late 40s when they produced their masterpieces and for some even later. Masterpieces were produced when 81% of their lives had been completed. Results of all three studies showed that rather than peaking and declining at certain ages, creativity remains same during the ages between 30s through 60s.

Kamulainen (1985) studied with 485 people for a cross-sectional research. He classified the participants into seven groups, five of which were adults. The group aged 22-28 was innovative flexibility I, 29-35 was innovative flexibility II, 36-42 was innovative flexibility III, 43-49 was emergentive originality I, and 50-61 was emergentive originality II-III. He tracked three dimensions across different phases of adulthood: creative change by suprarationalization, creative reproduction by rationalization, and creative integration by these two rationalities. He found that creative reproduction increased in all innovative flexibility groups and decreased in emergentive originality groups. Creative change increased in innovative flexibility I, but decreased in
innovative flexibility II and innovative flexibility III. Then it increased again emergentive originality II and III. As far as creative integration, it decreased in innovative flexibility I and increased in innovative flexibility II followed by another decrease in innovative flexibility III and emergentive originality I, and a final increase in emergentive originality II and III. Therefore there was a non linear change in different facets of creativity in adulthood.

Kim (2011) investigated the changes in creative thinking by age. She analyzed the TTCT scores of subjects for years 1966, 1974, 1984, 1990, 1998 and 2008. Although fluency and elaboration significantly decreased in adults, abstractness of titles and resistance to premature closure significantly increased in adults. Originality scores also increased for adults but this increase was not significant.

Wu, Cheng, Ip, and McBride-Chang (2005) examined the relationship between age and creativity. Creativity was assessed by three instruments: a realistic task that required understanding of real-life conditions, a figural task that involved drawing based on lines or figures, and a verbal task that asked for unusual uses of cardboard boxes. Each test was scored based on fluency, quality (i.e. combined score of originality and elaboration) and flexibility. The subjects were 22 6th grade students and 22 university students from Hong-Kong. Results showed that, although there was not any significant difference between the verbal creativity scores of two groups, the fluency and quality scores of 6th grade students were higher in figural creativity and flexibility, and the quality scores of university students were higher for the real-world-problem task. These results are interesting in that creativity is shown to be a multi-faceted construct. Therefore, developmental changes do not occur in the same way for all dimensions.
Bronte (1997) studied the differences between the developmental patterns of a long lifetime and a shorter lifetime. She interviewed 150 people from 1987 to 1992. Half of the participants reached the peak of their creativity in their 50s. Six-percent of the participants started their most creative time after they retired from their regular jobs, which was around age 65 or later. Bronte (1997) claimed that in a short lifetime, the creative growth spurt is approximately in the 20s or 30s, but for a longer lifetime, the peak is in later years. Healthy adults do not experience a decrease in creativity. But, if old people have cognitive, sensory or physical problems, those problems may prevent them from creative production.

When considering the changes in creativity with aging, one needs to take other factors into account. In an experimental study, Jaquish and Ripple (1981) examined the relationship between creativity and self-esteem among adults. According to the correlations within age groups, there were not any significant differences between divergent thinking and self-esteem within the young adult and adult age groups. In middle adult group, self-esteem was significantly correlated with all creative abilities (fluency, flexibility and originality). In older age group, self-esteem was significantly correlated to fluency and flexibility. They combined the creative scores for subjects from all age groups to examine the relationship between creativity and self-esteem across the adult life-span. Stepwise regression analyses showed that self-esteem explained a significant amount of the variance for fluency, flexibility and originality. Adding the age factor to the regression did not make a significant contribution for all three areas. Here, self-esteem seemed to be the real factor behind the change rather than aging.
Another tradition of research is historiometric studies. Researchers used historical data which indicates actual creative performance rather than performance in tests. The results of these studies are interesting in terms of seeing the difference with psychometric studies.

Dennis (1966) studied the biographies of 738 eminent creative people. They were mostly male, and all of them lived to the age of 79 or older. For collecting data, he looked at the percentage of their works in every decade between the ages of 20 to 80. He found differences between the domains in terms of creative productivity. Scholars and scientists (except mathematicians and chemists) had less creative products in their 20s than in later years. The peak period for them was between ages 40 and 60. They were also just as creative in their 70s as they were before. One reason for their higher creativity in later years than artists, musicians and authors, might be the influence of training. Creativity in art is an individual creativity. Artists are less likely to depend on others to produce their works. However, collecting appropriate data for their studies and waiting for others’ feedback may cause scientists to start their creative works later than artists.

Based on the results of several historiometric studies, Simonton (1990) revealed that creativity is not a concept that increases or decreases with age. People can be creative at any age. However some reasons can affect their production in later years. Older people might be less creative because of health problems. It is not aging itself which causes a decrease in creativity, but rather some illnesses that occur because of aging can cause people to be less productive. Negative effects that come along with aging can be reduced through adaptation to new conditions and the desire for self-actualization. According to Simonton, higher creative potential results both in earlier and higher rates of productivity.
as well as making last major contributions later. In addition, decrements in creativity differ according to disciplines. Later creativity is more expected in a field such as geology rather than lyric poetry because the peak is observed later in life in the former. When the quality of the works is considered no age related decrements in creativity was observed. As people grow they produce less in quantity but of a higher quality. In the final years of life, specifically in the last year, creative individuals engage in creative endeavors again. As a result of that they produce shorter but more significant works. Therefore it is even possible to say that there can be an increment toward the very end.

Historiometric studies revealed that the relationship between creativity and aging is far from being uniform. It is largely a non-linear relationship, and has a different pattern in each discipline. Most of these are in agreement with theoretical accounts of creativity. According to Runco (1996) creativity is a multidimensional, complex concept. It requires skills, traits, and capacities from both adulthood and childhood. Runco’s (1996) definition of creativity is “creativity as manifested in the intensions and motivation to transform the objective world into original interpretations, coupled with the ability to decide when this is useful and when it is not (p. 4).” He emphasized transformational capacities in this definition because of its generalizability to all ages. Mature creators use this skill to transform external information appropriately and creatively. They know when they transform that information. On the other hand, children may transform everything immaturity for play and exploration. At that point, the difference between mature and immature creativity is the discretion to know when to transform external information.
According to Sasser-Coen (1993), creativity does not decline by age, but components of creativity may change. Creative products in later years are qualitatively different and perhaps less salient. She focused on the measurement of creativity to underline the misperception of the decline of creativity in old age. If it is assumed that creativity is the same throughout the life-span, it is measured by the same concepts and instruments. Although there can be a decline in some cognitive components of creativity, this cannot be applied to all of them. She suggested viewing creativity as a multidimensional, dynamic construct, so that age-related declines can be explained by qualitative changes in creativity in the later years of life. With increasing age and experience, fluency might decrease, but originality might increase based on personal experiences.

Lorenzen-Huber (1991) examined creativity in later years by using a single factor case-study design. 20 Nebraskans were selected among the past winners of the Annual Art Show for Older Nebraskans. Subjects’ ages ranged from 64 to 92. All subjects were active in painting, photography, drawing, collage or mixed media. A case study interview was used for collecting data. First, self-perceived patterns of their own creativity were asked of the participants. Twenty percent of participants reported an up-down-up pattern that increased in their 20s, decreased in their 40s and increased after their 40s. Twenty percent reported consistent patterns or no changes across life-spans. Sixty percent reported a rising pattern that increased throughout life. The subjects focused on three factors that influenced their creativity: time availability, family and career. This open-ended question gave new insights about creativity and aging. Subjects’ responses
included self-discipline, a desire to achieve, perceived creativity as a form of learning, an activity to keep someone busy and a way to overcome regression.

To sum up, there is not one answer to the question of “Does creativity change with age?” Different studies and types of studies give different answers. Therefore, a quantitative review of studies could reveal the general picture in the literature.

**What is the relationship between childhood and adulthood creativity?**

Another common debate in the literature about adult creativity is if creativity in childhood influences creativity in adulthood. Root-Bernstein and Root-Bernstein (2006) studied creative play in childhood and its effects on adults’ creative products. They specifically focused on worldplay, a fantasy world which is created through a child’s imagination. They expected that creative individuals were more inclined to have invented worlds in childhood than the general population, that people who were engaged in childhood worldplay have a variety of interests in the arts and sciences in their adulthood, and that those individuals made connections between their childhood worldplay and their careers as adults. The study included 106 participants who received MacArthur Fellowships, which are given to individuals from different disciplines for extraordinary originality. As a comparison group, students who took a variety of courses at Michigan State University also answered the same questionnaires. Results showed that in addition to its prevalence in the general population, worldplay was more common among creative people. In contrast to the literature, this study found that the tendency toward childhood worldplay was not only seen in the arts but also, in all professional areas. It was common mostly to persons in the humanities, then the arts, followed by the sciences. One of the most important findings of the study was that the creative population had considerable
tendencies toward childhood worldplay than the control group in all professional categories.

Myers (1979) claimed that having imaginary companions in childhood is early evidence of creativity in adulthood. In his detailed case study, he examined two women who had creative interests. One of the women excelled in creative writing, and the other one was a painter. Both of them had one or more imaginary companions/twins during their childhood. He also described four creative women in an earlier study (Myers, 1976). Two of them were creative writers, one was a painter and the last one was a photographer. All of those women also claimed having imaginary companions or twins in childhood.

Another study that examined the relationship between childhood experiences and adult creativity was done by Koestner, Walker and Fichman (1999). They worked with archival longitudinal data that were originally collected when the 379 subjects were 5 years old. Data for this study were collected from a representative 31-year-old sample. Parents of the original subjects were asked about their parenting styles. Their responses were categorized under three factors (parental warmth, parental restrictiveness, and parental conflict) for the present study. Creativity was measured by the consensual assessment technique (observers evaluate subjects’ creative stories) and the Creative Personality Scale. Two independent multiple regression analyses were conducted to test the effect of childhood parental style on adult creativity. The creative storytelling results were used as the dependent variable of the first regression analysis, and the Creative Personality Scale scores were used as the dependent variable for the second regression. For both analyses, parental conflict was significantly positively related to adult creativity.
Longitudinal studies of the Torrance Test of Creative Thinking might be good sources to show the relationship between childhood and adulthood creativities. In 1998, TTCT were administered again to subjects who had received the test 40 years ago. Ninety-nine of 170 respondents returned the questionnaire. Creative achievement was measured by two criteria: quantity of publicly recognized creative achievements and quality of public achievements. The predictors are IQ, fluency, flexibility, originality, elaboration, 3 years of TTCT testing as in the earlier elementary sample, and whether respondents had a mentor in 1980 and in 1998. Correlations were calculated for males and females separately. In both male and female groups, flexibility and originality scores were significantly correlated with quality, but not quantity of creative achievements. Additionally, fluency had a significant correlation with quality of creative achievement only in the female group. These findings are noteworthy in that quality might become more important than quantity as people get older. Additionally, a structural equation modeling was conducted to show the relationship between variables more clearly. Results showed that the best predictors of creative achievement after 40 years were IQ, flexibility, originality and creativity index. Having a mentor in 1980 and 1998 were correlated with quantity and quality criteria. According the model with a good fit, both IQ and TTCT were related to creative achievements, and IQ was also related to TTCT. Therefore, creativity assessed in younger ages can predict creative achievements in adulthood, but the role of intelligence should not be omitted (Cramond, Matthews-Morgan, Bandalos, & Zuo, 2005).

For the fifty-year-follow-up, data from more than half of the participants of the forty-year-follow-up study was available. Four scores of TTCT, (i.e., fluency, flexibility,
originality and elaboration) and IQ scores that were derived from the WISC were used. Criteria measures were public and personal achievements. There were moderate but significant relations between fluency, flexibility and originality scores and personal achievement. The correlation between originality and personal achievement were marginally significant. None of the correlations with public achievement was significant. A composite score of TTCT was conducted. This composite score was positively correlated to personal achievement but not public achievement (Runco, Millar, Acar, & Cramond, 2010).

Feist and Barron (2003) examined the predictors of creativity from early to late adulthood through a 44-year longitudinal study. The original assessment of the 27 years-old subjects was conducted in 1950 with 80 male graduate students. 43 of them participated in the longitudinal study in 1994. Originality of the 27 year old participants was measured by a composite score that involved the ratings of at least three of the participants’ graduate advisors, six psychological staff members, and the participant himself. To assess personality, the Adjective Check List was used for self- and observer ratings. In 1994, the creativity of the 72 year old participants was measured based on honor/award information, publication data, and citation counts. Results showed that ratings on their potentials and intellect as assessed at age 27 year-old predicted creativity after 44 years.

Albert (1996), however, claimed that childhood creative products are not evidence of adult creativity. According to him, the type and level of childhood creativity were not the same as creativity in adulthood. He noted several observations on creativity from childhood to adulthood. First, only a few of those who were creative in childhood are still
creative in adulthood, so childhood creativity is not a good predictor of adult creativity. Second, formal education hinders the transformation of early talent into adult creativity, especially in the nonmathematical and nonscientific domains. This might be because of the emphasis on logical thinking rather than divergent thinking in the schools. Third, families are also important for creativity. There are critical differences between the families of eminent and creative persons and eminent but not creative persons. Parents’ characteristics, certain demographic information (such as socioeconomic status) and an individual’s relationship with his or her parents all influence one’s creativity. Lastly, adult creativity is a result of the changes a child goes through in puberty and later. In fact, puberty is the most important “development marker” of creativity because of the development of new social, emotional and cognitive skills. Most creatively eminent persons produced their first creative products in their early to mid twenties. As a result, not all children are creative, and even the majority of those who show creative potential in childhood are not creative when they become adults. Creativity in adulthood is not a continuation of childhood creativity.

In conclusion, although there are some controversial studies, longitudinal studies especially showed that childhood creativity is a good predictor of creativity in adulthood.

**What is the creative style in later years?**

Keegan (1996) summarized the common characteristics of creative adults. He suggested that there are not unique thought processes that distinguish creative adults from non-creative ones. The unique characteristics of creative individuals include a strong emotional bond toward what they are doing, intrinsic motivation and deep knowledge of the subject. Their cognitive, motivational and emotional components are highly
organized. He discussed the importance of *acquisition of expert knowledge* for becoming an extraordinary and creative thinker. Although expertise is not sufficient, it is very critical for creativity. It is especially important for higher level, extraordinary creative products. Keegan defined this characteristic as the difference between a creative child and a *Darwin, Einstein and Picasso*. Building expertise takes a long time, so a child does not have enough time to perfect this expert knowledge. Expertise also differentiates a creative adult not only from children but also from other adults. A person can only see the limitations of an area when he or she attains expert knowledge and then, develop new points of view and techniques for overcoming the limitations of the area.

In his theory of creativity, Dacey (1989) specified six peak periods for creativity and defined the characteristics of these years that foster creativity: 0-5 years old, 11-14 years old for males and 10-13 years old for females, 18-20 years old, 29-31 years old, 40-45 years old and 60-65 years old. In adult life, the first peak is at ages 10 to 20. This is a critical period, because people leave their parents’ supervision during these ages. These early adult years aim at achieving independence from parents. One needs to develop a new self-image. If he or she has enough opportunities and encouragements, he or she becomes more creative. The second peak period in adulthood is between the ages 28 to 30. People become more aware of their own values in these years. They choose to continue their marriages, or they see the differences between them and their partners and choose to divorce. There is an increase in inner conflicts at this stage. There is a similar crisis, especially for men, around age 40. These middle adult years cause changes in self-perception. Both crises in the 30s and 40s cause an increased exploration for new things in life. This search fosters creativity. Ages 60 to 65 are the retirement years. So, many
people have more chances to fulfill their creative needs that were previously impossible. Of course, not all individuals become suddenly creative. But, a worthwhile number do. So, for some people, creativity starts at these ages.

Some artists change their styles dramatically in old age. The changes are usually in technique or composition, but these changes make their work more creative. Usually, these artists become eminent—or more eminent—after they change their style. Old-age/late-life periods can be observed in artists from all areas: painters, sculptors, film makers and authors. There are some characteristics of the late-life style that differentiate them from the early works. For instance, they are more dynamic, unpredictable, more independent, intense, and more detailed. There might be different explanations to the changes of style in later years. For instance, changes might be the results of physical or mental breakdowns. These breakdowns may have affected their color, shape and space perceptions. Other reasons can be personal conflicts in later years, desire to prove him or herself to younger generations and reactions to one’s own works in early years (Lindauer, 1992).

**How does creativity influence lives of the adults?**

The common trend for the research on age and creativity is exploring the influence of age on creativity. However there are also some studies focused on the effects of creativity on aging. Creativity can be a chance for elders to feel themselves still productive.

Smith and Meer (1990) studied sixty 72-years old subjects to explore their perceptions about aging, illness and death. There were two groups of subjects. The selenium group consisted of the active, partly health-conscious participants and the
pensioners group consisted of more passive-dependent individuals. The subjects were typically middle class. Creativity was measured by the Creative Functioning Test (CFT). CFT aims to liberate individuals from the limitations of the objective world by exposing them to meaningful pictures that flow in gradually shortening periods. Participants’ attitudes toward aging were influenced by their creativity. In the selenium group, only 8% of the creative people had negative attitudes toward aging. However 35% of noncreative people had negative attitudes toward aging. In that sense, creativity makes people more resilient against the challenges of late years of their life because they think that their life is more meaningful than those who are not creative. Creative people can overcome conflicts and ambiguities in a more constructive way. Smith and Meer (1990) found that creative people make more age regressions than noncreative people. This can be interpreted as a higher flexibility in self-image through swinging between adult and childish or youthful way of thinking.

Fisher and Specht (1999) examined the relationship between creativity and successful aging. They interviewed 38 people who contributed to senior art exhibitions. Their ages ranged from 60 to 93. Their responses about the meaning of creative in later life can be grouped under 2 categories. The first category (67%) was defined by doing something. Although participants primarily focused on the actual production of something, they also discussed developing ideas. The second category (28%) was defined by thinking of things in unique ways. This category tended to develop ideas and explore the self. Overall, they defined creativity as both a way of thinking and of doing things in a different way. Participants’ responses to the question about the benefits of the creative process were categorized under three groups. First, the creative process helped them to
escape from the difficulties of life circumstances. They forgot their pains and focused on positive things. The second benefit was the sense of being successful. They felt that they were making a contribution to life while leaving something valuable of theirs behind. Third, they could connect with others who have similar interests and support each other. Fisher and Specht (1999) concluded that there is a positive relationship between creativity and successful aging. Elders who produce creative things were active, have a sense of purpose, feel successful and have reasons to look forward. When participants were asked about the requirements of being creative in later life, the responses included motivation, a higher respect towards oneself and life, and giving more importance to imagination and inspiration.

Bygren, Konlaan and Johansson (1996) examined the effects of attending creative activities on survival. They interviewed with more than 12,000 Swedish people aged 16-74 years between the years 1982 and 1983. Then they followed up the participants until the end of 1991. In the study, confounding variables such as age, sex, education level, income, long term disease, social network, smoking and physical exercise were controlled. Creative events included activities such as playing and attending concerts, and visiting art galleries and museums. Results showed positive significant influences of attending creative cultural events on longevity. Parallel with this finding, Lindauer’s (1993) study with 120 different artists showed that creative artists live long. Among the artists in his study, the average age of death ranged from 65 to 77 years. Long-lived artists, who lived more than 60 years, die between the ages 75 and 77 on the average. This average was higher than the average of normal population.
Rugh (1991) examined the role of creativity in an older woman’s life. In several in-depth interviews, eight thematic trends were generated. The most powerful three themes were the need to tell one’s own life story in an artistic way, the desire to relate to others through the creative process and the use of art as a tool for personal problem solving. The subject of the case study reviewed her life in her old years and transformed her past experiences into a powerful future. This transformation was especially important for personal wholeness. Arts in the later years did not only include entertainment and pleasure. Older people’s studies were not signs of passive withdrawals. They engaged in life actively through artistic means.
CHAPTER 2

PROMOTING CREATIVITY IN ADULTHOOD

If creativity is a complex then there must be some strategies that can promote creativity. Although it is hard to find strategies specifically developed for adults, there are still some studies that focus on promoting creativity in adulthood.

Training Programs

According to Runco (1999), contrary to children, adults rely on routines and assumptions. They need effort to foster their creativity. Thus, creativity training programs are important for promoting creativity in adulthood. Ma (2006) conducted a meta-analysis to measure the effects of training programs on creativity. Two hundred sixty-eight effect sizes from 34 studies were calculated. Moderators were creativity tests, experimental designs, the type of the training programs, ages of the participants, and duration of the training. Results showed the effects of training programs on creativity. Among the moderators only age had a significant effect. Creativity training programs were more successful with older participants than younger ones.

Hickson (1997) examined different training programs for fostering creativity in the elderly. Creative Aging Workshops offered several workshops to help elder people learn more about themselves and improve their mental abilities. Seniors learned to use their inner and external resources more effectively to become creative. Its objectives are that by the end of the program participants would be able to generate new behaviors,
skills, and attitudes. The Torrance Quality of Life Program aimed to increase creative thinking abilities in different disciplines, such as art, dance, drama or fitness. The main teaching strategy was Torrance’s three stage incubation model. Empirical studies showed the significant differences between the training and control groups. Goff (1992) examined the effects of the Quality of Life Program on older adults. The program aims to improve creativity and fitness to participants through physical and expressive activities. Both the training and control groups received the Torrance Test of Creative Thinking before and after the training. The control group was higher on the pretest scores before the 4-month training. After the training, the experimental group was higher on the post-test scores. When the pretest scores were controlled, the post-test scores of the training group were significantly higher on fluency, flexibility and overall creativity than the control group.

The final program that Hickson discussed is the Elderhostel. In this program, seniors used available spaces in the universities for summer time. Several weeks long, noncredit courses were organized to motive older people to use their creative and intellectual abilities effectively. Because the courses were non-credit classes, it aimed to focus on the intrinsic motivations of participants rather than extrinsic motivations.

Clapham (1997) discussed the effectiveness of ideational skills training. One hundred and eight participants were randomly assigned to one of the three training situations. The creativity training consisted of six components. In the first step, participants developed as many ideas as possible to improve a bathtub. In the second step they attended relaxation and stretching exercises. The importance of creativity was discussed in the third step. In the fourth step, idea generating techniques including brainstorming (allowing all ideas without criticism), forced relation (looking at the
immediate environment to see if items can be used to generate ideas), using a checklist consisting of the three key elements: magnify, minify, rearrange (if the stimuli can be used by enlarging, reducing or rearranging of its components), and catalog (to generate new ideas using a catalog), were discussed. In the fifth step personal factors that affect creative performance, such as positive self-talk, setting goals, and accepting failure as a part of life were discussed. Finally, they completed a second creative exercise to measure their improvement at the end of the training. Humor and anecdotes were used as a part of the training. The ideational skills training consisted of the same elements of the creativity training, except the relaxation techniques, which discussed the importance of creativity and information about self-talk and goal-setting. In addition, this training did not include humor and anecdotes. The creativity program was 30 minutes and the ideational skills program was 10 minutes. The control group received a different training that does not include anything about creativity and idea generation. Creativity was measured by TTCT-Figural before and after the trainings. Results showed the significant influence of training on post training creativity scores. Both the creativity training group and the ideational skills training group had significantly higher scores than the control group. The two experiment groups did not differ significantly from each other. When differences between trainings were compared in terms of the subscales of TTCT-figural, the creativity training group had significantly higher scores on fluency, elaboration and resistance to premature closure than the control group. There were not any significant differences between the ideational skills training group and the control group in the subscales of the TTCT-Figural.
Clapham (1996) examined the effects of a creativity training program which aimed to improve production of units. The program was developed based on the divergent production subtests of the Structure-of-Intellect Learning Abilities Test. The relations and transformations subtests of the test were not covered in the program. Fifty-six college students were assigned to two groups. Experimental group participated in the creativity training; and the control group participated in an alternative training. Results showed that training group’s scores on production of unit subtests were significantly higher than the control groups’ scores. However as it was expected, there was not an improvement on relations and transformations subtests of the scale.

Fontenot (1993) worked with 62 business people to examine the effects of creativity and creative problem finding training on fluency, flexibility and quality of problem statement. Participants in the control group completed a program finding task without receiving any training, and the experimental group completed the same task after a six-phase creativity training. The training included mess finding, data finding, problem finding, idea finding, solution finding, and acceptance finding. Results showed that training had positive effects on the fluency and flexibility in data and problem finding and quality of problem statement scores of the experimental group.

Meichenbaum (1975) compared two creativity trainings. Twenty-one undergraduate students ages between 19 to 26 years were assigned to one of the three groups based on their gender and pretreatment creativity performance. The assessment battery included two divergent thinking measures, a preference for complexity measure, a measure of fantasy and reality coordination ability, and an adjective check list to measure the changes in self-concept. Two of the groups were experimental. In the first group,
subjects received a self-instructional training about their perceptions concerning their own creative processes. They became aware of negative perceptions about their creative process and used self-instructional training to cope with those perceptions to enhance creativity. In the second-group, subjects received focusing training. The difference of this training from the first training was the explicit exercises in focusing or learning how to get in touch with one’s feelings. They learned how they can use these focusing exercises to enhance creativity. The third group was the control group which was not treated but received the same pre and post-tests. The Self-instructional training group had the most significant improvement on the remote and original responses on the tests of divergent thinking, test for preference for complex figures, and human movement responses in inkblot test. The Focusing training group had significantly higher scores on fluency scores of divergent thinking test. But neither of these responses are more original nor more flexible. Finally, the least change in creativity was on the control group. In contrast to their actual performance on the creativity measures, participants in the focusing training groups felt more creative after the training. But the actual performance showed the significant difference only in fluency scores.

Davis and Bull (1978) examined the effects of taking a creativity course on the affective components of creativity. Subjects were university undergraduate students who attended a 5-week-1-credit creativity class. There were 87 students in the first class and 60 students in the second class. The course content included topics related to creativity such as creative problem solving, creative personality, reviews of creative training materials and strategies, creativity tests, theories of creativity, creative thinking techniques, and brainstorming. Creativity was measured by four criteria: an art or
handicraft project, creative writing, ideas for two inventions, and ideas for a creative teaching method. The first class took the How Do You Think test before the course and Adjective Checklist after the course. The second group took the Adjective Checklist before the course and How Do You Think test after the course. In both tests the trained subjects had significantly higher scores than the before training subjects. In both groups, the training had more influence on females than male subjects.

Basadur, Graen and Scandura (1986) studied on the attitude changes of manufacturing engineers toward creative problem solving after the training. An increase in preference for ideation and a decrease in tendency to make premature critical evaluations of ideas were expected at the end of the training. In the training there were three critical stages: problem finding, problem solving and implementation. Each step included an ideation-evaluation process. Ideation is about idea generations without any criticism. Evaluation was about evaluating ideas to choose best ones. Thus ideation referred to the divergent thinking part and evaluation to the convergent part. The three-day creative problem solving training were conducted twice. There were 65 participants in the first training and 47 participants in the second. The contents of the training were similar. The second group received the training five weeks later. As a result, the training improved participants’ attitudes toward divergent thinking in problem solving.

Shearring (1992) suggested three important subject areas that must be a part of every comprehensive creativity development program. First, a basic syllabus must include techniques such as problem identification and analysis, opportunity analysis, SWOT analysis, solution criteria, brain storming, and value analysis. External environment also had to be a part of the education. This area includes management and
organization, innovation, resistance to change, stakeholders, system theory, and chaos theory. The third component is internal environment which includes theories of creativity, models of human behavior, language and its relation to thinking, convergence, and divergence thinking.

**Work Settings/Work Environment**

A basic strategy for letting creativity emerge is to provide the appropriate context for it. Most of the studies about enhancing creativity in adulthood were conducted in work settings and discussed strategies for employees.

Madjar, Oldham, and Pratt (2002) examined the effects of support from inside and outside the organization on employee’s creative performance in the workplace. Data were collected from more than 1000 employees and 20 supervisors from three different work settings. Their creativity was measured by the Creative Personality Scale and creative performance items. Results showed that both support from work (from supervisors and coworkers) and non-work (friends and families) made significant contributions to employee’s creative performance. Support from families and friends contributed more than the support of supervisors and coworkers.

There are similar studies that showed the importance of supportive environment for enhancing creativity in work settings. Oldham and Cummings (1996) worked with 171 employees and examined the effects of personal characteristics, job complexity, supportive supervision and controlling supervision on creativity. Creative personal characteristics were measured by the 30-item Creativity Personality Scale. Creativity performance was measured by employees’ patent disclosures written, contributions to an organization suggestion program and, supervisor ratings of creativity. Results showed the
significant positive effects of personal creative characteristics, job complexity and supportive supervision employees’ creativity.

Amabile, Schatzel, Moneta and Kramer’s (1982) study on 211 employees showed the importance of leader support on creativity. Creativity was measured by peer ratings of the contributions of employees to the team project. Peers used a 7-point response scale to rate their own creativity and their peers’ creativity. Average ratings of the peer evaluations were used for a single overall creativity score. Results showed that there was a positive, moderate, and significant relationship between perceived leader support and mean peer-rated creativity.

Edelson (1999) suggested several strategies for continuing education leaders to promote creativity in institutions. First, enhancing intrinsic and external motivation can increase creativity. For intrinsic motivation, it is important to focus on people’s own values. For extrinsic motivation awards, additional resources, including participation in conferences, can be helpful. When public recognition is emphasized in the institution, then employees tend to be creative through seeking rewards with their innovations. Praise and constructive feedback can be also helpful. Promoting self-efficacy is another way to increase creativity. Creating a supportive environment in the institution, avoiding unnecessary and negative criticism, and having opportunities in work settings to enhance one’s abilities are all strategies to promote self-efficacy and, therefore creativity. As it was discussed previously, experience contributes to creativity, especially in real life tasks. Developing expertise is one of the most important actions in work settings. Giving opportunities to attend conferences in the field, subscribing to leading journals, making time for individual conferences with employees, and having mentorship opportunities
within or from outside the institution help people to reach mastery levels in their work areas. Another strategy is to provide time to generate new ideas. A flexible time schedule is crucial for creativity. Employees should leave their usual tasks from time to time and certain days might be devoted to creativity. On these days, institutional support should be provided for innovation. Work settings should be designed for team work and group interactions for creativity. Playing might be also helpful. On creative days, some fun activities such as board games can be played together. These games help employees develop different strategies and new possibilities in an uncritical environment.

**Feedback and Evaluation**

The influence of feedback on creativity is a controversial issue. Some believe that there should be no criticism of ideas generated while others believe that constructive feedback provides better results.

Zhou (1998) analyzed the interactive effects of the feedback valence, feedback style, and task autonomy on creative performance. The study’s participants were 210 university students who played given roles in a laboratory setting. Their creativity was measured by three judges using the consensual assessment technique based on the participants’ solution generations. The feedback valence was measured as negative or positive feedback, and the feedback style was measured as informational or controlling. The highest creativity score was obtained for the positive-informational feedback. The lowest creativity was obtained for the negative-controlling feedback.

In another study, Zhou (2003) examined the effects of supervisor’s close monitoring, developmental feedback, and the presence of creative coworkers on creativity. The creativity of employees was measured based on the supervisor’s ratings.
The supervisor’s close monitoring, the supervisor’s developmental feedback, and the presence of creative coworkers were evaluated by employees. Regression analysis showed that when creative coworkers were present, the lower the supervisor’s close monitoring the greater the creativity and the more the supervisor provided developmental feedback the greater the creativity.

Shalley (1995) compared the differences in creativity with or without the expectation of evaluation. Eighty-four university students whose average age was 22 participated in the study. Subjects received a packet with problems, and it was expected that they would generate creative solutions to these problems. Subjects in the no-expected-evaluation condition did not receive any instructions about the external evaluation. However, subjects in the expected-evaluation condition learned that their responses were evaluated in terms of quantity (productivity) and creativity. Individuals in the no-expected-evaluation condition had higher productivity scores than the individuals in the expected-evaluation condition.

**Rewards**

Another controversial tactic for promoting creativity is giving rewards. Some believe that giving rewards is a good strategy to foster creativity. However, some others claim that rewards do not improve creativity because they contribute to external motivation rather than intrinsic motivation.

According to Eisenberger and Rhoades (2001), expected rewards for creative performance increases creativity. One hundred fifteen college students were asked to develop five creative titles for a short story. For half of the students, as a part of the instruction, it was emphasized that a financial reward would be given in the following
week based on the creativity of their responses. The other half of the students were not
given any instruction about rewards. Students who were promised a reward produced
more creative titles for the story than the second group of students. In addition, their
study with 331 employees showed that expected reward for high performance increases
intrinsic task interest, leading to increased creativity.

However Amabile, Hennessey and Grossman (1986) rejected the positive effects
of rewards on creativity. Sixty adult women participated in a creativity experiment that
required completing a creativity task. Different conditions were created in the laboratory
setting. In the no choice/no reward condition, participants participated in the experiment
without being asked for their consent, and the possibility for rewards wasn’t mentioned.
The no choice/reward condition is the same as the previous condition, except that
participants were told about the monetary reward (money) after the experiment. In the
two choice conditions (choice/no reward and choice/reward), everything was the same
with the first and second conditions, except the subjects’ willingness to participate in the
experiments. Importantly, no successful completion was required for rewards.
Participants were required to complete a collage-making activity. At the end of the
activity, their intrinsic interests were measured by a questionnaire. Creativity was
measured through the consensual assessment technique. The lowest level of creativity
was found in the choice/reward condition.

**Incubation**

Incubation is a stage of creative problem solving. After working on a problem for
a while, the problem is put aside. During the incubation, an individual does not work on
the problem actively. Then suddenly and unexpectedly, a solution is realized. Instead of
continuously working on the problem, delaying it for a while leads to finding better solutions (Smith & Dodds, 1999).

Houtz and Frankel (1992) examined the effects of incubation and imagery training on solving anagrams and open-ended ideational tasks. One hundred five subjects were assigned to six different groups according to whether they received both incubation intervals and imaginary training, one of them or none of them. Results showed the positive effect of incubation interval on originality of ideas. Those who took intervals had better originality scores. However imagery training had significant effect only on anagram solving, and this effect was negative.

Segal (2004) aimed to demonstrate the effect of break lengths on incubation for different tasks. Three break lengths (long, short, and no break) were combined with two different tasks (a demanding task and a non-demanding task). The long break was 12 minutes, and the short break was 4 minutes. The no-break situation was used as the control group of the study. Breaks started only after an impasse and there was no activity during the breaks. The results showed that both the long and short break groups performed better than the non-break group, and their performance was close to each other. This pattern was true for both demanding and non-demanding activities.

Smith and Blankenship (1989) revealed the effects of incubation on creative problem solving. They used picture-word puzzles as the problem. In the experiment, the puzzles were presented with clues. However the last puzzle was given with a misleading clue. Later, this last item was given again without a clue. After the presentation of the problems, three interval periods were used: 0 minutes for the control group and 5 minutes and 15 minutes for the other groups. Intervals could be either filled or unfilled with
demanding music tasks. For this task, instrumental music selected by the participant was played, and the participant talked about music. It was hypothesized that longer intervals and filled intervals would cause more incubation effects. In the end, the 15-minute group improved the most, and the control group improved the least. Although the difference between the control group and the two experimental groups was significant, the difference between the two experimental groups was not significant. The control group also performed significantly lower than the filled and unfilled groups. However the difference between filled and unfilled groups was not significant.

These results indicate that if incubation time is provided to adults while they are working on problem solving tasks, this time interval helps them to generate more creative solutions.

**Goal Setting**

Creativity goals can also increase creative performance. Shalley (1995) examined the effects of a creativity goal on creative performance. The sample was 138 undergraduate students with a mean age of 22. Subjects were assigned to two groups: a no-goal-group and a do-your-best creativity goal group. In the study, creativity was defined as novel and appropriate. Thus, the instruction of the do-your-best creativity goal group included doing their best to generate highly creative responses that are practical, legal and appropriate. The results demonstrated a significant difference between the creativity scores of the groups. Participants who received creativity-goal instruction had higher creativity scores than the control group.

Carson and Carson (1993) examined the effects of creativity goals and feedback on creative performance. Creativity was measured by a divergent thinking test. Subjects
developed as many responses as possible in one minute toward five given adjectives. Fifty-four undergraduate students were assigned one of the four experimental groups. The results showed that before the feedback, participants who were assigned to a creativity goal group had higher creativity scores than participants who were assigned to a quantity goal group. After feedback was given, although both goal groups improved their creativity scores, the creativity goal group still had better creativity scores than quantity goal group.

**Synectics**

Synectics means combining together different and irrelevant elements. As a strategy that fosters creativity, it refers to making familiar things strange by looking at them from a different, perhaps opposite perspective, and making strange things familiar by using analogies, generalizations, and metaphors (Ma, 2006).

Gendrop (1996) studied on the effects of synectics on creative and critical thinking. The sample was professional nurses with a mean age of 34 years. Creative thinking was measured by the Torrance Test of Creative Thinking-Verbal and also by a problem situation developed by Gordon to measure creative problem solving ability which measures novelty and efficacy. Critical thinking was assessed by the Watson-Glaser Appraisal of Critical Thinking which measures critical thinking by inference, recognition, deduction, interpretation and evaluation or argument. The synectics training has four distinct steps: paradox, analogue, unique activity, and equivalent. Before starting the synectics, the subject uses critical thinking to identify the problem. In the first step, the problem is seen as a conflict. By using a comparison, a new context is given in the second step. The function of the analogue is identified in the third stage. In the final stage
functions of the analogue, the paradox is identified. All these steps required critical and creative strategies to generate new ideas. Subjects were randomly assigned to either one of the experimental or control groups after the pretest. Subjects in the experimental group received a text in addition to an invitation letter to a workshop. They were asked to read the text and complete the exercises in synectics before the workshop. They received posttests at the end of the workshop. Subjects in the control group were also invited to the workshop but their invitation letter did not include text and the exercises. When they came to the workshop they received the posttest before they entered the synectic workshop. Results showed larger pretest-posttest differences for the experimental groups than the control groups. The experimental groups improved significantly on fluency, flexibility, and on Gordon’s test. For originality, although the experimental groups’ improvement was higher than the control groups, both groups had considerable improvements.

**Brainstorming and Team Work**

Brainstorming is one of the most common idea generation strategies in creative thinking processes. The key feature of the brainstorming is lack of destructive feedback. Generating as many ideas as possible is supported during the brainstorming process. Usually idea generation occurs in a small team. Members of the team do not criticize ideas during the brainstorming process. Increasing quantity of the ideas is the aim.

Parnes and Meadow (1959) discussed the effects of brainstorming on trained and untrained subjects. Untrained subjects did not have any previous experience and training in the brainstorming method. The trained group took a course about creative problem solving which included brainstorming. Members of the two groups matched in terms of
grade point average, age and sex. The problem involved developing ideas about all possible uses of an ordinary wire coat hanger and a broom. One of the problems was given under brainstorming instructions, and the second one was given without brainstorming instructions. Brainstorming instruction focused on the number of ideas rather than the quality of the ideas. However, the instructions without brainstorming focused on good ideas rather than the quantity of the ideas. Responses were evaluated based on uniqueness (originality) and value (usefulness) criteria. Results showed that more good ideas were produced under the brainstorming condition. Also, the group that took a creative problem solving course produced more good ideas than the control group.

Honig (2001) developed techniques to enhance creativity in young children. Although her techniques were for children, some of them might be useful also for promoting creativity in adults. She suggested conducting group meetings in the classroom, a method that can be easily used for adults also. In these meetings people are asked to think about any tensions or programs in the institution and then to generate new solutions. This helps them not only manage their own problems but also practice creative problem solving for ambiguous and uncertain real life tasks. Honig (2001) also suggested cooperative learning. In this method, every person in the group becomes an expert about a piece of the information. After they learn everything about their pieces they share it with other group members. When she used this technique with her college students, they produce more creative final papers than the previous year’s students who learned the topic and prepared the final assignment individually. However Shalley (1995) found different results. In her study with university students, individuals working alone had higher creativity scores than those working with others.
Although it is very commonly used for generating creative ideas, brainstorming is also criticized in the literature. Mullen, Johnson and Salas (1991) examined the studies on productivity loss in brainstorming with a meta-analytic review. Effect sizes were derived from 34 hypothesis tests measuring the quantitative loss and 9 hypothesis tests measuring the qualitative loss. Results showed a highly significant productivity loss in brainstorming groups. The loss increased in larger groups, when the experimenter was present in the situation and when responses were tape recorded rather than written down.

Runco (2007) focused on the problematic functions of using brainstorming for idea generation. One problem is that brainstorming may cause performance matching in the group. If individuals align their performance with the less productive members of the group, then idea generation decreases. Also even though lack of criticism of the ideas is the key concept of brainstorming, still the presence of others may cause anxiety about the reactions of other group members toward a response.

**Mindfulness**

Mindfulness was defined by Moldoveanu and Langer (1999) as “a state of active cognitive and emotional engagement with lived experience, leading to the creation of new categories for structuring our understanding of the world” (p.221). On the other hand mindlessness is “a state of passive acceptance of concepts and observations, usually involving the categorization of new perceptions in entrenched categories that are not responsive to new experiences (Moldoveanu & Langer, 1999, p. 221)”. According to Runco (2007) mindfulness leads directly to improved creativity for adults. To avoid routine and mindless behaviors, people should avoid relying on their past experiences. If people rely completely on their past experiences, they have automatic responses and
cannot create unique ones. This automatization causes a lack of flexibility. Thus, there must be a balance between experience and naïveté (Runco, 1996). A mindful adult should create new categories and perspectives to understand new experiences. From that point of view, mindfulness is especially related to flexibility. The distinction between mindfulness and mindlessness is not only quantity but also quality. Mindfulness is a process that requires alertness and awareness. So, in a mindful mode, a person is actively involved in the creative process (Langer, 1989).

Grant, Langer, Falk and Capodilupo (2004) examined the effect of drawing as a mindfulness treatment. Observing a drawing is a passive mindless activity; however, the act of drawing itself requires greater engagement with the object. Eighty-eight adult tourists were randomly assigned to either observation or drawing groups. In the drawing group, there were two conditions, a building condition and an art condition. In the building condition, participants drew something in detail. In the art condition, participants drew a piece of art in detail. Then all participants completed several dependent measures including perceived competence, current stress, overall enjoyment, and interest in the subject. Results showed that participants who attended a mindful creative activity felt more competent than the group who simply observed. The former group felt better about themselves. In another experiment, 120 adults who were waiting in a dentist’s office again were assigned to either observing or drawing groups. The drawing group was asked to draw the receptionist’s desk. They received a mindfulness manipulation instruction. The instruction asked them to draw a distinction between the things that they saw and observe how those things changed. Then all participants completed dependent measures
(competence, stress, and self-worth). Results showed that mindfulness as an active involvement in the creative process increased self-worth.
CHAPTER 3

CONCLUSION

Studies on creativity in adulthood have focused mostly on the developmental trends of creativity in the later years of life. Although earlier theories suggested a decline in creativity in later years, recent perspectives viewed creativity as a lifelong process with some qualitative changes rather than a decline by age after a peak point. If creativity is a life-long process, then the relationship between childhood creativity and adulthood creativity needs to be well-understood. Studies indicated that worldplay, having an imaginary companion, and parental attitudes in the childhood were predictors of creativity in the later years.

Creative adults have common characteristics such as strong emotional attachment to what they do, intrinsic motivation, and deep knowledge. Deep knowledge is especially important because it is necessary to develop new points of view and techniques in a field. However, it is not sufficient for creativity. An interesting characteristic of later life creativity is old-age/late-life style. Some artists may change their creative style dramatically when they get older. This new style makes them eminent or more eminent. Usually the new style is more intense, detailed, dynamic, and unpredictable.

Although research has commonly discussed the effects of aging on creativity, there are some studies that examined the opposite relationship: effects of creativity on aging. Creative people had more positive attitudes toward aging and saw their lives as more meaningful than their noncreative counterparts. They felt themselves still successful and productive. They connected with others who had similar interests. Creativity made
people more resilient, helped older people to escape from the difficulties of life, improved social support mechanisms, and positively influenced longevity.

There are strategies that can enhance creativity in adulthood. These strategies include providing a supportive work environment, giving constructive feedback and rewards, providing training programs that aim to increase creativity, allowing opportunities for incubation, setting goals, using synectics, brainstorming, and team work.

There are several points that have not been sufficiently investigated in the literature. First, the specific field of creativity could impact the expression of creativity differently across the life-span. Some fields require more expertise, which may lead to a delay in major creative contribution. Differences in creative productivity across fields could be empirically studied. Some differences were reported by historiometric studies, but a more comprehensive examination is needed. Second, fundamental influences such as gender and socioeconomic status could be investigated and correlated with creativity in adulthood. Retirement is also particularly important for adulthood creativity because it could lead to mixed effects. For some, it can enhance creativity because people may have more time to explore their hobbies which they could not while working. For others who are creative in their vocation, retirement may lead to a decrease in creativity. Studies focusing on those issues may also help to explain the complexities of this field of research and the mixed results.
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