Quality of Life and its Relation to Creative Thinking among a Sample of Female Adolescents in Jeddah

Huda Assem Mohammed Khalifa
King Abdulaziz University, Department of Psychology, Faculty of Arts and Humanities, Jeddah, Saudi Arabia

Abstract: The study of subjective well-being in adolescence has had recent and dynamic growth, however, there are still few qualitative studies that contribute to getting to know about and discussing the sociocultural diversity of well-being, in particular ones that consider the socioeconomic status of the studied groups. The purpose of this study is to prove that Quality of Life plays a large role in an individual’s Creative Thinking abilities. Two hundred sixty-four female middle-school students (first, second and third grades) in Saudi Arabia, aged 12-15 were chosen randomly for participation in this study. The students were then subjected to Quality of Life Scale (QOL) and The Torrance Tests of Verbal Creative Thinking. The results showed quite a few differences regarding the group’s Quality of Life and Creative Thinking Scores. There was a positive statistically significant correlation of 0.01 between the “family and social life”, “general health”, the total degree of Quality of Life perceived and Creative Thinking. On the other hand, there was no statistically significant correlation between “Time management” and the total and subscales of the Creative Thinking Scale. The results also showed that there is a statistically positive effect at 0.05 level of Quality of Life on Creative Thinking, where the value of the beta coefficient is 0.36 proving that Creative Thinking can be predicted by Quality of Life. The findings suggest that the Quality of Life represented in home and school environments, and health in general does influence creative thinking in adolescents. These points raise important issues in relation to Creative Thinking by implying that fostering creative thinking of adolescents requires a suitable environment.

Keywords: Quality of life; Creative thinking; Teenagers; Adolescents; Creativity

I. Introduction

Creative thinking is an elusive concept, yet it constitutes an important facet of daily life. Creativity is a concept surrounded by beliefs and misconceptions. People believe it is limited to only a few, declines seriously with age and is associated primarily with uniqueness or innovation or “artists” (Adams-Price 1998; McCormick & Plugge 1997; Runco 1996). However, research shows that creative thinking is a universal ability that can help adults create satisfying lives and that is increasingly in demand in the workplace (Runco et al., 2010; Jenaabadi & Haghgoo, 2015). Adolescence is one of the most important stages affecting the development of an individual’s perceptions of the quality of his/her life. This is also the beginning of a new birth for the individual while moving from childhood to adulthood. Quality in the life of the adolescent, when his or her character is shaped, affects the stability of his/her behavior at the earliest and perhaps till its very end (Al-Sabah & Ganzrah, 2015). Jewett & Katzev (1993) stressed the importance of the effective roles of both the family and school in developing the creative abilities of the gifted individual. They also stressed the need for cooperation between family and school for providing material support and the use of technological techniques and advanced methods to achieve this. Bernheimer (2002), and Al-Mehy (2014) show that with an increase of parental experience and high levels of education, culture and economics, children’s creative process and innovative features are increasing. A lot of burdens whether spiritual, health, moral, educational or economic used to be put on families as they were the first social institution and the foundation for the child’s social upbringing. Families then had the sole responsibility for developing a child’s intelligence and abilities, through the provision of a good family environment (Shafi’i, 2014). Over the last several years, there has been a significant shift of focus. Researchers have become increasingly interested in adopting a less stigmatizing approach that acknowledges that adolescents possess unique strengths, talents, competencies, and skills (Donovan and Nickerson 2007; Cox 2006). In addition, a growing number of studies (McDougall et al. 2015; Van Damme et al., 2014; Olympia et al., 2013; Weitkamp et al., 2013) suggest that solely relying on traditional outcomes (e.g., psychopathology, behavioral changes) is insufficient for grasping the entire
life of adolescents. Additional influences (e.g., personal, community and family factors) on Quality of Life (QOL) and the adolescents’ own perception of their overall QOL need to be taken into account (White-Koning et al., 2011). Today, QOL has become a recognized field of study and a valued outcome in research and clinical practice in child and adolescent populations (McDougall et al., 2015).

A growing interest in the study of well-being has been developing in various disciplines and within the context of the study of QOL, aimed at knowing and better understanding positive development (not only disease and social problems), its causes and other dimensions related to Creative Thinking (May, 2015).

Quality of Life in the present era has become a national trend in society and a goal that all its economic, political, social and educational systems seek to achieve (Husseain, 2009). The United Nations Educational, Scientific and Cultural Organization (UNESCO) has adopted QOL from a perspective that focuses on the family, society, people’s relations and the cultural requirements of the new social life.

The key purpose of this research is to understand better the complex relationships between individuals’ creative thinking abilities especially during their adolescent phase and their built and natural surroundings aka QOL (Gifford, 2009).

Over the last decades, our understanding of youth health and well-being has undergone significant shifts in conceptualization that has led to the new approach of QOL research and positive psychology (Corral-Verdugo 2012). Among the most important shifts has been the move towards strengths-based understanding of the relationship between young people’s health and well-being on their creativity or creative thinking (Masten, 2014). The influence of everyday environments on individuals’ thinking, feeling, and actions has been extensively examined in some Research studies including Gifford (2014) and Oishi (2014).

A. What is Creative Thinking and How it Could be Developed?

People engage in unique thinking because of an intrinsic desire to find new and better things. This is called creative thinking. The power of a nation depends greatly on the quality of new knowledge and unique information produced. Our societies require creative thinking more and more than in the past and because of social changes, the Kingdom of Saudi Arabia is paying more attention to the development of creativity (Lee, 2005).

In order to raise Creative Thinking and develop educational programs for children, we need to know what creativity is, how to measure it, how it changes according to age and how the quality of life impacts upon it.

Since Guilford addressed the definition of creativity in the 1950s, various other definitions have been presented (Guilford, 1950). Psychologists have considered creativity as a trait of character, as creative process, as creative environment, and as inventive product. Researchers go on to say that when the traits of character, process, environment, and product interact with each other, creativity is mobilized (Isaksen et al., 1993).

Creativity is a complex of traits, skills, and capacities, including curiosity, unconventional thinking, openness to experience, the ability to work autonomously and tolerance of ambiguity (Adams-Price 1998; Albert 1996). Highly creative adults exhibit deep knowledge of and a strong bond with their subject matter, as well as intrinsic motivation (Amabile 1996; Keegan 1996).

For some people, creativity is an adaptive, innovative response to environmental sources of distress such as early death of a parent or other family problems, misfortunes, or conflicts (Adams-Price 1998; Albert 1996), as opposed to other people whose coping mechanisms might be substance abuse, depression, or withdrawal (McCormick & Pluge 1997).

A growing body of research is examining how environmental factors affect the creativity of an individual in different ways. For many, creative expression is limited by their education and training, cultural standards, lack of social support, and for women, traditional gender expectations. Women inventors (McCracken 1998) cite gender discrimination as a hindrance to creative activity. Women artists describe difficult family-related choices they’ve had to make that diverted them from their art, although such obstacles as lack of support, money, or child care did contribute to the creative process and their identity as artists (Kirschbaum & Reis 1997).

We all have the potential to be creative. One might think that being creative means doing creative things, but a creative thinker doesn’t always end up in creative roles. You could think of creative thinking as taking an alternative way to get to an answer. Creative Thinking implies the use of lateral or divergent thinking. In other words, ignoring preconceived, “normal” ideas, and thinking of original, alternative ideas (Lucas et al., 2013).

B. Creative Thinking during Adolescence

Environmental influences may explain in part why childhood creativity seems to be a poor predictor of adult creativity (Albert, 1996). Although most young children are very creative, it is estimated that creativity diminishes by 40% between the ages of 5 and 7 (Grupas 1990; McCormick and Plugg 1997). At these ages, Quality of Life starts making a difference and impacts on their creative thinking either positively or negatively. For instance, a recent study had some startling findings regarding Creative Thinking scores in adolescents. It found that Creative Thinking changes with age: young children’s creative thinking steadily increases until third grade, then it levels...
off and begins to decrease until about high school, when increases are again observed (Kim, 2011). This aligns with a conventional stage model of creativity that suggests creative thinking levels correlate with a child’s ability to understand societal conventions (Runcic, 2014). The reason creativity diminishes as children grow may vary with each stage. For young adolescents, the intense pressure to conform, fit in, and not stand out is a key factor for the (continued) loss of creativity. While teens are known for being impulsive risk-takers, within academic circles they tend to be the opposite. They conform to expectations, often work to prepare for the test, and avoid actions that may draw attention to themselves or will cause them to make public “mistakes” (Katz & Supel, 2015). However, there are ways to work with children’s developmental drives and foster creativity at the same time. For example, children this age value connections with friends. Use this knowledge to spur creativity! For girls this might mean encouraging them to make projects for friends, such as duct tape pencil toppers or friendship bracelets for a BFF. For boys it might mean using trading cards as taking off points to explore imaginary worlds or creating new rules for favorite sports or games. Middle schoolers are often beginning to question their parent’s values and the expectations of their teachers. Helping children see that divergent thinking requires questioning of the typical ways of doing things, might be just the spark they need to invest in more creative endeavors (Grant, 2012).

Even though Creative Thinking is valuable and necessary for both individuals and society, there is growing concern that life’s settings do not provide adolescents with appropriate opportunities to develop Creative Thinking (Beghetto et al., 2012). This is often because the changing phase of adolescence is filled with pressure and confusion.

C. Quality of Life

An individual’s sense of Quality of Life is a relative matter because it is entirely dependent on various factors represented in one’s self-esteem, satisfaction with life, work, social status, and level of happiness as well as other subjective factors such as income, job, educational level, environmental cleanliness, health status and housing status (Suleiman, 2008). Quality of Life is one of the basic requirements in the present time for the mental health of a child, especially in the light of family problems that may hinder the achievement of the aspirations of its members due to changes in its social, family and economic attributes (Kish and Moody, 1999).

The quality of the residential environment represents the physical container of the adolescent’s life, which the adolescent affects and is affected by. The dwelling itself is the closest residential environment that affects the life of an individual. Therefore, taking into consideration the physiological, psychological, health and design aspects of the dwelling is a necessity for creating a housing environment that will meet human needs (Muhammed, 2004). Henry & Sandra (1995) confirmed that the creation of an appropriate atmosphere in the family’s residential environment is conducive to the development of the individual’s creative and talented experiences.

Quality of Life is a multidimensional construct that includes evaluation of at least four main aspects of emotional well-being, physical health, social function, and spirituality (Abbasi et al., 2014). Dempsey et al., 2009 considered Quality of Life as having social, emotional, psychological and physical functions.

D. Significance of the Study

Creative thinking, which is defined as thinking that is novel and produces ideas of value (Sternberg & Lubart, 1996), is a crucial skill in society today. It plays a key role in everyday cleverness, arts and science advances, business innovation, social interactions and public policy (Moran, 2010). Creative thinkers are active learners who can find and solve problems, recognize patterns, combine information in new ways, challenge assumptions, make decisions, and seek new ideas (Healy, 2004). Creative thinking is needed to develop, refine, communicate, and execute ideas; it is needed for being open to new perspectives, demonstrating originality, understanding real-world limits, and viewing failure as an opportunity (Greenhill, 2015).

According to the Global Innovation Index Saudi Arabia was ranked 41 ahead of Italy, Poland, Turkey and China (Vong, 2008). However, its Innovation Output Index was low at the 98th place. There has not been enough research undertaken for studying adolescent life in Saudi Arabia, and specifically none on creative thinking or on student perceptions of creative thinking and how creative thinking is directly affected by Quality of Life in in Saudi Arabia. That is the aim of this study (Al-Enezi, 2003).

Realizing the importance of Quality of Life for creativity and creative thinking and in an effort to boost Quality of Life, Saudi Arabia is launching Quality of Life Program 2020, which is part of Saudi Arabia’s Vision Realization Programs 2030 with more than a SR34 billion budget. The Kingdom of Saudi Arabia is aiming to improve the lifestyles of individuals and families in order to build a society in which individuals enjoy a balanced lifestyle, by setting up the environment necessary to support and provide new options that enhance the participation of citizens and residents in cultural, entertainment and sporting activities (Al-Silami, 2010).

This study aims to emphasize the inter-related (looping) relationship between creative thinking and Quality of Life. Each of these leads to the other one; in other words, a positively boosted and supportive Quality of Life shapes the mind of a creative thinker, and at the same time if an
individual is gifted with a creative mind and has the ability to think creatively, this will help him or her lead a better life with a high Quality of Life. This research tackles creative thinking and how directly it is related to Quality of Life to determine whether any relation in these linkages can be identified.

II. Literature Review

While reviewing the literature, it was discovered that over the years, various psychologists have issued calls for greater attention to a science of positive psychology, which focuses on studying conditions that promote optimal human and societal development. Recent calls (e.g., McCullough & Snyder, 2000; Seligman & Csikszentmihalyi, 2000) have furthered interest in studies of the nature and determinants of the good life. Such a science, along with the creation of prevention and intervention programs informed by the expanded scientific framework, is expected to improve the Quality of Life for all individuals, not just individuals who are at risk or who already demonstrate psychopathological conditions.

According to some authors, psychologists have disproportionately focused on the study of psychological ill-being (McCullough and Snyder, 2000; Seligman & Csikszentmihalyi, 2000). These authors suggest that psychologists should pay greater attention to the complementary study of psychological well-being, including the development and enhancement of human strengths and environmental resources.

Research regarding child and adolescent judgments of their QOL has received increasing attention in a variety of areas recently (e.g., Crocker, 2000; Huebner, 1997). As early as 1986, Landesman (1986) noted that QOL and Personal Life Satisfaction were the new buzz-words in the field of psychology. Current researchers in mental health (e.g., Valois et al., 2001; Day & Jankey, 1996) have extended QOL concepts to understanding efforts to promote creativity for all individuals. Although the early work was primarily aimed at adults, work has begun to extend to children and adolescents as well.

Although research with adolescents is just beginning, the preliminary findings have been encouraging. The purpose of this research is to tackle how QOL affects the level of creative thinking in adolescents. This research provides valuable information that informs the conceptualization, measurement, and importance of QOL for creative thinking.

In a recent review of the study of creativity, Hennessey and Amabile (2010) found that the study of creativity is surprisingly fragmented, whereas research into the psychology of creativity has been rapidly expanding. In recent years, creative thinking has emerged as an essential component in individual’s success (Chan, 2013). The definition of Quality of Life is particularly important in the field of adolescent studies. We know that for many authors in health sciences the constructs of QOL and wellbeing are more or less synonymous. However, that is not the case for most authors in the social sciences. That difference makes the literature review confusing. There is a long history of social debate and change in the meaning of adolescent well-being (Sandin, 2014); however, the history of adolescent QOL studies is very short.

Until recently, in many Western societies, the mainstream representation of childhood and adolescence was that they were “the private affair of the family”. During the second half of the last century, a change in these majority social representations started. This was influenced by multiple factors, (Casas et al., 2013; Casas, 2011), such as the increased training and sensibility of many professionals and NGOs and many researchers. However, the UN Convention on the Rights of the Child has been the most influential factor to consolidate this tendency. Children have to “count” and have to be taken into account, as human beings with universal human rights.

Past research suggested that family resources and family-based social capital influenced the developmental outcome of youth, especially in educational and occupational achievement (Jeong & Chun 2010; Yi et al. 2009; Crosoe & Elder 2004; Epstein 1992; Teachman 1987). Family relationships are the most salient factor accounting for the general psychological well-being of youth. Jou and Hsieh (2004) and Pan et al., (2004) found that family relations, more so than family characteristics, structure, and significant family life events, appear to be the most significant factor explaining adolescent creativity. Similar findings are reported in the West. For example, Drew and Silverstein (2004) investigated the psychological well-being of family members and found that, from various family relational variables, both role hierarchy and finding meaning in role enactment were linked to positive well-being and creative thinking.

There is a debate regarding the ways in which creativity and critical thinking can promote cultural development (Zeng, Proctor & Salvendy, 2011; Westwood & Low, 2003). In fact, the challenges faced by different countries go beyond the purely physical, indicating that there is a need for innovation to improve the QOL in society (Stein & Harper, 2012). Because creating new ideas, as well as analyzing and implementing them, is the main process involved in innovation (Cropley, Kaufman, & Cropley, 2011; Reiter-Palmon, 2011), the stimulation of both creativity and critical thinking in educational contexts remains important. Indeed, results from the studies conducted by the Organization of Educational and Economic Development (2009) and the United Nations Educational, Scientific and Cultural Organization (2016), in different countries, have emphasized that creativity, critical thinking, problem solving, and decision making can be assumed to be the
major 21st century competencies that will be developed by the educational system. The integration of Creative Thinking has been emphasized in literature in recent decade (Padget, 2013; Glassner & Schwartz, 2007; Baker, Ruddy, & Pomeroy, 2001). However, studies regarding this construct as independent remain predominant (Halpern, 2014; Runco & Garrett, 2012; Kaufman, Plucker, & Baer, 2008).

The emerging attention given to studying the effect of QOL on children and adolescents arises from its capability to identify its effect on creative thinking which will define everything in their futures. Therefore, due to the significance enumerated for QOL, several studies have investigated its influential correlators in a global level. In response to the need for creative thinking and creative minds for the development of the nation, research is needed to determine strategies that will best support creative thinking at all ages, especially the critical stage of adolescence. This research is essential at adolescence level, as the insights gained can help in all aspects of life.

III. Method

A. Subjects and Procedures (Sample)

The sample of the study consisted of (264) female middle-school students (First – Second – Third) Grades. Taking into account external variables, such as diversity in social, economic, and cultural backgrounds, the sample governmental schools were randomly selected from different parts of Jeddah, Saudi Arabia and the students were randomly chosen from them. The student ages ranged between 12 and 15 with an average 13.55 and a standard deviation of 1.7.

Table I. Distribution of the Study Sample Based on Demographical Data

| Variable             | Frequency | Percent |
|----------------------|-----------|---------|
| Grade                |           |         |
| First                | 104       | 39.4%   |
| Second               | 88        | 33.3%   |
| Third                | 72        | 27.3%   |
| Total                | 264       | 100%    |
| Mother’s Education   |           |         |
| Diploma or Below     | 82        | 31.1%   |
| University and Higher| 182       | 68.9%   |
| Total                | 264       | 100%    |
| Father’s Education   |           |         |
| Diploma or Below     | 70        | 26.5%   |
| University and Higher| 194       | 73.5%   |
| Total                | 264       | 100%    |

B. Instruments

I: The Quality of Life Scale (QOLS): The current Quality of Life Scale was designed and applied by Dr. Mahmoud Abdelhalim Mansi and Dr. Ali Mahdi Kazim (2006), and mainly consisted of (60) items, assessing (6) main domains of QOL.

- General Health (Items 1-10)
- Family and Social life (Items 11-20)
- Education (Items 21-30)
- Emotional Well-being (Affectional Side) (Items 31-40)
- Mental Health (Items 41-50)
- Time Management (Items 51-60)

The positive items with individual numbers were given the grades of (1, 2, 3, 4 and 5), while the negative items with the even numbers (Mansi & Kazim, 2006).

The scale’s validity has been validated in various ways including content and criterion validity. However, reliability was evaluated by calculating Cronbach’s alpha (α) coefficients. Cronbach’s α values for the total score was 0.91 and for the subscale, between 0.72 – 0.85. For total QOL and subscale scores, alphas were good (all > 0.6).

II: The Torrance Tests of Verbal Creative Thinking (TTCT): The Torrance Tests of Verbal Creative Thinking have been implied (Form A), and were translated into Arabic by Abdullah Sulaiman and Fuad Abu Hattab and have been widely used in numerous research projects in the Arab world. The test was adapted to the Saudi environment by Abdullah Nafea Al-Sharea in 2008.

The Verbal TTCT uses seven subtests (activities): Asking, Guessing Causes, Guessing Consequences, Product Improvement, Unusual Uses, Unusual Questions, and Just Suppose. The stimulus for each activity starts with a picture, and the test-taker responds to the picture in writing. The scoring components include the Fluency, Originality and Flexibility subscales. Fluency is measured by the number of relevant ideas to the picture. Originality is measured by the unusualness of the ideas. Flexibility is measured by the variety of different types of ideas (Kim 2006).

Each activity takes five minutes, except for the fourth and fifth ones which take ten minutes each. Hence, the entire TTCT take around 45 minutes in total.

- Activity 1 (Asking): In this activity, the test-taker is required to ask questions about the displayed picture which represents a certain incident.
- Activity 2 (Guessing Causes): In this activity, the test-taker is required to guess the possible causes leading to the incident represented in the previous picture.
- Activity 3 (Guessing Consequences): In this activity, the test-taker is required to guess all the possible immediate and remote consequences of the incident.
Activity 4 (Product Improvement): In this activity, the test-taker is required to represent their opinions and propose as many suggestions as possible to improve a children’s toy to make it more fun and exciting to children.

Activity 5 (Unusual Uses): In this activity, the test-taker is required to mention all the possibly unusual uses of carton boxes.

Activity 6 (Unusual Questions): In this activity, the test-taker is required to think of a number of questions about carton boxes with the one condition, that these questions would eventually lead to several and variable answers.

Activity 7 (Just Suppose): In this activity, the test-taker is confronted with an improbable situation and asked to predict the possible outcomes of that situation.

Al-Nafie (2008) validated the TTCT’s content and criterion for the Saudi environment. While reliability has been calculated by the split-half method using the Spearman-Brown prediction formula with stability values between 0.64 and 0.90 in Fluency, Originality and Flexibility subscales.

B. Data Collection and Statistical Analysis

The data were analyzed using SPSS v.23. Analytic techniques included correlation Pearson Correlation Coefficient, T-Test, One-way analysis of variance (ANOVA), Scheffe Test and Simple Regression Analysis.

IV. RESULTS

A. Hypothesis 1

The results show that there is a statistically significant relationship between QOL and Creative Thinking (CT) in the study’s samples. The results are shown below in Table II.

Table II. The Pearson Correlation Coefficient Between QOL and Creative Thinking (CT) (264)

| QOL Scale          | CT Scale       | Originality | Flexibility | Fluency     | Total Degree of CT |
|--------------------|----------------|-------------|-------------|-------------|--------------------|
| General Health     | Pearson Correlation | 0.209**     | 0.105       | 0.190**     | 0.191**            |
|                    | Sig. (2-tailed)  | 0.001       | 0.090       | 0.002       | 0.002**            |
| Family and Social life | Pearson Correlation | 0.003       | 0.188**     | 0.254**     | 0.220**            |
|                    | Sig. (2-tailed)  | 0.955       | 0.002       | 0.000       | 0.000              |
| Education          | Pearson Correlation | 0.254**     | 0.375**     | 0.412**     | 0.416**            |
|                    | Sig. (2-tailed)  | 0.000       | 0.000       | 0.000       | 0.000              |
| Emotional Well-being | Pearson Correlation | 0.220*      | 0.279**     | 0.347**     | 0.343**            |
|                    | Sig. (2-tailed)  | 0.000       | 0.000       | 0.000       | 0.000              |
| Mental Health      | Pearson Correlation | 0.164**     | 0.224**     | 0.303**     | 0.290**            |
|                    | Sig. (2-tailed)  | 0.007       | 0.000       | 0.000       | 0.000              |
| Time Management    | Pearson Correlation | 0.059       | 0.040       | 0.013       | 0.010              |
|                    | Sig. (2-tailed)  | 0.337       | 0.517       | 0.831       | 0.873              |
| Total Degree of QOL | Pearson Correlation | 0.221*      | 0.285**     | 0.374**     | 0.364**            |
|                    | Sig. (2-tailed)  | 0.000       | 0.000       | 0.000       | 0.000              |

**. Correlation is significant at the 0.01 level (2-tailed).

Table II shows an initial positive correlation between “General Health” and “Fluency”, “Originality” and the total degree of CT. This is also present in the correlation between “Family and Social life” with “Fluency” and “Flexibility” and the total degree of CT.

A statistically significant correlation is measured between “Education”, “Emotional Well-being”, “Mental Health” and the total degree of QOL on the scale of CT which is presented in Table 2. However, regardless of the positive correlation between “Time Management” and the total degree of QOL on all the scales of CT (Originality, Flexibility and Fluency), this relationship did not live up to the level of statistical significance.
### Table III. The Results of T-Test for QOL Scale According to Father’s Education

| QOL Scale               | Father’s Education                  | N     | Mean    | Std. Deviation | T     | DF  | Sig. (2-tailed) |
|-------------------------|------------------------------------|-------|---------|----------------|-------|-----|-----------------|
| General Health          | High-school Diploma or Below       | 70    | 38.38   | 1.82           | 3.018 | 262 | 0.003           |
|                         | University Education and Higher    | 194   | 37.15   | 3.11           |       |     |                 |
| Family and Social life  | High-school Diploma or Below       | 70    | 46.80   | 3.56           | 5.167 | 262 | 0.000           |
|                         | University Education and Higher    | 194   | 44.28   | 3.48           |       |     |                 |
| Education               | High-school Diploma or Below       | 70    | 39.43   | 6.58           | 3.120 | 262 | 0.002           |
|                         | University Education and Higher    | 194   | 37.13   | 4.72           |       |     |                 |
| Emotional Well-being    | High-school Diploma or Below       | 70    | 34.68   | 5.87           | 0.122 | 262 | 0.903           |
|                         | University Education and Higher    | 194   | 34.59   | 4.86           |       |     |                 |
| Mental Health           | High-school Diploma or Below       | 70    | 39.69   | 4.93           | 1.127 | 262 | 0.261           |
|                         | University Education and Higher    | 194   | 38.91   | 4.97           |       |     |                 |
| Time Management         | High-school Diploma or Below       | 70    | 35.03   | 2.28           | 4.753 | 262 | 0.000           |
|                         | University Education and Higher    | 194   | 32.14   | 4.88           |       |     |                 |

### Table IV. The Results of T-Test for QOL Scale According to Mother’s Education

| QOL Scale               | Mother’s Education                  | N     | Mean    | Std. Deviation | T     | DF  | Sig. (2-tailed) |
|-------------------------|------------------------------------|-------|---------|----------------|-------|-----|-----------------|
| General Health          | High-school Diploma or Below       | 82    | 36.88   | 2.52           | -2.27 | 262 | 0.024           |
|                         | University Education and Higher    | 182   | 37.74   | 2.98           |       |     |                 |
| Family and Social life  | High-school Diploma or Below       | 82    | 45.51   | 3.15           | 1.687 | 262 | 0.093           |
|                         | University Education and Higher    | 182   | 44.69   | 3.86           |       |     |                 |
| Education               | High-school Diploma or Below       | 82    | 37.56   | 6.40           | -0.369 | 262 | 0.713           |
|                         | University Education and Higher    | 182   | 37.82   | 4.84           |       |     |                 |
| Emotional Well-being    | High-school Diploma or Below       | 82    | 32.93   | 5.63           | -2.684 | 262 | 0.000           |
|                         | University Education and Higher    | 182   | 35.38   | 4.71           |       |     |                 |
| Mental Health           | High-school Diploma or Below       | 82    | 38.32   | 5.71           | -1.759 | 262 | 0.080           |
|                         | University Education and Higher    | 182   | 39.47   | 4.55           |       |     |                 |
| Time Management         | High-school Diploma or Below       | 82    | 34.78   | 5.04           | 4.685  | 262 | 0.000           |
|                         | University Education and Higher    | 182   | 32.06   | 4.02           |       |     |                 |

Total Degree of QOL
Table V. Results of Analysis of Variance (ANOVA) Test of QOL According to Students Educational Level

| QOL Scale                | Sum     | DF | Mean   | F       | Sig. |
|--------------------------|---------|----|--------|---------|------|
| General Health           |         |    |        |         |      |
| Between Groups           | 357.89  | 2  | 178.94 | 25.89   | 0.000|
| Within Groups            | 1803.87 | 261| 6.91   |         |      |
| Total                    | 2161.76 | 263|        |         |      |
| Family and Social Life   |         |    |        |         |      |
| Between Groups           | 51.85   | 2  | 25.93  | 1.94    | 0.146|
| Within Groups            | 3485.40 | 261| 13.35  |         |      |
| Total                    | 3537.26 | 263|        |         |      |
| Education                |         |    |        |         |      |
| Between Groups           | 1761.21 | 2  | 880.61 | 39.65   | 0.000|
| Within Groups            | 5797.27 | 261| 22.21  |         |      |
| Total                    | 7558.48 | 263|        |         |      |
| Emotional Well-being     |         |    |        |         |      |
| Between Groups           | 305.86  | 2  | 152.93 | 6.02    | 0.003|
| Within Groups            | 6628.26 | 261| 25.39  |         |      |
| Total                    | 6934.12 | 263|        |         |      |
| Mental Health            |         |    |        |         |      |
| Between Groups           | 111.70  | 2  | 55.85  | 2.29    | 0.103|
| Within Groups            | 6354.89 | 261| 24.35  |         |      |
| Total                    | 6466.59 | 263|        |         |      |
| Time Management          |         |    |        |         |      |
| Between Groups           | 126.99  | 2  | 63.49  | 3.15    | 0.045|
| Within Groups            | 5262.82 | 261| 20.16  |         |      |
| Total                    | 5389.82 | 263|        |         |      |
| Total Degree of QOL      |         |    |        |         |      |
| Between Groups           | 8423.04 | 2  | 4211.52| 13.03   | 0.000|
| Within Groups            | 8436.71 | 261| 323.23 |         |      |
| Total                    | 92785.76| 263|        |         |      |

B. Hypothesis 2:
The results show that there are statistically significant differences between the average QOL with all its domains in the samples of the study according to the variable level of parents’ education. The results are shown in Tables III and IV above.

It is clear from Table III that there are statistically significant differences according to the educational level of the father between the average scores of the study sample in the total degree on the QOL and the dimensions of “General Health”, “Family and Social life”, “Education” and “Time Management” in favor of “High-school Diploma or Below”. Yet “Emotional Well-being” and “Mental Health” did not live up to the level of statistical significance.

It is clear from Table IV that there are statistically significant differences according to the educational level of the mother between the average scores of the study sample in the total degree on the QOL and the dimensions of “General Health” “Education”, “Emotional Well-being” and “Time Management”. Yet the total degree of “Family and Social life”, and “Mental Health” did not live up to the level of statistical significance.

To identify the direction of the functional differences, the Scheffe Test was used. Table VI below illustrates these results.

C. Hypothesis 3:
The results show that there are statistically significant differences between the average QOL with all its domains in the samples of the study according to the Students Educational Level (First-Second-Third). The results are shown in Table V above and Table VI below.

It is clear from Table V that there are statistically significant differences according to the educational level of the students (Sample) between the average scores of the study sample in the total degree on the QOL and the dimensions of “General Health” “Education”, “Emotional Well-being” and “Time Management”. Yet the total degree of “Family and Social life”, and “Mental Health” did not live up to the level of statistical significance.

To identify the direction of the functional differences, the Scheffe Test was used. Table VI below illustrates these results.

It is clear from Table VI that there are statistically significant differences according to the educational level of the students (Sample) between the average scores of the study sample in the total degree on the QOL and the dimensions of “General Health” “Education”, “Emotional Well-being” in favor of “The First Grade”. Yet the total
degree of “Time Management” did not live up to the level of statistical significance.

D. Hypothesis 4:

The results show that there are statistically significant differences between the average degree of CT with all its dimensions in the samples of the study according to the Academic Level of the Parents (High School Diploma or Below - University Education and Higher). The results are shown below in Tables VII and VIII.

It is clear from Table VII that there are statistically significant differences according to the educational level of the Father between the average scores of the study sample in “Fluency” in favor of “High-School Diploma or below”. Yet the total degree of “Flexibility”, “Originality” and the Total Degree of CT did not live up to the level of statistical significance.

It is clear from Table VIII that there are statistically significant differences according to the educational level of the Mother between the average scores of the study sample in the Total Degree of CT with all its domains (Fluency – Flexibility – Originality) in favor of “University Education and Higher”.

E. Hypothesis 5:

The results show that there are statistically significant differences between the average degree of CT with all its dimensions in the samples of the study according to the Students Educational Level (Samples) (First – Second – Third). The results are shown in Tables IX and X below.

It is clear from Table IX (in Appendix IV) that there are statistically significant differences according to the Students educational level (Samples) between the average scores of the study sample in the Total Degree of CT with all its domains (Fluency – Flexibility – Originality).

To identify the direction of the functional differences, the Scheffe Test was used, and Table X below illustrates these results.

Table VI. Post Hoc Tests Results of QOL According to Students Educational Level

| Dependent Variable | Grade | Mean  | DF   | Std. Deviation | Sig. (2-tailed) |
|--------------------|-------|-------|------|----------------|-----------------|
| General Health     | 1     | 36.09 | 0.42 | 0.027          |                 |
|                    | 2     | 37.22 | 0.40 | 0.001          |                 |
| Education          | 1     | 39.50 | 0.68 | 0.000          |                 |
|                    | 2     | 34.09 | 0.75 | 0.000          |                 |
|                    | 3     | 39.67 | 0.72 | 0.974          |                 |
| Emotional          | 1     | 34.50 | 0.73 | 0.360          |                 |
| Well-being         | 2     | 33.45 | 0.80 | 0.003          |                 |
|                    | 3     | 36.22 | 0.77 | 0.085          |                 |
| Time Management    | 1     | 33.77 | 0.65 | 0.099          |                 |
|                    | 2     | 32.36 | 0.71 | 0.999          |                 |
|                    | 3     | 32.33 | 0.69 | 0.116          |                 |
| Total Degree of QOL| 1     | 230.96| 2.60 | 0.000          |                 |
|                    | 2     | 218.82| 2.86 | 0.000          |                 |
|                    | 3     | 230.55| 2.76 | 0.989          |                 |

Table VII. Results of T-Test for CT Scale According to Father’s Education

| Father’s Education | N     | Mean   | Std. Deviation | T   | DF   | Sig. (2-tailed) |
|--------------------|-------|--------|----------------|-----|------|-----------------|
| Fluency            | High-school Diploma or Below | 70 | 75.46 | 35.18 | 2.84 | 262 | 0.005 |
|                    | University Education and Higher | 194 | 64.39 | 24.89 |     |     |       |
| Flexibility        | High-school Diploma or Below | 70 | 31.91 | 10.31 | 0.25 | 262 | 0.803 |
|                    | University Education and Higher | 194 | 31.59 | 8.99  |     |     |       |
| Originality        | High-school Diploma or Below | 70 | 12.77 | 8.67  | -0.46| 262 | 0.646 |
|                    | University Education and Higher | 194 | 13.21 | 5.96  |     |     |       |
| Total Degree of CT | High-school Diploma or Below | 70 | 120.14| 50.22 | 1.94 | 262 | 0.053 |
|                    | University Education and Higher | 194 | 109.18| 36.29 |     |     |       |

Table X shows that there are statistically significant differences according to the student’s educational level between the average scores of the study sample in the Total Degree of CT as well as “Flexibility” and “Fluency” in favor of “The Third Grade”. Yet the total degree of “Originality” was in favor of “The First Grade”.

F. Hypothesis 6: Creative Thinking can be predicted by the QOL.

To validate this hypothesis, the simple linear regression
method was used on the basis that the QOL variable is the independent variable, and that the innovative thinking is a dependent variable. Table XI and Table XII show the results of these analyses.

It is clear from the Table XII that the regression constant is statistically significant at (0.05) and that there is a statistically positive effect at (0.05) level of QOL on CT, where the value of beta coefficient is 0.36 positive value proving that CT can be predicted by QOL.

**Discussion**

Creative people are the means for a country to remain competitive, no less so than for Saudi Arabia. The Kingdom has immense natural resources, and this extends to its human capital: exceptional people who are necessary to assist its growth and harness its potential for the 21st century. This growth requires knowledge and skills from all Saudis in order to maintain and advance the country’s position in the global community.

This research was motivated to achieve just that: research that would help nourish the creative minds of this nation. Understanding the qualities required and proper environment for those young minds to become more creative and unleash their creativity comprises the whole purpose of this study. The reason we particularly chose adolescence is that it’s an age of struggle during which cognitive, physical, psychological, and emotional changes take place that can affect and be affected by health and well-being. Not only that but it’s the age when creativity could either be developed or disappear forever. Previous research showed evidence that adolescence is a crucial period for the development of cognitive abilities (Casey, Jones & Hare, 2008; Steinberg, 2005).

The research studied the relation between QOL with all of its six domains (general health, family and social life, education, emotional well-being, mental health and time management) and the three axes of CT (fluency, flexibility and originality). And the findings proved that QOL determines the level of creativity.

For the students sampled, there was a significant increase in all three axes of CT in students whose mothers have a university degree and above, and fathers with high-school diploma or below. These findings prove that the overall environment in adolescents’ lives contributes to providing an appropriate QOL that will play a part in creative thinking. These findings shed light on the importance of the QOL provided by the parents not only on social or health levels but also on the educational levels of both parents. The higher education they have, the higher the chances are of their having a creative child.

When the simple linear regression method was used on the basis that the QOL variable is the independent variable, and that Innovative thinking is a dependent variable, the results showed that the regression constant is statistically significant at (0.05) and that there is a statistically positive effect at (0.05) level of QOL on CT, where the value of beta coefficient is 0.36 proving that CT can be predicted through the QOL.

This simply means that the influences of family, social relations, health, emotional feelings and mental health are all variables and when they provided for properly, a creative thinker’s mind is highly likely to be found as well. As those variables were found to provide an environment that would significantly affect, nourish and provide a fertile space for nurturing CT in adolescents.

The findings and observations of this research were consistent with previous findings of (Kazim and El-Bahaadly, 2007), which showed that the quality of a student’s life especially family relations, and social life is correlated and affects their creativity and innovation. This implies the primary effect of family on the creativity level of their child.

**Table VIII. Results of T-Test for CT Scale According to Mother’s Education**

| Mother’s Education             | N  | Mean | Std. Deviation | T   | DF  | Sig. (2-tailed) |
|--------------------------------|----|------|----------------|-----|-----|----------------|
| Fluency High-school Diploma or Below | 82 | 56.90| 28.42          | -4.13 | 262 | 0.000          |
| University Education and Higher  | 182| 72.02| 27.10          |      |     |                |
| Flexibility High-school Diploma or Below | 82 | 28.93| 9.93           | -3.26 | 262 | 0.001          |
| University Education and Higher  | 182| 32.91| 8.82           |      |     |                |
| Originality High-school Diploma or Below | 82 | 9.27 | 5.40           | -6.64 | 262 | 0.000          |
| University Education and Higher  | 182| 14.81| 6.63           |      |     |                |
| Total Degree of CT High-school Diploma or Below | 82 | 95.09| 39.62          | -4.74 | 262 | 0.000          |
| University Education and Higher  | 182| 119.75| 38.83         |      |     |                |
Table IX. Results of Analysis of Variance (ANOVA) Test of CT According to Students Educational Level

| QOL Scale    | Sum     | DF  | Mean  | F     | Sig. |
|--------------|---------|-----|-------|-------|------|
| Fluency      |         |     |       |       |      |
| Between Groups | 14462.76 | 2   | 7231.38 | 9.59 | 0.000 |
| Within Groups | 196879.22 | 261 | 754.33 |       |      |
| Total        | 211341.96 | 263 |       |       |      |
| Flexibility  |         |     |       |       |      |
| Between Groups | 1955.59  | 2   | 977.79 | 12.15 | 0.000 |
| Within Groups | 21006.39 | 261 | 80.48  |       |      |
| Total        | 22961.98 | 263 |       |       |      |
| Originality  |         |     |       |       |      |
| Between Groups | 1249.76  | 2   | 624.88 | 15.09 | 0.000 |
| Within Groups | 10808.05 | 261 | 41.41  |       |      |
| Total        | 12057.82 | 263 |       |       |      |
| Total Degree of CT |      |     |       |       |      |
| Between Groups | 21873.73 | 2   | 10936.8 | 6.92 | 0.001 |
| Within Groups | 412588.09 | 261 | 1580.79 |       |      |
| Total        | 434461.82 | 263 |       |       |      |

Table X. Results of Post Hoc Tests of CT according to Students Educational Level

| Dependent Variable | Grade | Mean  | DF | Std. | Sig, |
|--------------------|-------|-------|----|------|------|
| Fluency            | 1 2   | 61.13 | -3.86 | 3.98 | 0.624 |
|                    | 2 3   | 65.00 | -14.11* | 4.36 | 0.006 |
|                    | 3 1   | 79.11 | 17.97* | 4.21 | 0.000 |
| Flexibility        | 1 2   | 28.79 | -3.12 | 1.29 | 0.058 |
|                    | 2 3   | 31.91 | -3.65* | 1.43 | 0.040 |
|                    | 3 1   | 35.55 | 6.77* | 1.37 | 0.000 |
| Originality        | 1 2   | 15.69 | 4.96* | 0.93 | 0.000 |
|                    | 2 3   | 10.72 | -1.49 | 1.02 | 0.345 |
|                    | 3 1   | 12.22 | -3.47* | 0.99 | 0.002 |
| Total Degree of CT | 1 2   | 105.61 | -2.02 | 5.76 | 0.940 |
|                    | 2 3   | 107.64 | -19.25* | 6.32 | 0.010 |
|                    | 3 1   | 126.89 | 21.27* | 6.09 | 0.003 |

Table XI. Results of the Simple Regression Analysis of the Effect of QOL on the CT of the Samples N=264

| Model                | Sum     | DF  | Mean  | F     | Sig. |
|----------------------|---------|-----|-------|-------|------|
| Regression           | 57443.97 | 1   | 57443.97 | 39.92 | 0.000 |
| Residual             | 377017.8 | 262 | 1438.99 |       |      |
| Total                | 434461.8 | 263 |       |       |      |

Table XII. Results of the Simple Regression Analysis of the Effect of QOL on the CT of the Samples N=264

| Model                | Un-standardized Coefficients | Standardized Coefficients | T    | Sig. |
|----------------------|-----------------------------|---------------------------|------|------|
|                      | B                           | Std. Beta                 |      |      |
| Constant             | -66.36                      | 28.34                     | -2.34 | 0.020 |
| QOL                  | 0.787                       | 0.125                     | 0.364 | 0.000 |

Conclusion

Having analyzed the effect of QOL on CT and how it may contribute in either developing or demolishing this quality, with tests applied on the student sample. To conclude, the present work provides initial evidence that CT can be predicted through the QOL, which on both family educational levels has a great impact on adolescents’ talents in general and Creativity in particular. This is why The Kingdom should pay more efforts to level up with the economic and social level of the families in general which will help raise the quality of individual’s life and CT in return. This study may serve as a foundation for future empirical studies that could generate strategies to improve the innovation practices in Saudi Arabia. The research and its possible evolutions could give a substantial contribution to the future of developing a new generation of future minds that could lead this Nation to a better future.

V. Limitations

Future research needs to confirm and extend our results also considering the present study limitations. This study
was limited to a certain age group and gender – Middle School Female Students aged between 12 and 15. Additional research should be developed for male subjects, as well as other age groups, and subjects of different social and educational status and any other demographic difference. This could be important to track changes through age and to verify if QOL can affect creativity levels and in which ways. Moreover, it could be interesting to assess such variables through a longitudinal study, to monitor the effects of the training and the progress of CT step by step, as well as other possible variables of interests such as family’s demographics, but also children’s personality.

Acknowledgement

This project was funded by the Deanship of Scientific Research (DSR), at King Abdulaziz University, Jeddah, under grant no. (G: 524-246-37). The author, therefore, acknowledge with thanks to DSR for their technical and financial support.

References

[1] Abbasi, S., Sajedi, F., Hemmati, S., and Rezasoltani, P. 2014. The effectiveness of life skills training on quality of life in mothers of children with Down syndrome. *Iranian Rehabilitation Journal* 12(22):29–34.

[2] Adams-Price, C.E. (Ed) 1998. *Creativity and successful aging*. New York: Springer.

[3] Baker, M., Ruddy, R., and Pomeroy, C. 2001. Relationship between critical and creative thinking. *Journal of Southern Agricultural Education Research*, 51(10):173–188.

[4] Albert, R. S. 1996. Some Reasons Why Childhood Creativity Often Fails to Make It past Puberty into the Real World . New Directions for Child Development, 72:43–56.

[5] Al-Enezi, N. 2003. Creativity for teachers in primary schools and its relationship to the creative students’ abilities. Master’s thesis, Um Al-Qura University, Makkah, Saudi Arabia.

[6] Al-Mehy, B. A. M. 2014. Awareness of resource management and its relationship to motivation for achievement and creative thinking among young people, PhD thesis, Faculty of Home Economics, Menoufia University, Egypt.

[7] Al-Nafie, A. A-S. 2008. TTCT: Validating Torrance Test for Creative Thinking (Form B) and its adaptation to the Saudi environment.

[8] Al-Sabah, S. and Ganazrah, H. 2015. Smart devices and their role in improving the quality of life of adolescents. Scientific conference entitled “The impact of smart devices on the emergence of the child”, Faculty of Social and Family Development, Al-Quds University.

[9] Al-Silami, T. A. 2010. A comparison of creative thinking and reflective-impulsive style in Grade 10 male students from rural and urban Saudi Arabia, Retrieved from http://vuir.vu.edu.au/16016/1/Al_Silami_PhD. pdf

[10] Amabile, T. M. 1996, *Creativity in context*. Boulder, CO: Westview Press.

[11] Beghetto, R. A., Kaufman, J. C., Hegarty, C. B., Hammond, H. L., and Wilcox-Herzog, A. 2012. Cultivating creativity in early childhood education. In O. N. Saracho, Contemporary perspectives on research in creativity in early childhood education (pp. 251–270). Charlotte, NC: Information Age Publishing.

[12] Bernheimer, L. 2002. Family experiences with young gifted children, *Journal of Early Intervention*, 17(3):253–255.

[13] Casey, B. J., Jones, R. M., and Hare, T. 2008. The adolescent brain, *Annals of the New York Academy of Sciences*, 1124:111–126.

[14] Casas, F. 2011. Subjective social indicators and child and adolescent well-being. *Child Indicators Research*, 4(4):555–575.

[15] Casas, F., González, M., and Navarro, D. 2013. Social psychology and child well-being. In Ben-Arieh, A., Casas, F., Frönes, I., and Korbín, J. E. *Handbook of child well-being* (pp. 513–554). Dordrecht: Springer.

[16] Chan, C. Y. Z. 2013. Critical thinking and creativity in nursing: learners’ perspectives, *Nurse Educ. Today* 33:558–563.

[17] Corral-Verdugo, V. 2012. The positive psychology of sustainability, *Environment, Development and Sustainability*, 14: 651–666.

[18] Cox, K. F. 2006) Investigating the impact of strength-based assessment on youth with emotional or behavioral disorders, *Journal of Child and Family Studies*, 15(3), 278–292.

[19] Crocker, A. C. 2000. Introduction: The happiness in all our lives, *American Journal on Mental Retardation* 105:319–325.

[20] Cropley, D. H., Kaufman, J. C., and Cropley, A. J. 2011. Measuring creativity for innovation management, *Journal of Technology and Management Innovation*, 6(3):13–30.

[21] Crosnoe, R., and Elder, G. H., Jr. 2004. Family dynamics, supportive relationships, and educational resilience during adolescence, *Journal of Family Issues*, 25(5):571–602.
[22] Day, H. and Jankey, S.G. 1996. Lessons from the literature: Toward a holistic model of quality of life, in Renwick, R., Brown, I., and Nagler, M. (Eds.), Quality of life in health promotion and rehabilitation: Conceptual approaches, issues and applications, Sage, Thousand Oaks, CA, pp. 39–50.

[23] Dempsey, I., Keen, D., Pennell, D., O'Reilly, J., Neilands, J. 2009. Parent stress, parenting competence and family-centered support to young children with an intellectual or developmental disability, Res Dev Disabil. 30(3):558–66.

[24] Donovan, S. A., and Nickerson, A. B. 2007. Strength-based versus traditional social-emotional reports: Impact on multidisciplinary team members’ perceptions. Behavioral Disorders, 32(4):228–237.

[25] Drew, L. M., and Silverstein, M. 2004. Intergenerational role investments of great-grandparents: Consequences for psychological well-being, Ageing and Society, 24:95–111.

[26] Epstein, J. L. 1992. School and family partnerships. In Alkin, M. C., (Ed.), Encyclopedia of educational research (pp. 1139–1151). New York: Maxwell Macmillan International.

[27] Gifford, R. 2009. Environmental psychology: Manifold visions, unity of purpose, Journal of Environmental Psychology, 29:387–389.

[28] Gifford, R. 2014. Environmental psychology matters, Annual Review of Psychology, 65:541–579.

[29] Glassner, A., and Schwartz, B. 2007. What stands and develops between creative and critical thinking? Argumentation. Thinking Skills and Creativity, 2(1):10–18. http://dx.doi.org/10.1016/j.tsc.2006.10.001.

[30] Grant, A. (Ed.) 2012. Who killed creativity? And how do we get it back? Milton: John Wiley & Sons.

[31] Greenhill, V. 2015. 21st Century Knowledge and Skills in Educator Preparation. The Partnership for 21st Century Learning. Retrieved from http://eric.ed.gov/?id=ED519336

[32] Grupas, A. 1990. "Creative Problem-Solving." Paper presented at the Annual Meeting of the Missouri Association of Community and Junior Colleges, November 15–17, 1990. (ED 343 813)

[33] Guilford, J.P. 1950. Address of the President of the American Psychological Association at Pennsylvania State College.

[34] Halpern, D. F. 2014. Thought and knowledge: An introduction to critical thinking (5th ed.). New York, NY: Psychology Press.

[35] Healy, J. M. 2004. Your child’s growing mind: Brain development and learning from birth to adolescence (3rd ed.). New York, NY: Broadway Books.

[36] Hennessey, B.A., and Amabile, T.M. 2010. Creativity. Annual Review of Psychology, 61:569–598 Tavel, P. 2007 Modeling and Simulation Design. AK Peters Ltd.

[37] Henry, C. and Lovelace, S. 1995. Family resources and adolescent family life satisfaction in remarried family households. Journal of Family Issues November, 16(6):765–786.

[38] Huebner, E. S. 1997, ‘Life satisfaction and happiness’, In Bear, G., Minke, K., and Thomas, A. (eds.), Children’s Needs II (National Association of School Psychologists, Silver Springs, MD), pp. 271–278.

[39] Hussain, D. E. E. 2009. Quality of perceived life in a sample of university students and the effectiveness of the existential and orientation program in its development.

[40] Isaksen, S. C., Murdock, M. C., Firestein, R. L. and Treffinger, D. J. (Eds.) 1993. Nurturing and developing creativity: The emergence of a discipline. Norwood, NJ: Ablex.

[41] Jenaabadi, Hossein & Hagghoo, Bita. (2015). Comparative Study of Thinking Styles, Creativity and Self-Esteem of Gifted and Normal High School Students in Zahedan. Advances in Environmental Biology 9(2). (PP. 365-370).

[42] Jeong, Y. J., and Chun, Y. J. 2010. The pathways from parents’ marital quality to adolescents’ school adjustment in South Korea. Journal of Family Issues, 31(12):1604–1621.

[43] Jou, Y. H., and Hsieh, Y. S. 2004, June 23-24). Continued or temporary impact: The effect of family life events on adolescents’ depression. Paper presented at the First youth conference of Taiwan Youth Project. Taipei, Taiwan.

[44] Jewett, J., and Katzav, A. 1993. School-based early childhood centers: Secrets of success from early innovators. Portland, OR: Child, Family and Community program, Northwest Regional Educational Laboratory.

[45] Katz, S., and Stupel, M. 2015. Promoting creativity and self-efficacy of elementary students through a collaborative research task in mathematics: A case study. Journal of Curriculum and Teaching, 4(1):68. https://doi.org/10.5430/jct.v4n1p68

[46] Kaufman, J. C., Plucker, J. A., & Baer, J. 2008. Essentials of creativity assessment. Hoboken, NJ: Wiley.
Kazim, A. M., and El-Bahaadli, A. A. N. 2007. Quality of life of university students of Amman and Libya. The Scientific Journal of Arab Open Academy in Denmark. 3:67–87.

Keegan, R. T. 1996. “Creativity from Childhood to Adulthood: A Difference of Degree and Not of Kind.” In Runco, A., (Ed.) Creativity from childhood through adulthood. New directions for child development NO. 72, pp. 57–66. San Francisco: Jossey-Bass: Summer. (EJ 534 574)

Kim, K. H. 2011. The creativity crisis: The decrease in creative thinking scores on the Torrance Tests of Creative Thinking, Creativity Research Journal, 23(4):285–295. https://doi.org/10.1080/10400419.2011.627805

Kirschenbaum, R. J., and Reis, S. M. 1997. Conflicts in Creativity: Talented Female Artists, Creativity Research Journal 10(2-3): 251–263.

Kish, G. & Moody, D. 1999. Psychopathology and life purpose, International Journal of Logotherapy, 12(1):40–45.

Landesman, S. 1986. Quality of life and personal life satisfaction: Definition and measurement issues, Mental Retardation 91:141–143.

Lee, K-H. 2005. The relationship between creative thinking ability and creative personality of preschoolers, International Education Journal, 6(2):194–199. ISSN 1443-1475 © 2005 Shannon Research Press.

Lucas, B., Claxton, G., and Spencer, E. 2013. Progression in student creativity in school: first steps towards new forms of formative assessments. OECD Education Working Papers, 86(86):45. https://doi.org/10.1787/5k4dp59msdwk-en.

May, R. 2015. The nature of creativity, Institute of General Semantics, 16(3):261–276.

Masten, A. S. 2014. Ordinary magic: Resilience in development. New York: Guilford Press.

McCormick, D. J., and Plugge, C. D. 1997. If I Am an Artist, What’s Wrong with My Picture?" In Deeply rooted, branching out, 1972-1997. Annual AEE International Conference Proceedings. Boulder, CO: Association for Experiential Education. (ED 414 141)

McCracken, J. L. 1998. “Examining the impact of formal and informal learning on the creativity of women inventors.” In 39TH Annual Adult Education Research Conference Proceedings, compiled by Kimmel, J. C., pp. 221–226. San Antonio, TX: University of the Incarnate Word.

McCullough, M. E., and Snyder, C. R. 2000. Classical sources of human strength: Revisiting an old home and building a new one. Journal of Social and Clinical Psychology. 19:1–10.

McDougall, J., Baldwin, P., Evans, J., Nichols, M., Etherington, N., and Wright, V. 2015. Quality of life and self-determination: Youth with chronic health conditions make the connection. Applied Research in Quality of Life, 11(2),1–29.

Mansi, M., and Kazim, A. 2006. Quality of Life Scale for University Students. Sultan Qaboos University Muscat, Oman.

Moran, S. 2010. The roles of creativity in society. In Kaufman, J. C., and Sternberg, R. J. (Eds.) The Cambridge handbook of Creativity (pp. 74–90). New York, NY: Cambridge University Press.

Muhammed, S. I. S. 2004. The functional relevance of housing and its relation to the aggressive behavior of the university youth, PhD thesis, Faculty of Home Economics, Menoufia University, Egypt.

Organization for Economic Cooperation and Development, 2009. Education at a glance: a view: 2009 indicators. Washington, DC: OECD. Retrieved from http://www.oecd.org/document/52/0,3343,en_2649_39263238_45897844_1_1_1_1,00.html.

Oishi, S. 2014. Socioecological psychology, Annual Review of Psychology, 65:581–609.

Olympia, D. E., Heathfield, L. T., Jenson, W. R., Majszak, H., Ramos-Matias, V., and Thacker, M. 2013. Positive psychology and children with emotional and behavioral difficulties. In M. L. Wehmeyer (Ed.), the Oxford handbook of positive psychology and disability (pp. 475–493). Oxford: Oxford University Press.

Padget, S. 2013. Creativity and critical thinking. New York: Routledge.

Pan, E-L., Chang, Y-H., and Hsieh, Y-S. 2004. Family structure, life events and adolescent distress: Variations by age. Paper presented at the First youth conference of Taiwan Youth Project, June 23–24, 2004, Taipei, Taiwan.

Reiter-Palmon, R. 2011. Introduction to special issue: The psychology of creativity and innovation in the workplace. Psychology of Aesthetics, Creativity and the Arts, 5(1), 1–2. http://dx.doi.org/10.1037/a0018586.

Runco, M. A. 1996. “Personal Creativity”. In Creativity from Childhood through Adulthood. New Directions for Child Development No. 72, edited by M. A. Runco, pp. 3-30. San Francisco: Jossey-Bass.
[71] Runco, M. A., Millar, G., Acar, S., and Crawford, B. 2010. Torrance tests of creative thinking as predictors of personal and public achievement: A fifty-year follow-up. Creativity Research Journal, 22(4):361–368. https://doi.org/10.1080/10400419.2010.523393.

[72] Runco, M. A., and Garrett, G. J. 2012. The standard definition of creativity. Creativity Research Journal, 24(1):92–96. http://dx.doi.org/10.1080/10400419.2012.650092.

[73] Runco, M. A. 2014. Chapter 2 - Developmental trends and influences on creativity. In Creativity (2nd Edition), (pp. 39–67). San Diego: Academic Press. Retrieved from http://www.sciencedirect.com/science/article/pii/B9780124105126000023

[74] Sandin, B. 2014. History of children’s well-being. In Ben-Arieh, A., Casas, F., Frønes, I. and Korbin, J. E. Handbook of child well-being (pp. 31–86). Dordrecht: Springer.

[75] Seligman, M. E. P. and Csikszentmihalyi, M. 2000. Positive psychology: An introduction, American Psychologist 55:5–14.

[76] Shafii, S. Z. H. 2014. The leadership skills of the housewife and its relationship to the quality of life, Master Thesis, Faculty of Home Economics, Menoufia University, Egypt.

[77] Stein, S. M., and Harper, T. L. 2012. Creativity and innovation: Divergence and convergence in pragmatic dialogical planning. Journal of Planning Education and Research, 32(1):5–17. http://dx.doi.org/10.1177/0739456X11417829

[78] Steinberg, L. 2005. Cognitive and affective development in adolescence. Trends in Cognitive Sciences, 9(2):69–74

[79] Sternberg, R. J., and Lubart, T. I. 1996. Investing in creativity. American Psychologist, 51(7):677–688. https://doi.org/http://dx.doi.org.libpdp.d.umn.edu:2048/10.1037/0003-066X.51.7.677

[80] Suleiman, S. K. 2008. Measuring the quality of life of a sample of students of Tabuk University in Saudi Arabia and the impact of some variables on them. Journal of the Arabian Gulf message, 117.

[81] Teachman, J. D. 1987. Family background, educational resources, and educational attainment. American Sociological Review, 52(4):548–557.

[82] United Nations Educational, Scientific and Cultural Organization 2016. Assessment of Transversal competencies in education: Policy and practice in the Asian-Pacific Region. Paris: UNESCO Bangkok Office.

[83] Valois, R. E., Zullis, K., Huebner, E. S. and Drane, W. 2001. Relationships between life satisfaction and violent behavior among adolescents, American Journal of Health Behavior 25:353–366.

[84] Van Damme, L., Colins, O., De Maeyer, J., Vermeiren, R., and Vanderplasschen, W. 2014. Girls’ quality of life prior to detention in relation to psychiatric disorders, trauma exposure and socioeconomic status. Quality of Life Research, 24(6):1419–1429.

[85] Vong, K-I. 2008. Developing creativity and promoting social harmony: The relationship between government, school and parents’ perceptions of children’s creativity in Macao-SAR in China. Early Years an International Journal of Research and Development, 28(2):149–158. DOI: 10.1080/09575140802065599

[86] Weitkamp, K., Daniels, J. K., Romer, G., and Wiegand-Grefe, S. 2013. Health-related quality of life of children and adolescents with mental disorders. Health and Quality of Life Outcomes, 11(129):1–7.

[87] Westwood, R., and Low, D. R. 2003. The multicultural muse: Culture, creativity and innovation. International Journal of Cross Cultural Management, 3(2):235–259. DOI: http://dx.doi.org/10.1177/14705958030032006.

[88] White-Koning, M., Grandjean, H., Gayral-Taminh, M., Lauwers-Cancès, V., and Raynaud, J-P. 2011. Assessing the quality of life of children with mental disorders using a computer-based self-reported generic instrument (KidIQoL)—Quality of life of children with mental disorders. Open Journal of Psychiatry, 1(1):8–13.

[89] Yi, C. C., Wu, C. I., Chang, Y. H., and Chang, M. Y. 2009. The psychological well-being of Taiwanese youth: School versus family context from early to late adolescence. International Sociology, 24(3), 397–429.

[90] Zeng, L., Proctor, P. R. W., and Salvendy, G. 2011. Assessing the quality of life of children with mental disorders using a computer-based self-reported generic instrument (KidIQoL)—Quality of life of children with mental disorders. Open Journal of Psychiatry, 1(1):8–13.