

"Community Education, Psychology and Social Studies"

## **Gender Differences in Cognitive Abilities and its Effect on Late Adolescent Students' Career Choices in Secondary Schools in Fako Division: The Case of Cameroon**

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**Abstract.** The topic gender differences in cognitive abilities have captivated many people's curiosities and raises politically and emotionally charged questions. This is because women are underrepresented in some careers which requires high cognitive abilities such as science and engineering related careers. This study seeks to investigate gender differences in creativity and its effect on late adolescent students' career choices in Secondary Schools in Fako Division. Parallel to reviewing an integrated literature and developing findings on adolescent's creativity and its effect on career choices, the indicators of creativity that were adopted in this study are; innovation, critical thinking and problem solving. To reduce the gender gap between male and female adolescent students, attention should be given to address the contributory cognitive, motivational, and sociocultural factors, primarily by maximizing the number of career options that women perceive as attainable and compatible with their abilities, preferences, and goals. Until then, large numbers of mathematically talented females will continue to slip through the cracks when their choices are restricted by cultural barriers, gender stereotypes, or misinformation. Our goal, therefore, is to maximize career options for women by capitalizing on female cognitive strengths, emphasizing hard work and effort instead of talent, cultivating female interest in math and science, and removing masculine stereotypes, misinformation, and obstacles that clouds career decisions for both males and female adolescents.

**Key words:** Cameroon, Schools, Students.

### **Introduction**

Gender difference in cognitive abilities is a controversial topic. Nevertheless, researchers in social sciences widely acknowledge that males and females differ in cognitive strength (Halpern & Collaer, 2005; Kimura, 2000). According to research conducted by Halpern,

(2011); Voyer, Voyer, & Bryden, (1995), it is one of the most robust and consistently found phenomenon of all cognitive gender differences. The cognitive variable was used in this study is creativity. However, the ability to make good career decisions is critical for success in life because adolescences choices will have repercussions on the individual's entire life and future. A person's future achievements, income levels, standard of living, self-esteem, and social status are largely influenced by his career decision. Hence it is important to provide effective career guidance at this stage to make appropriate career choices.

Cognitive psychologists such as Collaer (2005), applied the term cognitive abilities to tasks which are intended to measure specific cognitive processes in isolation. However, there is considerable debate over just how large the differences between males and females are. According to Collaer (2005), researchers also differ in their perspectives on the origins of gender differences in cognitive abilities, including the relative contributions of biological factors such as the influence of chromosomes, hormones and brain function, social and cultural factors such as stereotype expectations, and modeling. The career trajectory of a person begins when he starts thinking of his future career and starts preparations for a successful foray into the same. Career interests are developed, future career objectives are formed, and the foundation for one's future career is laid in adolescence.

### **Statement of the Problem**

The number of females adolescents 'who choose to pursue careers in areas of innovative and transformative college degrees and occupations relating to sciences and engineering fields is relatively low with science related majors comprising only 24% of all bachelor's degrees awarded (National Center for Education Statistics [NCES], 2012). And, of those students who graduate with a degree in Sciences, Technology, Engineering and Maths, most of them are employed in industries where there is high demand for skilled workers in engineering. There is an increasing concern that the demand for skills workers in engineering and science related occupations in Cameroon will exceed the supply because there is gender imbalance and the underrepresentation of women in those career fields (National Academy of Science, 2007). Thereby making it difficult as a nation that is supposed to run on two wheels to be running on one wheel due to gender imbalance in those career occupations.

Career choice process is one of the key elements in adolescent's life. Career is the application of a person's cognition and capabilities, providing command over profession, expertise on creativity and developing mastery in problem solving as well as bettering social networks through communication skills. There are numerous problems faced by students in the process of making career decisions. Many adolescents lack adequate information on the opportunities available to ensure that their cognitive abilities can meet the demands of their career dreams. Misinformation causes adolescents to perform poorly in their career choices hence becomes a source of inefficiency not only for themselves and their organization but also for the economy as a whole (Issa and Nwalo, 2008). Some are limited by environmental influences to choose the careers which are perceived as gender matched and avoid gender-mismatched careers. Even though there are available jobs some career fields, such as in nursing, secretaries and the field of art, men might not choose to be in this field of work because of their perception (Dockery & Barns, 2005).

The influence of cognitive abilities on career choice of adolescent students can lead to a

labor shortage in some career fields as many adolescents are limited to choose careers based on gender. With this perception, they turn to shut down their scope to employ their innate potentials to develop skills that can lead them to achieving their career dreams. Thus, failing to believe in themselves, lacks the interest and motivation to pursue science and engineering careers related jobs where there is high demand for labor. Inability to get into some careers which requires critical and analytical thinking, creative ability and adequate mastery of problem solving skills perceived to be attributed to gendered occupations could be some of the reasons why adolescents make wrong career decisions and some end up unemployed after college degrees in Cameroon today. Therefore, the researcher seeks to investigate gender differences in creative skills and their effects on adolescents' career choices.

### **Gender Differences in Career choices**

In today's world of work, many people change jobs or move to different organizations several times until they retire. They are more likely to have loyalty to their careers than the companies (Hytti, 2010). According to socioeconomic development worldwide, there is an increase in career alternatives (for example, information technology (IT) jobs) (Landry, Mahesh & Hartman, 2005). This seems like people have more career options than they did in the past. However, their career choices may be limited by gender difference in cognitive abilities. The perceived gender bias in employment opportunities can block individuals from choosing their preferable choice. According to Gilbert, Burnett, Phau & Haar (2010), previous research found work related differences between males and females, this means gender gap in career choice still exists. Both males and females may perceive that they are expected to do particular types of work in which they do not really need to do. Their career chances are possibly blocked by the perceived gender cognition. In Thailand for example, a developing country in Southeast Asia, women still have fewer career opportunities and they are economically, socially, and politically disadvantaged compared with men (Hutchings, 37 2000). For instance, in Cameroon 90% managerial positions, men are thought to be more suitable than women; also, 91% of electrical engineers in ENEO Cameroon are made up of males, the same goes to jobs like drivers (taxi, bus and truck drivers). There are similar phenomena in other countries, for instance, a study of Turkish college students' attitudes toward women managers by Sakalli-Ugurlu and Beydogan (2002) argues that men are perceived as more devoted to their work, more precise, and harder working than women managers. In North America, men are widely considered as more competent than women (Correll, 2001).

It can be said that the perception of gender role can create individuals' career barriers (Huffman, Olson, O'Gara Jr. & King, 2014). Gender gap in career choice may be caused by gender role perceptions among cultures. Originally, women had been expected to be more responsible for household duties. As time passed, the perceptions of gender role have been changed. Men's household responsibilities have increased in recent years (Huffman et al., 2014). One of the reasons for the lack of job applicants in some areas may be derived from cultural beliefs about gender (Correll, 2001). Moreover, gender differences in cognitive abilities could affect individuals' career decision. Males and females might value different factors related to career choice (such as intrinsic and extrinsic factors).

### **Adolescence and career choices**

Adolescence is a distinct phase of the developmental life cycle in humans and other animal

species (Elliot & Feldman, 1990; Spear 2000). Among humans, adolescence is a complex, multi-system transitional process involving progression from the immaturity and social dependency of childhood into adult life with the goal and expectation of fulfilled developmental potential, personal agency, and social accountability (Greenfield, Keller, Fuligni, & Maynard, 2003; Graber & Brookes-Gunn, 1996; Modell & Goodman, 1990; Steinberg, 2002). Conceptualized by G. Stanley Hall, the founder of adolescent science, as a process of physical and psychosocial “rebirth”, adolescence gender is the synthesis of profound corporal development with the evolution of a matured existential essence and integration of the nascent self within family, community, and culture (Arnett, 2002; Berzonsky, 2000; Blos).

Developmental transitions occurring during adolescence differs among gender and career choices, and requires reciprocal reorganization of the individual and the context influencing cognition, emotion, behavior and relationships (Graber & Brooks-Gunn, 1996; Lerner & Castellino, 2002). This interdependent, individual and contextual evolution presents multi-system challenges constituting the basis of risk, resiliency, and opportunity in adolescence (Geidd, 2015; Graber, Brooks-Gunn, & Petersen, 1996; Steinberg, 2014).

### **Creativity**

An important variable of cognition that was employed in this study is creativity; creativity according to Lucas (2015), is a core life skill that individuals should develop from an early age. It supports academic performance and helps uncover adolescents various talents. An essential component of cognitive ability is creativity; it is one of the most important life skills which are viewed differently by gender. It is a necessary, constructive element of innovative thinking processes and is a crucial life skill in sciences and career development (Lucas, 2015). Being creative helps to address and, more importantly for learners, to partake constructively in complex and evolving technological and digital settings (Ferrari, 2009). Creativity allows for adaptability in various life situations by leading to solutions, methods and processes to tackle old problems and contemporary challenges.

Using creativity as a variable for this study, some indicators learners develop include; curiosity and innovation (originality). Social creativity is a collaborative phenomenon which encourages individual learners to be even more creative by combining different ideas, sometimes across cultures (Ferrari, 2009). A number of important environmental factors influence creative thinking abilities. These include the cultural and personal barriers that can inhibit creative abilities. Jones (1984) classified such factors as strategic (that is, value, beliefs, morals, and other habits acquired from society and self-image), barriers that can stifle individual’s effort to function creatively

Creativity, or being creative, is the ability to generate, articulate or apply inventive ideas, techniques and perspectives (Ferrari, 2009), often in a collaborative environment (Lucas and Hanson, 2015). In conjunction with critical thinking and problem-solving skills, to which it closely relates, creativity is a major component of purposeful thinking, that is, a non-chaotic, orderly and organized thought process. Being creative is, to a large extent, connected to the learner’s cognitive abilities, including analytic and evaluative skills (Sternberg, 2006). Moreover, ideational thought processes are fundamental to creative persons (Kozbelt, 2010). Creative skills intersects with social and personal management skills; therefore, while

related to the arts, creativity is also a pre-condition for innovation and adaptive behaviors and solutions in all life settings, including in learning settings and in the workplace (Partnership for 21st Century Learning, 2015). Creativity can however be linked to the effectiveness of other life skills, in particular: critical thinking, problem identification (Sternberg, 2006), problem-solving (Torrance, 1977), and self-management.

With regards to a renewed vision for education in Cameroon, creativity is relevant at two levels. First, it is intrinsic to the learning process of all learners, at all ages across the curriculum. Creative skill is a means of knowledge creation that can support and enhance self-learning, learning how to learn and lifelong learning (Ferrari, 2009). Thus, the promotion of creativity is a core component of improved learning processes and education systems. Second, promoting creativity in and beyond education settings helps children, adolescence and other learners to unearth their resources in multiple disciplines and subject areas, while developing their capacity to brainstorm, cast a fresh look on every day, family, health and workplace situations, and offer constructive suggestions (Lucas and Hanson, 2015). Recurrent in national skills documents, creativity and creativity-related skills, such as innovative thinking, collaboration and self-efficacy, are valued throughout life (Care, 2016). For this reason, psychologists, such as Vygotsky and Guilford, have long maintained the importance of fostering creative development in children in order to prepare them for a changing future (Kozbelt, 2010; Guilford, 1950), which in turn is a priority in the Cameroon context, as children and youth face particularly complex life environments.

Interventions targeted at improving creative thinking has not been successful at increasing students' academic achievement (Maker, 2004); this is of specific relevance to Cameroon where education service delivery generally does not set out to encourage creativity due to teacher-centered pedagogy that tends to suppress innovative ideas (Beghetto, 2010). In addition, school environments are not systemically felt as safe by adolescents and this may inhibit creativity. Fostering creativity by adapting new teaching methods and building safe educational environments could, therefore, support overall improved performance of the schools in the region, while preparing learners to be innovative in life and the world of work. Creativity develops from potential to achievement as children grow up; therefore, it is necessary to start encouraging creativity at an early age. There have been successful efforts to improve creativity of children through facilitation of pretend play skills (Russ and Fiorelli, 2010). Other success factors include:

- i) The exploration of different activities so that children can find what they enjoy and developed their talents and abilities; and
- ii) Caring environments, in which children feel safe to express even unconventional ideas, where every-day acts of creativity are reinforced, and independence in problem-solving encouraged (Russ and Fiorelli, 2010).

According to Article 29 of the Convention on the Rights of the Child, creativity is critical to the “development of the child’s personality, and mental and physical talents, to their fullest potential” (UN General Assembly, 1989). Hence, beyond the development of children’s intellectual abilities, a task traditionally viewed as the sole responsibility of schools (UNICEF, 2007b), there is a rights-based justification for educational settings to be conducive to creativity. This can be done by encouraging and 63 fostering dynamism,

playfulness and trust, while promoting tolerance of differences and personal commitment (Siegel and Kaemmerer, 1978). An environment conducive to creativity should also include organizational encouragement and work-group support (Amabile, 1995) to emphasize the social dimension of creativity.

### **Ways to foster creativity**

Creativity can be fostered through teaching and is not the preserve of any particular subject discipline which may determine adolescences career choices. It can be considered integral to quality education and is acquired through training and the right classroom environment (Gutman and Schoon, 2013). Teaching approaches that emphasize acquisition of facts over the development of thinking skills are, on the other hand, associated with the suppression of creative expression (Kozbelt, 2010). Creativity is related to both innovative and divergent thinking; the latter, in particular, involves imagining several responses to a single problem, rather than focusing on a single correct answer, a thought process that can lead to creation and innovation. Meta-cognitive processes, such as tactical thinking, are also tied to creative thinking (Kozbelt, 2010).

Research exploring behavioral and brain function has evinced that, while men and women were indistinguishable in terms of behavioral performance across all tasks, the pattern of brain activity while engaged in divergent thinking indicated strategic differences between the genders. During divergent thinking, declarative memory related regions of the brain were strongly activated in male learners, while the regions involved in self-referential processing were more engaged in female learners (Kozbelt, 2010).

The implications of these gender differences beg further exploration in the field of gender differences in higher-order cognition, where the crucial question is not intellectual abilities, but the employed strategies, functional task approach and cognitive style adopted by each gender under specific conditions (Abraham, 2014) in order to then foster each with the adequate educational activities to obtain the best performance.

Creativity and creativity-related life skills are widely sought after in the workplace. Like findings elsewhere, creative thinking skills were considered among the most important life skills at recruitment, according to a survey of MENA chief executive officers (Al Maktoum Foundation, 2008). A survey of the skills gap in MENA found that creative thinking was considered an important skill for junior/mid-level positions, and especially important for senior-level positions (YouGov and Bayt, 2016). Difficulties in finding these skills were encountered by 63 per cent of companies from the region that responded. Creativity and creativity-related life skills are important for fostering innovation and problem-solving, and for improving productivity. Innovation is a process by which people, or groups of people with an entrepreneurial mindset, develop new ideas or adapt existing ones (World Bank, 2010a). By extension, these life skills are highly relevant in any entrepreneurship endeavour, both at the start and for later business growth. Beyond innovations in the economy encompassing products, processes and services, creativity is linked to improvement in society as new ideas can help solve pressing problems (Moran, 2010). This includes developing workers who can think ‘outside the box’ to be competitive in the global economy by fostering their capacity to think in a digital and technology-oriented economy (Jalbout and Farah, 2016).

### **What motivates creativity?**

Creative individuals are often intrinsically motivated (Kaufman and Sternberg, 2010; Van Tassel-Baska and MacFarlane, 2009), they are willing to take intellectual risks, ask questions and place themselves at risk of making mistakes (Sternberg, 2006; Kozbelt et al., 2010) to better learn from them. They are open to new ideas and tend to have high creative self-efficacy or belief in their ability to generate new and meaningful ideas (Kozbelt et al., 2010; Russ, 1996; Sternberg, 2006). This disposition, motivation, intellectual risk-taking and creative self-efficacy can be critical in the face of the natural resistance that society often displays toward creative and innovative ideas that are new and untested (Sternberg, 2006). Yet, like all core life skills in the framework of the Individual Dimension, creativity does not spur opposition; on the contrary, it is known to enhance the ability of adolescences and youth to positively, constructively and innovatively face every day challenges in their social environment.

Although creativity may be associated with individuals, it is now largely conceived as a collaborative and social phenomenon developed in and through communities and groups (Carlile and Jordan, 2012). Social creativity shapes creative individuals within it, encourages social cohesion and celebration, suggests a dynamic inter-relationship between the personal and the social, involves an ethical dimension, and may arise from the interaction of differing cultures and values (Carlile and Jordan, 2012). In order to promote the social aspect of creativity, teachers should be aware of the extent to which different cultures value creativity to show learners how subjects and disciplines are socially constructed, and of how to use group diversity to stimulate creativity and explore the ethical dimensions of creativity (Carlile and Jordan, 2012).

The growing relevance of creativity to address complex challenges in society is evinced through a myriad of citizenship discourses and research currently fostering creativity (for example, the “Creative Citizens” programmes in the UK). In its most practical 118 dimension, creativity is a key for the exploration of everyday problem-solving at the community level and for enabling positive social transformation. Also, one problem for psychologists who want to understand cognitive gender differences is the fact that females achieve better grades in school and on tests in all subject areas when the material closely resembles what has been taught in school, but males achieve higher grades on standardized tests if the test questions are not tied to any specific curriculum or in-class learning experience.

According to Gallagher, Levin, & Cahalan, (2002), these results can be partly explained by the fact that more women than men take advanced standardized tests like the Graduate Record Examination (GRE), so their overall mean on these tests would be expected to be lower than the mean for men (because the larger number of women test takers suggests that overall the group of women who take the tests is less select than the group of men who take them). However, this reasoning does not apply for tests taken by approximately equal numbers of females and males, for which similar results are found Kimball (1989) hypothesized that girls’ learning is more rote than boys’ learning, so girls’ learning is assessed best with familiar problems, but this theory ignores the fact that writing is a highly creative act involving novel topics, and girls perform particularly well on writing tests.

### **Piaget's Theory of Cognitive Development (1962)**

According to Piaget (1936), the theory of cognitive development explains how children construct a mental model of the world. He disagree with the idea that intelligence was a fixed trait and regarded cognitive development as a process which occurs due to biological maturation and interaction with environment. The goal of this theory is to explain the mechanism and processes by which the infant, and then the child develop into an individual who can reason and think using hypotheses. To Piaget, cognitive development was a progressive reorganization of mental processes as a result of biological maturation and environmental experiences. Piaget's theory focus on cognitive development and learning. Development focus on the leaner's capabilities and the learning focuses on the realization of such capabilities and the education within the theory is extrinsic. Base on Piaget's theory of cognitive development, the behavior reflects the emergence of various psychological structures, organized units or patterns of thinking that influences how children interpret the information they receive from the environment (Kendra, 2014).

The cognitive developmental theory explains the change in reasoning level of adolescents in acquiring new ways of understanding their world and how both males and females conceptualize the world differently. Piaget's theory of cognitive development assumes that all adolescents go through the same sequence of development and these developmental stages however vary between males and females, especially the way males and females understand and explore the world, but they do so at different 81 rates. Teachers must make a special effort to provide classroom activities for individuals and small groups, rather than for the total class group.

According to Piaget (1983), the schema is actually the different sensory motor map that the learner constructs about their world on their knowledge development. Gradually as learner develop the ability to represent the outer world in the internal images, logical thoughts become possible for a learner to perform. Schemas are constructed through the process of assimilation and accommodation which describes both the mental and physical actions involved in understanding and knowing. Schemas are categories of knowledge that help learners to interpret and understand their world. In Piaget's view; a schema includes both a category of knowledge and the process of obtaining that knowledge. As experiences happen, this new information is used to modify, add to, or change previously existing information or schemas.

According to Kendra (2014), Piaget's cognitive developmental theory suggests that adolescents incorporate gender role knowledge gained from the social interaction into existing mental schemas about self-prompting, in this context, the reorganization of thinking over time about gender, cognitive ability and career choice to accommodate new data. The integration of new ideas into pre-existing, organized sets of idea (schemas) also has the effect of making the information more retrievable, or accessible in memory, than other kinds information that is not as readily assimilated into the schema (Bjorklund, 2000).

In line with Daehler (1995), these socio-cognitive feedback loop perpetuates gender stereotype when a young girl decides, based on consistent gender stereotyping social feedback, for instance, that it is not appropriate for her to become a physician, when that occurs, future information that is consistent with that dominant non-physician self-schema is



more likely to be attended to and encoded than information that challenges the belief. Conversely, the young boy who receives regular social reinforcement, (or tacit permission from the environment) to consider “physician” as a possible future self, constructs over time an increasingly more elaborate physician self-schema that is cognitively primed to receive and encode supporting information. These different self-schemas in turn can impact specific aspects of cognition and differentiation in career choices between male and female adolescents.

There are various factors, such as heredity, environmental stimuli, socioeconomic status, culture, and maturation, contributing to adolescents’ cognitive abilities (Zhang, 2008). Among them, the role of cognitive development is indispensable. According to Piaget (1962), one’s cognitive abilities become sophisticated throughout four developmental stages according to one’s age. Children aged between 7 and 11 years are at the concrete operational stage. Their logical reasoning is developed which allows them to mentally arrange and compare things. Critical thinking starts to blossom as their thinking becomes decentered and less egocentric, which allows them to consider others’ perspectives and clarify one’s thoughts (Piaget, 1977). This logical and critical thinking becomes advanced when they reach the formal operational stage (age 12 or above) because they are able to think systematically, manipulate mental objects, test hypotheses, and draw conclusions based on reasoning. It reveals that developmental age and maturation are related to the development of cognitive competence, and at the same time, adolescents’ cognitive competence is changing progressively via their active manipulation of the mental processes.

### **Empirical study**

According to research conducted by Lubart & Sternberg (2006), a comparative studies in Middle East and North Africa was carried out to directly test the investment theory of creativity. In the first study, the authors tested the predictive value of the five person-centered resources specified in the theory for creative production in eight tasks: designing two advertisements, making two drawings, solving two creative scientific problems, and writing two short stories. All correlations between average creativity scores across the four domains and scores on the tests measuring the five person-centered resources were statistically significant. The correlation for motivation was nonlinear, showing a curvilinear function whereby people with intermediate motivation showed higher levels of creativity than those with either high or low motivation. It was concluded that, in general, the results dovetailed well with the predictions of the theory. However, an unexpected finding was obtained: Creativity was significantly correlated with the local, rather than with the global, style. It was thought that this unexpected finding could have been due to the fact that the topics and titles given might have narrowed the tasks too much.

The second study examined predictions concerning risk-taking behaviors, the personality resource in the investment theory of creativity. The creative tasks were the same with those in the first study for the drawing and writing domains. In the risk taking contest, adolescents’ entered their drawings and stories (separately) in contests involving varying degrees of risk and payoff. In the hypothetical-situations questionnaire, participants were asked how they would respond if they encountered certain risk situations. In the self-report questionnaire, participants were asked about risk taking in a wide range of situations. It was found that the participants generally tended toward being risk-averse, “perhaps because of

socialization against risk taking'' (Sternberg & Lubart, 1992). Moreover, the results for the art domain supported the authors' hypothesis that high risk-takers would be judged (by 15 independent evaluators) as significantly more creative than low risk-takers.

However, the results for the writing domain did not clearly support this hypothesis. The reason was that what was evaluated as creative by the authors was sometimes found to be somewhat offensive to at least some of the independent judges. The two existing studies reported by Lubart and Sternberg (1995) are limited in three ways. First, both studies involved small sample sizes (44 participants in each study). Second, both studies involved many tests, both self-reported and behavioral ones. Although such extensive testing has the obvious advantage of being comprehensive and objective (with the involvement of 114 behavioral measures), administering such tests could be cumbersome and expensive. Finally, the existing studies did not take into account the contextual resource (that is, environment) specified in the investment theory of creativity.

The aforementioned limitations call for an alternative approach to further investigating the validity of the theory. One potential approach is to design questionnaires to examine the extent to which people take into account each of the six resources when they make judgments about creativity. Furthermore, because there is often a gap between people's espoused theory and their theory-in-use (example, Westby & Dawson, 1995), it is necessary to assess people's judgments about creativity when they are presented with different types of tasks. According to Dawson (1995) as a core life skill, the contribution of creativity to the cognitive dimension of learning brings about the advantages of purposeful thinking, especially creative thinking, for adolescents learners and, by extension, for Cameroon educational systems and their outcomes. Creativity is sometimes misunderstood as resulting in chaotic thinking processes, however, it actually encourages orderly and organized thoughts, thus expanding in learners, at any age, the ability to constructively think anew and perform better.

Empirical research studies at the college level, and the popular Career Development literature all support the importance of systematic career planning as a prelude to successful job searches and long-term career management for both male and female gender (Broscio & Paulick, 2003; Folsom & Reardon, 2003). Gould's (1979) study of 277 managers and professionals provides an early example of the empirical literature. He found that individuals with the most successful careers (based on salary and position level) reported more extensive career planning. Considering the same need, 119 Rottinghaus, Day and Borgen (2005) developed and validated a new 25-item measure of positive career planning attitudes called Career Future inventory (CFI).

Results from a sample of 690 undergraduates from a large mid-western university revealed three subscales: Career Adaptability, Career Optimism, and Perceived Knowledge. Career Adaptability (CA) was defined as the way an individual views his or her capacity to cope with and capitalize on change in the future, level of comfort with new work responsibilities, and ability to recover when unforeseen events alter career plans. Career Optimism (CO) was defined as a disposition to expect the best possible outcome or to emphasize the most positive aspects of one's future career development, and comfort in performing career planning tasks. Perceived Knowledge of Job Market (PJK) assessed perceptions of how well

an individual understands job market and employment trends.

### **Conclusion**

To reduce the gender gap between male and female adolescent students, attention should be given to address the contributory cognitive, motivational, and sociocultural factors, primarily by maximizing the number of career options that women perceive as attainable and compatible with their abilities, preferences, and goals. Until then, large numbers of mathematically talented females will continue to slip through the cracks when their choices are restricted by cultural barriers, gender stereotypes, or misinformation. Our goal, therefore, is to maximize career options for women by capitalizing on female cognitive strengths, emphasizing hard work and effort instead of talent, cultivating female interest in math and science, and removing masculine stereotypes, misinformation, and obstacles that cloud career decisions. In order to achieve these goals, researchers, practitioners, and policymakers will need to increase their collaboration and communication efforts. Researchers, for instance, can contribute by reviewing existing literature, proposing research questions, models, and theories, performing accompanying testing, and providing empirical evidence to support, revise, or reject these theories.

### **Recommendations**

Creative skills are often lacking in the labour market (World Bank, 2010a) and MENA enterprises are looking for solutions to encourage this core life skill (Nosseir, 2015). To support creative behaviors, organizations should be aware of existing gender bias with regard to creativity, which is sometimes linked to qualities traditionally associated with male workers, such as boldness, risk-taking and independence. This bias may lead to dismissing women's ideas and creative output, thus missing out on collaborative and inclusive innovations (Adams, 2015). Creativity, which is at the heart of "being human" (Robinson, 2015), is both integral to the fulfillment of individual talent and is an element leading to persistence (Simonton, 2010) and resilience, another core life skill. More specifically, creativity skills are a key factor in having a successful life (Sternberg, 2006) as they foster self-esteem and self-worth, and contribute to self-efficacy. Creativity also draws on individual skills and resources such as motivation and drive. Characterized as a way of coping with the challenges of life (Cropley, 1996), creative thinking can help people respond adaptively and with flexibility to problematic situations in daily life (WHO, 1997). Hence, in the volatile and sometimes violent context that children and youth face in Cameroon, being creative appears to be a constructive asset, conducive to personal empowerment and career development.

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