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Department of English



Master Degree

Psycholinguistic Issues in English Learning

The Cooperation of Nature and Nurture on Developing Meta-cognitive Abilities in Adolescents_Gender-Based Function.

Case Study of Third Grade Secondary Students at High School in Tiaret

Dissertation Submitted In Partial Fulfillment For The Requirements Of Master Degree In English

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Abstract

Gender differences in spatial abilities overlooked findings generated by the metatheory of evolutionary psychology. This oversight reflects an underlying hostility within the social sciences towards the use evolutionary theory in the study of human behaviour and cognition. As a remedy, this paper outlines the theoretical background of evolutionary psychology, focusing on the insights evolutionary psychology offers for cognitive gender differences research, with particular reference to gender differences in spatial abilities, memory, self-esteem, and linguistic interpretation and performance.

Keywords: Left brain right brain functions, hormones, cognitive abilities, parentings styles.

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General Introduction

Gender differences in cognitive abilities have been widely analyzed in the psychological and neuropsychological literature. As the origin of these differences is not yet clear, though it has been assumed that both biological and environmental factors account for the variation that has been demonstrated. Among the biological factors identified, differences in neurological structure and function have been pointed out to form our hypothesis: The coorporation of nature and nurtue on developing metacognitive abilities in adolescents_ gender based function.

In attempt to highlight the objectives of the study, the research aims at signifying the main gender cognitive similarities and differences in terms of functional behaviour in adolescence. Throughout the realm of school and teaching it is well-known that puberty, as a demanding and decisive period in children's physical and psychological development.

Due to the processes adolescents experience during the course of puberty there cannot only be observed changes on a mere physical or neurobiological level but also in terms of behavior and attitudes on which we attempt to require gender individuals reflecting on some paticular cognitive tasks in purpose of observing responses that may lead us to prove the variance perspective in terms of gender cognitive developing skills, as well to fulfill the gap behind our research interogation: Do nature or nurture aspects affect more the development of cognitive abilities into meta-cognitive skills during adolescence?

Interestingly, our research paper is about to cover three chapters. First, it provides a general theoritical overview about the common most biological factors taking part on the adolescent cognitive abilities, especially after puberty. Second, it examines gender meta-cognitive tendencies through their rate of performance reflected in major cognitive tasks in order to highlight any functional variance limited to speed of conception and positive response. Last, presents a discussion of the findings and recommendations for parents and teachers to have appropriate improvisataions in terms of nurturing under nature contiditions.

Introduction

Mystery about the human behaviour has always been an issue for the human kind to decode. After all conducted knowledge since ever knowledge explored science, human biology, physiology, chemistry and psychology centered the driving machine of the human kind in their head, their mind i.e. the brain. Scientifically, its structure and functions of its elements are called neuroscience, and since the outer language as verbal or non-verbal the human produces in ambiguous manners, signs, sounds, gestures, through their senses are the brain orders, by processes of perception, conception and production. To initiate discovering this phenomenon then, we should introduce the anatomical aspect of the brain in relation to linguistic interpretation since our focus is on the neurological matter in the neuro linguistic development of the human gender. Among all of those parameters as means of perception, conceptualizing, and producing in terms of logic, remembering, thinking, problem solving, and emotions orientations_ intelligence and memory majorly interpret the process of gender cognitive functions in common task performances measured by specific variables along three considerable phases; childhood, early adolescence, and late adolescence. The structure of gender brains is controversial in several scientific spheres; psychologists seek different perspectives on how much of gender cognitive skills are due to biological, neurochemical, and evolutionary factors as nature, or is the result of culture and socialization as nurture.

1.1 The scope of human brain nature

1.1.1 Structure and cognitive functions

The brain in its form looks as a strange shape to be so delicate and responsible of dominating the body mechanics claimed (Carolyn P. Sobel, Paul Li, 2013, p. 83)#/One would never suspect the wonders of which this rather odd-looking object is capable. But do not let its appearance fool you. There are interesting observations to be made in the single nerve cell, in the many regions of the brain, and in the brain taken as a whole. "Through the outer image of the human character there is an inner vehicle embodying the quiddity of soul and mind, psychologically speaking. But as receiving the external information through our senses: taste, smell, sight, touch and hearing there's technically a neurobiological internal process working on transmitting the input into a responding output via cognitive parameters governed by the

three-pound organ in our head i.e. approximately 1.362 Kg. Memory and speech, intelligence and creativity, emotions, thoughts and body movements, and figuring out how we react to distressing circumstances like doing a test, losing a job, academic failure, or enduring an ailment by pursuing and directing our heart and breathing rate_ all function in response to its orders.

1.1.2 Size and Material variances

The brain material is made up of more than one hundred billion nerves that communicate in trillions of connections called synapses. It is formed of three major parts: cerebrum, cerebellum, and a brainstem connecting the former ones to the spinal cord which in its turn connects the brain to the nerves in the body. The cerebrum is partitioned under four lobes: frontal is responsible for problem solving, judgment and motor functions. Parietal lobes manage sensation, handwriting and body position. Temporal lobes are involved in memory and hearing, and occipital lobes control the brain visual processing system. It's created of claiming right and left hemispheres. It performs higher works similar to translating touch, dream and hearing, and in addition speech, reasoning, emotions, learning, and fine control of development. While the cerebellum is placed under the cerebrum. Its work is to coordinate muscle movements, posture, and equilibrium _ its surface again needs a collapsed presence known as the cortex. That cortex holds over 70% of the 100 billion nerve units. The nerve cell figures color the cortex greybrown giving it its sake – gray matter. Underneath the cortex are long interfacing fibers making the touch point of neurons, called axons, which make up the white matter, shown in Fig (01).



Figure 01: Grey matter, white matter, gyrus and sulcus (Hines, 2016)

The cortex holds neurons (grey matter), which need aid interconnections to different cerebrum territories by axons (white matter). A fold known as a gyrus and the groove in between is a sulcus centralis. That collapsing of the cortex expands the brain's surface range permitting more neurons to fit inside the skull. Also empowering higher functions and there are names to those folds and grooves that help characterize particular brain areas.

1.1.3 Major functional areas

The basal ganglia is a cluster of deep structures in brain center coordinating messages between multiple other brain areas. Then the brainstem incorporates the midbrain. It goes about as a transfer focal point interfacing those cerebrum and cerebellum to the spinal line. It performs huge numbers of programmed capacities such that of breathing, heart rate, constitution temperature, rest cycles as wake and sleep, digestion, sneezing, coughing, vomiting, and swallowing. Fig 02.



Figure 02: Brain areas of functional localization (Krebs, 2011)

1.1.3.1 Right – left hemispheres major functions

The right and left equal parts of the brain are joined by a bundle of fibres called the corpus callosum that delivers messages from one side to the other. Called cerebral hemispheres; their functions are not all shared, each of both controls the opposite side of the body. The left is about analytic thought, logic, language, reasoning, science and math, writing, numbers, skills and

right hand control. The right hemisphere controls imagination, art, creativity, intuition, insight, holistic thought, music awareness, spatial ability. It is dominant in left hand use and language in about 92% of people as shown in Fig (03)



Figure 03: Right brain Vs left brain functions (Oglesby, 2010)

1.2 Biology and sex hormones influence in teenagers metacognition

1.2.1 Gender brain differences in cognition

(Halpern, 2013) "We do socialize our boys and girls differently, but the contribution of biology is not zero," focused on the issue to be innate. Genes and behaviour are connected, contrasts that might demonstrate the reason we anticipate males and females to act in characteristic ways. But as some researchers found that some brain structure features are more noticed in one gender over the other, and some are found typically the same, there is the key to answer our question _There is a certain unique mix of functions. However, if that physical brain does not change, how it functions does i.e. if the biological aspect is non flexible, how it works individually differs.

1.2.2 What cognitive variables show sex differences

(Cool, 2016) Comparing a detailed MRI scans of more than 1,400 people. When trying to reveal those fabulous differences as location issue _ brain road maps. After measuring the amount and location of gray matter giving its sake "*thinking matter*" in 116 parts of the brain, she figured out which areas featured the biggest sex differences and scored these areas on each scan finding six out of a hundred consistently representing a single sex. While most of them had a patchwork quilt of masculine and feminine features. As either falling into the "female-end" zone, the "male-end" zone, or somewhere in between.

MRIs showed the biggest gaps between the sexes were in the larger amount of gray matter females had in their hippocampus, the area processes in memory, and the left hemisphere as to control their communication skills. They discovered in female brain more wiring in regions linked to memory and social cognition i.e. larger deep limbic system. So it would be impressing that females outperform at understanding others feelings when communicating, called multitaskers, and respond more creatively in social contexts.

Conversely, explaining why male brain outsize the females' by 11-12%, in relation to being active in left-brain, approach problem-solving from a task oriented perspective. The size difference does not correspond to intelligence but to their more neurons needed in controlling their greater muscle mass and larger body size.

1.2.2.1 Brain road maps reveal differences

(Verma, 2016) She looked at nearly two thousand healthy people, including kids, teens, and young adults when performed various tests of their mental operations, only variances in their "*brain road maps*" scientifically called "the connectome" can reveal why males outperform females on certain tests of cognitive abilities, while females have the edge in others. Yet, realized "*Our studies are finding significant differences in the brain circuitry of men and women, even when they're doing the same thing: It's like two people driving from Philadelphia to New York, who take different routes, but end up at the same place "Verma. 98% of this study didn't suit a clear-cut gender profile, suggesting that " human brains do not belong to one of two distinct categories " cognitive variance is about a pathway system for brain traffic, nerve pathways that link brain structures.*

1.2.2.2 Intelligence area

Many researchers assumed that brain size does not necessarily correlate with intelligence. However, others precised on this gap to find out the notion of size might interfere somehow, exceptionally.

"Bigger doesn't mean smarter," says (Amen, 2013). When studied more than 45,000 brain scans, and turned out that male's inferior-parietal lobule (IPL) is larger in left-brain than females, dominating significantly the way more connections happen on the left hemisphere, which may heighten their mental mathematical ability, the reason males frequently perform higher in mathematical tasks than females, a clinched predominance on pivoting objects and angles and navigate using cardinal directions that require a particular instant mental process. Interestingly, that is the most specific area was discovered in Einstein's brain to be biologically, abnormally large, and perception tending to be more attuned to familiarity of present things so they can react. Males have stronger connections between brain areas for motor and spatial skills which means males tend to do a better job at tasks that need hand-eye coordination and understanding where objects are in space, like throwing a ball i.e. target skills.

On the other hand, females tend to have more connections going left and right across the two hemispheres which could give them an advantage in pulling together information from different sources and drawing conclusions as the left one manages logical thinking and the right is associated with intuition, so they excel at verbal familiarity as they peruse to navigate using landmarks, and more stupendous memory for questions said Halpern, "*they are better at remembering where things are*".

Conversely then, as females typically have the IPL larger in the right-brain, and in advantage of processing sensory information, it permits their sensitive focus to unexpected emotional contexts called "Specific stimuli". Yet, both genders can get there using both ways of navigation, claiming that diverse aptitudes don't separate levels of brain power after an assortment of tests over age groups, species and nations, as juniors of three months as adults said Halpern "There's no smarter sex" variance fell at the tails of distribution curves _ cortex-dependent.

Interestingly then, "Individuals of both sexes can have large variations in their abilities," Verma supports with her own case, "*I have three math degrees but no sense of direction*".

Claiming as a notice to consider, said Amen 2013" And no differences have been found in men and women's IQs, regardless of brain size" emphasizing on the title Who's brain is better.

1.3 Gender intelligence

Random examinations of age trends indicated that girls showed a slight superiority in computation in elementary school and middle school. There were no gender differences in problem solving in elementary or middle school; differences favoring male emerged in high school and college, by comparing mass and volumes between the genders claiming that females were intellectually inferior because they have smaller and lighter brains. Many believed that the size difference caused females to be excitable, emotional, sensitive, and therefore not suited for political participation.

Psychologists as always, applied empirical tasks to support gender differences in respect to multiple intelligence rather than the universal g factor. Defining intelligence in multiple dimensions, a theory developed in 1983, Frames of mind by Dr. Howard Gardner professor of education at Harvard university, suggesting that the traditional notion of intelligence based on IQ testing is highly limited, and conceptualized nine different intelligences to account for a broader range of human potential in intellectual development, linguistic "word smart"# logical "number/reasoning smart", special "picture smart", bodily kinesthetic "body smart", musical "music smart", naturalistic" nature smart", interpersonal "people smart", intrapersonal "selfsmart", and existential cosmic smart" intelligence.

Further, supported Gardner, 2006 p.6" multiple intelligences on the other hand, pluralizes the traditional concept, an intelligence is a computational capacity, a capacity to process a kind of information that originate in human biology and human psychology"

1.3.1 Intelligence IQ Tests types

(Surbhi Agarwal, 2017) Though in physical proximity wiring an interconnection in the brain mechanisms, there is much information processing, but gender variance significance is less noticed when investigated the effect of gender and the interaction between gender and the instructional program on intelligences, sampling one hundred girls and one hundred boys from two senior secondary schools of Meerut city, India. Randomly selected, regardless stream sections. A. Ali (2005) and Al-Faoury, H.O. & Smadi, M.O. (2015). Loori, used Mean, T-test,

and S.D. tests as statistical techniques to find out that males expressed more bodily-kinesthetic intelligence and naturalistic intelligence. The t-ratios for linguistic, logical, spatial, musical, interpersonal, intrapersonal and existential intelligence have not come out to be considerable.

Thus, males and females show similar magnitude of the nine dimensions of multiple intelligence. But in the concept of preference males are more of logic intelligence and females are more of intrapersonal and linguistic intelligence, which supported that gender cognitive functions outperform well in accordance with learning styles rather than with objective technical tests. So, gender intelligence outcomes are dimensional according to figure (05).



Figure 04: Scores with reference to nine dimensions of multiple intelligence (Surbhi Agarwal, 2017)

From all the received views from all experts there is no sex difference in intelligence including all dimensions. A leading authority, Diane Halpern came up with a strong focus on the hypothesis of the must existing difference due to biological factors. Halpern 2012 stated "females and males score identically on IQ tests" mentioned (Lynn, 2016) in his speech on sex differences in intelligence claiming that there is hardly a definite test score determining how much of biology interferes in the gender differences in intelligence, human brain size can't be the only reliable factor, there is the social factor impact too .

Furthermore, the issue will be still ongoing for further paradox discussions. Added (Tajularipin Sulaiman Suriati Sulaiman Khairunnidzam Bahruddin Azlida Mohamad, 2013); Gardner (1993) stated that "multiple intelligences have a cultural component. From this

perspective, the difference in intelligence is not biological, but rather social. The origin of these differences is found in single roles and positions in society". Muhammad Sohail Ali et al. (2009) listed that "one of the possible factors affect the gender differences in intelligence are social influences. These factors include gender roles, self-conception, outside influence, education, and personality".

1.4 Gender and memory

1.4.1 Types of memory

Memory is an intricate methodology that incorporates three phases: encoding (deciding what data may be important), storing, and recalling. Separate zones of the brain are included on memory contingent upon the type of memory; working memory, Long-term memory, and Short term-term memory.

Hereby, if we want to contrast the cognitive characteristics of the male and female brain functions, we may require some previous parts of the neuroanatomical brief discriptions of the human brain to put in issue that there are differences in their function developmental stages due to natural structural interplay and nurture factors as studies have required establishment of relative biology for both sexes i.e. Feminine brain anatomy for psychological matters that rather focus on cognitive functions in relation to structural aspects _ gender gaps issue.

1.5 Memory involved in intelligence

A difference in navigational neural circuitry is one explanation for the disparity noticed in spatial navigation between males and females who process neural cognitive abilities to "orient oneself to objects or places that are either in view or conceptualized across distances, and to perform the mental transformations necessary to maintain accurate orientation during movement" stated (Silverman, Eals, Peters M, 1992). The hypothesis stating gender major variance in spacial and verbal cognition interfere approximately with the gender variance in recalling information. There is an underlying neurofunctional differences observed during working memory, a rotation cognitive process appear to be predictive of academic achievement and intelligence.

(Conway AR, Kane MJ, Engle RW, 2003), a neuroimaging study focused on the intrinsic neural functioning of memory rather than the extrinsic behavioral test performances to elucidate gender differences in neural network connectivity during working memory tasks. the observed neural activation patterns shown prefrontal, temporal, and parietal involvement posited to reflect the components of (Repovs G, Baddeley A, 2006) revised model of working memory *"working memory operated differently when presented with verbal compared to spatial information"*. Verbal working memory favorably engaged the left hemisphere, particularly the inferior parietal lobe, lateral frontal lobe, the marginal gyrus (BA 10), premotor areas, and Broca's area. Spatial working memory was associated with a more spreaded activation pattern across the hemispheres, consisting of the inferior frontal lobe, posterior parietal lobe, right occipital gyrus, right premotor area, right prefrontal cortex, and the extra striate cortex in the occipital lobe.

In addition, working memory plays a key role in manipulating incoming information entering the cognitive system, whether the information is verbal or spatial in nature, interacting dynamically with attention and long-term memory. For this account, working memory is an integral part of general cognitive processing with significant trickle-down effects on other critical processes. Therefore, observing gender differences over working memory networks would depend on robust effects in other areas of cognitive functioning, previously supported by (Jerison, 1973, p. 202) reviewed by *"The mass of neural tissue controlling a particular function is appropriate to the amount of information processing involved in performing the function"*.

Interestingly, when working memory is deconstructed into spatial and verbal components, evidence suggests that behavioral disparities emerge between genders. (Halpern DF, Benbow CP, Geary DC, Gur RC, Hyde JS, Gernsbacher MA, 2007) noted a behavioral performance perspective when stated, "Males demonstrate greater mathematical, spatial, and object working memory compared to females, and females display much more verbal, including episodic memory and writing skills than males".

Eventually, the discrepancy in male and female spatial ability appears to begin as early as preschool and then becomes even more significant as males and females enter adulthood, whereas the female superiority in verbal facets tends to appear slightly later, peaking in early adulthood as (Lynn R, Irwing P, 2008) suggests *"The male advantage in spatial ability helps*

set them above their female counterparts in mathematics, especially in areas like geometry, which involve the visualization of items in space''.

1.6 Sex hormones interference with adolescent cognitive abilities

It is well known that gonadal hormones influence brain development in the uterus, yet before age 13, boys' and girls' mental circuitry appears similar. But during puberty the development of hormones may well influence and contribute to reorganize the gender brain cognitive functions. In order to explore this phenomenon, there must be a range of studied variables through which we realize the interconnection of cognitive abilities with gender chromosomes, by observing intelligence, memory, spatial abilities performed in linguistic tasks.

Adolescence refers to the period of physical and psychological development between childhood and adulthood. Teenagers are more likely to transfer some infantile behaviour into an adolescent one because the human brain experiences fluctuating hormonal effects during puberty, but only a small number of empirical behavioral studies have focused on the effect of puberty on a particular cognitive process.

1.6.1 Hormones effect in cognition

Hormonal fluctuations are ongoing. The adolescent brain pours out adrenal stress hormones, sex hormones, and growth hormones, what noticeably influence brain development. The production of testosterone increases ten times in adolescent males. Sex hormones act in the limbic system, source of the neurotransmitter serotonin, responsible for the regulation of arousal and mood. The hormonally regulated 24-hour clocks change their settings during adolescence, maintaining high school and college students awake far into the night and making it difficult to rise for morning classes.

Since the level of estrogen in the brain is essential to determine its influence on the neurophysiology of the hippocampus and its subsequent effect on cognition, cognitive studies measuring sex differences demonstrated gender differences in aspects as personality, response to stress, vulnerability to develop certain psychiatric disorders and cognitive functions supported (Richmond R. Thompson & Kirsten George, 2003) sex hormones are capable of modifying cognitive capacities. Given that the modifications are much clearer in subjects

exposed to pathological hormone levels during fetal and prepubertal development in regards to those studies that evaluate hormone influence in adult subjects (after puberty).

Furthermore, these outcomes suggest that sex hormones have a permanent progress effect on brain structures that manipulate the cognitive functions during puberty. Other differences may be due to prenatal sex hormone effects, to puberty-independent effects of genes encoded on the sex chromosomes, or to gender-specific environmental effects across the lifetime.

1.6.1.1 Cortex and hormonal interference

As added Gasey BJ1, some effects may be attributable to puberty at the early stage of it. With neuroimaging techniques (Casey BJ1, Tottenham N, Liston C, Durston S, 2005) they figured out that the brain is reshaped. Neurons (gray matter) and synapses (junctions between neurons) proliferate in the cerebral cortex and are then gradually pruned throughout adolescence. Brain regions associated with more basic functions such as sensory and motor processes mature first, followed by association areas involved in top-down control of behavior.

1.7 No evidence sharpness

So far, no clear variance has been considered for gender in tasks that imply attention and working memory. Researches that seek to clarify the influence of sex hormones on cognitive capacitates have identified differences based on hormone levels, although, as a whole, the findings should be cautiously interpreted due to their limitations. A large part of them have been done with a reduced subject sample. Many did notadequately control the type of hormone treatment administered (estrogen, androgen, estrogen plus progestin, estrogens plus anti-androgens, etc.). Many did not control the test-retest effect.

Accordingly, few approaches controlled potential confounding variables as educational level, intelligence quotient, mood state, etc. Though, it appears that teenagers and adults process reward stimuli differently; For example, adolescents are hypersensitive to the value of novel experiences which in turn requires some linguistic intelligence and verbal memory for further interpretation of predictable or potential own experiences.

In general, these studies suggest that sex hormones are capable of modifying cognitive capacities. Given that the modifications are much clearer in subjects exposed to pathological hormone levels during fetal and prepubertal development in regards to evaluations of hormone

influence in adult subjects (after puberty), these findings suggest that sex hormones have a permanent organizing effect on brain structures that support the cognitive functions during brain development.

1.8 White matter gets thicker

Eventually, (Giedd JN, 2004) provides accurate MRI anatomical brain images, more than 40% of all synapses are eliminated, largely in the frontal lobes. Meanwhile, the white insulating coat of myelin on the axons that carry signals between nerve cells continues to accumulate, gradually improving the precision and efficiency of neuronal communication — a process not completed until the early 20s. The corpus callosum, which connects the right and left hemispheres of the brain, consists mostly of this white matter.

1.9 Nurture impact on the psychosocial and cognitive development on the adolescent gender

1.9.1 Psychosocial Aspects

Adolescence is a stage of specific increasing vulnerability as a consequence of potential disjunctions regarding developing brain, behavioral and cognitive parameters that come along various schedules under the control of both frequent and independent biological processes. Put together, these developments enhance the emerging concept of adolescence as a critical or sensitive stage for a reorganization of regulatory systems that is fraught with both risks and opportunities. supports earlier Baumrind's *"The core developmental task at adolescence is identity formation"* (Baumrind, Diana, Hillsdale, NJ, Lawrence Erlbaum, 1991) The fact of standard and a typical development in adolescence have taken on special significance in the last few years, as scientists have begun to recast old portraits of adolescent behavior in the light of new knowledge about brain development.

1.9.2 Parenting styles

Interestingly then, this part explores adolescents' cognitive responsiveness on parenting dynamics to reflect in accommodating themselves for further constructive development. Family patterns are considered determinants of adolescent competence, which means variations in parental responsiveness and demandingness, tightly reflect the interactional nature of

parenting on the adolescent outcomes, added (Baumrind, Diana, Hillsdale, NJ, Lawrence Erlbaum, 1991)" *Parent-adolescent conflict typically increases immediately following puberty, but abates in mid-adolescence*".

According to (Baumrind, 1996) work on parenting that was based on the dimension of parental control to form three different parenting styles, which included authoritative, authoritarian, and permissive style, accounted for the way children functioned socially, emotionally and cognitively. As shown in the table below.

Rate of control	(Demanding) High control)	(Undemanding) Low control
High responsiveness	Authoritative	Permissive (Indulgent)
(Accepting, responsive)		
Low responsiveness	Authoritarian	Permissive (Neglectful)
(Rejecting, unresponsive)		

Table 01: Parenting typologies (Maccoby, E.E 1983, P. H. Mussen, & E. M. Hetherington(EDS), 2015)

1.9.3 Parental responsiveness

Parental responsiveness signifies the degree of support, warmth and affection that parents display towards their children. Responsive parents praise and encourage their children, but less accepting and unresponsive parents are quick to criticize, punish or ignore their children and are less affectionately available to them. (Belsky, 1981) argued "*parental warmth and sensitivity to children's needs is the most influential dimension of parenting during infancy, laying the groundwork for healthy development*". Warm and responsive parenting has importantly been associated with positive developmental outcomes, such as secure emotional attachments, good peer relations, high self-esteem and a strong sense of morality.

1.9.4 Parental Control Dimension

The relationship between parental control and developmental outcomes is less straightforward than parental responsiveness.

Recently, research attention has focused on 'control dimension' of parenting behaviour, claiming that low levels of parental monitoring and high levels of permissiveness are associated with high levels of problem behaviour, supported (Kerr, M. and Stattin, H, 2003)"*parents of these adolescents tend to have limited knowledge of their children's whereabouts, companions and activities*". However, contradicting this, some research indicates that high levels of parental outcomes, supported (Patterson, G.R., DeBaryshe, B.D. and Ramsey, E, 1989)"*Harsh and inconsistent behaviour*".

Together then, these findings suggest that parental control is important, but the manner in which it is enforced may influence its effectiveness.

1.9.5 Authoritative Parenting Style

Authoritative parents are high in responsiveness and demandingness and exhibit more supportive than harsh behaviors. They encourage verbal give and take, convey the reasoning behind rules, and use reason, power, and shaping to reinforce objectives.

As focused (Gonzalez, A.; Holbein, M.; Quilter, S, 2002)"Adolescents with authoritative parents are less prone to externalizing behaviors, and specifically are less likely to engage in drug use than individuals with uninvolved parents". This parenting style is most often associated with positive adolescent cognitive outcomes and was found to be the most effective and beneficial style of parenting among most families.

It is well recommended by (Fletcher, A.C.; Jefferies, B.C, 1999) that "Authoritative parenting fosters adolescents' positive well-being", as parents assess their strengths and weaknesses and do not hesitate to criticize their teenagers lackadaisical attitude, but they figure out points of negligence and lack of interest in education. As freedom is also age-appropriate and is given in phases, they give freedom but monitor their actions lest to go off track when smelling something fishy for example.

On the hand, love and limits act as a reassurance for the teenagers, especially when they are the most susceptible to vices. They set them the limits, which they cannot cross. love bind them, and the limits will stop them from walking down a wrong path as they know that you will

not approve of their actions. They would take care not to hurt you and deprive themselves of your love.

1.9.6 Gender-related patterns in parental control and discipline

As added (Simons, L.G.; Conger, R.D, 2007) "Positive effects of authoritative parenting are amplified when both parents engage in the authoritative parenting style". This study indicated that having at least one authoritative parent fosters better outcomes than family parenting styles that do not include an authoritative parent due to its association with the lowest levels of depression, higher well-being, higher self-esteem and life-satisfaction, parent and the highest levels of school commitment among adolescents.

1.9.7 Mother over father effect

In another study, "Adolescents whose parents are both authoritative or whose mother alone is authoritative report higher well-being", claimed (Milevsky, A.; Schlechter, M.; Klem, L.; Kehl, R, 2008). Although the importance of mother-related variables are much considerable, having an authoritative father was also associated with positive outcomes among adolescents. So in turn, regardless of gender of the parent, the presence of even one authoritative parent is beneficial for adolescent outcomes and contribute in response to adolescents' increasing demands for independent decision-making, that is, enabling the control and coordination of thoughts and behaviour

In other words, authoritative parent's style is represented by high levels of control and maturity demands, in the context of nurturance and open communication that might as well enhance the adolescence ability to improve their mental capacities. Common discipline usually involves the use of reason and power, but not to the extent that the adolescent's autonomy is severely restricted.

1.9.8 Authoritarian Parenting Style

Authoritarian parents are low in responsiveness yet highly demanding. As (Baumrind, D.; Larzelere, R.E.; Owens, E.B, 2010) claimed "*The authoritarian parenting style is associated with parents who emphasize obedience and conformity and expect that rules be obeyed without explanation in a less warm environment*".

1.9.8.1 Main negative effects

According to (Maccoby, E.E. and Martin, J.A, 1983) "They are often cold, unsupportive, insensitive to the child's needs, and demanding in their control". This statement showed that authoritarian parents exhibit low levels of trust and engagement towards their children, discourage open communication, and engage in strict control, Verbal hostility and psychological control were found to be the most detrimental of the authoritarian-distinctive, coercive power-assertive behaviors.

Moreover, these parents are more likely to use corporal punishment or verbal insults to elicit the desired behavior, they lack the warmth of the authoritative parent and may seem aloof to their children. Children with authoritarian parents may be well-behaved, but they are also likely to be moody and anxious; they tend to be followers rather than leaders, but reflect in externalized behaviors and aggression when they are away from parents.

Consequently, according to Professor Baumrind, D. 2010"Adolescents of authoritarian families have been found to exhibit poor social skills, low levels of self-esteem, and high levels of depression", in the whole, this style is identified by high levels of control and demands towards the adolescent, coupled with low levels of nurturance. As authoritarian parents engage in low levels of communication with their children, rarely explaining why compliance is necessary, and often engage in strong punitive tactics whenever children deviate from their standards.

1.9.9 Permissive Parenting Style (Indulgent)

Permissive parenting is characterized by high levels of responsiveness and low levels of demandingness. Supported (Baumrind, D.; Larzelere, R.E.; Owens, E.B, 2010)"*Permissive parents behave in an affirmative manner toward the adolescent's impulses, desires, and actions while consulting with the adolescent about family decisions*", in this way parents do not set rules and expectations, avoid engaging in behavioral control for appropriate behavior benefit adolescent's development.

1.9.9.1 Antisocial deviance

Interestingly, another study by (Luyckx, K.; Tildeley, E.A.; Soenens, B.; Andrews, J.A.; Hampson, S.E.; Peterson, M.; Duriez, B, 2011)"*permissive parents showed steep decreases in monitoring once their children reached adolescence and these children increased their levels of externalizing behavior*". Which highlighted adolescents from permissive families report a higher frequency of substance use, school misconduct, and are less engaged and less positively oriented to school compared to individuals from authoritative or authoritarian families.

1.9.9.2 Lack of self-esteem and motivation

Added (Ginsburg, G.S.; Bronstein, D, 1993) "Permissive parenting is also associated with low self-esteem and extrinsic motivational orientation among adolescents".

These references in the whole refer to this style as one of high levels of nurturance and warmth, but low levels of control and maturity demands. This parenting style could be described as an accepting, but lax style of parenting – parents rarely exert control over their children's behaviour and do not closely monitor their activities.

1.9.10 Permissive Parenting Style (Uninvolved)

Differently, uninvolved parenting style is found to have the most negative effect on adolescent outcomes when compared to the other three parenting styles. Based on (Baumrind, D.; Larzelere, R.E.; Owens, E.B, 2010) "Uninvolved parents often fail to monitor or supervise their child's behavior and do not support or encourage their child's self-regulation". This neglectful parenting style is described as low in responsiveness and low in demandingness.

1.9.11 Absence of engagement and involvement

In other views, as said (Hoeve, M.; Dubas, J.S.; Eichelsheim, V.I.; van der Laan, P.H.; Smeenk, W.; Gerris, J.R., 2009) "adolescents of uninvolved parents often engage in more externalizing behaviors" which indicates a direct association between neglectful manners and delinquent acts ranging from vandalism, potential assault and rape. These adolescents commonly smoke, act aggressively and use more drugs.

In other words, these parents often show disengagement from the responsibilities of child rearing and are often seen as being neglectful regarding the needs of their children. As they do not engage in structure or control with their adolescents and often there is a lack of closeness in the parent-child interaction, outright rejection of their children desires and curiosities.

1.9.12 Lower Self-esteem

In addition to increased externalizing behaviors among adolescents, findings show that participants with either an uninvolved parent or two uninvolved parents scored lower on self-esteem than participants without an uninvolved parent, as supported, (Simons, R.L.; Lin, K.; Gordon, L.C.; Brody, G.; Murry, V.; Conger, R.D, 2002)"*The effects of uninvolved parenting were associated with higher levels of child-reported depressive symptoms during adolescence*".

Consequently, even one gender of this style may influence on the adolescent performing most poorly in all emotional and behavioral outcomes.

1.10 Society

1.10.1 Contextual influences

Few years ago, researchers increasingly recognized the importance of contextual influences in relation to parenting and adolescent outcomes. Racial, ethnic differences, family structure, socioeconomic status, and neighborhood. Research indicateed that the associations between parenting behaviors and adolescent outcomes can be contextually specific rather than universal, since parenting practices respond to immediate contextual demands.

1.10.2 Inductive reasoning effect on self-esteem

Inductive reasoning is a form of nurturing parenting whereby parents clarify expectations, identify problems and possible consequences, supply explanations, and provide rationales by eliciting ideas from adolescents rather than disciplining them in a coercive manner. Thus, it

fosters high quality of parent-adolescent communication that serves as a protective factor for adolescent problem behaviour. As claimed (Kim, S.Y.; Ge. X, 2000) "parents who do not practice inductive reasoning may facilitate the development of an adolescent's sense of uncertainty and frustration, which may lead to depressive symptoms".

In addition, Inductive reasoning fosters adolescents ability to evaluate situations they may experience in life. As parents report a tendency to increase their level of inductive reasoning when they violate a moral compared to a traditional principle and in response to deliberate versus accidental behaviour.

1.10.3 Racial and Ethnic Differences in Discipline Practices

Researchers have found that high levels of control has been linked to positive outcomes for minority adolescents that live in high-risk environments and may actually benefit safety, development and promote school achievement. As supported (Murry, V.; Bynum, M.S.; Brody, G.H.; Willert, A.; Stephens, D, 2001) "*parents adapt their parenting styles to match the localized settings of their lives*" this indicates that they are more likely to interpret parents' strict discipline as more necessary and acceptable than do adolescents in low-risk communities . All together, these parenting practices have neutral effects on adolescent outcomes since high control was considered normative and a valued socialization mechanism.

1.10.4 Neighborhood and Community Contexts

Researchers found a significant interaction between disorderly neighborhoods, which refers to conditions and activities that are perceived as social and physical disorder.

As added (Simons, R.L.; Lin, K.; Gordon, L.C.; Brody, G.; Murry, V.; Conger, R.D, 2002) "*The effectiveness of parenting practices varies by neighborhood conditions and community contexts*". This statement indicates that parental use of more inductive reasoning was a protective factor for depressive symptoms particularly for adolescents living in disorderly neighborhoods. such as; safety and levels of violence or crime, components of community social organization include social, capital, formal and informal networks, and community capacity building have a direct effect on developmental outcomes for adolescents, Furthermore, these findings suggest that parents rearing adolescents in high-risk neighborhoods may need to engage in more controlling parenting behaviors or styles based upon the norms of the community to keep their adolescent safe.

1.10.5 Family Structure

Research has shown that adolescents in married, biological two-parent families generally fare better than children in single-mother, step-mother, or step-father families. As (Simons, R. L., Simons, L. G., and Wallace, L. E, 2004) suggested "Family structure serves as a risk factor for adolescents, since adolescents from divorced or single-parent families are two to three times more likely to display problem behaviors"

Similarly, researchers have examined factors that contribute to adolescent enhanced adjustment among intact families. As stated (Simons, R. L., Simons, L. G., and Wallace, L. E, 2004) "Adolescents in two biological parent households are more likely to have greater socioeconomic resources, as well as greater investments of parental time, attention, and support". This indicates that within intact families, mothers communicated more positively and supported their adolescents more than did single mothers, suggesting that having two parents in a household enhances the quality of parent-adolescent relationships.

Further, adolescents do better on average in two-biological-parent families because a greater proportion of them enjoy close ties to their fathers.

1.10.6 Gender related patterns

Findings on sex differences in child and adolescent outcomes as they relate to parenting style are inconsistent; some studies report interactions. Though, parenting styles seemed to have similar effects for both sexes, due to the lack of full awareness of gender margin in their developmental psychosocial gaps, and parenting behaviors are limited towards accidental gender spontaneous attitudes as stated (Finkelstein J, Donenberg G, Martinovich Z, 2001)"When differences are noted, patterns are consistent with the behavior problems typical of each sex".

Moreover, in terms of shared activities, adolescents considered that boys and girls have needs and interests that are specific to their gender and the matching of specific aspects of mother and father roles with the specific needs of boys and girls is important. This gendermatching trend emerged with respect to support functions of parents. As another perspective by (Stattin, H.; Kerr, M, 2000) argued "*Parents are stricter with their daughters and more laid back with their sons*"

Accordingly, girls tend to exhibit more internal problems, e.g., shyness, somatic complaints, whereas boys' problems tend to be displayed through external behaviors enacted against others or their environment. That is why adolescents tend to go on better with the parent of the opposite sex or got on equally well with both of their parents in relation to control and differentiale regulation.

1.11 Egocentrism

The concept of adolescent egocentrism has been proven to be a popular and durable construct for understanding the nature of adolescent cognition. According to (Lapsley, D. K., Milstead, M., Quintana, S. M., Flannery, D., & Buss, R, 2012), "Adolescent egocentrism is to be understood in the context of the ontogenetic changes in egocentrism that characterize logical development from the sensorimotor stage to formal operations", indicating their own variant of egocentrism. The imaginary audience and the personal view are thought to cause failure of logic thought process. The former interprets the process in which the adolescent anticipates the reaction of others to himself or herself in real or imagined situations, and believes that he or she will be the focus of others' attention as critical or admiring of him or her as is he or she.

On the other hand, the personal view reflects an over differentiation of feelings and the relevant belief in one's personal uniqueness and indestructibility. Thus, these two twin components of adolescent egocentrism accounted for a variety of typically observed adolescent behaviors, as heightened self-consciousness, risk taking, idealism, as added *"adolescent boorishness, loudness and faddish dress"* (Lapsley, D. K., Milstead, M., Quintana, S. M., Flannery, D., & Buss, R, 2012, ₃₃. 1030)

Accordingly, an adolescent would be willing to reveal aspects of his or her abiding and temporary self to others, as a general unwillingness to self-reveal which is thought to involve self-consciousness, the presence of which, in turn, involves the imaginary audience and delays their ability to be abstract thinkers, who can imagine things not seen or experienced. Consequently, early adolescents have less capacity to love, think about spirituality, and participate in more advanced mathematics. They are socioemotionally distracted.

1.12 Social Media

1.12.1 Internet Use

Internet use can be considered an environmental exposure variable, similar to musical training or malnutrition. ne of the main concerns about Internet use is not just how using the Internet can impact cognitive processes such as memory or social understanding, but how having constant access to the Internet might impact these cognitive processes.

1.13 Information retrieval

The possible effects of ubiquitous Internet availability on cognitive processes was conducted in a study in 2011, tested a common concern on how Internet use might affects memory— specifically how having access to information stored in an external source could render individuals less likely to store information in their own memory. Supported (Wegner, D. M B. Mullen & G. R. Goethals (Eds.), 1987), "*The information known by a group is treated as a memory bank from which individual members can draw*", this indicates that the expectation of having access to information at a later time affected the memory of adolescents as expected to have future access to information, as added (Sparrow, B., Liu, J., & Wegner, D. M, 2011) "*They were less likely to remember specific information but more likely to remember where to find the specific in formation*" which in turn affects how adolescents process and store information and encourages false memory formation.

Accordingly, trying to remember many pieces of specific pieces of information is less efficient than remembering how to access these pieces of information when access is easily obtainable because of having near-constant access to the Internet .

1.14 Analytical Thinking

Investigating how both information and cognitive analytical strategy propagated through different kinds of networks, especially highly-connected networks, as stated (Rahwan, I.,

Krasnoshtan, D., Shariff, A., & Bonnefon, J.-F, 2014) "They were more likely to correctly answer a question that required analytical reasoning, but were less likely to utilize analytic reasoning in later situations that required this cognitive strategy". This indicates that adolescents who are part of a highly connected networks like the Internet are less likely to adopt the kind of cognitive strategy needed to reach a solution when the solution is readily available. Thus, much internet networking is cognitively effortful process, affects conceptualizing situations for further problem-solving challenges and critical thinking.

1.15 Facebook Addiction

Some adolescents may be more vulnerable to develop symptoms of Internet addiction than others, including those experiencing some psychological symptoms and disorders such as depression, ADHD symptoms, or hostility. Recently studies proposed the concept of *"Development of a Facebook addiction Scale"* by (Andreassen CS(1), Torsheim T, Brunborg GS, Pallesen S, 2012), and developed a scale to measure symptoms of addiction and cognitive productivity related specifically to Facebook use.

Furthermore, time spent online does not displace time spent doing other activities associated with health and well-being. Stated (Andreassen CS(1), Torsheim T, Brunborg GS, Pallesen S, 2012) indicating that internet use is creating a generation with 'fundamentally different cognitive skills', communicating with friends through the Internet can increase adolescents' social connectedness, though, typical Internet activities do not impair social development during adolescence.

Other studies suggest that environmental influences, like Internet use, would have little effect on neural measures at this stage, as stated (S-J. Blakemore, K.L. Mills, 2014) "Wellestablished sensitive periods for sensory processes and language acquisition end well before adolescence, but adolescence might encompass a sensitive period for sociocultural learning", that is, social interactions have to be healthy, regarding the manner undertaken through.

1.16 Education

To our knowledge no previous study examined the contribution of learning strategies and general cognitive ability for college students' academic performance in one model while considering gender differences. But there were some studies showing individual differences in the application of learning strategies between male and female students.

Therefore, it is essential to determine which learning strategies male and female students use differently and to investigate their relative importance for academic performance.

Accordingly, Richardson et al. (Richardson M., Abraham C., Bond R, 2012, §3. 353) Stated "*Predictions of academic performance may be more accurate if they are based on assessment of a variety of individual differences, not just of past achievement and cognitive capacity.*" Which highlighted the importance of incorporating non-cognitive factors to reduce the adverse impact of substantial group differences in cognitive predictors and to increase the accuracy of admission decisions, grades and standardized tests, study habits and skill measures.

1.17 The psychosocial Determinant

A psychosocial determinant is a referred to by (Lee J., 2013), "non-cognitive" refers to "behavioral dispositions, tendencies, and habits that are not measured by typical cognitive tests, such as tests of school performance, ability, and aptitudes.", reporting these significant correlations between learning measures, such as self-testing, time management, test strategies, study aids, information processing, concentration and attitude as the key issue whether learning strategies can explain any variance when controlling for the well-established predictor general cognitive ability.

Furthermore, disparities in the prediction of male and female academic success is of special interest to address gender differences in the prediction of academic performance. General cognitive ability and learning strategies show evidence on gender differences as ambiguous since most studies did not report overall gender differences,

Interestingly, a study by (Halpern D. F., LaMay M. L, 2000) highlighted, "both sexes have their strengths and weaknesses in different tasks, such as a male advantage in different types of visual-spatial abilities and a female advantage in different memory tasks" indicating that these differences in the predictability of academic performance by general cognitive ability were investigated less frequently. As added (Freudenthaler H. H., Spinath B., Neubauer A. C, 2008) "Gender differences were not found at school age".

However, a well-documented gender difference, known as the "female under prediction effect" (FUE), emerged when comparing the predictions to the actual academic performance. Stated (Kling K. C., Noftle E. E., Robins R. W, 2012) "standardized tests of cognitive ability usually over predict males' and under predict females' academic achievement", this illustrates the need for testing gender-specific prediction models and the search for predictors of academic performance beyond general cognitive ability.

Based on these findings, they expected a certain pattern of results: As "*no gender differences in general cognitive ability*" stated (Halpern F. D., Beninger A. S., Straight C. A, 2011); in the hypothesis of the smarter sex, but gender differences in terms of learning strategies, that is, learning strategies might be positively related to academic performance and may explain incremental variance above general cognitive ability. By testing whether the predictability of academic performance by means of general cognitive ability and learning strategies varied as a function of gender.

1.18 Gender Differences in Learning Strategies

A T-tests sized in (J, 1988), Cohen's study revealed gender differences for all learning strategies except for learning with fellow students, literature, learning environment, and attention "*Male students more often relied on relationships and critical evaluation, whereas female students used all remaining strategies more often*", Showing that gender differences in organization and rehearsal were medium and small for effort in terms of relationships, time management, meta-cognition, and critical evaluation, but in terms of general cognitive ability they found no significant differences.

However, the differences in total variance explained call for a further examination of gender differences in future studies.

Regarding the investigated gender differences in learning strategy use, we can conclude that there are differences in preferred learning strategies between males and females which teachers should acknowledge, students should also be aware of their most suitable and promising strategies and might benefit from each other, for instance through mixed learning groups Learning strategies should be fostered as (Hagger H., Burn K., Mutton T., Brindley S, 2008, 83. 160) stated "*teachers should be learners, not only in developing their practice, but also in modeling for their learners the process of continual learning*".

Conclusion

In conclusion, nature and nurture both have influences on early human development. Nature decides human's dispositions and nurture can change these personalities. Nature gives human born abilities and nurture help human to develop the abilities.

More specifically, Environmental factors involve many dimensions. They include both physical environments, a good example is prenatal nutrition and social environments, such as the neighborhood, media and peer pressure. Also, environmental factors have different levels of impact on human development as they involve multiple layers of action, ranging from most immediate families, friends, and neighborhoods to bigger societal contexts school systems and local governments. These layers are also impacted by other factors outside them. For example, adolescents are exposed to not just peer pressure from their peers but also to parental ideals, community standards and ethnic views regardless of gender type.

Although these data suggest significant covariance in cognitive ability from age 1 to age 16, there is also a great deal of instability, particularly in early childhood. Thus, it is important to point out that although genetic factors are important to understanding why there is stability, these genetic factors do not explain all of the variability in general cognitive ability at a given age.

As the above studies suggest, biological mechanisms play a highly consistent and considerable role in the stability of cognitive ability during the first 16 years of life. This genetic stability is likely to be associated with brain-based, neuroanatomical, and neurophysiological mechanisms. In the context of the stability of general cognitive ability throughout development. Neurobiological substrates might prove valuable. Suggesting that influencing changes in cognitive performance are age-specific unique environmental experiences. Cooperation between these genetic, or neurobiological, mechanisms and environmental influences suggests that these neurobiological substrates of cognition are flexible and responsive to external stimuli, constructing a responsive neurobiological system.

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The prefrontal cortex is important for a wide range of cognitive functions. Cognition can be defined as all mental activities that are involved in acquisition, processing, storage and retrieval of information. It includes a variety of skills attention, learning, memory, verbal ability or language, visuospatial function, and a group of abilities, known as executive function i.e. reasoning, abstraction and mental flexibility.

There is paucity of the data related to cognitive function amongst healthy adolescent age group which limits our ability to distinguish and compare cognitive changes that in female and male subjects separately and can provide some help to understand dementia related conditions.

2.1 Description of the population

The potential effect of gender on intellectual abilities remains controversial. The purpose of this research was to analyze gender differences in cognitive test performance among adolescens from similar age groups. For this purpose, the normative data from four functions of the newly developed neuropsychological test battery. The sample included 10 adolescents from high school, third year grade (5 boys, 5 girls) aged 17 to 20 years.

2.1 Method

Gender differences were observed in gender by using classical cognition aassessment questionnaires and a paractical visual task in visual-spatial abilities, time: 5 minutes; recognition of pictures seen from different angles, and visual Object Integration. Language, memory and aattention, logic ability, and self-esteem.

2.2 Research Tools

1. Closed questionnaire alternative based response: (logic and procedual memory/working memory and attention/verbal ability performance) in which students areb requested to respond in alternative manners.

2. shape recognition: (visual-spatial ability) in which students are involved in recognizing the differents angles of a paticular architectural shape into a specific logic form.

3. closed questionnare agree/disagree based response: (self-esteem frequency) in which students are required to agree or disagree on some habitual attitudes they take in an unintentional practical way in daily life in terms of self-confidence, social integration, self-reflection to external stimuli.

2.3 Qualitative Research

Sherman and Webb (2001) demonstrated that qualitative research in education took time to receive recognition and its first considerable discussion was in 1986. Qualitative research has made its mark and has become an accepted and valid approach in the field of education. It is a method of inquiry designed to gain understanding and provides insights into the problem, it is simply a method employed to focus on the participant's perspective on a subject under study.

2.4 Analysis of the findings

4.2.1 Questionnaire Type one

 Your friend bought you one of the latest food mixer on the market – apparently, it can slice, dice, and make juice at the same time. The only problem is, you have no idea how the mixer works. What do you do?

Grade		Third year at secondary				
Gen	der	Male		e Female		
Rati	0	Respondents	Percentage	Respondents	Percentage	
_	a	2	40%	0	0%	
ptior	b	0	0%	0	0%	
0	c	3	60%	5	100%	
Tota	d	5	100%	5	100%	

Table 02: Gender variance in logic and procedure cognitive processing



Figure 05: Gender variance in logic and procedure cognitive processing

This question was adressed in three variant task trials to estimate gender variance in perceptual and cognitive visualization in response to hemispheral functions; all females expressed full details requirement and content interest before doing the task which reflects left brain cognitive involvement in words and details for conceptualization of logic procedural response, whereas males interpreted two distant angles, as major males expressed similar manner as females above, but still the minority intended risk-taking, as quick as to directly operated the unfamiliar machine serving multiple functions. Thus, this finding revealed a significant gender difference_ as males showed less involvement in component details and words but an enthusiasm for the object of the excercise, more right brain reference to material recognition and procedural memory which males outperform females frequently.

2. You have a formal event evening coming up but are a little strapped for cash, so rather than buying a dress/suit you have decided to have it made. What would be the easiest way for you to describe to the tailor what you want?

Grade		Third year secondary			
Gender		r Male Female			
Ratio		Respondents	Percentage	Respondents	Percentage
ſ	а	1	20%	0	0%
ptior	b	0	0%	0	0%
0	с	4	80%	5	100%
Total		5	100%	5	100%

Table 03: Gender variance in linguistic cognitive ability



Figure 06: Gender variance in linguistic cognitive ability

This question assessed individuals' multiple shift of hemispheral functions in verbal output production. All females to major males interpreted full use of liguistic and artistic patterns to deliver an abstract picture to the interlocuter in purpose of conveying their ideas in complete and exact manner which indicates right-left brain shift functioning, whereas one male, the same individual mentioned above interpreted a sence of response speed that does not require much of linguistics and tones in reference to verbal ability, but a focus on object materials to express the concept through visual shapes, indeed, left brain dominance. This finding reveals a specific disbalanced variance of the same gender in style of conceptualization with use of multiple abilities as linguistic and spatial-visual, but no significant variance among both genders in left-right brain shift functioning.

3. When a friend recounts a story, you usually prefer that he/she:

Grade		Third year secondary				
Gen	der	Male		Female		
Ratio	on	Respondents	Percentage	Respondents	Percentage	
u	а	1	20%	3	60%	
Optic	b	3	60%	2	40%	
	с	1	20%	0	0%	
Tota	1	5	100%	5	100%	

 Table 04: Gender variance in attention in relevance with working memory for top-down and bottom-up conceptualization



Fiagure 07: Gender variance in attention in relevance with working memory for topdown and bottom-up conceptualization

This question was adressed in purpose of assessing gender variance in terms of instant conceptulization which is quite relevant to working memory in cooperation with analytical reasoning to figure out the target point from the linguistic expression of facts. Major males showed more interest in few details when trying to get an average understanding about the facts from an auditory input, while major to all females opposed to one male showed less to no details need, major to all, expressed quick deductive conception which indicates the female gender outperformance in linguistic abilities,

in function of top-down Vs bottom-up processing. In contrast, males request for few details represented a probable lack of attention in words so that double trial is more efficient, and working memory weakness rates. This finding reveals an interconnection between two cognitive functions, attention and working memory that may well function at the same time in habitual manner for the same purpose above, which females outperformed males more significantly.

4.2.2 Shape recognition task

4. Which 3-D shape corresponds to these 2-D representations



Grade		Third year secondary				
Gender Male Ge		Gender				
Ra	tion	Respondents	Percentage	Respondents	Percentage	
u	Correct	1	20%	0	0%	
Optic	Incorrect	2	40%	3	60%	
	No resp	2	40%	2	40%	
То	ıtal	5	100%	5	100%	

Table 05: Gender variance in mental rotation in function of visual-spatial ability



Figure 08: Gender variance in mental rotation in function of visual-spatial ability

This task was directed to reach out any outperformance or underperformance variance among gender cognitive abilities in terms of visuo-spatial. One male respondent reflected the use of technical alternative rotations over the trick which indicated his engagement in the task as well, whereas a ratio below average of them confused, reflected no logic engagement, and a similar average did not respond, reflected no involvement. On the other hand, above average of females confused, which reflected their underperformance in this task, and below average showed no response referring to no involvement.

4.2.3 Questionnaire type two

1. People will onlyrespect me if I am good looking and successful

Grade		Third year secondary			
Gender		Male		Female	
Ratio		Respondents	Percentage	Respondents	Percentage
Option	Agree	3	60%	2	40%
	Disagree	1	20%	3	60%
Total		4	80%	5	100%



Table 06: Gender variance in terms of self-confidence and satisfaction

Figure 09: Gender variance in terms of self-confidence and satisfaction

This question was targeted to reflect gender differences in interconnecting self-image with selfesteem in function of appearance and success as major means to get respected by others. More males agreed on having good appearance and goold intellectual level as basic conditions to gain respect from others, while more females disagreed on the same issue, but the rest of them who agreed are near to similar in ratio in comparison to males who agreed, are less. This finding indicates that males might have received less respect due to their outer appearance and low intellectual level, or due to their low good attitudes about themselves, which indicates too that females might have received respect regardless of their poor appearance or low level of intellectuality. 2. When people point out my mistakes, i feel like they are degrading me.

Grade		Third year secondary			
Gender		Males Females			
Ratio		Respondents	Percentage	Respondents	Percentage
Option	Agree	4	80%	1	20%
	Diasagree	1	20%	4	80%
Total		5	100%	5	100%

Table 07: Gender variance in reflection to peers criticism



Figure 10: Gender variance in reflection to peers criticism

This question was directed to assess variance of gender in self-reflection and sensitiveness after receiving least criticism from peers. Most to all males agree to the fact of getting influenced by criticism, considering it a failure and get devastated, whereas females expressed high defending reaction against criticism, ignoring the fact as objectively as it should be. In contrast, one to one ratio referring to gender opposite reaction to previous terms of self-confidence and sence of objectivity.

3. I have what it takes to socialize with other people

Grade		Third year secondary						
Gender		Males (5)		Female (5)				
Ratio		Respondents	Percentage	Respondents	Percentage			
Option .	Agree	3	60%	3	60%			
	Diasagree	2	40%	0	0%			
Total		5	100%	3	60%			

Table 08: Gender variance in meta-cognitive awareness to integrate in society



Figure 11: Gender variance in meta-cognitive awareness to integrate in society

This question was stated in order to point out whether gender types were aware of any typical metacognitive abilities or skills of socialization, and to what extent of gender variance. Both males and females represented abouve average awareness of manners required to get socialized with people so they agreed reflecting possession of self-worth and self-reflection in social contexts, whereas below average of males disagreed which indicates they may be aware but enough confident about what they have as positive abilities of socialization. Conversly, the sate rate of females did not respond due to probable lack of self recognition, or ignorance of what is meant by getting socilaized with people.

Conclusion

The results of the data analysis have come up to cover our hypothesis with a less convenient feedback about gender cognitive functional variances, some showing near to similar rates and some near to complete difference, yet same rates in paticular tasks reflecting less conceptual engagement as well as less psychosocial motives reflecting males less intentional engagement in response to social pressure in comparison to females. Our evaluation revealed from these findings provided us with a norrow feedback of gender cognitive performances but considerable variance emerged though, upon which we are going to discuss the main aspects pointed in the statistics.

Introduction

Based on the results of the study inquiry, the overall score of cognition functions showed statistically significantly average in female and male adolescents cognitive perception performance. However, typical meta-cognitive responses in function of social attitudes raised a significant unexpected variance between the two genders in common challenging contexts in terms of self-esteem and self-worth.

At this stage of the discussion, there is a notable decline in performance gradually taking place along with the aging process until the age of 18/20, which should not be neglected, and not anymore compared to prepubertal stage performances in common senses. As we attempted to measure metacognitive shaped abilities adolescents outperform under the influence of hormones interference with the cognitive maturity we noticed some confusing reactions towards common stimuli. Thus, in the following chapter we will try to have a look at the developments and changes teenagers undergo during adolescence in multifunctional tasks requiring mental processes interaction.

3.1 Discussion of the findings

Our findings showed mental processes or cognitive abilities includeing attributes like perception, attention, memory (procedural memory), motor, language, visual and spatial processing, and executive functions. These cognitive attributes were remarkably different in males and females.

Generally, females showed advantages in linguistic interpretation, perceptual speed and reflected high self-esteem in societal contexts, while males outperformed females in spatial, working memory, paticularly procedural, but higher operational logic conceptualization than females. Gender mental skills vary during this stage of inconsistent meta-cognitive shaping.

Male and female brains showed anatomical, functional and biochemical differences throughout life as scientists experiment revealed through laboratory technichal tests, whereas our study was conducted by means of cognitive response based testing, many factors are involved in this differentiation; physiological factors along with social norms, is another factor, that brings changes. 3.2

undeperforming in visuo-spatial interpretation via words, but visuo-spatial conceptualization in symbolic features that require no oral linguistic details, which correlate significantly with left brain most perceptive meta-cognition on shape mechanisms favouring males.

In contrast to females were more favoured in conceptualization of abstract ideas and thought through oral linguistic outperformance reflecting multi-shift brain production functioning. In contrast, females showed very considerable exceeding in function of working memory process in correlation with instant the auditory input (Figure 07), they tend to proceed better in top-down and bottom-up induction and deduction functions for the neurol transmitting from specific to general perception and vice versa manner, which by far, consists of muliple intelligences, and attentional skills in bold feature, that they need no double repetition of details for double trial for target comprehension. In contrast, males typically require more linguistic range for more perception of oral input.

3.4 Social skills variance in function of personal response

In external social aspects, questioned members reflected in similar rate to whether they possess meta-cognitive capacities that shape acceptable behaviours in social contexts so that they integrete with people and express challenges. As both genders responded posively, we noted there in an awareness of external self-reflection patterns that they think are of much efficacy to come along with peers in general open spaced contexts.

In contrast, a significant rate of males disagreed in function of self-confidence towards external expression, which support the next findings highlighting high rate of female self-esteem evaluation and recognition of how to defend oneself when probably get criticised, or fingers were pointed on weakness points, they reflected the intention of argument disapproving, through the manner of imposing one's appearance and it should be respected as it seems in casual state. On considerable paradox perspective, males shwed very less self-esteem and patterns of identity satisfaction to challenge most crossing obstacles in social interactions and common challenging situations, weakness aspects which may well be backed up to predisposition stimuli by parental behavioural effects and lack of social experiences that are far considered to fulfill one's personality strengths.

3.5 Study limitation

Due to many reasons, the study under research has considered some limitations. To begin with, the specific population is one limitation. The population of the study was limited because it focused only on 10 students who were only in third year secondary grade, which provided a narrow amount of information.

Further, the number of the sample would not represent the whole population because it is difficult to generalize these findings. If the study covered a large number of students, it would have provided another amount of data and findings. So, it would be interesting if the study were repeated to examine a larger number of students of different levels, age and gender of course. More cultural variations as well.

The second limitation was time; we were bounded by time, and supposed to focus on our research project and dissertation. Also we did not have enough time to cover a large sample of students and use different tools for our research. Extended time would have been very helpful to cover large sample of students in oral and practical contexts which may provide our findings with different dimensional aspects in concrete manners.

3.6 Recommendations for adolescents regardless gender

In attempt to respond to adolescents complains throughout the questionnaire and the interview, we would like to provide them with different recommendations that they would take into consideration for the purpose of supporting them against challenges that they are facing in their meta learning; these recommendations also aim at urging adolescents to adopt a positive cognitive attitude and look for problem solving in contexts they encounter personally rather than having the habit emitation and straying from facts.

We recommend that adolescents should lose the habit of being less confident and negative toward their performances in a particular cognitive tasks which would lower their self-esteem for better academic and future personal achievements. Students should stop being biased and be more open toward people criticism and other peers' point of view; it would be beneficial if they develop the attitude of discussing ideas instead of ignoring their potentials. They had better engage in interactions with their peers and to develop cognitive abilities and adopt new ones.

Since adolescents are more attracted toward social Media, it would be beneficial if they create forums and blogs to post motivational quotes, post different strategies for having meta-thinking fields in attempt to build intellectual components to adopt positive attitude and increase their awareness over consequences of being less considered and underestimated.

3.7 Future studies

The tasks and questionnaires were suitable methods to shape an understanding toward adolescents characteristics and their cognitive potential. Also, the results and the interpretation of the data for the study revealed several areas where future research could be conducted. The adolescents' positive and negative responses were essential to capture its impact on their personality building and intellectuality.

First, there is a need that more research studies should be conducted on the interference of nature and nurture on a large sample population and using different research tools which would allow shaping an understanding of human biosocial predispositions and reveal a large impact regarding their gender. In addition, more investigations need to be conducted on parents and adolescents; which would help to understand individuals behaviours and mental qualifications for future potential developing.

Conclusion

Our findings showed mental processes or cognitive abilities include attributes like perception, attention, memory (procedural memory), motor, language, visual and spatial processing, and executive functions. These cognitive attributes are different in males and females.

Generally, females showed advantages in linguistic performance, perceptual speed and reflected high self-esteem in societal contexts, while males outperformed females in spatial, working memory but similar operational logic abilities as females. Gender mental skills vary during different phases. As it has been reported that the high levels of gonadal steroids relevant to adolscence period are present in huge biological and horminal interactions with the paralel impacts of behavioural stimuli that may facilitate and develop cognitive skills which favour females, and are detrimental to skills which favour males as well.

General conclusion

The present paper was an attempt to highlight the influence of nature and nurture patterns on adolescence cognitive development. The study of the investigation allowed us to shape an understanding of adolescents nurturing factors and their influence on their intellectual building and meta-cognitive performances. To test the hypothesis put forward, we have carried out questionnaires and tasks administered to third year secondary students aged between 18 to 20 years old during the academic year of 2016/2017.

Basing our survey on exploring three chapters, we began with a theoretical review composed of two parts that highlight the most relevant aspects of nature and nurtue; we devoted the first part to formulate an understanding of biological aspects and their major structures and cognitive functions. Then, we shed light on their influence that impose some controversial differences in function of gender; males and females during adolescence, As well as nurturing aspects in function of developing human cognitive abilities into metacognitive skills for the new shape of a mature normal behaviour responding posively and effectively in social and personal constructs; brain major cognitive functions, intelligence, logic and visuo-spatial skills, working memory, attention, self-esteem and self-worth. The second part tended to shed the light on positive and negative parenting styles, society patterns and education as a continous behavioural process to promote higher metacognitive reachings; it also included basic psychosocial observations that contribute to discover individuals rate of engagement in problem solving in gender based functions, and adopt meta-cognitive tasking habits.

The second chapter of this paper was devoted to the empirical investigation which provides a detailed description of the research work; it provided a description of both a questionnaire and tasks, description of the population, data gathering tools and analysis. As for the last chapter, it has provided a discussion of the collected data, and it presented some recommendations for both adolescents regardless of their gender. In addition, the last chapter also presented the limitation of the study and some suggestions to implement adolescents' awarness of the interconnection of nature features and their nurturing componing parameters to develop their intellectuality and potentials. To conclude, nature and nurtue must be in continious company to expand the areas in which both genders may exceed well, and achieve satisfaction at the personal level and social level; that is to say adolescents with helthy good natual cognitive abilities may still crave the suitable nurturing shapes of parenting, social and educational orientations and fulfilment in order to built an attitude, a challenging and sourceful mind to form metacognitive skills which in return provide them to be persistent and self-determinant to achieve a particular goal; moreover, it is all about cognitive and meta-cognitive awareness that shape the humans self and the human social-self into one profile.

Appendix

Questionnaire one: Left/right brain functions

- 1. Your friend bought you one of the latest food mixer on the market apparently, it can slice, dice, and make juice at the same time. The only problem is, you have no idea how the mixer works. What do you do?
 - a. Grab some apples and carrots and test it out.
 - b. Quickly look through the instruction manual and then test it out.
 - c. Thoroughly read the instruction manual, step by step.
- 2. You have a formal event coming up but are a little strapped for cash, so rather than buying a dress/suit you've decided to have it made. What would be the easiest way for you to describe to the tailor what you want?
 - a. Draw him/her a picture
 - b. Describe it to him/her in a lot of detail.
 - c. Describe in detail what I want, with the help of a picture.
- 3. When a friend recounts a story you usually prefer that he/she:
 - a. Get straight to the point and spare the details.
 - b. Summarize the story but add in a few details.
 - c. Recount the story in its entirety, sparing no detail.

Gender	Male				Female					
Number		2	3	4	5	1	2	3	4	5
I have what it takes to socialize with people										
People only respects me if i am good-looking and successful										
When people point out my mistakes, i feel like they are degrading me										

Questionnaire two self-esteem. Mark agree with A/ Disagree with D

Task: Which 3-D shape corresponds to these 2-D representations?



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