

## ASSESSMENT OF EMOTIONAL INTELLIGENCE AND ITS RELATIONSHIP WITH STUDENTS' ACHIEVEMENT IN MATHEMATICS

<sup>1</sup>Nnaji, A.D, <sup>2</sup>Eze, F.B and <sup>3</sup>Madu, B.C

<sup>1&3</sup>Department of Science Education  
University of Nigeria, Nsukka  
Enugu State

<sup>2</sup>Federal college of Education,  
Omoku, Rivers State  
Nigeria

---

**ABSTRACT:** *In Nigeria, the continuous fall in students' achievement in mathematics has been a major source of concern to policy makers and stakeholders in the nation's education sector. A lot of measures taken over the years to reduce this trend have not produced the desired results. Some measures taken targeted solely on teachers', and infrastructural improvement, without taking into consideration the measures to improve the learners' characteristics for effective learning. Hence, the focus of this study was on the assessment of emotional intelligence and its relationship with students' achievement in mathematics in Enugu Education zone, Enugu, Nigeria. The research questions and hypotheses used as guide to the study were three and two respectively.. The study adopted a correlation design. The population of the study comprised 4825 Senior Secondary School two (SS2) students in 25 government secondary schools in Enugu Education zone. The study had a sample of 483 SS2 mathematics students from six senior secondary schools in the study area. Multistage sampling consisting of simple random and stratified sampling techniques were used for selection of the schools and the subjects for the study. Youth version of emotional quotient inventory (EQ-i2.0) and a mathematics achievement test (MAT) were used for data collection. Data were analyzed using multiple linear regressions to answer the research questions, and test null hypotheses at 0.05 level of significance. The results revealed that there was a significant positive correlation between the components of emotional intelligence and students' achievement in mathematics and the components, singly and jointly, contributed significantly to the variation in students' achievement in mathematics.*

**KEY WORDS:** achievement, emotional intelligence, mathematics, students, education

---

### INTRODUCTION

Education, formal or informal has been a tool for ages by which all skills and desirable norms have been transferred from one generation to another. Education emancipates man from the ignorance of self and his environment through scientific inquiry. An evidence for a functional education is accounted when learning takes place. Nworgu (2016) noted that learning is measured by the level of achievement of individuals or groups who have been exposed to pedagogical intervention. Nworgu (2015) described achievement as a measure of the extent to which the objectives of instruction as well as goals of education are attained. However, the effectiveness of a pedagogical intervention depends on learners' interpretation, understanding and emotional concern for the

---

concept taught, especially in mathematics. Emotions were understood as composed of bodily feelings and ideas to which these feelings attached themselves (Roberts, Matthews, & Zeidner, 2010). Mahadi (2011) connote emotion as irrational, private, weak, feminine, and even de-legitimized for a scholarly topic. Emotions create a conflict between our thought (what we think we know) and reality (what we actually observe). Gayathri & Meenakshi (2013) said that the cognitive theorists established a positive relationship between emotions and cognition and the theorists supposed that emotions depend on personal interpretation and appraisal of a particular event Cognition involves thinking and rationalizing, while emotions combine the quality of thinking along with feeling. Gayathri and Meenakshi believe that emotion has a lot of potential to be analyzed and assessed like any other intelligence. This is the focus of emotional intelligence theory which emphasizes on the importance of emotional regulation and emotional management in an individual's life. Grewal & Salovey, 2005; Sternberg, 2002) posited that emotional intelligence has broadly generated heated interest in the 21st century, both to the lay and learned that it has engulfed other less speculative classical psychological concepts According to Emmerling & Goleman (2003), emotional intelligence has been variously described, but each basing on one's view of the construct; all of which aim to understand the abilities and traits related to one's own and others' emotions Although, there is a consensus of opinion that emotional intelligence is the ability to perceive emotions, understand emotions, manage emotions and use emotions of self and others.

However, there are sociological and epistemological reasons for explaining the fast and wide diffusion of emotional intelligence within organizational and educational fields, both for evaluative and formative tasks (Feldman-Barret & Salovey, 2002; Mayer, Salovey, & Caruso, 2004). For instance, researchers described emotional intelligence in cognitive terms, such as memory and problem-solving and other researchers recognized that the non-cognitive aspects also played important role in human intelligence. Similarly, Cherniss (2010) saw emotional intelligence in terms of both intellective and non-intellective intelligence elements, by which he meant affective, personal, and social factors. In a general, this implies that, emotional intelligence (EI) is about the intelligent use of emotions and utilizing the powerful information contained in emotion to make effective decisions (Matthews, Roberts & Zeidner, 2004). Hence, emotional intelligence can be described as a spectrum of non-cognitive skills, capabilities and competencies that influence a person's ability to cope with environmental demands and pressures. It is also believed that emotional intelligence allows individuals other ways of being and behaving as compared to those emphasized by traditional ideas of intelligence. In other words, emotional intelligence is regarded as an alternative ways helping the individual to become more effective and efficient in both day-to-day living and in the workplace (Hayward, 2005). But, initially, Mayer and Salovey (1990) considered emotional intelligence as a form of intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions. Unfortunately, some scholars, however, still doubt the viability of the construct as a result of lack of consensus regarding the definition of emotional intelligence. They argue that the discrepancies in the opinion concerning the concepts of emotional intelligence undermine the validity of the construct. However, there have been attempts to integrate

different models of emotional intelligence. According to Zeidner et al (2003) model, infants are born with different temperamental factors that, in turn, influence perception and expression of basic emotions and primitive control strategies (first level of EI). Preschool children differ in how easily they learn simple regulative strategies that often have a rule-based nature (second level of EI). Finally, school-aged children acquire a more sophisticated understanding of the self as a social being, and use this knowledge to guide emotional regulation (third level of EI). Lee (2010) pointed out that the levels in Zeidner et al (2003) model correspond to the concepts of EI in mixed or trait models, as well as ability models, the investment model can be considered as a framework that can integrate different models of emotional intelligence, however, the model suggests that ability and mixed models of emotional intelligence are not mutually exclusive.

Contrary to the argument of the invalidity of emotional intelligence, Goleman (1998) put forward that each theory represents the theoretical orientation and context in which each of these authors has decided to frame their theory. However, all researchers share a common desire to understand and measure the abilities and traits related to recognizing and regulating emotions in ourselves and others. Goleman and Emmerling (2003) asserted that the existence of several theoretical viewpoints within the emotional intelligence paradigm does not indicate a weakness, but rather the robustness of the field. This kind of alternative theorizing, of course, is not unique to the study of emotional intelligence and should not be viewed as undermining the validity and utility of this emerging field (Goleman and Emmerling, 2003).

Existing literature suggests that judging or criticizing EI to a different standard definitely needs rethinking. Therefore, more studies on emotional intelligence may likely blossom into invaluable knowledge that will transform teaching and learning theories and metamorphous instructional techniques in order to effectively achieve the desired objective of education with minimum input. Hence, there is need to strengthen more research in this field of study in order to clarify contending issues for criticizing the authenticity and validity of the EI.

However, in Nigeria, education seldom accord regards to the emotional needs of the learners though emotional intelligence has been thought to be an important variable capable of improving learners' kinetics and enhancing students' achievement in mathematics. Many educationists, teachers and students in Nigeria have little or no idea of emotional intelligence and how it relates to achievement in mathematics. This is evident in the poor literature backing on the subject matter in Nigeria. Therefore, this study assesses emotional intelligence and its relationship with students' achievement in mathematics in the Nigerian context.

## **THEORETICAL FRAMEWORK**

The theory of emotion calls to mind the salient need for intelligence in the engagement of emotion in order to allow the learner recognize and manage emotions to avoid its disruptive tendencies. The theory also leads to an explanation of such disorders as phobias, fears, panic attacks and post-traumatic stress disorder students experience in Mathematics.

---

Emotional data is designed to provide more important information to the cognitive brain for assessing situations and making valued judgments. However, if this information is negatively interpreted during Mathematics lesson, fear, tension, panic and phobia create a resultant effect which translates to poor academic achievement in Mathematics. Deductions from the theory explains that sensory inputs are translated by the cognitive brain during Mathematics lessons and forged into a meaningful representation that first passes through the emotional brain where it is rapidly evaluated. Neural schemata if not properly handled tend to become rigid patterns of information processing, shaping subsequent patterns and making sense of the content of mathematics lessons. Hence, emotional stimulation is necessary for activating certain schematic thought patterns, which, if not adequately handled, may lead to frustration. Therefore, the fusion of emotion and cognition in an intelligent manner to achieve ones' target is the hallmark of emotional intelligence. This requires emotional sensitivity, the ability to evaluate emotions within a variety of social circumstances to succeed in life. Since emotions influence how people think, make decisions, and perform different tasks a high level of concentration, emotional stability and intelligence are required to fusion both emotion and cognition result for maximum achievement in mathematics. Therefore, based on the assertion of Le Doux (1994), the present study seeks to assess emotional intelligence and its relationship with student's achievement in Mathematics. Hence, the purpose of this study was to determine the relationship between emotional intelligence and students' achievement in Mathematics and the amount of variation in students' achievement in mathematics that was attributed to each dimension of emotional intelligence (self-perception, self-expression, interpersonal skills, stress management and decision making).

### **Research Questions**

- What is the amount of variation in students' achievement in mathematics that can be attributed to each dimension of emotional intelligence (self-perception, self-expression, interpersonal skills, stress management and decision making)?
- What is the amount of variation in students' academic achievement in mathematics that can be accounted for by all the dimensions of their emotional intelligence jointly?
- What is the regression model that can be used in predicting students' academic achievement in mathematics based on their emotional intelligence?

### **Hypotheses**

- The regression coefficient associated with the predictor variables (students' self-perception, self-expression, interpersonal skills, decision making and stress management) in predicting students' academic achievement in mathematics is not significant.
- The regression model for predicting students' academic achievement in mathematics by their emotional intelligence is not significant.

## **METHODOLOGY**

The study adopted correlation research design. Correlation research design as one which seeks to establish what relationship exists between two or more variables. The design was considered appropriate because the study sought to determine the relationship between students' emotional intelligence and their academic achievement in mathematics as well as the variations in the students' achievement that were attributed to different dimensions of emotional intelligence.

The study was conducted in Enugu education zone of Enugu State with 25 public secondary schools. The study area has been chosen due to the poor performance of students in mathematics. Also, incessant drop-outs from schools and high rate of students' truancy characterize schools in the area (Post Primary School Management Board Enugu, 2016). The area comprised federal, state and privately owned secondary schools.

The population of the study consist of 4825 SS II Mathematics students in the 25 secondary schools. The choice of SS II students was informed by the consideration that students in SS II have been introduced to a fair degree of mathematical concepts in view of preparation for Senior Secondary School Certificate Examination (SSSCE), as well as a fair maturity in emotional indicators.

A sample size of 483 SS II Mathematics students was used for the study. Multistage sampling technique was employed in drawing the sample of the study. At the first stage, simple random sampling technique was used to sample two (2) local government from the zone. At the second level, stratified sampling technique was used to sample three (3) senior secondary schools from each of the two sampled local government areas.

Two instruments were used in the study for data collection. The instruments for data collection include Youth Version of Emotional Quotient Inventory (EQ-i2.0) and Mathematics Achievement Test (MAT). The EQ-i2.0 was adapted from Bar-On's emotional quotient inventory – youth version (Bar-On's EQ-I YV™), to suit age and grammatical needs of students in Enugu, Nigeria. The EQ-i2.0 comprised of two sections, A and B. Section A captured demographic data of the respondents while section B was on student's emotional intelligence, divided into five (5) clusters (A-E). Cluster A-E sought information on self-perception, self-expression, interpersonal skills, decision making and stress management respectively. EQ-i2.0 had 60 items with 4-point rating scale indicators of Strongly agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) weighted as 4, 3, 2, 1 for positive items and 1, 2, 3, 4 for negative items, respectively.

Mathematics Achievement Test (MAT) was a 50-item instrument developed by the researchers and the items generated from the following mathematics topics: logarithm, approximation, sequences and series, quadratic equation, simultaneous, linear and quadratic equations, gradient of a curve, logical reasoning, linear inequalities, algebraic fractions, chord property, circle theorems, trigonometry, and bearings. The test was prepared using a test blueprint. MAT was an objective

test with four response options ranging from A to D, one (1) mark for the correct answer and zero (0) for the wrong answer.

The instruments for this study were validated by three experts in Measurement and Evaluation and Mathematics Education unit of University of Nigeria, Nsukka. The experts were requested to scrutinize the relevance of the items of the instruments to the study and the clarity of the items of the instrument. All comments and recommendations made by the experts were carefully incorporated into the version of the instruments to be used in the study. To ascertain the content validity of MAT, a well-prepared table of specification was used to construct the items of the instrument.

The instruments were subjected to trial testing using forty (40) SS II Mathematics students from one Secondary School in Enugu whose students were not part of the study. Responses obtained from the students on emotional intelligence were analyzed for internal consistency reliability using Cronbach alpha statistic while Mathematics Achievement Test (MAT) scores were analyzed using Kuder-Richardson's 20 formular (KR-20). The reliability coefficients of 0.83, 0.76, 0.80, 0.71 and 0.87 were obtained respectively for clusters A, B C, D, and E respectively while the overall reliability index of the instrument was 0.93. The reliability coefficient for MAT was found to be 0.890. The instruments for data collection were administered to the students in the sampled schools with the help of their mathematics teachers. The teachers (research assistants) were briefed on the modalities of the collection of the instrument. Multiple linear regressions were employed to answer all research questions and test all hypotheses. All the hypotheses were tested at  $p < .05$  alpha level of significance.

## **RESULTS**

The results of this study are presented according to the research questions and hypotheses that guided the study.

### **Research Question One**

What is the amount of variation in students' achievement in mathematics that can be attributed to each dimension of emotional intelligence (self-perception, self-expression, interpersonal skills, stress management and decision making)?

**Table 1:** Regression analysis of amount of variation in students' achievement in mathematics that can be attributed to each dimension of emotional intelligence

Variables	Correlation Coefficient (r)	Coefficient of Determination (r <sup>2</sup> )
Self-Perception	.61	.37
Self-Expression	.64	.41
Interpersonal Skills	.58	.34
Decision Making	.51	.26
Stress Management	.72	.52

(R) Correlation Coefficient (R<sup>2</sup>) = Coefficient of Determination

The results in Table 1 revealed that the correlation coefficient (r) of .61, .64, .58, .51 and .72 with associated coefficient of determinant (r<sup>2</sup>) of .37, .41, .34, .26 and .52 were obtained between students' self-perception, self-expression, interpersonal skills, decision making and stress management and their achievement in mathematics respectively. The coefficients of determination (r<sup>2</sup>) implied that 37%, 41%, 34%, 26% and 52% variations in mathematics achievement was predicted by students' self-perception, self-expression, interpersonal skills, decision making and stress management respectively. Based on the result, it could be deduced that stress management contributed 52% of variation in the students' achievement in mathematics; Self-expression (41%); Self-perception (37%); Interpersonal skills (37%); and decision making (26%).

### Research Question Two

What is the amount of variation in students' academic achievement in mathematics that can be accounted for by all the dimensions of their emotional intelligence jointly?

**Table 2:** Model summary of the amount of variation in students' achievement in mathematics that can be accounted for by all the dimensions of their emotional intelligence jointly

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>
1	.76	.69	.62

(R) Correlation Coefficient (R<sup>2</sup>) = Coefficient of Determination

55

From the Table, the result showed that a correlation coefficient (r) of .76 was obtained between students' academic achievement in mathematics and all the dimensions of emotional Intelligence. This means that, there exists direct positive relationships between students' academic achievement in mathematics and all the dimensions of emotional intelligence. Table 2 also revealed that, the coefficient of determination (R<sup>2</sup>) associated with the correlation coefficient was 0.69 and adjusted 0.62. This coefficient of determination (R<sup>2</sup>) indicated that 62% of variation in students' academic achievement in mathematics was attributed to all the dimensions of emotional intelligence. This is an indication that 38% of the variation in students' academic achievement in mathematics was attributed to other factors other than emotional intelligence.

### Research Question Three

What is the regression model that can be used in predicting students' academic achievement in mathematics based on their emotional intelligence?

**Table 3:** Regression model for predicting students' academic achievement in mathematics based on their emotional intelligence

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	$\beta$	Std. Error	Beta	t	
(Constant)	28.59	4.314		6.63	.000
Self-Perception	.42	.047	.31	1.34	.000
Self-Expression	.44	.040	.34	1.28	.001
Interpersonal Skills	.39	.986	.22	1.58	.000
Decision Making	.34	.001	.19	1.03	.028
Stress Management	.53	.798	.49	2.17	.000

a. Dependent Variable: Achievement

Result in Table 4 revealed the scores in regression model that could be used in predicting students' academic achievement in mathematics based on their emotional intelligence. The regression model is shown as follows

$\bar{Y} = \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + a$  where  $x_1, x_2, x_3, x_4,$  and  $x_5$  represent self-perception, self-expression, interpersonal skills, decision making and stress management respectively;  $B$  represents regression coefficients and  $a$  represents constant. Hence, the regression model from the result of the study is

$$\bar{Y} = .31x_1 + .34x_2 + .22x_3 + .19x_4 + .49x_5 + 28.59$$

### Hypothesis One

The regression coefficient associated with the predictor variables (students' self-perception, self-expression, interpersonal skills, decision making and stress management) in predicting students' academic achievement in mathematics is not significant.

**Table 4:** t-test analysis of significance of the regression coefficients associated with the predictor variables in predicting students' academic achievement in mathematics based on their emotional intelligence

**Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients		
		$\beta$	Std. Error	Beta	t	Sig.
1	(Constant)	28.59	4.314		6.63	.000
	Self-Perception	.42	.047	.31	1.34	.000
	Self-Expression	.44	.040	.34	1.28	.001
	Interpersonal Skills	.39	.986	.22	1.58	.000
	Decision Making	.34	.001	.19	1.03	.028
	Stress Management	.53	.798	.49	2.17	.000

a. Dependent Variable: Achievement

The result in Table 5 revealed the exact probability values of .000, .000, .001, .000, .028 and .000 obtained for students' self-perception, self-expression, interpersonal skills, decision making and stress management respectively were less than  $p < .05$  level of significance. Thus, the null hypothesis was rejected and the researcher concluded that the regression coefficient associated with the predictor variables (students' self-perception, self-expression, interpersonal skills, decision making and stress management) in predicting students' academic achievement in mathematics was significant.

**Hypothesis Two**

The regression model for predicting students' academic achievement in mathematics by their emotional intelligence is not significant.

**Table 5:** Analysis of variance of significance of the regression coefficients associated with the predictor variables in predicting students' academic achievement in mathematics based on their emotional intelligence

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	389.793	5	77.959	41.420	.002 <sup>a</sup>
Residual	26190.236	477	54.906		
Total	26580.029	482			

The result in Table 7 showed the exact probability level of .002 is less than 0.05 level of significance. Thus, the null hypothesis was rejected. The researchers, therefore, concluded that the regression model for predicting students' academic achievement in mathematics by their emotional intelligence was significant.

## DISCUSSION

This study sought to investigate the influence of each dimension of emotional intelligence on students' achievement in mathematics. This study sought to investigate the influence of emotional intelligence on students' achievement in mathematics. The result of this study revealed that there was a significant relationship between emotional intelligence and students' achievement in mathematics. All predictor variables and jointly as emotional intelligence correlated positively with students' achievement in mathematics. The result of this study showed that stress management has the greatest influence on students' achievement in mathematics. This was followed by self-expression, then closely followed by self-perception, followed next by interpersonal skills and lastly decision making. A plausible explanation to this result was that stress poses a great deal of psychological discomfort sufficient to deter learning. Therefore, its management will invariably promote maximum achievement. One's expression is often related to one's perception but interpersonal relationships can only be effective to the extent that one's perceptions and expressions are acceptable by others. However, decision making is possible only if stress, expression, perception and interpersonal skills are redeemed. Based on the result of this study, engaging approaches to stress management will yield greatest impact on students' achievement in mathematics by 52%, while self-expression will yield 41%, self-perception 37%, interpersonal skills 34% and decision making yielding the lowest at 26%. Therefore, stress management is the most vital of all dimensions of emotional intelligence in predicting students' achievement in mathematics. Least to consider, in predicting students' achievement in mathematics is decision making. The result of this study agrees with the findings of Mendelson, Guity, Mantz and Mendelson (2016), that stress management and self-perception facets of emotional intelligence were the most influential on students' achievement while decision-making was the least influential.

This implies, therefore, that emotional intelligence has an influence on students' academic achievement in mathematics. It signifies that higher emotional intelligence enhances students' achievement in mathematics. The result of this study confirmed the findings of Mendelson, Guity, Mantz and Mendelson (2016) that found out in their study that a significant positive correlation existed between un-weighted GPA and EQ. Also, the finding of this study agreed with the findings of Durgut, Gerekan and Pehlivan (2013) who studied the impact of emotional intelligence on the achievement of accounting subject and found that emotional intelligence has a significant influence on students' achievement in accounting.

However, the findings of this study disagreed with the finding of Seng, Hanafi, Taslikhan and Raman (2016) who studied the influence of emotional intelligence on students' academic achievement and found no relationship existing between predictor variables and student's academic achievement. Also, the finding of this study does not totally agree with the finding of Festus (2012) who found a significantly low but yet positive relationship between emotional intelligence and student's academic achievement in mathematics. Emotional intelligence has been

---

found to be a strong predictor of academic achievement. Teachers of mathematics need to consider emotional intelligence in planning mathematics instruction. Understanding students' emotional states as well as emotional intelligence, and each of its dimensions, teachers can easily assist students in both emotional and academic needs with minimal work stress. A good understanding of the five dimensions of emotional intelligence will improve healthier learning environments too. Students on the other hand can tap from the findings of this study, become aware of and manage their emotions to relieve stress and cope with daily academic demands in mathematics. Engaging students in emotional drills will help them build their emotional intelligence to improve their achievement in mathematics. Emotional intelligence skills when acquired could enable the students adjust appropriately to ever dynamic global trend of events and cater for employment needs. Generally, the results support research conducted on the already existing literature and facts about emotional intelligence and its relationship with students achievement in mathematics providing an indisputable proof of the relationship between two variables.

## CONCLUSIONS

It can be concluded that emotional intelligence can be valuable in many aspects of students' academic pursuit and it involves gaining of particular emotional abilities and skills. Its efficacy, however, has been regularly acknowledged in terms of its role in students' performance in the schools. In the school system, there is a constant deal with students, the manner in which the students interact with peers and teachers could be attributed to their emotional intelligence levels. It can also be noted that although emotional intelligence is a large predictor of students' achievement in mathematics by creating a strong foundation to build upon, many researchers have not disregarded the influence of other factors such as intelligent quotient (IQ) on the achievement levels of the students. It is clear that those students that are successful in their academic pursuit take a more proactive approach to developing emotional intelligence competencies. This implies that in our schools excellent teaching could be facilitated by mathematics teachers who are emotionally self-aware and who understand their students on emotional levels. Hence, positive reinforcement of an emotionally intelligent environment will enable the development of intellectual capacity which is authentic in nature. Therefore, the findings of this study suggest that when mathematics teachers make decisions, they have to bear in mind the relationship between emotional intelligence levels and students achievement.

## References

- Bar-On, R. (1997). *The bar-on emotional quotient inventory (eq-i): a test of emotional intelligence*. Toronto, Canada: Multi-Health Systems.
- Cherniss, C. (2010). Emotional intelligence: Toward clarification of a concept. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 3, 110-126.
- Emmerling, R. J. & Goleman, D. (2003). Emotional Intelligence: Issues and common misunderstandings. Consortium for Research on Emotional Intelligence in Organization. Retrieved from [http://www.eiconsortium.org/research/ei\\_issues\\_and\\_common\\_misunderstandings.html](http://www.eiconsortium.org/research/ei_issues_and_common_misunderstandings.html)

- Feldman-Barrett, L., & Salovey, P. (2002). *The wisdom in feeling: psychological processes in emotional intelligence*. New York: Guilford Press.
- Gayathri, N., & Meenakshi, K. (2013). A literature review of emotional intelligence. *International Journal of Humanities and Social Science Invention*, 2(3), 45-44.
- Grewal, D. & Salovey, P. (2005). Feeling smart: The science of emotional intelligence. *American Scientist*, 93, 330-339.
- Hayward, A. B. (2005). The relationship between employee performance leadership and emotional intelligence in South African parastatal organizations. *Unpublished MA Thesis*. Rhodes University.
- LeDoux, J. (1994). *Emotion, memory and the brain*. *Scientific American*, 50–57.
- Lee, H. (2010). The Relationship between Emotional Intelligence and Emotional Labor and its effect on Job Burn out in Korean Organizations. *Unpublished Doctoral Dissertation*: University of Minnesota.
- Matthews, G., Roberts, R. D., & Zeidner, M. (2004). Seven myths about emotional intelligence. *Psychological Inquiry*, 15, 179-196.
- Mayer, J. D., Salovey, P., & Caruso, D. R. (2008). Emotion intelligence: New ability or eclectic traits? *American Psychologist*, 63, 503-517.
- Nworgu, B. G. (2015). *Educational Measurement and Evaluation Theory and Practice*. Nsukka-Enugu, University Trust Publishers.
- Nworgu, B. G. (2016). Averting Pedagogical Failure in Science: Insight from Educational Measurement and Evaluation. *103<sup>rd</sup> Inaugural Lecture of the University of Nigeria*. Nsukka-Enugu, University of Nigeria.
- Roberts, R., Matthews, G., & Zeidner, M. (2010). Emotional intelligence: Muddling through theory and measurement. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 3, 140-144.
- Sternberg, R. J. (2002). *Why smart people can be so stupid*. New Haven: Yale University Press.
- Zeidner, M., Matthews, G., & Roberts, R., & MacCann, C. (2003). Development of emotion intelligence: Towards a multi-level investment model. *Human Development*, 46, 69– 96.