STUDENTS' AGGRESSION AND SELF-ESTEEM AS CORRELATES OF SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN MATHEMATICS IN ANAMBRA STATE

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ABSTRACT

The impact of aggression and self-esteem on academic achievement has long been an important issue in developmental research. The study aimed to explore the students' aggression and self-esteem as correlates of academic achievement in Mathematics in Anambra State. Five research questions and five null hypotheses guided the study. The study adopted a correlation approach to provide answers to the research questions and testing of the hypothesis. The population of the study comprised 21204 from which a sample of 630 was drawn. A multi-stage procedure was used to select the sample. Two standardized research instruments namely; the Aggression Questionnaire (AQ), and Self-esteem Questionnaire (SQ), as well as scores from students' promotional examinations, were used for data collection. Cronbach's alpha was used to determine the reliability of the items in the instruments. A reliability index of 0.71 for physical aggression, 0.64, for verbal aggression, 0.73, for anger aggression, 0.81, for hostility aggression, 0.83, for high self-esteem, and 0.76, for low self-esteem respectively. The overall reliability coefficient was 0.7 which shows that the instrument was reliable and good for the study. The Pearson Product Moment Correlation was used to answer research questions 1 to 4 and test hypotheses 1 to 4 while research question 5 and hypothesis 5 were answered and tested with multiple correlations. Findings showed that students' verbal aggression and anger aggression recorded a low positive relationship with academic achievement in mathematics except for physical aggression which recorded and hostility aggression that recorded a low negative relationship with academic achievement. the findings on the multiple correlations reveal that a low positive and significant relationship existed between students' aggression, self-esteem, and academic achievement. Based on these findings, it was recommended that this variable should be examined by using another group of students from higher institutions of learning to see whether the results will be similar or different.

Keywords: Aggression, Self-esteem, and Academic Achievement.

1.0 INTRODUCTION

Aggression is one of the common mental problems among adolescents and it tends to pose a serious social issue in the modern era of a competitive society. Aggression is referred to as abnormal behaviour between members of the same species that is intended to course humiliation, pain, or harm to those species (Shaheen & Jahan, 2014). According to the scholars, it is antisocial behaviour, that makes the members of the same species exhibit

depression, anxiety, dissociation, and other trauma-related symptoms as well as problems in emotion regulation. Therefore, aggression is a behaviour characterized by strong self-esteem with hostile or harmful tones. According to Uludag (2013), aggressive behaviours are triggered by the size of the individual's social network, relations with peers and efficiency in social skills. By all these influences, aggression can take forms like physical, verbal, suspicion, and resentment (Gracia-Leon, Reyes, Vila, Perez, Robles & Ramos, 2002). On this note, the sub-divisions of students' aggression as was boiled down to four categories by Buss and Perry (1992) will guide the present study. These are verbal aggression, anger aggression, physical aggression, and hostility aggression. Verbal aggression is defined as hurting or harming others verbally, and it represents the instrumental or motor component of the behaviour. Anger with resentment involves physiological arousal and preparation for aggression, and it represents the emotional or affective component of behaviour. Hostility consists of feelings of ill-will and injustice that represents the cognitive component of behaviour as well as showing resentment. Physical aggression is an overt behaviour of a person that intends to harm another person, it deals with physical attack or bullying that has future psychological effects on the bearer.

Based on the scholarly observations on the effects of aggression on human behaviours, the question should be on whether aggression has a link to shaping self-esteem which may likely lead to violent experiences on individuals in society. For example, the study of Lambe, Hamilton-Giaehrits, Garner, and Walker, (2016) hypothesized that feelings of inferiority or low self-esteem made individuals be aggressive against those they view as being superior. However, Lambe and colleagues suggest that it is not just the level of self-esteem but stability that is relevant to the understanding of this process. As such, researchers have looked to this construct of self-esteem in trying to understand aggressive behaviour. Thus people with aggressive behaviour are constantly concerned and motivated to maintain the inflated self-esteem through a variety of intrapersonal and interpersonal mechanisms. Since the above scholarly review had noted that both self-esteem and aggression have links to influence the development of each construct in human being, examining their impact in determining the development of each other is one of the aims of the present study. Therefore, the present study will assess aggression to negate the possibility that unrealistically self-esteem is related to it and also explore the association that exists between the two constructs.

Suffice it to say that Ostrowsky (2009) suggested that aggression may influence individuals with low self-esteem to develop an increased sense of power and independence. Also, aggression may serve as attention-seeking behaviour that enhances self-esteem. Again, individuals with low self-esteem may externalize blame for their problems and failures to protect themselves against feelings of inadequacy, inferiority, and shame, which leads to aggression towards others. Therefore, in an attempt to understand self-esteem the study of Baumeister (1998) defined it as the evaluative aspect of the self-concept that corresponds to an overall view of the self as worthy or unworthy. That is a personal judgment of the worthiness that is expressed in the attitude the individual holds towards his/herself. Thus, self-esteem is an attitude about the self and is related to personal beliefs about skills, abilities, social relationships, and future outcomes. Self-esteem is produced over life and can be either positive (high self-esteem) which resulted in positive outcomes or negative (low self-esteem) which resulted to negative outcomes (Saadat, Ghasezadch & Soleimani, 2012).

High self-esteem means that a person has a conviction to do what is right in life. Then, low self-esteem is defined as a belief that represents an individual's negative emotion towards the self which embraces negative appraisal by lowering his/her self-view (Ghazvini, 2011). The effects of self-esteem in students' lives is so crucial that those with high self-esteem are more likely to persist in the face of difficulties and are better equipped in their personal lives to cope with challenges that arise unlike those with low self-esteem (Anyamene, Nwokolo & Ezeani, 2016). This supported the study of Kernis (1989) as was cited in the study of Shaheen and Jahaan (2014) which opined that threats to self-esteem are more apt to be perceived as unjustified if one's self-concept is positive than if one's self-concept is negative and unjustified threats are more likely to prompt anger. This is because self-esteem originally emerged as an integral part of self-concept. Also, high self-esteem individuals may be more likely to take steps to restore a damaged self-view than low self-esteem individuals.

It will be interesting to know that there are relatively few research pieces of evidence on whether self-esteem can relate to aggression to determine academic achievement. In a related study, Shaheen and Jahan (2014) recorded a significant negative correlation between self-esteem and different dimensions of aggression (i.e., physical, verbal, anger and hostility). The study of Donnellan, Trazesniewski, Robins, Moffitt and Caspi (2005) reveals that self-esteem was negatively correlated with the total aggression scale and with all of the subscales except verbal aggression. In the study of Aggarwal and Bihari (2014), it was recorded that aggression was negatively correlated with academic achievement. Also, the study of Uludag (2015) recorded a significant association between verbal aggression and academic achievement. The study of Anyanwu and Emesi (2020) reported a very low positive and significant relationship between the two dimensions of self-esteem and academic achievement. With the above observations, the present study will make an attempt to examine the possibility of students' aggression, and self-esteem to individually relate to academic achievement.

Academic achievement has been defined as scores obtained from examinations that measure the extent to which a person has acquired certain information or mastered certain skills, usually as a result of specific instruction (Meherns & Lehman, 2016). It is assumed that the nature of perceptions students have toward their aggression and self-esteem could lead to violent behaviour that may have a robust positive or negative influence on their academic achievement. Though many researchers have proved some links among academic achievement, self-esteem, and aggression, providing the evidence that these constructs could jointly relate to students' academic achievement is a gap in the knowledge in the Nigerian academic literature.

For students to learn and achieve excellently, especially in the subject that deals with articulation and aggregation, they must be sufficiently and psychologically healthy in behaviour. A psychologically healthy individual is the person that has a positive perception of his/her behaviour as it represents the total self. This positive personality view can be developed through educational processes in educational institutions. Surprisingly, the dramatic increase in the prevalence of problematic behaviours during adolescence has broken the traditional view that academic success is the only standard in assessing good students. In the Nigerian settings, not only students' academic achievement but also their behaviour has been given considerable public attention. For example, Masten, Rosiman, Long, Burt,

Obradovic and Riley (2005) proposed that for school-age children, high academic achievement and behavioural competence should be regarded as two important indicators for their success. It has been observed that aggressive behaviours are triggered by the size of the individual's social network, relations with peers, and efficiency in social skills. These could have implications to determine individuals' aggression which may relate negatively to self-esteem as well as their academic achievement. Therefore, in an attempt to understand how aggression and self-esteem could relate to academic achievement, the researchers used mathematics achievement scores of the students to examine how aggression and self-esteem could individually and jointly relate to it.

Therefore, the relationship of students' aggression, and self-esteem as a correlate of their academic achievement has important implications for developing effective intervention programs within the school environments. Stemming from the aforementioned literature, the present study aimed to fill the paucity of empirical findings on secondary school students' aggression, and self-esteem as correlates of academic achievement in mathematics in Anambra State.

Research Questions

1. What is the relationship between students' aggression and their academic achievement in mathematics?
2. What is the relationship between students' self-esteem and their academic achievement in mathematics?
3. What is the relationship between students' high self-esteem and their aggression?
4. What is the relationship between students' low self-esteem and their aggression?
5. What is the nature of the relationship among students' aggression, self-esteem and academic achievement in mathematics?

Hypotheses

1. There is no significant relationship between students' aggression and their academic achievement in Mathematics.
2. There is no significant relationship between students' self-esteem and their academic achievement in Mathematics.
3. There is no significant relationship between students' high self-esteem and their aggression.
4. There is no significant relationship between students' low self-esteem and their aggression.
5. The nature of the relationship among students' aggression, self-esteem and academic achievement in Mathematics is not significant.

2.0 METHOD

The researchers used a correlational research design and questionnaires to collect data for the study. The population of the study consisted of 21204 SS2 students in senior Anambra State. A sample size of 630 questionnaires was administered to respondents and collected for data analysis. Out of the 630 questionnaires administered to the respondents, 621of them were found useful during data analysis. A multi-stage sampling procedure was used to select the

respondents. The procedures for the selection were as follows: In stage one, three education zones were selected from the six education zones in the state by simple random sampling. Then in stage two, from each sampled education zone, one local government area (L.G.A) was selected through simple random sampling given a total of three (3) L.G.As. In stage three, from each sampled L.G.A, 10 schools were randomly selected giving a total of 30 schools. Then, from each of the schools, 21 SSII students were selected for the study using a table of simple random sampling. This gave a total number of 630 students used in the study.

The study adapted two standardized research questionnaires namely, Buss and Perry (1992) Aggression Questionnaire (AQ) and Eysenck and Eysenck Self-esteem Questionnaire (1976). The students' achievement scores were obtained from the schools before the administration of the other research questionnaires. The students' achievement scores in Mathematics from the statewide senior secondary one (SS1) promotion examination were obtained from the schools before the administration of the instruments.

The methods used for validating the instruments were faced and construct validity by the three experts from the Faculty of Education, Nnamdi Azikiwe University, Awka. Cronbach's alpha reliability method was used to determine the internal consistency of the items in the research questions; 0.71, for physical aggression, 0.64, for verbal aggression, 0.73, for anger, 0.81, for hostility, 0.83, for high self-esteem and 0.76 for low self-esteem respectively. The overall reliability coefficient was 0.74 which shows that the instrument was reliable and good for the study. According to guide lines by Haradhan, (2017), a coefficient of 0.6 is considered to be poor, 0.7 is acceptable while over 0.8 is good. The Pearson Product Moment Correlation Coefficient was used in answering research questions one to four and testing of hypotheses one to four. Multiple correlation was used to answer research question five and to test hypothesis five at 0.05 level of significance. The decision rule for null hypotheses with P-value higher than 0.05 was not rejected, while the hypotheses with P-value lower than 0.05 was rejected. The guide for interpretation of correlation results was done in accordance with Okoye (2015). Rough guide for interpreting correlation coefficient values when a large number of pairs of scores have been correlated. The decision rules to interpret the research questions were presented as follows: $r = .00$, no relationship; $r = \pm 0.0$ to ± 0.2, very low relationship; $r = \pm 0.2$ to ± 0.4, low relationship; $r = \pm 0.4$ to ± 0.6, medium relationship; $r = \pm 0.6$ to ± 0.8, high relationship; and $r = \pm 0.8$ to ± 1.0, very high relationship.

Presentation of Results

Research Question 1: What is the relationship between students' aggression and their academic achievement in mathematics?

(N= 621)

Variables	Academic achievement (r)	Remarks
Physical aggression	-.062	Very low negative relationship
Verbal aggression	.060	Very low positive relationship

Anger aggression	.004	Very low positive relationship
Hostility aggression	.075	very low positive relationship

The results in table 1 reveal a very low negative relationship between students' physical aggression and their academic achievement in mathematics. A very low positive relationship was recorded between students' verbal aggression and their academic achievement in mathematics. The students' anger aggression and their academic achievement in mathematics recorded a very low positive relationship. Then a very positive relationship was recorded between students' hostility and their academic achievement in mathematics.

Research Question 2: What is the relationship between students' self-esteem and their academic achievement in mathematics?

(N= 621)

Variables	Academic achievement (r)	Remarks
High self-esteem	.037	very low positive relationship
Low self-esteem	.072	very low positive relationship

The results in table 2 reveal a very low positive relationship between students' high self-esteem and their academic achievement in mathematics. A very low positive relationship was recorded between students' low self-esteem and their academic achievement in mathematics.

Research Question 3: What is the relationship between students' high self-esteem and their aggression?

(N= 621)

Variables	High self-esteem (r)	Remarks
Physical aggression	-.024	very low negative relationship
Verbal aggression	.002	very low positive relationship
Anger aggression	.036	very low positive relationship
Hostility aggression	.037	very low positive relationship

The results in table 3 reveal a very low negative relationship between students' physical aggression and their high self-esteem. A very low positive relationship was recorded between students' verbal aggression and their high self-esteem. The students' anger aggression and their high self-esteem recorded a very low positive relationship. Then a very positive relationship was recorded between students' hostility and their high self-esteem.

Research Question 4: What is the relationship between students' low self-esteem and their aggression?

(N= 621)

Variables	Low self-esteem (r)	Remarks
Physical aggression	.024	very low positive relationship
Verbal aggression	.023	very low positive relationship
Anger aggression	.102	very low positive relationship
Hostility aggression	-.017	very low positive relationship

The results in table 4 reveal a very low positive relationship between students' physical aggression and their low self-esteem. A very low positive relationship was recorded between students' verbal aggression and their low self-esteem. The students' anger aggression and their low self-esteem recorded a very low positive relationship. Then a very positive relationship was recorded between students' hostility and their low self-esteem.

Research Question 5: The nature of the relationship among students' emotional creativity skills, critical thinking skills, and academic achievement in mathematics.

(N= 604)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.143[a]	.020	.011	8.848424

Table 5 reveals that the nature of the relationship among students' aggression, self-esteem, and academic achievement in mathematics is .143a. While the standard error of the estimate is 8.848424.

Hypothesis 1: There is no significant relationship between students' aggression and their academic achievement in mathematics.

(N = 621)

Variable	Mathematics achievement (r)	P-value	Remark
Physical aggression	-.062	.124	NS
Verbal aggression	.060	.135	NS
Anger aggression	.004	.917	NS
Hostility aggression	-.071	.075	NS

NS-Non-Significant correlation at 0.05 level of significance.

The results in table 6 reveal that there is a nonsignificant relationship between students' physical aggression and their academic achievement in mathematics (r = -.062< 0.05). There is no significant relationship between students' verbal aggression and their academic achievement in mathematics (r = .060< 0.05). There is no significant relationship between students' anger aggression and their academic achievement in mathematics (r = .004< 0.05). There is also no significant relationship between students' hostility aggression and their academic achievement in mathematics (r = -. 071< 0.05).

Hypothesis 2: There is no significant relationship between students' self-esteem and their academic achievement in mathematics.

(N = 621)

Variable	Mathematics achievement (r)	P-value	Remark
High self-esteem	.037	.354	NS
Low self-esteem	.072	.073	NS

NS-Non-Significant correlation at 0.05 level of significance.

The results in table 7 reveals that there is a non-significant relationship between students' high self-esteem and their academic achievement in mathematics (r = -.037 < 0.05). There is no significant relationship between students' low self-esteem and their academic achievement in mathematics (r = .072< 0.05).

Hypothesis 3: There is no significant relationship between students' high self-esteem and their aggression.

(N = 621)

Variable	High self-esteem (r)	P-value	Remark
Physical aggression	-.024	.551	NS
Verbal aggression	.002	.958	NS
Anger aggression	.036	.372	NS
Hostility aggression	.037	.355	NS

NS-Non-Significant correlation at 0.05 level of significance.

The results in table 8 reveal that there is a non-significant relationship between students' physical aggression and their high self-esteem (r = -.024< 0.05). There is no significant relationship between students' verbal aggression and their high self-esteem (r = .002< 0.05). There is no significant relationship between students' anger aggression and their high self-esteem (r = .036<0.05). There is also no significant relationship between students' hostility aggression and their high self-esteem (r = . 037< 0.05).

Hypothesis 4: There is no significant relationship between students' low self-esteem and their aggression.

(N = 621)

Variable	Low self-esteem (r)	P-value	Remark
Physical aggression	.024	.549	NS
Verbal aggression	.023	.561	NS
Anger aggression	.102	.011	S
Hostility aggression	-.017	.680	NS

NS-Non-Significant correlation at 0.05 level of significance

The results in table 9 reveals that there is a non-significant relationship between students' physical aggression and their low self-esteem (r = .024 < 0.05). There is no significant relationship between students' verbal aggression and their low self-esteem (r = .023 < 0.05). There is significant relationship between students' anger aggresion and their low self-esteem (r = .102 < 0.05). There is also no significant relationship between students' hostility aggression and their low self-esteem (r = -. 017 < 0.05).

Hypothesis 5: The Nature of Relationship Among Students' Aggression, Self-esteem and their Academic Achievement in Mathematics.

(N =621)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R. Square Change	F.Change	df1	df2	Sig.F Change
1	.143[a]	.020	.011	8.84824	.020	2.130	6	614	.048

Table 10 shows multiple correlations run to examine the nature of the relationship among students' aggression, self-esteem and academic achievement. The result in the table also reveals that the relationship among these variables is positively significant (r = .143 > .048). Therefore, the null hypothesis was rejected it was concluded that the nature of the relationship among students' aggression, self-esteem and academic achievement is significantly related.

3.0 DISCUSSION OF FINDINGS

Findings in table one reveal a very low negative relationship between students' physical aggression and their academic achievement in mathematics. A very low positive relationship was recorded between students' verbal aggression and their academic achievement in

mathematics. The students' anger aggression and their academic achievement in mathematics recorded a very low positive relationship. Then a very positive relationship was recorded between students' hostility and their academic achievement in mathematics. Also, the four clusters of students' aggression do not significantly relate to their academic achievement in mathematics. These findings do not support the study of Aggarwal and Bihari (2014), which recorded that aggression was negatively correlated with academic achievement except the physical aggression that recorded a very low negative relationship with academic achievement in mathematics. Also, the present study did not support the study of Uludag (2015) which recorded a significant association between verbal aggression and academic achievement.

Findings in table two reveal a very low positive relationship between students' high self-esteem and their academic achievement in mathematics. A very low positive relationship was recorded between students' low self-esteem and their academic achievement in mathematics. Then, the study further reveals that both high self-esteem and low self-esteem does not significantly relate to academic achievement in mathematics. The findings supported the study of Anyanwu and Emesi (2020) which reported that both high self-esteem and low self-esteem were very low positively related to students' academic achievement. Then in the hypothesis testing as the present study does not support Anyanwu and Emesis finding, as it was recorded that both high self-esteem and low self-esteem were significantly related to academic achievement.

The findings in table three reveal a very low negative relationship between students' physical aggression and their high self-esteem. A very low positive relationship was recorded between students' verbal aggression and their high self-esteem. The students' anger aggression and their high self-esteem recorded a very low positive relationship. Then a very low positive relationship was recorded between students' hostility aggression and their high self-esteem. The results in table four reveal a very low positive relationship between students' physical aggression and their low self-esteem. A very low positive relationship was recorded between students' verbal aggression and their low self-esteem. The students' anger aggression and their low self-esteem recorded a very low positive relationship. Then a very positive relationship was recorded between students' hostility and their low self-esteem. This does not support the study of Donnellan et al (2005) which reveals that self-esteem was negatively correlated with anger aggression, hostility aggression and physical aggression except verbal aggression.

Then, in the hypothesis testing, it was recorded that all the four clusters of aggression do not significantly related to the students' high self-esteem. Also, physical aggression, verbal aggression and hostility aggression were not significantly related to the students' low self-esteem while there is a significant relationship between students' anger aggression and their low self-esteem. These findings do not support the study of Shaheen and Jahan (2014) which recorded a significant negative correlation between self-esteem and different dimensions of aggression (i.e., physical, verbal, anger and hostility).

Finally, the findings in table ten show the multiple correlations that examined the nature of the relationship among students' aggression, self-esteem and academic achievement reveals that the relationship among these variables is positively significant. Therefore, the null

hypothesis was rejected and it was concluded that the nature of the relationship among students' aggression, self-esteem and academic achievement is significantly related.

4.0 CONCLUSION

The impact of aggression and self-esteem on academic achievement has long been an important issue in developmental psychology research. The present study had been directed towards studying the relationship between aggression, self-esteem and academic achievement in mathematics. The result of the multiple correlations demonstrated students' aggression and self-esteem significantly related to academic achievement in mathematics.

5.0 RECOMMENDATIONS

Based on the findings, the following recommendations were made.

1. Based on the low positive relationship among the verbal and anger aggression, and academic achievement except for physical and hostility aggression which recorded a low negative relationship with academic achievement, it is recommended that teachers should be observant of their students' aggressive behaviour so that it will not affect their self-esteem in determining academic achievement.
2. Though the relationship between students' self-esteem recorded both positive and negative that was not significantly related to aggression. Teachers and significant others should introduce strategies that will protect the worth of the students within the classroom and outside the school environment so that aggressive behaviour will not have a negative effect on the positive self of the students.
3. The non-significant results that existed between aggression and self-esteem is an indication that more measurement of the potential determinants of aggression is necessary in order to foresee the underlying factors that might instigate students aggression to affect their self-esteem.
4. In order to mitigate the effects of aggression on current and overall academic achievement, the administration of the secondary schools should appoint mentors to monitor and mentor students portraying antisocial behaviours so that this will not have an adverse effect on their academic achievement.
5. Based on these findings, it was recommended that this variable should be examined by using another group of students from higher institutions of learning to see whether the results will be similar or different.

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