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Sex as a Moderator Between Self-Esteem and Depression Among Secondary School Adolescents in Delta State

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Abstract: *This study investigated sex as a moderator between self-esteem and depression among adolescents in secondary schools in Delta State. A correlational research project was adopted. The population consisted of 128,026 high school students at the 2021/2022 academic session, from which a sample of 1,056 students was selected using a sampling procedure at various stages. The data were collected using a structured questionnaire comprising the Adolescent's Self-Esteem Rating Scale (ASERS) and the Adolescent Depression Rating Scale (ADRS), adapted and validated for the present study. The instrument demonstrated strong psychometric properties, with content validity rates above 64% explained the variation and Cronbach's alpha coefficients of 0.71 for self-esteem and 0.81 for depression. Data were collected over a six -week period with a 96%response rate. Pearson's determination coefficient was used to answer research questions, while the hypotheses were tested using Fisher's linear regression and statistics at a significance level of 0.05. The findings revealed a significant negative relationship between self-esteem and depression among adolescents, but sex did not significantly moderate this relationship. The study recommends the integration of mental health programs and the promotion of self-esteem improvement strategies in schools.*

Key Words: *Sex, Self-Esteem, Depression, Secondary Schools, Adolescents.*

1. INTRODUCTION:

Adolescence is a period marked by significant emotional, cognitive and psychological transitions. This phase of development usually shapes an individual's perception and his response to external stressors. A key psychological construction that emerges strongly during adolescence is self-esteem, which refers to the evaluation of an individual of his own value and capacities (1). It is defined as an attitude that a person has towards himself or herself which includes a set of personal features such as self-belief, emotions, behaviour, and physical characteristics that remain stable. Self-esteem is the affective component of self-concept, as it concerns people's global appraisal of their positive or negative value, depending on how they estimate their value in different life domains (2). Self-esteem can be rooted in one's personal characteristics or relational identity. People who have extraordinary skills and talent tend to have higher levels of personal self-esteem; whereas people who feel that they are valued by their significant others can gain higher levels of relational self-esteem (3). Self-esteem can influence decision making, interpersonal relationships and emotional well-being. Low self-esteem has been consistently associated with negative psychological results, including depression, especially during the vulnerable period of adolescence (4; 5).

Depression is a mood disorder characterized by persistent feelings of sadness, low energy and loss of interest in previously pleasant activities (6). Among Nigerian adolescents, particularly those in secondary schools, depressive symptoms have been increasingly reported, often unrecognized and untreated (7). Low self-esteem adolescents are more likely to experience depression due to their reduced ability to deal with academic pressure, pairs rejection or family conflicts (8). In an effort to better understand the link between self-esteem and depression, researchers have turned their attention to identifying moderating variables that may affect this relationship. One of these factors is sex, referring to biological differences between male and female. The results of research on sexual differences in self-esteem and depression remain mixed. Some studies have suggested that adolescents tend to report lower self-esteem and higher depression rates than males, possibly due to society expectations, hormonal changes and gender-based papers (9; 10). Others propose that while self-esteem predict depression in both sexes, the strength and nature of this relationship may vary according to sex (11). In Nigeria, particularly in the state of Delta, where traditional gender roles are still influential,

it is pertinent to understand if sex significantly moderates the bond of self-esteem-depression among adolescents. The cultural context can shape how men and women internalize self -esteem and respond to emotional stress, thus influencing the beginning or intensity of depressive symptoms.

2. Statement of the Problem

Adolescence is a critical stage of human development marked by significant emotional, psychological and social changes. During this period, the development of self-esteem becomes central to an individual's sense of identity and general mental well-being. When self-esteem is low, adolescents can become more vulnerable to emotional difficulties, especially depression, which can negatively affect their academic performance, social interactions and long-term personal development. Depression among adolescents in secondary schools became a growing concern, with the increase in cases of emotional instability, low motivation and withdrawal of social and academic activities. Although several factors contribute to the beginning of depression, self-esteem has been identified as an essential psychological variable that influences how adolescents respond to the challenges of life and emotional stress. However, there is uncertainty about how sex influences the relationship between self-esteem and depression. Although men and women can differ in the way they experience or express emotional challenges, it is unclear if sex moderates the impact of self-esteem on depression. In some scenarios, female adolescents are believed to experience higher levels of depression and less self-esteem, while in others these differences may not be significant. In Delta state, where cultural expectations and gender roles can influence adolescents' emotional experiences, it is important to investigate how sex interacts with self-esteem to predict depression. Unfortunately, there is limited empirical research in this area, especially in the context of high school. This study, therefore, seeks to fill this gap by examining the relationship between self-esteem and depression among adolescents in Delta State secondary schools and determining whether sex moderates this relationship. The problem of this study therefore is: What is the moderating impact of sex on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State.

3. LITERATURE REVIEW:

One aspect of concern of depression and anxiety disorders is the greater prevalence of these disorders among adolescent and adult's females may simply be more likely than adolescent males to endorse all items on common measures of depression and anxiety because adolescent females are more willing to disclose personal information. Thus, similar rates of sex differences for all of the items would lead to a higher score but would not reflect a true higher prevalence. Higher depressive symptoms amongst females compared to males in developed nations may have an important cultural component that cannot be generalised (12). Parker et al. (13) investigated sex differences across various subtypes of depression. The results showed that, overall, women scored only slightly higher than men on measures of depression severity. However, among individuals with bipolar depression, women exhibited more severe symptoms compared to their male counterparts. The most consistent sex-based differences were observed in symptoms such as changes in appetite and weight, as well as psychomotor disturbances. The researchers concluded that sex had little to no significant influence on overall estimates of depression severity, though distinctions were more noticeable among patients with bipolar depression.

Nguyen et al. (14) investigated the occurrence of low self-esteem and its association with various sociodemographic factors, including depression and suicidal thoughts, among secondary school students in Vietnam. The study used a cross-sectional design involving 1,149 students from Cantho City. Data were collected using a structured questionnaire covering self-esteem, depression, anxiety, academic stress, and suicidal ideation. Findings revealed that 19.4% of the students exhibited low self-esteem. Key risk factors contributing to low self-esteem included high academic stress and experiences of physical or emotional abuse from parents or other adults in the home. Conversely, participation in supplementary classes emerged as a protective factor. Furthermore, low self-esteem was significantly associated with elevated levels of anxiety, depression, and suicidal ideation.

Henriksen et al. (15) investigated how global self-esteem influences the development of anxiety, depression, and attention-related issues in adolescents within a clinical setting, while also considering the effects of sex, therapeutic intervention, and medication. The study followed 201 adolescents aged 13 to 18, who had been referred to the Department of Child and Adolescent Psychiatry in Trondheim, Norway. Using self-report measures, the researchers assessed participants' self-esteem and symptoms of anxiety/depression and attention problems at the start of the study. A follow-up assessment was conducted three years later, achieving a 77% retention rate. The findings indicated that adolescents with higher self-esteem at the outset exhibited significantly fewer symptoms of anxiety, depression, and attention problems at the three-year follow-up, even after adjusting for initial symptom levels, sex, therapy, and medication use.

Cong, et al (16) investigated the intervening role of self-esteem on the association between problem-focused coping and depression among adolescents. A total of 852 secondary school students in Kuala Lumpur, Malaysia was

recruited through multi-stage cluster sampling. Participants filled out self-reported questionnaires on depression, self-esteem, and problem-focused coping. SPSS macro was used to analyse the mediation model. The findings showed both self-esteem and problem-focused coping negatively correlated with adolescents' depression. Self-esteem in turn partially mediated the association between problem-focused coping and adolescents' depression.

Makinde, et al (17) examined influence of low self-esteem and peer pressure on depression among adolescent in selected secondary schools in Ogun State Nigeria. The population of the study in total was 5478 which made up the totality of students in the local government and 400 respondents was drawn in strata from the four towns selected. Psychosocial risk factors (low self-esteem and peer pressure) of depression were measured, with a validated scale. Result showed that there was a positive significant relationship between depression and peer pressure among adolescents ($r = .502$, $N = 397$, $p = .000$) implying that peer pressure contributes to the development of depression in adolescents. Also, findings showed that the analysis of the variance of the multiple regression data produces an F-ratio value significant at 0.05 level ($F\ 1,395) = 123.582$; $P = .000$. This finding implies that the lower the self-esteem of adolescents, the greater the likelihood of the onset of depression in them. The study validated that Low self-esteem and Peer pressure positively influence depression in that both peer pressure and low self-esteem contribute to the development of depression in adolescents. The study also established the relationship between depression as a dependent variable, low self-esteem and peer pressure as independent variables.

Gittins and Hunt (18) assessed the relation between two major self-cognitions (self-esteem and self-criticism) and depressive symptoms in early adolescence. Two-hundred and forty-three Australian adolescents (mean age = 12.08, 52% female) completed measures of self-esteem, self-criticism and depressive symptoms at baseline, then approximately 12- and 24-months later. Growth-curve modelling was used to assess changes in the variables. Cross-lagged analysis assessed whether either of the self-cognition variables predicted depressive symptoms, or if depressive symptoms predicted self-cognitions. Results indicated that self-criticism and depressive symptoms increased over the time period, while self-esteem decreased, and these changes were all related.

4. Research Questions

The study was guided by the under listed research questions:

i. What is the relationship between self-esteem and depression among adolescents in secondary schools in Delta State?
ii. What is the moderating impact of sex on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State?

5. Hypotheses

The study was guided by the under listed null hypotheses:

i. There is no significant relationship between self-esteem and depression among adolescents in secondary schools in Delta State.
ii. There is no significant moderating impact of sex on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State

6. RESEARCH METHOD

A correlational research design was adopted for this study. The population consisted of 128,026 senior secondary school students (61,401 males and 66,625 females) enrolled in the 2021/2022 academic session, as reported by the Ministry of Basic and Secondary Education, Asaba (2022). A total of 1,056 students were selected through a multi-stage sampling procedure to form the sample size.

Data were collected using a structured questionnaire comprising two standardised instruments: the Adolescent Self-Esteem Rating Scale (ASERS) and the Adolescent Depression Rating Scale (ADRS). The questionnaire was divided into two sections: Section A gathered demographic data such as sex, Section B included the rating scales measuring the study variables. The ASERS was adapted from the Self-Esteem Scale for Schoolchildren developed by De Tejada Lagonell, Sidera, Gras, and Mera (19). Originally consisting of 18 items, it was reduced to 13 items after validation. Scores ranged from 18 to 72, with higher scores indicating higher levels of self-esteem. The scale reported an internal consistency alpha coefficient of 0.81.

The ADRS was adapted from the Self-Report Depression Scale for the General Population developed by Radloff (20). Initially containing 20 items, it was reduced to 16 validated items that assess depressive symptoms commonly observed in adolescents. Scores ranged from 20 to 80, with higher scores signifying greater levels of depression. The scale had an internal consistency alpha coefficient of 0.85. The face, content and construct validities of the research instrument was ascertained using different procedures. The face validity was estimated through experts' judgement.

Copies of the instrument were printed and given to the research supervisors and other experts in the Department of Guidance and Counselling to screen. The experts made some suggestions in terms of spelling, sentence structure and grammar. Their suggestions were effected before a validation process was done on the instrument.

In doing the validation process, the researcher administered the instrument on 100 students in locations different from the study area. The data obtained were subjected to a Principal Component Analysis (PCA) of factor analysis. The total cumulative variance was used to determine the content validity of the instrument. The result shows that adolescent self-esteem sub-scale had 65.94% explained variance and 34.06% unexplained variance and the adolescent depression sub-scale had 64.73% explained variance and 35.27% unexplained variance. This result implies that the sub-scales have adequate content validity. The rotated component matrix was used to determine the construct validity of the various scales in the instrument. The result shows that adolescent self-esteem sub-scale had values that ranged between 0.59-0.88; while adolescent depression had values that ranged between 0.53-0.82. This result implies that the instrument had an adequate construct validity.

In order to estimate the reliability of the instrument, the data obtained from the pilot-testing were subjected to a Cronbach alpha reliability coefficient, which estimate measures of internal consistency. It yielded coefficients which the researcher used to estimate the reliability of the instrument. The result shows that adolescent self-esteem sub-scale had a coefficient of 0.71; while adolescent depression sub-scale had a coefficient of 0.81. This result implies that the various sub-scales are reliable and can therefore, be used for a research study (21).

The researcher administered the questionnaire with the help of five research assistants. The research team monitored and ensured that all copies of the instrument were properly filled and returned in good condition. The administration lasted for a period of six weeks in secondary schools across Delta State. At the of the exercise, a total of 1,045 copies of questionnaire were administered, and a total of 1,000 were returned, indicating 96% retrieval rate. The research questions were answered with the aid of Pearson's coefficient of determination. Hypothesis 1 was tested with linear regression statistics while hypothesis 2 were tested with Fisher's Z statistics. The hypotheses were tested at 0.05 level of significance.

7. RESULTS:

Research Question 1: What is the relationship between self-esteem and depression among adolescents in secondary schools in Delta State?

Table 1: Pearson's Correlation and Coefficient of Determination of the Relationship Between Self-Esteem And Depression Among Adolescents in Secondary Schools in Delta State

Variable	N	Mean	SD	r	r^2	r^2%	Decision
Self-Esteem	1000	42.42	5.94	-0.244	0.060	6.0	Negative Relationship
Depression		38.06	9.53				

Table 1 shows the result of a Pearson's correlation and coefficient of determination, which the researcher used to find out the relationship between self-esteem and depression among adolescents in secondary schools in Delta State. The result shows a negative relationship between self-esteem and depression among adolescents (r = -0.244; r^2 = 0.060; r^2% = 6.0). From the result shown above, self-esteem contributed 6.0% to the variation in depression among adolescents in secondary schools in Delta State. The negative relationship observed in the result indicates that the higher the level of self-esteem, the lower the level of depression among the students. On the other hand, the lower the level of self-esteem, the higher the level of depression among the students.

Hypothesis 1: There is no significant relationship between self-esteem and depression among adolescents in secondary schools in Delta State

Table 2: Regression analysis of the relationship between self-esteem and depression among adolescents in secondary schools in Delta State

ANOVA					
	SS	***Df***	***MS***	***F***	**Sig.**
Regression	5410.150	1	5410.150	63.223	.000[b]
Residual	85315.750	997	85.572		
Total	90725.900	998			

Table 2 shows the result of a regression statistics, which the researcher used to find out the relationship between self-esteem and depression among adolescents in secondary schools in Delta State. The result shows a significant relationship exists between self-esteem and depression among adolescents $F(998) = 63.223$, $p < 0.05$ alpha level. Hence, the null hypothesis is

rejected. As shown in the R^2 value of 0.060, self-esteem contributed 6.0% to the variation in depression among adolescents. Self-esteem predicted depression with the unstandardized regression coefficient (B) of -0.392; with the standardized coefficient (β) of -0.244, $t = -7.951$, $p < 0.05$ alpha level.

Research Question 2: What is the moderating impact of sex on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State?

Table 3: Pearson's correlation and coefficient of determination of the moderating impact of sex on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State

Sex	Variable	N	Mean	SD	r	r^2	r^2%	Decision
Male	Self-Esteem	422	41.38	6.44	-0.219	0.048	4.8	Negative Relationship
	Depression		38.16	9.78				
Female	Self-Esteem	578	43.18	5.42	-0.271	0.073	7.3	Negative Relationship
	Depression		37.99	9.36				

Table 3 shows the result of a Pearson's correlation and coefficient of determination, which the researcher used to find out the moderating impact of sex on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State. The result shows a negative relationship between self-esteem and depression among male and female adolescents ($r = -0.219$; $r^2 = 0.048$; $r^2\% = 4.8$ for male and $r = -0.271$; $r^2 = 0.073$; $r^2\% = 7.3$ for female). From the result shown above, self-esteem contributed 4.8% and 7.3% to the variation in depression among male and female students respectively. The negative relationship observed in the result indicates that the higher the level of self-esteem, the lower the level of depression among the students. On the other hand, the lower the level of self-esteem, the higher the level of depression among the students.

Hypothesis 2: There is no significant moderating impact of sex on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State

Table 4: Pearson's correlation and Fisher's Z statistics of the moderating impact of sex on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State

Sex	Variable	*N*	Mean	*SD*	*R*	Fisher-*z*	Remark
Male	Self-Esteem	422	41.38	6.44	-0.219	0.841	Not Significant
	Depression		38.16	9.78			
Female	Self-Esteem	578	43.18	5.42	-0.271		
	Depression		37.99	9.36			

Table 4 shows a multiple correlation analysis, which was used to examine the moderating impact of sex on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State. The result shows that for male students, $r = -0.219$, while for female students, $r = -0.271$; $Z_{Obs} = 0.841$. Since this value was not statistically significant, the null hypothesis was retained. This indicates that sex does not have a significant moderating effect on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State.

8. DISCUSSION

The first finding revealed a significant negative relationship between self-esteem and depression among adolescents in secondary schools in Delta State. Self-esteem contributed 6.0% to the variation in depression among adolescents in secondary schools in Delta State. The negative relationship observed in the result indicates that the higher the level of self-esteem, the lower the level of depression among the students. On the other hand, the lower the level of self-esteem, the higher the level of depression among the students. Hence, adolescents with low self-esteem are at higher risk for depression. The above finding agrees with Keane and Loades (22), whose fining revealed an association between low self-esteem and negative outcomes for young people's behavioural and mental health problems, including health compromising behaviours such as substance abuse, early sexual activity, eating problems and depression. The finding is also in line with Duffy, et al. (23), who found that high self-esteem is related to several well-being conditions, such as high happiness and life satisfaction, as well as low anxiety, depression, and loneliness. The finding furter agrees with the finding of Trzesniewski et al. (24), which revealed that low levels of self-esteem can predict depressive symptoms in a time-frame ranging from 3 months to 10–15 years later on.

The second finding revealed no moderating impact of sex on the relationship between self-esteem and depression among adolescents in secondary schools in Delta State. Self-esteem contributed 4.8% and 7.3% to the

variation in depression among male and female students respectively, which is not statistically significantly different. This finding suggests that male and female adolescents exhibit the same symptoms when they have high or low self-esteem. Therefore, it is not surprise that they may exhibit the same amount of depression as a result of their level of self-esteem, irrespective of their sex differences. The above finding is at variance with Twenge and Nolen-Hoeksema (25), who found in their study that during early adolescence, more girls are affected than boys from depression. According to the authors, although boys experience a similar or even higher rate of depressive symptoms than do girls prior to adolescence, roughly twice as many as boys become depressed once they reach adolescence. The finding also disagrees with Bleidorn et al. (26); Orth and Robins (27), who found that males tend to have higher self-esteem.

8. CONCLUSION

This study examined sex as a moderator between self-esteem and depression among adolescents in secondary schools in the state of Delta. The findings revealed a significant negative relationship between self-esteem and depression, indicating that adolescents with higher levels of self-esteem tend to experience lower levels of depression. This emphasizes the importance of self-esteem as a protective psychological factor against depressive symptoms during adolescence. However, the study also found that sex has not significantly moderated this relationship, suggesting that the reverse association between self-esteem and depression is consistent among male and female adolescents. In other words, regardless of sex, low self-esteem adolescents are more likely to display depressive trends. Based on these findings, it can be concluded that interventions designed to improve adolescent self-esteem may be beneficial in reducing depression among high school students in the state of Delta. In addition, these interventions can be universally applicable in both sexes without the need for specific sex adjustments.

9. RECOMMENDATIONS:

Based on the findings of this study, the following recommendations are made:

i. school administrators, counselors and psychologists project and implement structured programmes that promote self-awareness, self-esteem and confidence construction among students.
ii. The Ministry of Education of the Delta State should incorporate mental health education into the curriculum of the secondary school. Topics on emotional well-being, self-esteem and coping strategies should be taught to equip students with knowledge and skills to manage stress, negative emotions and depressive trends.
iii. Teachers and school counselors should be given regular training to identify signals of low self-esteem and depression in students. This will allow early intervention and ensure that students in danger receive adequate psychological support, regardless of their sex.

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