

SELF-CONCEPT AND PERSONALITY TRAITS AS CORRELATES OF SENIOR SECONDARY SCHOOL STUDENTS' LEARNED HELPLESSNESS IN MATHEMATICS

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Abstract

The issue of poor academic achievement in mathematics has become a long-standing concern among researchers. This trend of low academic achievement in mathematics is worrisome because it can lead to learning helplessness. In view of the above, the present study investigated self-concept and personality traits as correlates of secondary school students' learned helplessness in mathematics. The study adopted a correlational survey research design. A sample of 363 SSII students selected through the multi-stage sampling procedure participated in the study. Three instruments were used for the data collection. They are the Mathematics Learned Helplessness Scale (MLHS), the Students' Self-Concept Questionnaire (SSCQ), and the Students' Personality Traits Questionnaire (SPTQ). To determine the face validity of the instruments, they were given to measurement and evaluation experts. Internal consistency reliability coefficients of 0.87, 0.79, and 0.75 were obtained for MLHS, SSCQ, and SPTQ, respectively using Cronbach alpha. Regression analysis was used for data analysis with the aid of the Statistical Package for Social Science (SPSS) version 20. Findings revealed that the relationship between self-concept and students' learned helplessness in mathematics is statistically significant; the relationship between personality traits and students' learned helplessness in mathematics is statistically significant; and the relationship among self-concept, personality traits, and students' learned helplessness in mathematics is statistically significant. Based on the findings, it was concluded that students' negative perception of themselves and personality traits are closely related to their learned helplessness in mathematics.

Keywords: Academic Achievement; Learned Helplessness; Self-Concept; Personality Traits.

Introduction

The issue of poor academic achievement in mathematics, especially among senior secondary school students, has become a long-standing concern among researchers. According to literature, students' achievement in mathematics, both at internal and external examinations, has continued to deteriorate year after year (Galadima & Okogbemon, 2012; Iji, Emiakwu & Utubaku, 2015; Amadi, Adedapo & Sunday, 2021). Andor (2021) highlighted a statistic of the West African Examinations Council's (WAEC) SSCE result from 2015 to 2020, in which the average number of candidates who enrolled for the examinations and scored below credit pass in

mathematics was 65.82% in 2015, 61.32% in 2016, 40.78% in 2017, 50.02% in 2018, 35.38% in 2019, and 34.76% in 2020. This demonstrates that secondary school students' academic achievement in mathematics is unsatisfactory and inconsistent. Again, this trend of low academic achievement in mathematics appears to be causing many students learning mathematics to feel helpless prior to, during, and even after mathematics assessments (Peixoto, Sanches, Mata, & Monteiro, 2017). Students' apprehension about recording poor achievement and a lack of improvement from previous attempts has rendered many of them helpless in learning mathematics. However, there is a paucity of literature regarding the phenomenon among secondary school students in Benue State, particularly in Zone A. This underscores the need for the present study to bridge this gap in the literature.

Learned helplessness is an evolving concept in education literature. This phenomenon was first observed and studied by psychologists Martin Seligman and Steven Maier in the late 1960s. Maier and Seligman (2016) defined learned helplessness as an intuitive notion that entails the belief that nothing one does will matter; one believes that their actions are futile. According to Yunusa (2020), it is an act of giving up or stopping trying a task by an individual or organism that they fail to accomplish even after repeated attempts. As a result, the individual becomes passive, resigned, and exhibits symptoms of depression or anxiety. Learned helplessness in mathematics can therefore be seen as a situation where students give up or stop solving mathematics tasks as a result of repeated failure. It occurs when a learner comes to believe success in mathematics is beyond his or her ability. The condition does not happen without repeated exposure to failure. As a result of repeated failures, the student comes to believe that failure in mathematics is inevitable, no matter how hard they work on the task.

Learned helplessness in mathematics poses a threat to mathematics education, especially at the secondary school tier of education. Students who have learned helplessness in mathematics appear to believe that mathematics is a subject for intelligent people. As a result, such students appear to lose interest during mathematics lessons, which may jeopardize their academic achievement in the subject. In support of the foregoing, Maier and Seligman (2016) buttressed that some students behave during mathematics lessons as if they believe they are powerless to influence the outcomes of their learning. Because of their reserved enthusiasm for mathematics, these students frequently complain that mathematics tasks are too difficult or impossible to complete, even before attempting to solve them. In Zone A of Benue State, it has been observed that such students prefer absenting themselves from mathematics classes as a way of avoiding mathematics tasks. When forced to stay by the teacher, they end up sleeping during classes and avoid participation in class activities. Consequently, these students struggle to achieve high marks or grades in mathematics.

As a result, there is an increasing recognition of the dangers posed by learned helplessness in mathematics. This has sparked research on possible factors that are responsible for this degrading phenomenon. Gurefe and Bakalum (2018) identified mathematical anxiety as a factor related to learned helplessness. Raufelder, Regner, and Wood (2018) identified test anxiety as being responsible for learning helplessness. According to Amadi, Agi, and Nwoke (2020), anxiety, self-efficacy, and locus factors are responsible for learning helplessness in mathematics. While anxiety and self-efficacy

may appear to be responsible for learned helplessness in mathematics, little is known about factors such as students' self-concept and personality traits. This becomes the thrust of this present study: to investigate the relationship between students' self-concept, personality traits, and learned helplessness in mathematics.

Scholars have been particularly interested in self-concept because of its strategic role in an individual's life. Wehrle and Fasbender (2019) describe self-concept as the entire complex, organized, and dynamic system of learned attitudes, beliefs, and evaluative judgments that people have about themselves. According to Wehrle and Fasbender, individuals are worried about who they are, who they can become, and how they fit into the environment in order to operate efficiently, have a secure sense of self, and so strive for personal goals and development while remaining confident in themselves and their activities. In his view, Mandigo (2021) described self-concept as an organized, consistent set of perceptions and beliefs about oneself. The author emphasized the importance of congruence between one's self-concept and one's actual experience for psychological well-being. Self-concept refers to a student's perception and understanding of themselves, which includes their thoughts, beliefs, attitudes, and evaluations of their own identity. A person's impression of himself might be either positive or negative. Positive self-concept is defined as having a positive and healthy picture of oneself, which includes acknowledging and respecting one's own worth, abilities, and potential while retaining a balanced view of both strengths and places for improvement (Rubio, 2014). Negative self-concept, on the other hand, relates to people's negative attitudes toward themselves (Winter, Bohus, & Lis, 2017). With a poor self-image, kids concentrate on their flaws and limitations, distorting failure and imperfections.

Introspection, social interactions, and input from others all contribute to the development of one's self-concept. According to Dewitte, De Schryver, Heider, and De Houwer (2017), people form their self-concepts by reflecting on their own thoughts, emotions, and experiences, as well as observing how others perceive and respond to them. Significant life experiences, psychological and social factors, and personal successes or failures, according to the authors, can all help to shape and evolve one's self-concept over time. Interactions with peers, instructors, parents, and significant others can have a substantial impact on a student's self-concept. Students' academic achievements and school experiences can have an impact on their self-concept (Tus, 2020). Academic success and failure can influence how students see their intelligence, abilities, and academic competence. In mathematics, such a student may begin to question their ability to solve problems, leading to a sense of helplessness in the subject. However, a positive self-concept can guard against learned helplessness (Adeoye, Fasanmi, & Igo, 2020). Students who have a high sense of self-worth and self-efficacy may be more resilient in the face of adversity, less prone to blame failure on internal, stable, or global forces, and more willing to persevere in the face of obstacles.

Self-concept has been shown to be closely related to some psychological factors. Adeoye, Fasanmi, and Igo (2020) revealed that self-concept clarity did not significantly predict psychoactive drug use and abuse among undergraduates at Benue State University, Makurdi. Hanley and Garland (2017) found that self-concept clarity mediates the relationship between dispositional mindfulness and psychological well-being. Self-concept has been shown to be a good predictor of future-oriented motivation to aspire

to a career in the sciences (Jansen, Scherer, & Schroeders, 2015). In relation to students' academic achievement, self-concept has been found to also be a correlate. Wu, Guo, Yang, Zhao, and Guo (2021) found a positive relationship between self-concept and academic achievement. Self-concept also moderated the relationship between academic buoyancy and academic performance (Colmar, Liem, Connor, & Martin, 2019). In mathematics, Arens, Frenzel, and Goetz (2022) found that the relationship between mathematics test scores and mathematics self-concept was unidirectional, with former mathematics test scores being related to later mathematics self-concept. Lee and Kung (2018) supported the idea that prior mathematics achievement significantly predicted subsequent mathematics self-concept. This shows a positive relationship between students' self-concept and academic achievement in mathematics. Despite this, little is known about the relationship between self-concept and secondary school students' learned helplessness in mathematics.

Another factor that may be related to students' learned helplessness in mathematics is personality trait, which is the focus of this study. Lampropoulos, Anastasiadis, and Siakas (2022) defined personality as the distinct and unique manner in which an individual responds to social stimuli and adapts to the social elements of their surroundings. Traits, on the other hand, are characterized as habitual patterns of behavior, thought, and emotion (Edobor & Fred, 2020). According to this viewpoint, traits are relatively stable over time, vary between individuals, and influence behavior. For example, some people are gregarious while others are shy. Personality traits describe persons in terms of relatively consistent patterns of behavior, thoughts, and emotions (Diener & Lucas, 2019). They are what distinguishes an individual from others. According to Savcisen, Eliassi-Rad, Hansen, Mortensen, Lilleholt, Rogers, and Lehmann (2023), each human being is born with a distinct and unique character that varies from person to person, whether in terms of conduct or personality. According to the authors, each human is unique and cannot be compared to others, and each individual's personality is distinct and distinctive. Genetics, upbringing, culture, environment, and life experiences all contribute to students' diverse personalities.

Essentially, personality traits are contained in a model known as the "Big Five" personality traits or the FFM (Five Factor Model) of personality (Oshio, Taku, Hirano, and Saeed, 2018). In this approach, personality traits include openness, conscientiousness, extraversion, agreeableness, and neuroticism. While the Big Five model of Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (OCEAN) is well-known, other personality traits encompass additional aspects of personality, such as ambition, self-esteem, empathy, honesty, creativity, resilience, and many others. Personality traits like learned helplessness may have a substantial impact on behaviour. Individuals with high neuroticism, for example, are more likely to experience negative emotions like worry, despair, and stress than others (Barlow, Ellard, Sauer-Zavala, Bullis, & Carl, 2014). As a result, students in this category may be more likely to develop feelings of helplessness since they perceive failure as uncontrollable. Their proclivity to dwell on failure in mathematics may heighten emotions of helplessness in the subject. Furthermore, those with poor self-esteem may be more susceptible to learned helplessness because they doubt their capacity to overcome obstacles or believe they are unworthy of accomplishment (Branden, 2021). In the face of repeated failure, a student may become resigned and passive. On a positive note,

psychological attributes associated with resilience and coping techniques, such as problem-solving abilities, social support seeking, and emotional regulation, may protect against the development of learned helplessness.

Students' personality traits have been shown to have a relationship with some psychological variables and academic achievement. For instance, Klein, Fröhlich, and Emrich (2017) found an overall relationship between personality traits and physical self-concept, with the neuroticism trait having a particularly strong link to students' self-concept. Spengler, Brunner, Martin, and Lüdtke (2016) showed that conscientiousness and openness were substantially related to subject-specific grades in mathematics, French, and German across several school years. In addition, Alcock, Attridge, Kenny, and Inglis (2014) found that personality accounted for significantly more variance in undergraduates' achievement and behavior than gender. Sorić, Penezić, and Burić (2017) found a statistically significant relationship between the big five personality traits and academic achievement. Despite this, little is known about the relationship between personality traits and secondary school students' learned helplessness in mathematics. Hence, the general purpose of the study was to investigate self-concept and personality traits as correlates of senior secondary school students' learned helplessness in mathematics in Zone A, Benue State. Specifically, the study investigated:

1. The relationship between self-concept and students' learned helplessness in mathematics.
2. The relationship between personality traits and students' learned helplessness in mathematics.
3. The relationship among self-concept, personality traits and students' learned helplessness in mathematics.

Research Questions

The following research questions guided the study

1. What is the relationship between self-concept and students' learned helplessness in mathematics?
2. What is the relationship between personality traits and students' learned helplessness in mathematics?
3. What is the relationship among self-concept, personality traits and students' learned helplessness in mathematics?

Hypotheses

H₀₁: The relationship between self-concept and students' learned helplessness in mathematics is not statistically significant.

H₀₂: The relationship between personality traits and students' learned helplessness in mathematics is not statistically significant.

H₀₃: The relationship among self-concept, personality traits and students' learned helplessness in mathematics is not statistically significant.

Methods

The study adopted a correlational survey design. Ezeh (2015) defined correlational survey design as a systematic study in which the researcher seeks to find out the association between variables. The rationale for choosing this design is that it

would help the researcher find out the relationship among self-concept, personality traits, and secondary school students' learned helplessness in mathematics. This design is therefore considered appropriate for this study. The study was carried out in Zone A, Benue State. Zone A, also known as Benue North-East Senatorial District, covers 7 local government areas, which include Katsina-Ala, Logo, Ukum, Konshisha, Vandeikya, and Kwande. The population of the study comprised all students with learned helplessness in mathematics in Zone A. Sampling was done using the multi-stage sampling procedure. Through this means, four secondary schools, each in four sampled LGAs, were selected for the study. A pilot study was then carried out to identify SSII students with learned helplessness in mathematics in the sampled LGAs. Copies of the Mathematics Learned Helplessness Scale (MLHS) were administered to all SSII students in the sampled schools. A student who scored above average on the MLHS was considered to be suffering from learned helplessness in mathematics, and vice versa. This is because all 20 items of the MLHS are positively skewed towards learned helplessness in mathematics and are modeled on a 4-point rating scale (SA = 4, A = 3, D = 2, SD = 1). Hence, a score of 40 on the MLHS represents the average. By so doing, 363 SSII students identified as suffering from learned helplessness in mathematics were then used as the sample for this study.

Measures

Data collection is the process of gathering and analyzing information based on the criteria or variables of interest that will help answer the research question (Bhat, 2019). Data collection is important because it ensures the integrity of the research, reduces errors, reduces the danger of errors in the decision-making process, saves money and time, and eventually supports the need for a new idea, change, or innovation (Creswell & Guet-terman, 2019). This study utilized three instruments for data collection: the Mathematics Learned Helplessness Scale (MLHS), the Students' Self-Concept Questionnaire (SSCQ), and the Students' Personality Traits Questionnaire (SPTQ). The MLHS was adapted from Quinless and Nelson's (1988) Learned Helplessness Scale (LHS), while the SSCQ and SPTQ were developed by the researcher. The MLHS had two sections, consisting of A and B. Section A contained information on the demographics of the students' gender, school name, and register number. Section B has 20 items modeled on a four-point Likert-type scale with response options of "strongly agree" (SA), "agree" (A), "disagree" (D), and "strongly disagree" (SD) with numerical values or points of 4, 3, 2, and 1, respectively.

The SSCQ has 20 items modeled on a four-point Likert-type scale with response options of "completely agree" (CA), "agree" (A), "disagree" (D), and "completely disagree" (CD) with numerical values or points of 4, 3, 2, and 1, respectively. In a similar vein, the SPTQ has 20 items modeled on a four-point Likert-type scale with response options of "strongly agree" (SA), "agree" (A), "disagree" (D), and "strongly disagree" (SD) with numerical values or points of 4, 3, 2, and 1, respectively. To determine the face validity of the instruments, the instruments were given to measurement and evaluation experts to check the appropriateness of items, clarity of language, suitability for the study, structure of items, and to make suggestions for improvement of the instruments. To determine the coefficient of internal consistency of the instruments, they were trial-tested on a similar sample. Cronbach alpha reliability coefficients of 0.87,

0.79, and 075 were obtained for MLHS, SSCQ, and SPTQ, respectively. The instruments were then administered to the participants in the sampled schools in the various LGAs selected. In total, 363 copies of the instruments were returned and recorded for data analysis.

Data Analysis

The data gathered were then analyzed using regression analysis with the aid of Statistical Package for Social Science (SPSS) version 20. Correlation coefficient R associated with regression analysis was used to answer research questions, while analysis of variance (ANOVA) associated with regression was used in testing the formulated hypotheses at the 0.05 level of significance. The correlation coefficients were interpreted based on Nwana's (1979) guide. Coefficients that range from 0.00-0.20 were regarded as very low, 0.20-0.40 (low), 0.40-0.60 (medium), 0.60-0.80 (high), and 0.80-1.00 (very high).

RESULTS AND DISCUSSION

Results

This section presents the result of the data collected in line with the specific purposes of the study.

Research Question One: What is the relationship between self-concept and students' learned helplessness in mathematics?

Table 1: Linear regression analysis of the relationship between self-concept and students' learned helplessness in mathematics

Model	N	R	R ²	Adjusted R ²
1	363	0.59	0.35	0.35

Note: N=Number of Respondents, R=Correlation coefficient, R²=Coefficient of determination

The result in Table 1 shows the relationship between self-concept and students' learned helplessness in mathematics in Zone A, Benue State. The result shows that the correlation coefficient (R) obtained between self-concept and students' learned helplessness in mathematics was 0.59. This shows that there is a moderate positive relationship between self-concept and students' learned helplessness in mathematics in Zone A, Benue State. Furthermore, the coefficient of determination associated with the correlation coefficient of 0.59 was 0.35. The coefficient of determination shows that 35% of the variation in students' learned helplessness in mathematics is attributed to their self-concept. This implies that 65% of the variation in students' learned helplessness can be attributed to other variables other than self-concept.

Hypothesis One: The relationship between self-concept and students' learned helplessness in mathematics is not statistically significant.

Table 2: ANOVA F-test of no significant relationship between self-concept and students' learned helplessness in mathematics

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	6557.935	1	6557.935	193.385	0.00
Residual	12241.971	361	33.911		
Total	18799.906	362			

$\alpha = 0.05$, Df= Degree of freedom

In order to test Hypothesis 1 (H_{01}), the F-test was used to test for the significance of regression. The result in Table 2 shows that an F-ratio of 193.385 with an exact probability value of 0.00 was obtained. This probability value of 0.00 was compared with 0.05 set as the level of significance for testing the hypothesis, and it was found to be significant because 0.00 is less than 0.05. The null hypothesis, which stated that the relationship between self-concept and students' learned helplessness in mathematics is not statistically significant, was therefore rejected. The inference drawn is that the relationship between self-concept and students' learned helplessness in mathematics is statistically significant. This implies that self-concept is a determinant of students' learned helplessness in mathematics.

Research Question Two: What is the relationship between personality traits and students' learned helplessness in mathematics?

Table 3: Linear regression analysis of the relationship between personality traits and students' learned helplessness in mathematics

Model	N	R	R ²	Adjusted R ²
1	363	0.70	0.49	0.49

Note: N=Number of Respondents, R=Correlation coefficient, R² =Coefficient of determination

The result in Table 3 shows the relationship between personality traits and students' learned helplessness in mathematics in Zone A, Benue State. The result shows that the correlation coefficient (R) obtained between personality traits and students' learned helplessness in mathematics was 0.70. This shows that there is a high positive relationship between personality traits and students' learned helplessness in mathematics in Zone A, Benue State. Furthermore, the coefficient of determination associated with the correlation coefficient of 0.70 was 0.49. The coefficient of determination shows that 49% of the variation in students' learned helplessness in mathematics is attributed to their personality traits. This implies that 51% of the variation in students' learned helplessness can be attributed to other variables other than personality traits.

Hypothesis Two: The relationship between personality traits and students' learned helplessness in mathematics is not statistically significant.

Table 4: ANOVA F-test of no significant relationship between personality traits and students' learned helplessness in mathematics

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	9150.086	1	9150.086	342.305	0.00
Residual	9649.821	361	26.731		
Total	18799.906	362			

$\alpha = 0.05$, Df= Degree of freedom

In order to test Hypothesis 2 (H_{02}), the F-test was used to test for the significance of regression. The result in Table 4 shows that an F-ratio of 342.305 with an exact probability value of 0.00 was obtained. This probability value of 0.00 was compared with 0.05 set as the level of significance for testing the hypothesis, and it was found to be significant because 0.00 is less than 0.05. The null hypothesis, which stated that the relationship between personality traits and students' learned helplessness in mathematics is not significant, was therefore rejected. The inference drawn is that the relationship between personality traits and students' learned helplessness in mathematics is statistically significant. This implies that personality traits are determinant of students' learned helplessness in mathematics.

Research Question Three: What is the relationship among self-concept, personality traits and students' learned helplessness in mathematics?

Table 5: Linear regression analysis of the relationship among self-concept, personality traits and students' learned helplessness in mathematics

Model	N	R	R ²	Adjusted R ²
1	363	0.71	0.50	0.50

Note: N=Number of Respondents, R=Correlation coefficient, R² =Coefficient of determination

The result in Table 5 shows the relationship among self-concept, personality traits and students' learned helplessness in mathematics. The result shows that the correlation coefficient (R) obtained among self-concept, personality traits and students' learned helplessness in mathematics was 0.71. This shows that there is a high positive relationship among self-concept, personality traits and students' learned helplessness in mathematics in Zone A, Benue State. Furthermore, the coefficient of determination associated with the correlation coefficient of 0.71 was 0.50. The coefficient of determination shows that 50% of the variation in students' learned helplessness in mathematics is attributed to the combination of self-concept and personality traits. This implies that the remaining 50% of the variation in students' learned helplessness can be attributed to other variables other than self-concept and personality traits.

Hypothesis Three: The relationship among self-concept, personality traits and students' learned helplessness in mathematics is not statistically significant.

Table 6: ANOVA F-test of no significant relationship among self-concept, personality traits and students' learned helplessness in mathematics

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	9442.833	2	4721.417	181.650	0.00
Residual	9357.073	360	25.992		
Total	18799.906	362			

$\alpha = 0.05$, Df= Degree of freedom

In order to test Hypothesis 3 (H_{03}), the F-test was used to test for the significance of regression. The result in Table 6 shows that an F-ratio of 181.650 with an exact probability value of 0.00 was obtained. This probability value of 0.00 was compared with 0.05 set as the level of significance for testing the hypothesis, and it was found to be significant because 0.00 is less than 0.05. The null hypothesis, which stated that the relationship among self-concept, personality traits and students' learned helplessness in mathematics is not statistically significant, was therefore rejected. The inference drawn is that the relationship among self-concept, personality traits and students' learned helplessness in mathematics is statistically significant. This implies that the joint combination of self-concept and personality traits is a determinant of students' learned helplessness in mathematics.

Discussion of the Findings

Relationship between Self-Concept and Students' Learned Helplessness in Mathematics

The result shows that the correlation coefficient between self-concept and students' learned helplessness in mathematics is moderate. This means that there is a moderately positive relationship between self-concept and students' learned helplessness in mathematics. The high coefficient of determination demonstrated a high percentage variation in students' learned helplessness in mathematics that can be attributed to self-concept. This shows that an increase in self-concept will lead to an increase in students' learned helplessness in mathematics. Further analysis of the relationship between self-concept and students' learned helplessness in mathematics revealed that the relationship between self-concept and students' learned helplessness in mathematics is statistically significant. The significance of the relationship that exists between self-concept and students' learned helplessness in mathematics may be feasible because success and failure in academics can shape students' beliefs about their intelligence, abilities, and academic competence. In mathematics, such a student may begin to doubt their intelligence in solving problems, thus leading to a feeling of helplessness in the subject. In other words, when students continue to possess a negative perception of themselves, there is a chance of becoming helpless.

The findings of this study are in line with and in disagreement with previous studies. The finding is in agreement with the study by Raufelder, Sahabandu, Martínez and Escobar (2015), who revealed that the teacher-student relationship mediated the association between individual school self-concept and school engagement, belonging to school, and helplessness in school. This showed that self-concept had a relationship

with helplessness in school. The study also aligns with the finding by Cho (2020), who revealed that learned helplessness showed negative correlations with educational expectations and academic self-concept. The relationship between educational expectation and academic self-concept and the mediating effect of learned helplessness were statistically significant. This showed that negative self-concept is associated with learned helplessness, as revealed by the present study. In contrast, the finding disagrees with the finding by Almasri (2019), who indicated that there were no statistically significant differences in the learner deficit due to the variable of negative self-concept. Hence, in line with the previous findings, the present finding provides the basis to conclude that there is a relationship between self-concept and students' learned helplessness in mathematics.

Relationship between Personality Traits and Students' Learned Helplessness in Mathematics

The result shows that the correlation coefficient between personality traits and students' learned helplessness in mathematics is high. This means that there is a high positive relationship between personality traits and students' learned helplessness in mathematics. The high coefficient of determination demonstrated a high percentage variation in students' learned helplessness in mathematics that can be attributed to personality traits. This shows that an increase in personality traits will lead to an increase in students' learned helplessness in mathematics. Further analysis of the relationship between personality traits and students' learned helplessness in mathematics revealed that the relationship between personality traits and students' learned helplessness in mathematics is statistically significant. The significance of the relationship that exists between personality traits and students' learned helplessness in mathematics may be plausible because personality traits may play a significant role in shaping behavior such as learned helplessness. Students' tendency to ruminate on failure in mathematics may exacerbate feelings of helplessness in the subject.

The finding aligns with the finding of Sorrenti, Filippello, Buzzai, Buttò and Costa (2018), who revealed, among other things, that the traits of conscientiousness, extraversion, openness to experience, and agreeableness correlate negatively with learned helplessness. However, the trait of emotional instability correlates positively with learned helplessness. In addition, the finding is in agreement with the finding by Alcock, Attridge, Kenny, and Inglis (2014) that personality accounted for significantly more variance in undergraduates' achievement and behavior than gender. By implication, personality traits are related to students learning and behaviors such as learning helplessness, as revealed by the present study. Hence, in line with the previous findings, the present finding provides the basis to conclude that there is a relationship between personality traits and students' learned helplessness in mathematics.

Relationship among Self-Concept, Personality Traits and Students' Learned Helplessness in Mathematics

The result shows that the correlation coefficient among self-concept, personality traits, and students' learned helplessness in mathematics is high. This means that there is a high positive relationship between self-concept, personality traits, and students'

learned helplessness in mathematics. The high coefficient of determination demonstrated a high percentage variation in students' learned helplessness in mathematics that can be attributed to the combination of students' self-concept and personality traits. This shows that the combination of self-concept and personality traits is a determinant of students' learned helplessness in mathematics. Further analysis of the relationship among self-concept, personality traits, and students' learned helplessness in mathematics revealed that the relationship among self-concept, personality traits, and students' learned helplessness in mathematics is statistically significant. The finding may be credible because both self-concept and personality traits are essential in shaping behavior. Hence, students' tendency to ruminate on failure in mathematics may act negatively on their self-concept and personality traits, thus exacerbating feelings of helplessness in the subject.

The study aligns with the finding by Cho (2020), who revealed that learned helplessness showed negative correlations with educational expectations and academic self-concept. The relationship between educational expectation and academic self-concept and the mediating effect of learned helplessness were statistically significant. This showed that negative self-concept is associated with learned helplessness, as revealed by the present study. The finding aligns with the finding of Sorrenti, Filippello, Buzzai, Buttò, and Costa (2018), who revealed, among other things, that the traits of conscientiousness, extraversion, openness to experience, and agreeableness correlate negatively with learned helplessness. However, the trait of emotional instability correlates positively with learned helplessness. From these findings, it can be deduced that both self-concept and personality traits can jointly correlate with students' learned helplessness in mathematics, as revealed by the present study. Hence, in line with the previous findings, the present finding provides the basis to conclude that there is a relationship among self-concept, personality traits, and students' learned helplessness in mathematics.

Conclusion

Drawing from the findings of the study, it was concluded that students' perception of their performance in mathematics is closely related to their chances of becoming helplessness in the subject. In a similar vein, the study concludes that personality traits are a determinant of learned helplessness in mathematics. The combination of self-concept and personality traits also correlate learned helplessness in mathematics. As a result, students are encouraged to correct negative perceptions about themselves and improve on their negative personalities as they lead to learned helplessness in mathematics.

Limitations

While the study provides valuable insights into the relationship among self-concept, personality traits and students' learned helplessness in mathematics, it is important to acknowledge some limitations. First, the study was conducted in Zone A of Benue State, which may not be indicative of all students with learned helplessness in Benue State, Nigeria. Second, the study employs a narrow range of mostly negative indicators of students' self-concept and personality traits. The findings may not accurately reflect the complexities of students' self-concept and personality traits. Finally, the researcher

had little control over the participants and their environment during data collection. Factors such as distractions, participant mood, or interpretation of questions may have affected the reliability of the data collected and in turn the findings of the study.

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