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Predictive Powers of Attribution Style and Study Behaviour on Secondary School Students' Interest in Chemistry in Abakaliki Education Zone of Ebonyi State, Nigeria

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ABSTRACT
The predictive powers of attribution style and study behaviour on senior Secondary two (SS2) students' interest in Chemistry in Abakaliki Education Zone of Ebonyi State was investigated. The design for the study was a predictive correlation research design. Three research questions and three null hypotheses that were tested at.05 alpha levels guided the study's. The study's population involved 3,242 SS2 students enrolled in 78 local public senior high schools. A sample of 348 SS2 students participated in the study, and they were chosen through a multi-stage sampling process. The Attribution Style Scale (ASS), the Study Behavior Scale (SBS), and the Students Chemistry Interest Scale (SCIS) were used to collect data. The Cronbach Alpha method showed that these three instruments were reliable at 0.85, 0.86, and 0.88, respectively. Four research assistants who were chemistry teachers assisted in the collection of data utilizing the direct delivery method. Both linear and multiple regression analysis were used to analyse the data gathered. The findings from the study showed that attribution style and study behaviour individually and jointly predicted SS2 students' interest in Chemistry. On the other hand, attribution style had less predictive power than study behaviour. Thus, it was suggested, based on the results, that school guidance counselors assist students in improving their study habits and attribution style in order to increase their interest in Chemistry classes. Additionally, the environment and atmosphere that will enhance good attribution style and good study behaviour should be encouraged by school administrators and government, for students to have interest in Chemistry.
Keywords: Attribution style, study behaviour, Secondary school and Interest in Chemistry.

INTRODUCTION

Science education is fundamentally important to getting children interested in technical occupations that are vital to modern civilizations. One of the main disciplines

offered in Nigerian senior secondary schools is chemistry. Because of its important significance in all science and technology undertakings, it might be referred to as the pride of science (Uwaleke, 2021). Despite chemistry's key place among science topics and its importance to the world, students in Nigeria's senior secondary schools don't seem to be very interested in the subject. The study by Okonji and Okonji (2014) supports this, demonstrating that students' disinterest in science—particularly chemistry—has been so severe that the proportion of students taking the subject in Nigeria's West African Senior School Certificate Examination (WASSCE) has been declining annually. If we are to keep up with the demanding and ever expanding body of scientific knowledge, this requires immediate attention.

Researchers' attention has already been drawn to instructional strategies. Lately, focus has shifted to student characteristics including study habits and attribution style, which may improve students' active engagement in the teaching and learning process (learning by doing). The current study was made necessary by evidence of a gap in the secondary school chemistry teaching and learning system that has to be looked into and fixed. This is so because these factors influence students' motivation to learn.

The aspect that resides within the students themselves has the biggest impact on their learning. Comprehending the typical reasons behind students' accomplishments in any given educational endeavor may also aid in molding their self-perception. Students typically explain their performance in every given academic activity, whether it be success or failure. The term "attribution" refers to the explanation provided for a task's perceived outcome. According to Weiner (2004), attribution style is thus described as the manner in which events' reasons are explained. Weiner defines it as an individual's perspective of what drives their conduct (that is, whether internal or external forces are responsible for the action, and whether environmental or personal factors play a role). Weiner went on to say that in order for students or individuals to alter the actions that have resulted in unfavorable consequences, these attributions are required. This pursuit of causes permeates every aspect of a person's life, including their interests, failures, and academic achievements. According to Ajayi and Owadera (2013), students' explanations for their achievements and shortcomings have a significant impact on their actions in the future.

As a result, how students view the reasons behind success or failure may have an impact on how much success, failure, or interest they have in the future. Students' future interests might be greatly impacted by the explanations they offer for their achievements and shortcomings. Research (Peter, 2014) has provided evidence that learners' interest in science courses is influenced by psychosocial factors such as attribution style, study behaviour, parents, peers, and teachers. However, further empirical research is required to determine the impact of some aspects, such as attribution style and study habit, on students' interest in chemistry.

One factor that frequently corresponds with students' interests is their study habits (Palani, 2016). Investing a specific, timed, and unbroken period of time to focus on learning is known as study behaviour. Without it, one cannot develop and eventually becomes self-restrictive. Children are sent to school by their parents to learn, and as a result, they are exposed to a variety of situations that shape their behaviour. Learning, then, is a modification of behaviour. Their ability to reason mentally, grow physically, manipulate objects, and acquire interests and values all show signs of this shift. Depending on the circumstances at home and at school, the

adjustment could be simple or challenging. Reading is the capacity to comprehend words found in a document and apply the knowledge gained for one's own personal development, according to study behaviour (Ghulam, 2017). Therefore, a study routine that include, but is not limited to, the frequency of study sessions, content revision, self-testing, rehearsal of taught material, and studying in a conducive atmosphere can be characterized as study behaviour (Crede and Kuneel, 2016). A student's study habits reveal his learning style, his goals, and his income potential. These could also be chosen with the aid of a person's lifetime study habits. It molds people's personalities, fosters the growth of sound critical thinking, and generates original thought. Accordingly, one of the most important learning variables for students that has a significant impact on their interest is their study habits (Mahraj and Qamar 2016).

According to Opara (2015), interest is the dynamics of absorption, and interest is the foundation of all learning processes. Opara added that a great deal of recent research has demonstrated the significant role that interest plays in any subject and how it helps students succeed in it. Being interested in something is committing to it or paying attention to it. Thus, interest in chemistry refers to a readiness to respond to chemistry instruction in a way that expresses gratitude and love. This is due to the fact that interest plays a critical role in the learning process. Because these factors, together with attribution style and study habits, can increase students' interest in Chemistry, it is imperative that educators understand them. According to the WAEC Chief Examiners Report (2020), taking into account students' factors such as study habit and attribution style during instruction could help increase their interest in chemistry. According to Cassady (2017), not enough focus has been placed on figuring out how study habits affect Nigerians' interest in chemistry and science. According to Huberty (2018) and Asma-Tuz, Manzoor, and Muhammad (2010), non-cognitive characteristics like study habits and attribution style are frequently disregarded while analyzing the variables influencing Nigerian secondary school students' interest in chemistry. This indicates that little research has been done on the effects of attribution style and study habits on secondary school students' interests, particularly among Nigerian chemistry educators.

Therefore, the current study would contribute to the investigation of whether attribution style and study habits affect students' interest in chemistry. There are no many researches that show how attribution style and study habits affect students' interest in chemistry and how much of a prediction they make. To the best of the researchers' knowledge, no study has looked at how the two variables' individual and combined predictions affect the interest of chemistry students. On the strength of the forgoing, it is therefore imperative to determine whether attribution style and study behaviour predict student's interest in Chemistry in Abakaliki Education zone of Ebonyi State, Nigeria.

Purpose of the Study

The purpose of this study was to determine the predictive powers of attribution style and study behaviour on secondary school students' interest in Chemistry in Abakaliki Education zone of Ebonyi State, Nigeria. Specifically, the study determined how:

1. Attribution styles (success and failure) predict secondary school students' interest in Chemistry.

2. Study behaviour predicts secondary school students' interest in Chemistry.

3. Attribution style and Study behaviour jointly predict secondary school students' interest in Chemistry.

Research Questions

The following research questions guided the study.

1. How do attribution styles (success and failure) predict secondary school students' interest in Chemistry?

2. How does study behaviour predict interest of secondary school students in Chemistry?

3 How does attribution style and study behaviour jointly predict interest of secondary school students' in Chemistry?

Hypotheses

The following null hypotheses tested at .05 level of significance.

1. Attribution styles do not significantly predict secondary school students' interest in Chemistry in Abakaliki Education Zone.

2. Study behaviour does not significantly predict secondary school students' interest in Chemistry in Abakaliki Education Zone

3. Attribution style and study behaviour jointly do not significantly predict secondary school students' interest in Chemistry in Abakaliki Education Zone.

Methodology

In this study, the correlational survey design was used. The goal of a correlational survey design study is to determine the nature of the link as well as its direction and amplitude between two or more variables (Nworgu, 2015). This research design was used for the study because the investigators wanted to know how attribution style and study habits both separately and together predicted the interest in Chemistry among secondary school students. They did this by gathering and analyzing data. 3,242 senior secondary two (SS2) students from the 78 public senior secondary schools in the Abakaliki Education Zone of Ebonyi State, Nigeria, made up the study's population. A multi-stage sampling technique was used to choose a sample size of 348 individuals from this group. The sampled students ranged in age from 14 to 19 years old, with an average age of 16.5 years.

The Student Chemistry Interest Scale (SCIS), Study Behavior Scale (SBS), and Attribution Style Scale (ASS) were the instruments utilized to collect the data. A few of the instruments were altered by the researchers. The attribution style survey by Akanazu (2021) served as the model for the ASS. The attribution styles of the pupils were assessed using this scale. 22 items in four response formats—Usually (U) = 4 points, Sometimes (S) = 3 points, Rarely (R) = 2 points, and Never (N) = 1 point—were included in the modified version that was utilized in this study. The researchers created the 25-item Student Study Behavior Scale (SBS) after consulting existing literature. The scale is split into two sections. The first section includes personal information about the respondents, such as their age, sex, and name of school. The items in the second section dealt with things related to their study habits. On a ten-point scale, the options that are least (1 point) and greatest (10 points) correspondingly are "least like me" and "most like me."

The Uwaleke (2021) student Chemistry Interest scale served as the model for the SCIS, a student interest scale. To fit the needs of the study, the researchers made modifications to the device. A 30-item, 4-point response scale was used as the modified

interest scale. This scale was created to assist students in selecting the kinds of chemistry-related activities that pique their interest and in which they would like to take part. They were also able to identify the products that really interested them and that they preferred over others. The objective was for the students to identify how much they agreed or disagreed with a series of statements regarding chemistry. Strongly liking me (SL) = 4 points; liking me (L) = 3 points; unlike me (U) = 2 points; and strongly unlike me (SU) = 1 point was the answer scale.

The instruments were validated by specialists in pertinent domains. Cronbach Alpha was used to determine the instruments' reliability index, and the results showed that the internal consistency reliability coefficients for ASS, SBS, and SCIS were, respectively,0.85,0.86, and 0.88. The Cronbach Alpha reliability coefficient has to be used in order to assess the instrument's reliability because its items were polychotomously scored. Before they could fill the instruments, the SS2 students were told to put their names on them. Under close supervision, class teachers acting as research assistants administered and collected the instruments from the children once they had finished them. The collected data were then subjected to analysis.

Both linear and multiple regression analysis were used to examine the data that had been gathered. The prediction of each variable and how it predicts students' interest in Chemistry was determined using multiple regression analysis. Nworgu (2015) provided 3-way grades for evaluating the relationship coefficient, and these are the criteria for interpreting the correlation coefficient. The following is the interpretation: A relationship is considered high if it is 0.80 or above, moderate if it is 0.30–0.79, and low if it is 0.30 or lower. The decision was that where P-value is less than or equal to 0.05 ($p \leq 0.05$), the null hypotheses was rejected but if otherwise, the null hypotheses not rejected.

Results

Table 1: Model summary of attribution style (AS) as predictor of students' interest in Chemistry

Variable	R	R^2	Adjusted R^2	B	Beta
AS					
	.540	.292	.290	21.636	.540
SCIS					

Table 1 displays a correlation coefficient (r) of 0.54 and an associated coefficient of determination (r2) of 0.29. According to Table 1, the coefficient of determination of 0.29, attribution style accounts for 29% of students' interest in chemistry. The regression equation for attribution style derived from Table 1 is as follows:

SCIS() = 21.63 + 0.54ATTRISTYLE.

Table 2: Model summary of study behaviour (SB) as predictor of students' interest in Chemistry

Variable	R	R^2	Adjusted R^2	B	Beta
SB					
	.571	.323	.324	26.61	.571
SCIS					

With a corresponding coefficient of determination of r2 = 0.32, Table 2 displays a correlation value of r = 0.57. The findings show that 32% of the variation in students' interest in Chemistry at SCIS may be explained by their study habits. Stated differently, 32% of the variation in students' interest in Chemistry SCIS might be explained by their study habits. The

regression equation for Students study behaviour derived from Table 2 is as follows:

SCIS() = 26.61 + 0.57 STUDBEHAVIOUR.

Table 3: Model summary of regression analysis of joint prediction of students' interest in Chemistry by attribution style (AS) and study behaviour (SB)

Variable	R	R^2	Adjusted R^2	B	Beta
AS, SB	.694	.481	.477	15.116	.275
SCIS					

The correlation coefficient (r) and coefficient of determination (r2) are 0.69 and 0.48, respectively, according to the result in Table 3. The combined attribution style and study behavior account for 48% of students' interest in Chemistry SCIS, according to the coefficient of determination of 0.48 as reported in the table above. This suggests that characteristics other than attribution style and study behavior account for 52% of the diversity in students' interest in Chemistry. Based on Table 3, the regression equation for the combined prediction of attribution style and study behavior is as follows: SCIS() = 15.12 + 0.28ATTRISTYLESSTUBEHAVIOUR.

Table 4: Summary Table for Regression analysis of Attribution Style as Predictor of Students' Interest in Chemistry

Model	Sum of squares	Df	Mean Square	F	Sig
Regression	21483.219	1	21483.22	142.39	.000
Residual	52202.195	346	150.87		
Total	73685.414	347			

According to Table 4, the obtained F-value was F(1,346) = 142.39, and 0.000 was the corresponding probability value. The null hypothesis was rejected since the estimated F-value (142.39) and the obtained probability value (0.000) were both below than the 0.05 level of significance. It suggests that secondary school students' interest in chemistry is predicted by attribution style.

Table 5: Regression Table for analysis of Study Behaviour as Predictor of Students' Interest in Chemistry

Model	Sum of squares	Df	Mean Square	F	Sig
Regression	25530.016	1	25530.016	166.986	0.000
Residual	52898.973	346	152.887		
Total	78428.989	347			

Table 5 displays the outcome, which indicates that F(1,346) = 166.986, P = 0.00. Since 0.00 was less than 0.05, it was determined to be a significant probability value when compared to 0.05. As a result, the null hypothesis was rejected, and it was concluded that study habits strongly predict secondary school pupils' interest in chemistry.

Table 6: Summary Table for Regression analysis of joint contribution of attribution style and study behaviour as predictors of Students interest in Chemistry

Model	Sum of squares	Df	Mean Square	F	Sig
Regression	52684.348	3	17561.449	106.35	.000
Residual	56802.718	344	165.124		
Total	109487.266	347			

Table 6 displays the obtained F-value, which was F(3,344) = 106.35, along with the associated probability value, which is 0.0005. After being compared to 0.05, the probability value of 0.0005 was determined to be significant. As a result, the null hypothesis was rejected, and it was concluded that attribution style plus study habits together predict secondary school interest in Chemistry.

Discussion

The results of this study showed that 0.29% of the diversity in students' interest in chemistry could be explained by their attribution style. The results additionally demonstrated that students' interest in Chemistry is significantly predicted by their attribution style. that the majority of students blamed themselves for both their achievements and shortcomings. This is the case because attribution provides us with a means of comprehending human behaviour by focusing on people's perceptions of events or circumstances and the factors that led to them. An attribution, in particular, is a statement of how someone understands the connection between a cause and an effect. According to the majority of academics who have examined interest, attribution style has proven to be one of the most effective indicators of interest. Okonkwo (2015) looked into the relationship between attribution style and students' interest in and performance in chemistry. This study completely supports Okonkwo's findings on achievement, however it does not support his findings regarding interest. The findings suggest that children have more faith in outside factors—such as teachers, luck, miraculous centers, and others—than in their own aptitude or hard work to succeed academically. However, as internal attribution may boost students' effort and interest, it might be good to encourage them to attribute their success or failure to internal rather than external circumstances.

The results of Sukariyah and Assaad (2015) in the relevant field likewise supported the findings. The impact of attribution retraining on the academic performance and mathematical interest of high school students was investigated in this study. The findings showed that attribution approach had a beneficial impact on students' academic performance and interest in mathematics. Students' interest would rise in tandem with a rise in positive attribution styles. This implies that understanding students' attribution styles can help anticipate their true areas of interest. Students' interests in Chemistry will therefore increase if they have a better awareness of their attribution style.

The results showed that study habits are a major predictor of secondary school students' interest in chemistry because they explain students' interest in the subject. The research conducted by Rabia, Mubarak, Tallat, and Nasior (2017) formed the basis of this paper, which demonstrated a strong correlation

between study behaviour and interest. Good study habits also increase students' enthusiasm in their studies, help them succeed in class, and help them reach their academic objectives. This result, however, contradicts that of Ebele and Olofu (2017), who found that study habits did not significantly predict students' interest in or success in chemistry.

The rationale behind these results may be found in the way that study behaviour fosters the growth of positive study habits in students, which in turn increases their engagement and preserves their relationships with peers and professors. That is, if they encounter any difficulties with their learning of Chemistry, they may always draw on the support of friends and professors to help pique their interest.

The results of this study showed that there is a substantial correlation between students' interest in chemistry and their study habits and their attribution style for Chemistry. Students' attitudes about learning, particularly in the classroom and other learning environments, are reflected in their study behaviour. Thus, it's feasible that combining the two ideas improves the ability to gauge students' attention.

The study's conclusions provide an overview of the multiple regression analysis that was performed when the predictor variables were all pooled. The current finding is consistent with the findings of other earlier studies conducted by Katelyn and Philip (2016), who found that interest in Chemistry was predicted by a combination of study behaviour and attribution style. This conclusion is consistent with Sutantoputri's (2016) earlier findings, which showed that students' interest in Chemistry is significantly predicted by the sum of their marks on mock exams and transition exams.

Conclusion

Based on the findings presented and discussed in this study, it was concluded that Students interest in Chemistry was significantly influenced by any of the attribution style and study behaviour or by the combination of the attribution style and study behaviour.

Recommendations

From the findings of this study, it was recommended that the environment and atmosphere that will enhance good attribution style and good study behaviour should be encouraged by school administrators and government, for students to have interest in Chemistry.

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