



Path analysis of personal variables and cheating tendencies in examinations Among Secondary School students in Anambra state

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Abstract

The study focused on the path analysis of students' personal variables influencing their tendencies to cheat in examinations in Anambra State, Nigeria. Four research questions guided the study and two hypotheses were tested at 0.05 level of significance. The design adopted for the study was correlation survey with a path analytical background. A sample of 650 students drawn from the population size of 5,005 using simple random sampling technique was involved in the study. The instruments for data collection were Test Anxiety, Academic Self-regulated Learning, Academic Self-confidence, Academic Self-resilience and Examination Cheating Tendency Scales. The instruments were validated by three experts. The reliability of the instruments was established using Cronbach Alpha to obtain 0.91, 0.88, 0.76, 0.68 and 0.83 respectively. The data obtained were analyzed with path analysis using Mplus software. The findings of the study revealed among others that the most meaningful causal model involving students' personal variables (test anxiety, academic self-regulated learning, academic self-confidence, and academic self-resilience) and examination cheating tendencies in Anambra State consisted 9 path ways which were meaningful and significant. It was recommended among others that secondary schools should organize orientation exercise for fresh students at the point of admission so as to teach them about the need for developing academic resilience, academic self-confidence and academic self-regulated learning.

Keywords: Path Analysis, Students' Personal Variables, Cheating Tendencies, and Examinations

Introduction

Since the introduction of western education in Nigeria, examination has been the major instrument used for the evaluation of learners' achievement in schools. Examination has many functions which includes; for promotion, placement, certification, to achieve the purpose for which it is designed, and to be a reliable consistent means of measurement. An examination or test is an educational assessment intended to measure a test-taker's knowledge, skill, aptitude, physical fitness, or other traits. Examination is a means of assessing the quantity and quality of performance that a student has accumulated at the end of a teaching and learning process. Examinations are aimed at measuring characteristics such as achievement, performance, intelligence, ability, and aptitude, among others (Bassey and Iruoje, 2016) ^[5]. Furthermore, Collins (2023) that examination is a formal test that one takes to show one's knowledge or ability in a particular subject, or to obtain a qualification. Onyeama-Obioma (2023) ^[20] defined examination as the formal assessment of students in order to determine their extent of mastery of the subject content.

The application of tests and examinations help teachers adjust or change their instructional strategies in the process of teaching and learning in the school system (Bassey and Iruoje, 2016) ^[5]. This implies that, when a student's performance in examination is encouraging, it indicates that the teacher's methods of teaching maybe appropriate, efficient and effective. The benefits of examination to students or test takers include among others; promotion of spirit of competition, job placement and remuneration, memory enhancement, promotion of self-confidence, self-concept, and improvement academic performance.

Examinations can be categorized into formative, summative, internal or external (public) forms.

Formative assessment is a strategy designed to identify learners' learning difficulties with a view to providing remediation measures to enhance the performance of majority of students. Assessment is said to be formative when assessment-elicited evidence of students' learning weaknesses are gathered and instruction modified in response to the feedback obtained through the process (Esomonu and Ikeanumba, 2021) ^[12]. The researchers continued that the feedback given as part of formative assessment helps learners become aware of any gap that exists between their desired goals and their current knowledge, understanding or skills and guide them through actions necessary to obtain the goal. Formative assessment can take the form of daily work, quizzes, presentation and participation in class), projects/term papers and practical work (example laboratory work, fieldwork, clinical procedures, drawing practice). On the other hand, summative assessment is an assessment administered at the end of an instructional unit in a course. These assessments are intended to evaluate student learning by comparing performance to a standard or benchmark. They are often high-stakes, meaning they have a high point value. Examples of summative assessments include midterm examinations, a final examination or a final project. Summative assessments are given to students at the end of an instructional period (Esomonu and Ikeanumba, 2021) ^[12]. Internal examination is the type of examination that is conducted by each private institution for its students within the school context. Examples of such examinations are interviews, continuous assessments, post-UTME, as well as terminal, cycle, semester and annual or promotional examination. They are referred to as school-based

assessments. These examinations are always conducted and controlled by each school. Such examinations could be conducted for the purposes of promotion, guidance, feedback, decision making, evaluation and/or monitoring (Ike and Agu, 2021). External examinations, on the other hand, could also be referred to as public examinations. Ike and Agu (2021) described public examination as the process and procedure of coordinating an examination for the large populace in order to sample or measure their behaviour in comparison with a domain of performance with others in a group. The tests in this type of examination, are developed, administered, scored and controlled externally.

Success in examination serves as a good motivator for students, teachers, school administrators, employers of labour and all stakeholders in education. On the other hand, failure to perform successfully in examination demoralizes all stakeholders in education, especially students. It is the crave to succeed and avoid frustration and/or embarrassment associated with failure that makes students engage in cheating, which has threatened the very foundation of the educational system (Bassey and Iruoje, 2016) ^[5]. Whenever irregularity or examination misconduct occurs, then the validity and resulting outcome of the performance is questionable. The most important threat to the credibility of the results of educational assessment in Nigeria and Africa at large is examination misconduct.

Examination misconducts is commonly defined as a deliberate wrong doing contrary to official examination rules designed to place a candidate at an unfair advantage or disadvantage (Omonijo, 2010). Examination misconduct as viewed by Ampofo (2020) ^[2] is a deviant, improper practice or cheating before, during or after any examination by examinees or others with a view to obtaining good results by fraudulent means. Northern Illinois University (2022) ^[16] opined that examination misconduct involves unauthorized use of information, materials, devices, sources or practices in completing academic activities. For example, copying during an exam that should be completed individually is an unauthorized practice, and, therefore, is considered cheating. NIU continued that examination misconduct is an academic dishonesty that involves committing or contributing to dishonest acts by those engaged in teaching, learning, research, and related academic activities, and it applies not just to students, but to everyone in the academic environment. Bassey and Iruoje (2016) ^[5] defined examination misconduct as the act of using fraudulent means to project oneself as possessing knowledge perpetrated by violating the rules.

The negative effect of examination misconduct is so disastrous that when students resort to cheating, the true assessment of knowledge and skills becomes compromised, leading to a decline in the overall quality of education. They will as well face difficulties in the future, as employers and higher education institutions might question the authenticity of their qualifications. To this end, Wangare and Sinwa (2023) ^[22], noted that the negative effects of examination misconduct, among others, includes undermining the values of honesty, integrity, and fair competition in the educational system, posing unreliable data for psychometricians, leading to a lack of trust, disrespect for academic achievements, and lack of academic excellence, and so on. The growing menace of examination misconduct in Nigerian schools is becoming a worrisome and disturbing phenomenon on a daily basis.

In Nigeria, cases of cheating before, during and after examinations of different examination bodies and levels of education abound (Bassey and Iruoje, 2016) ^[5]. In 2006, 324 secondary schools in Nigeria were blacklisted and banned by the Federal Government from registering or serving as examination venues from 2007-2010 for Senior Secondary Certificate Examination (SSCE) and University Matriculation Examination (UME), due to their involvement in different forms of examination misconducts (Federal Ministry of education, 2007). Examination misconduct is experienced both in internal and external examinations across states in Nigeria as well as various exam bodies such as WAEC, NECO and JAMB. This ugly situation was reported by Nigerian Tribune (2017) for West African Examination Council (WAEC) and National Examination Council for 2014-2016 academic years. In Anambra State, the case of the menace is the same as it was reported by Anierobi, Nwiko, Okeke, & Unachukwu (2018) ^[3] that Anambra state ranked 3rd state in the south-east zone and 13th state in Nigeria with the highest rate of examination misconduct. The ongoing discourse has shown that examination misconduct has eaten so deep in our public secondary schools. Several researchers were of the view that students' lack of interest, negative attitude towards the subject, method of teaching, and tendency to cheat in public examination among students and others may be the possible causes examination misconduct among students (Onete, 2020) ^[19].

Tendency to cheat in examination as defined by Onote (2020) could be defined as the inclination to indulge in behaviour or action that interferes with or hinders the pursuit of knowledge and results in misrepresentation of academic materials, taking credit or recognition for academic work (including papers, quizzes, examination, and so on) that is not one's own, or fabricating data, records or tampering with academic documents. Tendency to cheat in examination is the willingness to carry out illegal act or behaviour by a candidate or a group of candidates before, during or after examination as to have unfair advantage over others (Offor in Bassey and Iruoje, 2016) ^[5].

Tendency to cheat in examinations does not just occur; it could be premeditated by different variables. The list of such variables is endless. However, many studies have been carried out on the relationship between students' personal variables like sex, age, self-efficacy, self-concept, self-esteem, achievement motivation, academic self-confidence, attribution to hard work, self regulation, academic self-regulated learning, achievement goal orientation, personality type, test anxiety, anomie, academic self-resilience, neutralization techniques of the examinees and their cheating tendencies in examination (Bassey and Iruoje 2016 ^[5]; Egbai, Ita & Nwogwugwu, 2020 ^[10]; Onete, 2020) ^[19]. Thus, the present study proposed a hypothetical model on how the 4 variables; test anxiety, academic self-regulated learning, academic self-confidence and academic resilience predicted tendency to cheat in examinations among students.

Test anxiety is a psychological concern that could motivate cheating in academic engagements, including examinations, presentations, and debates (Nnaji, 2022) ^[15]. Research suggests that examination anxiety increases at the thought of an examination (Lotz and Sparfeld, 2017) ^[14], thus divulging most students to sharp practices to cope with the outcomes. Test anxiety as defined by Doherty and Wenderoth (2017)

[8], is a psychological condition in which people experience extreme distress and anxiety in examination situations. While many people experience some degree of stress and anxiety before and during exams, test anxiety can actually impair learning and hurt examination performance. Several researchers were of the view that test anxiety can be reduced or checked by factors like academic self-regulated learning among others (Amate-Romera and Fuente, 2021 ^[1]; Garzón-Umerenkova, Fuente, Amate, Paoloni, Fadda, & Pérez 2018; Pichardo, Cano, Garzón-Umerenkova, de la Fuente, Peralta-Sánchez, & Amate-Romera, 2018). Consequently, test anxiety could be reduced by developing good academic self-regulated learning habit by the students.

Self-regulated learning (SRL) refers to learning that is guided by meta-cognition (thinking about one's thinking), strategic action (planning, monitoring, and evaluating personal progress against a standard), and motivation to learn (Burman, Green & Shanker, 2015) ^[6]. A self-regulated learner monitors, directs, and regulates actions toward goals of information acquisition, expanding expertise, and self-improvement. Dweck and Leggett (2021) ^[9] explained that, self-regulated learners are cognizant of their academic strengths and weaknesses, and they have a repertoire of strategies they appropriately apply to tackle the day-to-day challenges of academic tasks. Students engaging in effective self-regulated learning can reduce their tendency to cheat in examinations and foster a sense of academic self-confidence in their abilities to excel in examinations.

Academic self-confidence refers to the standard of ideas or the assurance that students have in their abilities to achieve academically. Koaraju and Nadler as cited in Anyanwu and Emesi (2021) ^[4] described academic self-confidence as students' beliefs that they can perform well in school tasks. This indicates that academic self-confidence is one of the most influential indicator, motivator, facilitator, and regulator of behaviour in students' everyday academic life. Students with a high academic self-confidence have realistic view of themselves and with capability which make them persistence in their endeavours. Students' academic self-confidence influences their choice and commitment to academic task, and their tendency to cheat in examination. The commitments to academic tasks spur students to adopt certain academic self-resilience to ensure success at such tasks.

Academic resilience refers to students' capacity to effectively cope with academic setbacks, challenges, and pressures such as grades, exam stress, and the various difficulties encountered in their academic or school life. Iviemu (2021) defined academic self-resilience as a student's capacity to deal with academic barriers, problems, difficulty, and stress in an academic or educational setting.

According to Abubakar, Ain, Mohd, Hashim, Fatin, and Kamarudin (2021), academic resilience is defined as a student's capacity to enhance academic performance following an unpleasant occurrence such as failing an individual assessment. As a result, only students who are academically resilient are better equipped to cope with academic stress during teaching and learning.

Studies have been conducted in most of the related factors influencing students' tendency to cheat in public examination using different analysis. (Onete, 2020 ^[19]; Eremie and Ikpa, 2020 ^[11]; Bassey and Iruoje, 2016) ^[5]. To the best knowledge of the researcher, no study has been carried out on how these selected students' personal

variables: academic resilience, test anxiety, self-regulated learning and self-confidence, directly and indirectly interact to influence students' tendency to cheat in examinations through a causal path. It is against this background that the researcher deemed it fit to hypothesize causal paths of secondary school students' personal variables and their cheating tendencies in public examination in Awka Education Zone, Anambra State.

Statement of the Problem

There has been a significant increase in examination misconduct tendencies among students of public secondary schools despite the studies carried out previously. Cheating in examination is a vice that has bedeviled public secondary schools. The act is likely to be caused by students whose intention is to have unfair advantage over the rest of the students due to competitiveness in the high stake examinations among others.

Despite the negative effect of cheating in examinations by students, and efforts made by school management and government appear to be creating no impact, in terms of eliminating these cheatings to cheat in examinations among student, this behaviour still persist. The causes therefore need to be unearthed and solution be proffered to stamp out this problem among students given that cheating in examination may lead to production of half baked graduates from the secondary schools and higher educational institutions, unqualified professionals in job markets and bad reputation to the learning institutions where the act is practiced.

The present study was necessitated by the facts that not only do the student personal variables influence each other but they may also interact through different pathways to influence students' tendency to cheat in examinations. To validate the nature of the interaction, one has to build a path model of the variables and trim the model for only those variables that meaningfully and significantly influence students' tendency to cheat in public examinations through different causal paths. Some studies reported that students' personal variables which include test anxiety, academic self-regulated learning, academic self-confidence and academic self-resilience, among others have relationships with cheating tendencies in examinations.

Although studies have equally being carried out on the influence of students' personal variables on students' tendency to cheat in examinations, most of these studies were done based on ANOVA, simple correlation or multiple linear regression. These approaches are not capable of determining both direct and indirect effects of the independent variables on the students' tendency to cheat in examinations. Lacking in these studies are direct and indirect effects of the aforementioned students personal variables on cheating tendencies in examinations which could be estimated using path analysis. Hence, the current study explored path analysis of personal variables and cheating tendencies in examinations among secondary school students in Awka, Education Zone, Anambra State.

Research Questions

The following research questions guided the study.

1. What are the most meaningful causal model involving students' personal variables (test anxiety, academic self-regulated learning, academic self confidence, and

academic self-resilience) and examination cheating tendencies in Anambra State?

2. What are the direct and indirect effects of the students' personal variables on examination cheating tendencies?

Methods

The design adopted for the study was correlation survey with a path analytical background. A sample of 650 students drawn from the population size of 5,005 using simple random sampling technique was involved in the study. The instruments for data collection were Test Anxiety Inventory, Academic Self-regulated Learning, Academic Self-confidence, Academic Self-resilience and Examination

Cheating Tendency Scales. The instruments were validated by three experts. The reliability of the instruments was established using Cronbach Alpha to obtain 0.91, 0.88, 0.76, 0.68 and 0.83 respectively. The data obtained were analyzed with path analysis using Mplus software.

Results

Research Question 1: What is the most meaningful causal model involving students' personal variables (test anxiety, academic self-regulated learning, academic self-confidence, and academic self-resilience) and examination cheating tendencies in Anambra State?

Table 1: Paths Ways in the Hypothesized Causal Model for the Study

Variables that has effects on Exam Cheating tendencies	Path co-efficient	Pvalue	Remark
Test anxiety	.441	0.002	Meaningful
Academic self-resilience	-.512	0.001	Meaningful
Academic self- confidence	-.272	0.012	Meaningful
Academic self-regulated learning	-.137	0.000	Meaningful
Variables that has effect on test anxiety			
Academic self-resilience	-.317	0.000	Meaningful
Academic self- confidence	-.606	0.002	Meaningful
academic self-regulated learning	-.002	0.708	Not Meaningful
Variable that has effects on Academic self-resilience			
Academic self- confidence	.380	0.000	Meaningful
Academic self-regulated learning	.270	0.000	Meaningful
Variable that has effects on Academic self- confidence			
Academic self-regulated learning	.419	0.000	Meaningful

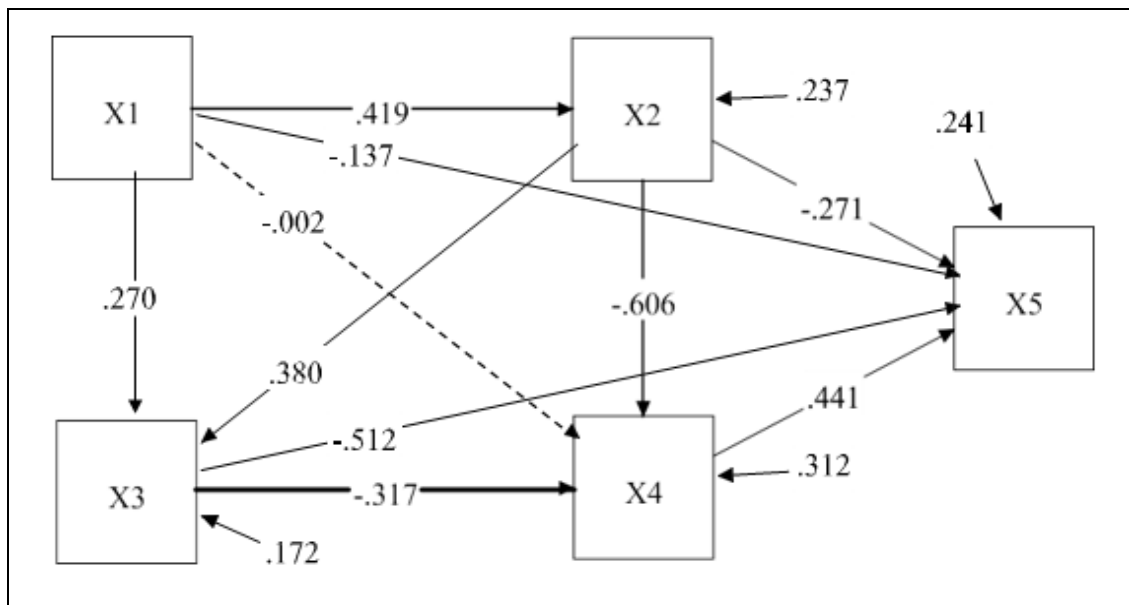


Fig 1: Initial hypothesized path model for the study

Note X1= Academic self-regulated learning, X2= Academic self- confidence, X3= Academic self-resilience, X4=Test anxiety, X5=Examination Tendencies to cheat

Examination of the initial hypothesized causal path model shows 9 path ways were significant and meaningful while 1 path way is not significant and meaningful. The 9 path ways that were significant and meaningful have Pvalue ≤ 0.05 while the 1 path way that is not significant and meaningful has Pvalue > 0.05. The 9 paths that were significant and meaningful include: Four path ways from test anxiety, academic self-confidence, academic self-regulated learning,

and academic self-resilience to examination cheating tendencies. Two paths ways from academic self-confidence and academic self-regulated learning to test anxiety; two paths ways from academic self-regulated learning and academic self-confidence to academic resilience. One path way from academic self –regulated learning to academic self-confidence. The path way that is not significant and meaningful is from academic self-regulated learning to test anxiety. See Table 2. This path way was deleted from the model and the model was rerun.

Table 2: Paths Ways in the Modified/Final Path Causal Model for the Study

Variables that has effects on Exam Cheating Tendencies	Path Co-efficient	Pvalue	Remark
Test anxiety	.541	0.000	Meaningful
Academic self-resilience	-.412	0.002	Meaningful
Academic self- confidence	-.372	0.003	Meaningful
Academic self-regulated learning	-.273	0.000	Meaningful
Variables that has effect on test anxiety			
Academic self-resilience	-.417	0.000	Meaningful
Academic self- confidence	-.506	0.002	Meaningful
Variable that has effects on Academic self-resilience			
Academic self- confidence	.280	0.000	Meaningful
Academic self-regulated learning	.370	0.002	Meaningful
Variable that has effects on Academic self-confidence			
Academic self-regulated learning	.319	0.0012	Meaningful

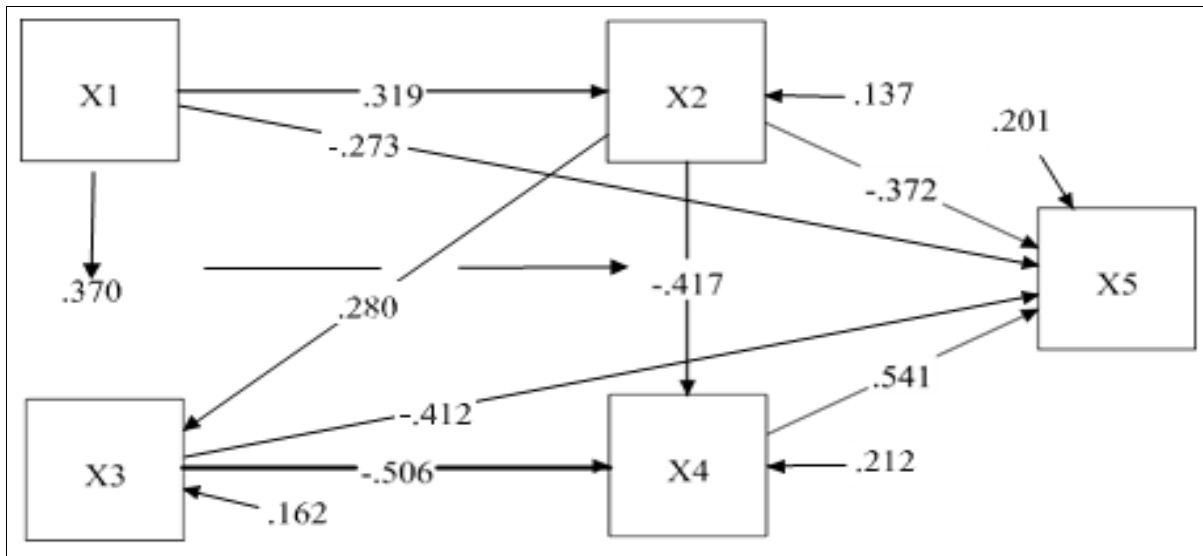


Fig 1: Most Meaningful Causal Path Model for the Study

Note X1= Academic self-regulated learning, X2= Academic self- confidence, X3= Academic self-resilience, X4=Test anxiety, X5=Examination tendencies to cheat

The various paths ways in the rerun model were also examined. The final model shows that all the paths ways were significant and meaningful. The model is viable in explaining the variations of the students’ personal variables on their cheating tendencies in examinations. The 9 path ways that were significant and meaningful have Pvalue ≤ 0.05. Therefore, the most meaningful causal model involving students’ personal variables (test anxiety, academic self-regulated learning, academic self-confidence,

and academic self-resilience) and examination cheating tendencies in Anambra State consisted 9 path ways. This means that as test anxiety increased, tendency to cheat in examination also increased. It also showed that an increase in academic self-resilience, academic self-confidence and academic self-regulated learning led to a decrease in tendency to cheat by students in examinations, vice versa. See figure 4 and table 4 for details.

Research Question 2: What are the direct and indirect effects of the students’ personal variables on examination cheating tendencies?

Table 3: Direct and Indirect Effects of the Independent Variables on Students’ Examination Cheating Tendencies

Variables	Path Co-efficient	Pvalue
Direct effect on Examination cheating Tendencies		
Test anxiety	.541	.000
Academic self-resilience	-.412	.006
Academic self- confidence	-.372	.009
Academic self-regulated learning	-.237	.0014
Indirect effect on Examination Cheating Tendencies		
Academic self-resilience	-.152	.004
Academic self- confidence	-.119	.001
Academic self-regulated learning	-0.444	.0011

Note: X1= Academic self-regulated learning, X2= Academic self-confidence, X3= Academic self-resilience, X4= Test anxiety, X5=Examination Tendencies to Cheat

Table 3 shows that the model exerts direct effect on tendency to cheat in examinations through four pathways and indirect effects through three pathways. The four direct

pathways are the negative direct effect on tendency to cheat in examinations by academic self-resilience, academic self-confidence and academic self-regulated learning as well as positive direct effect of test anxiety on tendency to cheat in examination. A standardized Pvalue estimate of each of the variables is ($Pvalue \leq .05$). The three negative indirect pathways are the indirect effects on tendency to cheat in examinations by academic self-resilience, academic self-confidence and academic self-regulated learning. A Pvalue estimate of each of the variables is ($Pvalue \leq .05$).

Discussions

Most meaningful causal model involving students' personal variables and examination cheating tendencies

Findings from research question one shows that all the paths ways were significant and meaningful. The model is viable in explaining the variations of the students' personal variables on their cheating tendencies in examinations. The 9 path ways that were significant and meaningful have $Pvalue \leq 0.05$. Therefore, the most meaningful causal model involving students' personal variables (test anxiety, academic self-regulated learning, academic self-confidence, and academic self-resilience) and examination cheating tendencies in Anambra State consisted 9 path ways. This means that as test anxiety increased, tendency to cheat in examination also increased. It also showed that an increase in academic self-resilience, academic self-confidence and academic self-regulated learning led to a decrease in tendency to cheat by students in examinations, vice versa. The above finding is in line with Omar and Petek (2011) [18] reported that the most meaningful path models are the one with all path significant with good theoretical foundations. Similarly, Nwanze and Okoli (2020) [17] also reported that path ways and path coefficients are considered meaningful if path coefficient is greater than .10 with Pvalue less than .05.

Direct and indirect effects of the students' personal variables on examination cheating tendencies

Findings from research question 2 shows that the model exerts negative direct effect on tendency to cheat in examinations through four pathways and negative indirect effects through three pathways. The four direct pathways are the direct effects on tendency to cheat in examinations by test anxiety, academic self-resilience, academic self-confidence and academic self-regulated learning. A Pvalue estimate of each of the variables is ($Pvalue \leq .05$). The three indirect pathways are the indirect causation/effect on tendency to cheat in examinations by academic self-resilience, academic self-confidence and academic self-regulated learning. A Pvalue estimate of each of the variables is ($Pvalue \leq .05$). This is in line with the findings of Ugwuanyi and Nworgu (2016) who found out that the students' personal variables had direct influence on their academic achievement. Findings from the present study is in conformity with the findings of Nwanze and Okoli (2021) [17] who observed that four of the students' personal variables have direct influence on their academic achievement while eight students' personal variables have indirect influence on their academic achievement in biology.

Conclusion

This study developed a causal model for the explanation of the students' tendencies to cheat in examinations with four

selected student variables. The results provided the most meaningful causal model involving four independent variables and students' tendencies to cheat in examinations comprising 9 paths. The results further showed that the four selected predictor variables had significant direct effects on tendencies to cheat in examinations and indirect effects on students' tendencies to cheat in examinations except for test anxiety.

Recommendations

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

1. Secondary schools should organize orientation exercise for fresh students at the point of admission so as to teach them about the need for developing academic resilience, test anxiety, academic self-confidence and academic self-regulated learning.
2. Diagnostic analysis of students' personal variables should be carried out at the point of admission and as the student progresses academically by the guidance and counselling unit to find out the areas students need orientation, guidance and counselling.
3. Secondary school teachers should organize and give students motivating self talks before and after lessons in order to help them develop the significant identified personal variables which will in turn reduce their tendencies to cheat in examinations.

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