

## **ACADEMIC OPTIMISM, MOTIVATION AND MENTAL ABILITY AS DETERMINANTS OF ACADEMIC PERFORMANCE OF SECONDARY SCHOOL STUDENTS IN OGUN STATE, NIGERIA**

**AKINLANA TEMIDAYO**

*Olabisi Onabanjo University  
 Faculty of Education, Ago Iwoye, Ogun State.  
 E-mail: [takinlana27@yahoo.com](mailto:takinlana27@yahoo.com)  
 Phone: 08055469146*

### **ABSTRACT**

This study sought to determine the relative and composite contributions of the independent variables of academic optimism, academic motivation and mental ability to Senior Secondary School students' academic performance in Ogun East Senatorial District, Nigeria. This study employed the descriptive research design of ex-post facto type. Five hundred and eighty-eight participants selected through the multi-stage stratified random sampling technique, were used for the study. Four main instruments were used in collecting data, they are: Almost Perfect Scale-Revised (APS-R), General Achievement Goal Orientation Scale (GAGOS) and Mental Ability Test for the independent variables and Junior School Certificate Examination results in Mathematics, English and Integrated Science for dependent variable. The data collected were analyzed using Multiple Regression Analysis. The results revealed that two out of the three predictor variables were good predictors of students' academic performance. Mental ability was the most potent out of the predictor variables ( $B = .052$ ;  $t = 6.729$ ;  $p < .05$ ). Academic optimism was next to mental ability in predicting student's academic performance ( $B = .008$ ;  $t = 2.5333$ ;  $p < .05$ ). Academic motivation was a weak predictor of students' academic performance ( $B = .004$ ;  $t = 1.397$ ;  $p < .05$ ). Based on the findings, it was recommended among others that government should put in place adequate facilities and resources which will make learning encouraging, while the school administrators should try as much as possible to boost the morale of teachers by providing necessary encouragement needed to achieve educational aims and objectives.

***Keywords: Academic optimism, mental ability, academic motivation, Senior Secondary School, academic performance, Ogun State, Nigeria.***

## Introduction

Academic optimism is a general content concept related to students' achievement after controlling for Socio Economic status, previous performance, and other demographic variables (Hoy, Tarter & Woolfolk, 2006a). Academic optimism is the positive environment created when academic emphasis, collective efficacy and trust work together in a unified fashion (Hoy, Tarter and Woolfolk, 2006a, 2006b). Hoy, et.al. (2006b) applied a new construct labelled academic optimism to recognize the school characteristics that explain student achievement at the high school level beyond socio-economic status (SES), their study reached beyond the previous findings of Coleman (Coleman, 1966 Edmonds, 1979;). Coleman indicated that school characteristics had a negligible effect on students' achievement and that most of the variation in student achievement was related to their differences in family background.

Hoy, et al., (2006a) conducted a study that linked three school properties : academic emphasis, collective efficacy and faculty trust in students and parents together as a single construct called academic optimism to explain achievement at the high school level. Hoy, et.al. (2006b) first theorized and then demonstrated the elementary school level that academic optimism was a construct that was formed when academic emphasis, collective efficacy and faculty trust in students and parents work together in a unified fashion. The elementary school study was built upon the findings of several previous studies developed by Hoy and his colleagues who examined academic emphasis (Alig-Mielcarek & Hoy, 2005; Goddard, Logerfo & Hoy, 2004; Goddard, Sweetland & Hoy, 2000; Hoy & Hannum, 1997; Hoy & Sabo, 1998; Hoy, Sweetland & Smith, 2002; Hoy, Tarter & Bliss,1990; Hoy, Tarter & Woolfolk, 2004, 2000;),and faculty trust in student and parents (Hoy, 2002; Goddard, Tschannen, Moram & Hoy, 2001) as properties related to students achievement.

Academic motivation asserts significant influence on school learning. As a consequence, learning and motivation are two variables for joint analysis (Pintrich, 2000; Pintrich & Degroot, 1990. In fact one of the proposals that best encompasses the complex of motivational processes at the academic level comes from Pintrich and DeGroot 1990), where they distinguished three general categories of relevant constructs for motivation in educational contexts: an expectation component, including students' beliefs about their ability to complete a task, importance and interest; and an effective component, including effective-emotional consequences derived from completing a task, as well as the results of success or failure at an academic level. Thus, various research papers claim that students adopting intrinsic motivational orientation use cognitive strategies and self-regulating processes to a greater degree than students who adopt an extrinsic motivational orientation (Anderman & Young, 1994; Miller, Behrens, Greene, & Newman, 1993; Pintrich & DeGroot, 1990; Valle, Gonzalez, Nunez, Rodriguez & Pineiro, 2001).

Academic motivation is a student's desire (as reflected in approach, persistence and level of interests) regarding academic subjects when the students' competence is judged against a standard of performance or excellence (Disperna & Elliot, 1999; McClelland, 1961 Wigfield, & Eccles, 2002). Academic motivation is a subtype of the general construct of effectance motivation, which is defined as the "need" to be successful or effective in dealing with one's environment (Gresham, 1988).

A number of studies have shown a moderate-to-strong relation between academic achievement and motivation (Skaadrick & Rankin, 1995). Within a goal theory framework of motivation, there are two distinct motivational tendencies. One motivational tendency maintains that students who engage in a task in order to master a skill or activity in an attempt to seek competence pursue a mastery goal. The other motivational tendency maintains that students who engage in a task to attain a favourable judgement of competence pursue an achievement goal (Kaplan & Middleton, 2002).

Another variable of great importance and concern is mental ability. Mental ability sometimes called cognitive ability represents a person's brain power in different areas of competency. Some typical mental abilities include verbal reasoning, mathematical reasoning, spatial reasoning and logical reasoning. Sometimes, psychomotor skills such as reaction time are also considered to be mental abilities. In general, however, psychologists agree that the term mental ability describes a person's ability to learn and remember information, to recognise, concepts and their reaction and to apply the information to their own behaviour in an adaptive way (Neisser, et.al. 1996). Mental ability tests yield a single number, usually called an Intelligence Quotient (IQ) score, although this does not itself mean that intelligence is a single, general characteristic, some investigators have suggested that certain intellectual abilities are completely independent of one another, for example, a person can be excellent at partial reasoning but poor at solving verbal analogies. But psychologist disagrees over whether specific abilities are totally independent or whether one general influences all abilities.

### **Statement of the problem**

It is sad to note that academic performance of students in Nigeria secondary schools in recent times is on the downward trend considering the reports of WAEC and NECO. This study investigated factors (academic optimism, academic motivation and mental ability) which have been found to have implication on academic performance but their collective and relative effects have not been determined in a single study. The study therefore examined academic optimism, academic motivation and mental ability as determinants of academic performance of secondary school students in Ogun State.

### **Hypotheses**

1. There is no significant composite contribution of academic optimism, academic motivation and mental ability to students' academic performance.
2. There is no significant relative contribution of academic optimism, academic motivation and mental ability to students' academic performance.

### **Methodology**

#### **Design**

This study adopted a descriptive research design of ex-post facto type. This design was appropriate because the variables were not manipulated but described as they naturally exist among the respondents.

#### **Sample**

The sample was selected using multi-stage sampling technique. First, 3 Local Government Areas out of the 9 Local Government Areas in Ogun East Senatorial District were selected using the simple random sampling technique. Secondly, from each of the selected Local Government Areas, 5 co-educational secondary schools were randomly selected to give a total of 15 participating secondary schools. Third, from each of the 15 participating secondary schools, 40 students (20 males; 20 females) were selected through the stratified random sampling from senior secondary school 1 making a total of 600 respondents.

## Instruments

Four main instruments were used for data collection. They are:

### 1. *Almost Perfect Scale-Revised*

Academic optimism was measured using the Almost Perfect Scale - Revised (APSR). It is an adopted instrument developed by Stanley, Rice, Manley, Tripp and Ashbb, 2001. This scale consists of 23 items. The APS-R contains three sub-scales for High standards (7 items), Order (4 items) and Discrepancy (2 items). Sample items include “I expect the best from myself” (High Standards), “I like to always be organized and disciplined” (Order) and “My achievement rarely measures up to my standards “(Discrepancy). The instrument has 7-point Likert-type scaling model ranging from Strongly Agree (1) to Strongly Disagree (7). Coefficient Alphas for the High Standards, Order and Discrepancy subscales were reported as 0.85, 0.86 and 0.92 respectively. Test-retest correlations were reported to be adequate over a period of three weeks: 0.72 for standards, 0.80 for order and 0.83 for Discrepancy.

### 2. *General Achievement Goal Orientation Scale*

The nature of students’ motivation was evaluated using the General Achievement Goal Orientation Scale (GAGOS) developed by McInerney(1997). It is an adopted scale . The scale consists of 18 items. The GAGOS also contain three subscales for mastery Goal (5items), performance Goal (8items) and social Goal (5 items). The scale has 7-point Likert-type scaling model ranging from Strongly Agree (1) to Strongly Disagree (7). The Crombach’s Alpha for each sub-scale was reported as 0.76, 0.81 and 0.75 respectively.

### 3. *Mental Ability Test*

Intelligence test developed by Thorndike (1974) and adapted by Hagen (1987) labeled cognitive ability test. The test was developed to measure the level of intelligence of students. It comprises of 35-item question and six options with only one correct answer in each question. The cumulative score would be added to give a composite score indicating the level of the student’s ability. Analysis of the mental ability scale revealed internal consistency of 0.443 on Crombach Alpha.

### 4. *Academic Performance*

Students’ academic performance was measured by collecting Junior School Certificate examination results in some selected subjects (English Language, Mathematics, and Integrated Science) before transition to Senior Secondary School 1.

## Data Analysis

In order to facilitate the analysis of the statistics generated from the data, this study employs descriptive analysis and multiple Regression Statistical Analysis.

## Results

**Table 1: Model Summary of the Multiple Regression Analysis for the Combined Contributions of Academic Optimism, Academic Motivation and Mental Ability to the Prediction of Students' Academic Performance**

REGRESSION		ANOVA				
Model		Sum of Squares	df	Mean Square	F	Sig.
R = .354	Regression	124.794	3	41.598	27.980	.000(a)
R Square = .126	Residual	868.246	584	1.487		
Adjusted R Square = .121	Total	993.041	587			

a. Predictors: (Constant), Mental Ability, Academic Optimism, Academic Motivation

b. Dependent Variable: Academic Performance

The results in Table 6 indicated that with all the predictor variables (academic optimism, academic motivation and mental ability) entered into the regression model at once, there was a significant prediction of students' academic performance ( $R = .354$ ;  $R^2 = .126$ ;  $F_{(3,587)} = 27.980$ ;  $p < .05$ ). This showed that all the variables accounted for 12.1% of the variance in students' academic performance.

The null hypothesis which states that there is no significant composite contribution of academic optimism, academic motivation and mental ability to the prediction of students' academic performance was by the findings of this study rejected. This implies that academic optimism, academic motivation and mental ability will significantly combine to predict students' academic performance.

A stepwise multiple regression analysis was performed to determine the complementary contributions of the independent variables to the prediction of the students' academic performance. Results are as presented in Table 7 below.

**Table 2: Model Summary of the Stepwise Multiple Regression Analysis for the Combined Contributions of Academic Optimism, Academic Motivation and Mental Ability to the Prediction of Students' Academic Performance**

Model	R	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	Df2	Sig. F Change
1	.315(a)	.099	1.23567	.099	64.372	1	586	.000
2	.350(b)	.123	1.22030	.024	15.850	1	585	.000

a. Predictors: (Constant), Mental Ability

b. Predictors: (Constant), Mental Ability, Academic Optimism

The results in Table 7 above indicated that when mental ability was entered into the regression model as the first predictor variable based on the strength of its relationship with students' academic performance, there was a significant contribution to the prediction of students' academic performance ( $R = .315$ ;  $R^2 = .099$ ;  $\text{Adj } R^2 = .097$ ;  $F_{(1,586)} = 64.372$ ;  $p < .05$ ). By this, mental ability only accounted for 9.7 percent of the variance in students' academic performance. When academic optimism was introduced into the regression model as the second predictor variable, together with mental ability, it revealed a significant effect on students' academic performance ( $R = .350$ ;  $R^2 = .123$ ;  $\text{Adj } R^2 = .120$ ;  $F_{(1,585)} = 15.850$ ;  $p < .05$ ). This revealed that mental ability and academic optimism together predicted 12.0 percent of the students' academic performance. In effect, environmental factor academic optimism was able to add about 2.3 percent to the prediction of students' academic performance.

**Table 3: Beta Coefficients and t Ratio for Relative Contribution of Academic Optimism, Academic Motivation and Mental Ability to the Prediction of Students' Academic Performance**

	Unstandardized Coefficients		Standardized Coefficients	t-Ratio	Sig.
	B	Std. Error	Beta		
(Constant)	2.700	.318		8.495	.000
Academic Optimism	.008	.003	.121	2.533	.012
Academic Motivation	.004	.003	.068	1.397	.163
Mental Ability	.052	.008	.271	6.729	.000

a. Dependent Variable: Academic Performance

The results in Table 8 above revealed that two out of the three predictor variables were good predictors of students' academic performance. Mental ability was the most potent out of the predictor variables ( $\beta = .052$ ;  $t = 6.729$ ;  $p < .05$ ). Academic optimism was next to mental ability in predicting students' academic performance ( $\beta = .008$ ;  $t = 2.533$ ;  $p < .05$ ). Academic Motivation was not a good predictor of students' academic performance ( $\beta = .004$ ;  $t = 1.397$ ;  $p > .05$ ).

### Discussion of Findings

The outcome of the study on no significant contribution of academic optimism motivation and mental ability in the prediction of students' academic performance was rejected by the analysis of data. This indicates that academic optimism, motivation and mental ability significantly combine to predict student academic performance. This showed that all the variables accounted for 12.1% of the variance in students' academic performance. This finding supported the work of Hoy (2005) who found out that academic optimism was a single measurable attitude of schools that was related to school achievement Hwang, Echols and Vrongistinos (2002) interviewed sixty high achieving African, American college students about their reasons for choosing their majors and for studying and about their educational values. They found that, contrary to the predictions of other researches, the students did not hold an intrinsic goal orientation (a.k.a. a task goal orientation). Instead, the students integrated a combination of intrinsic, extrinsic (a.k.a.

performance) future and social goals. For instance, many of the students who were extrinsically motivated wanted to perform well so they would have better career opportunities and were thus incorporating a future goal orientation, elementary students (n = 152) with learning disabilities (LD), low achievement (LA), or mild mental retardation in a study by Gresham (1996) were contrasted on 41 measures of school-related factors. LD students scored higher on cognitive ability whereas the LA group showed higher academic achievement. No differences were found on measures of social skills, problem behaviours, or academic engaged time.

The result of the analysis in table 3 showed that two (mental ability and academic optimism) out of three predictor variables were good predictors of students' academic performance. Mental ability was the most potent out of the predictors and academic optimism was the next potent predictor while motivation was not a good predictor of students' academic performance. The result corroborated the findings of Maguey and Hoy (2006) who found out that the enabling structure of schools significantly correlated with academic optimism, controlling for SES and that the greater the academic achievement levels of the school, the higher the Math's and Reading achievement levels of schools. Hoy (2003) also found out that academic optimism is a latent construct that had a positive correlation on enabling bureaucracy, school organizational structures and processes that enable teachers in the performance of their work.

### **Conclusion and Recommendation**

This research work has empirically examined academic optimism, academic motivation and mental ability as determinants of academic performance of secondary school students in Ogun State, Nigeria. The findings of this study however had shown that mental ability and academic optimism are the two potent factors in determining students' academic performance.

In the light of these findings, it is therefore recommended among others that government should put in place adequate facilities and resources which will make learning encouraging, while the school administrators should try as much as possible to boost the morale of teachers by providing necessary encouragement needed to achieve educational aims and objectives.

## REFERENCES

1. Alig-Mielcarek, J., & Hoy, W. K. (2005). Instructional leadership: Its nature, meaning, and influence. In W. K. Hoy & C. Miskel (Eds.), *Educational Leadership and Reform* (29 – 54). Greenwich, CT: Information Age.
2. Anderman, E. M., & Maehr., M. L. (1994). Motivation and Schooling in the middle grades. *Review of Educational Research*, 64, (2) 287-309.
3. Edmonds, R. (1979). Some schools work and more can. *Social Policy*, 9, 28-32.rfo
4. El-anzi F, (2005). Academic Achievement and its relationship with anxiety, optimism and pessimism in Kuwaite students. *Journal of social Behavior and personality*
5. Goddard, R. D.; Sweetland, S. R.; Hoy, W. K. (2000). Academic emphasis of urban elementary schools and students achievement in reading and mathematics: A multilevel analysis. *Educational Administration quarterly*, 36 (5), 683-702.
6. Goddard, R. D.; LoGerfo, L.; & Hoy, W. K. (2004). High School Accountability: The role of collective efficacy. *Educational Policy*, 18(3), 403-425.
7. Goddard, R. D.; Tschannen-Moran, M. & Hoy, W. K. (2001). A multilevel examination of the distribution and effects of teacher trust in students and parents in urban elementary schools. *The Elementary School Journal*, 102(1), 3-17
8. Hoy, W. K. & Kupersmith, W. J. (1985). The meaning and measure of faculty trust. *Educational and Psychological Research*, 5(1), 1-10
9. Hoy, W. K. & Sabo D, J. (1998). *Quality middle schools: Open and Healthy*. Thousand Oaks ,CA: Corwin Press.
10. Hoy, W. K. & Sabo, D. J. (1998). *Quality middle schools: Open and healthy*. Thousand Oaks, CA: Corwin Press.
11. Hoy, W. K. & Tarter, C. J (1997). *The Road to open and Healthy Schools: A handbook for change*. Thousand Oaks, CA: Corwin press.
12. Hoy, W. K. & Tarter, C. J. (1997a). *The road to open and healthy school. A handbook for change* (middle and secondary ed.) Thousand Oaks, CA: Corwin Press.
13. Hoy, W. K. (2002). Faculty trust: A key to student achievement. *Journal of School Public Relations*. 23, 88-103.
14. Hoy, W. K. (2003). An analysis of enabling and mindful school structures: Some theoretical, research and practical considerations. *Journal of Educational Administration*, 41(1), 87-108.
15. Hoy, W. K. Smith, P. A. & Sweetland, S. R. (2002). The development of the organizational climate index for high schools; its measure and relationship to faculty trust. *High School Journal*. 86(2), 38-49.
16. Hoy, W. K. Sweetland; Sweetland, S. R. & Smith, P. A. (2002). Toward an organizational model of achievement in high schools: The significance of collective efficacy. *Educational Administration Quarterly*: 38(1), 77-93.
17. Hoy, W. K.; Tarter, C. J. & Witkoskie, L. (1992). Faculty trust in colleagues: Linking the principal with school effectiveness. *Journal of Research and Development in Education*, 26(1), 38-45.

18. Hoy, W. K; Tarter, C. J. & Woolfolk Hoy, A. (2006a). Academic optimism of schools: A fore for student achievement. *American Educational Research Journal*, 43(3), 425-446.
19. Hoy, W. K; Tarter; C. J. & Woolfolk Hoy, A. (2006b). Academic optimism of schools: A second-order confirmatory factor analysis. In W. K. Hoy & c. Miskel (Eds.), *Contemporary issues in educational policy and school outcomes* (135-156). Greenwich, CT: Information Age.
20. Huang, S.L; Waxman, H.C.; & Wang, M.C. (1995, April). Comparing school-based environment of high-and low-performing inner city school, paper presented at the American Educational Research Association, San Diego, CA.
21. Kaplan, A.; & Maehr, M. (1999). Achievement goals and student well-being. *Contemporary Education Psychology*, 24, 330-358.
22. Kaplan, D. (2000). Structural equation modeling in J. Leeuw, & R. Berk (Eds.) *Advances quantitative techniques in the social sciences*. Thousand Oaks: Sage Publications.
23. Magdol, L. (1994). Risk Factors for adolescent academic achievement. Technical Report. University Wisconsin – Madison Cooperative Extension.
24. McInerney, D. M. (1997). Relationship between motivational goals, and sense of self, self-concept and academic achievement for Aboriginal students. 10<sup>th</sup> Annual Aboriginal Studies Association Conference, University of Western Sydney, Bankstown Campus, Milperia, 12-14 July, 2000.
25. Miller, B. R., Behrens, J. T., Green, B. A. & Newman, D. (1993). Goals and perceived ability. Impact on student valuing, self-regulation and persistence. *Contemporary Educational Psychology*, 18, 2-14.
26. Neiser, V.; Boodoo, G.; Bouchard, T. J.; Boykin, W. A.; Brody, N.; Ceci, S.; Halphern, D. F.; Loehlin, J. C.; Perloff, R.; Sternberg, R. J. & Urbina, S. (1996). Intelligence; known and unknowns. *American Psychologist*, 51(2), 77-101.
27. Wigfield, A.; & Eccles, J. S. (2000). Expectancy value theory of achievement motivation. *Contemporary psychology*, 25, 68-81.
28. Vale, A., Gonzalez, R., Nunez, J. C., Rodriguez, S., & Pineiro, I. (2001). Diferencias en la utilizacion de estrategias de aprendizaje segun el nivel motivacional de los estudiantes. (Difference in use of learning strategies according to students motivational level). *Revista de Investigacion Educativa*, 19, 105-126.