



Temperament as a Correlate of Academic Achievement in Junior Secondary School Basic Technology

Dr. W. J. UBULOM

**Faculty of Technical and Science Education
Rivers State University of Science and Technology
P M B 5080, Port Harcourt, Nigeria
E-mail: will.ubulom@yahoo.com**

Ibimina A. S. ABAM

**Department of Science and Technical Education
Rivers State University of Science and Technology
P M B 5080, Port Harcourt, Nigeria**

Dr. B. I. DAMBO

**Department of Business Education
Rivers State University of Science and Technology
P M B 5080, Port Harcourt, Nigeria**

ABSTRACT

The purpose of this study was to determine the association existing between students' temperament (sanguine, melancholic, choleric and phlegmatic personality types) and their academic achievement in junior secondary school basic technology in Port Harcourt Metropolis. The study adopted correlational research design with a target population of 2400 respondents (that is, 1129 male and 1374 female students) drawn from selected junior secondary schools in Port Harcourt Metropolis. The sample size used for this study consists of 720 students (339 boys and 381 girls); a representation of 30% of the entire population. Keirsey Temperament Sorter II (KTS-II®) was the research instrument used to collect data for this study. The instrument consists of 70 forced-choice questions. It is of 4-point Likert type of scale with response options of Strongly Agree (4) Agree (3) Disagree (2) and Strongly Disagree (1). Mean and standard deviation scores were used to answer the research questions and Pearson's Product Moment Correlation Coefficient (r) was used to test the hypotheses. High level of academic achievement was discovered in basic technology with low level of students' temperament (sanguine, choleric, pragmatic and melancholy personality) among junior secondary school students in Port Harcourt metropolis and that students' temperament (sanguine, choleric, pragmatic and melancholy personality types) do not negatively influence students' academic achievement in junior secondary school basic technology. It was also discovered that no significant relationship exists between students' temperament (sanguine, choleric, pragmatic and melancholy personality type) and their academic achievement in junior secondary school basic technology. Government should ensure that secondary schools in Port Harcourt metropolis adopt the necessary counselling services to assist students adapt to their psychological problems in order to improve on their academic achievement.

Keywords: students' temperament, sanguine, choleric, pragmatic, melancholy, personality type, academic achievement

INTRODUCTION

Across the entire span of schooling, temperament characteristics relate to child's ability to successfully negotiate the multiple demands of school, whether in terms of academic achievement, socially appropriate

behavior or relationship. School task demands not only intellectual ability but also characteristics such as flexibility and sustained effort (Keogh, 2003). Scholars and researchers acknowledged that children's temperaments influence their reactions in school environment and their interaction with others hence the need to address how individual students' and teachers' temperament can contribute to children's learning and achievement.

Temperament is simply the individual differences in behavior tendencies that are biologically based. It can best be viewed as a general term referring to how of behavior; it differs from ability, which concerned with what and how well of behaving and from motivation, which seeks to account for why a person does what he or she is doing (Thomas, Chess & Birch, 1968).

Many have posited that individual difference in temperament during the early years constitutes nascent personality (Caspi & Silva, 1995). Individual differences in temperament are evidenced in the unique predispositions, which students bring to the school setting in terms of activity level, attention span, mood and approach to new experiences etc. Children's early academic achievement has been linked to later success in life in areas such as the types of employment, life satisfaction, health and the academic achievement of offspring (Easterlin, 2001; Subasi & Hayran, 2005). More proximally, children's early academic achievement has important implications for their future academic achievement. According to Alexander, Entwisle, Blyth & McAadoo (1988) by the end of the third grade, children are launched into achievement trajectories, which they follow for the rest of their school years. Indeed, the landmark legislation of No Child Left Behind in United States in 2002 mandated third grade as the first year of required annual testing of reading and mathematics achievement in all public schools. Thus, the importance of early academic achievement for ongoing academic success is widely accepted. The need to be aware that students' temperament influences their early academic achievement is absolutely necessary given the established importance of early achievement and the high stakes context of early education.

Several factors including temperament and classroom support processes have been found to be associated with children's early achievement. However, we know less about the ways in which the child and process characteristics work *together* to predict children's academic outcomes. Thus, this study is to examine the interplay of child temperament before the onset of formal schooling and classroom emotional support in third grade as they relate to children's third grade academic achievement.

In 450 B.C, the Greek physician, Hippocrates described four dispositions of temperament as choleric temperament with an ease or emotional arousal and sensitivity; phlegmatic temperament with cool detachment and impassivity; melancholic temperament with a very serious, dour and downcast nature; and sanguine temperament full of impulsivity, excitability and quick reactivity. Temperament is widely acknowledged to be relatively stable through early elementary school and beyond (Caspi & Silva, 1995; Rimm-Kaufman & Kagan, 2005; Rothbart & Posner, 2005). Temperament reflects an individual's patterns of behavior in response to the environment, rather than responses to isolated events (Rothbart & Bates, 2006). Students' temperament plays a significant role in teacher's perception of the students' learning style and educational competence. Hence, temperament contributes to students' academic achievement subjective ratings of school grades. The concept of matching temperament or trait with instructional and learning style has been investigated by numerous researchers but little or no research study seems to have been carried out on the effect of students' temperament on academic achievement in basic technology in Port Harcourt Metropolis in Nigeria hence the need for this study at this time.

Kurt Lewin's earlier works published in 1935 and 1942 proposed that behavior is a function of both the individuals and the environment and more specially that there are three interacting forces that influence the learning process; the student, the instructor and the learning environment. An imbalance of any of these factors, Lewin concluded would result in a partnering process. Temperament appears to be related to education in a number of ways, including teacher's perception, classroom adjustment and actual educational achievement.

Early in the study of temperament interest was always forming about how temperament affected children in school. A study showed that teachers overestimated the intelligence of children who had 'easy' temperament characteristics, giving them a 'halo' in the teachers' eyes. Another early study showed that children who were flexible and persistent were rated higher in school adjustment than students with poor

self-regulation and low task performance. Based on these problems, this research attempts to investigate how students' temperament (sanguine, melancholic, choleric and phlegmatic personality type) could influence their academic achievement in basic technology in selected junior secondary schools in Port Harcourt Metropolis of Nigeria.

Research Questions

The following research questions guided the study:

1. How does sanguine personality type as an aspect of students' temperament influence their academic achievement in junior secondary school basic technology?
2. To what extent does choleric personality type as an aspect of students' temperament influence their academic achievement in junior secondary school basic technology?
3. To what extent does the pragmatic personality type as an aspect of students' temperament influence their academic achievement in junior secondary school basic technology?
4. How does melancholy personality type as an aspect of students' temperament influence their academic achievement in junior secondary school basic technology?

Hypotheses

The following hypotheses were formulated and tested in this study:

1. There is no significant relationship between sanguine personality as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology.
2. There is no significant relationship between choleric personality as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology.
3. There is no significant relationship between phlegmatic personality as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology.
4. There is no significant relationship between melancholic personality as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology.

METHOD

This study adopted purely correlational research design. The correlational research design was adopted because the study attempted to establish relationship between temperament as the independent variable and the students' academic achievement scores in junior secondary school basic technology as the dependent variable.

The target population for this study comprised of two thousand, four hundred (2,400) respondents (that is, 1,129 male and 1,374 female students) from the selected junior secondary schools in Port Harcourt Metropolis in Nigeria. The choice of the population for this study was based on the fact that the junior secondary schools studied were drawn from Port Harcourt Metropolis. Also, three arms were randomly selected from each of the junior secondary schools used for the study. The sample size consists of 720 students (339 male and 381 female students), which is a representation of 30% of the entire population used in this study

A structured research instrument was used to collect data for this study which is the Keirsey Temperament Sorter II (KTS-II®). The physical survey consisted of 70 forced-choice questions preceded by written instructions on how to complete the survey. The Keirsey Temperament Sorter II (KTS-II®) measures variables and essentially structure with difficulty level, instructions, scoring, and interpretation. The Keirsey Temperament Sorter II (KTS-II®) is of 4-point Likert type of scale with response options of Strongly Agree (4) Agree (3) Disagree (2) and Strongly Disagree (1). In order to establish the validity of the instrument, two experts in Guidance and Counseling and a specialist in Measurement and Evaluation from the Rivers State University of Science and Technology, Port Harcourt, Nigeria were used. The instrument was presented to the experts to assess whether it can measure the dimensions of temperament that it was supposed to measure. Instrument validation also relied on comparisons of both the KTS-II®

and the Myers-Briggs Type Instrument (MBTI®). Reliability coefficients for internal consistency of the MBTI® Form-M were .91 to .92 across male and genders respectively and to establish the reliability of the Keirsey Temperament Sorter II (KTS-II®), test-retest method was also used because it was considered by the Guidance and Counseling and measurement and evaluation experts to be the best method. The reliability coefficient obtained through test-retest method was 0.89 which was quite reasonable.

For scoring the scale items, Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1. The total score for each of the research instrument was used as the indices of respondents' response scores to measure students' temperament and for the academic achievement of students in basic technology, mean scores of 0 – 2.49 represent low level, 2.5 represent average level and 2.51 – 4.00 represent high level.

The data generated were analysed based on item-by-item analysis to show frequency count of responses of the various categories of respondents. Mean and standard deviation scores were extracted and presented in appropriate tables to answer the research questions. To determine the extent of significant relationship that existed between the independent and dependent variables at 0.05 alpha level, the researchers employed Pearson's Product Moment Correlation Coefficient (r) to analyse the data and test the validity of the four (4) hypotheses.

RESULTS

Hypothesis 1

There is no significant relationship between sanguine personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology.

Table 1: Calculated r between sanguine personality type as an aspect of students' temperament and academic achievement scores in junior secondary school basic technology

Variable	Mean	Std Dev.	$\sum XY$	r-cal	r-Crit
Sanguine Personality	2.37	0.236	1685.62	0.1924*	±0.1946
Academic Achievement	3.35	0.337			

N = 720

df = 718

P > 0.05

* = Not Significant

Table 1 shows the calculated mean and standard deviation scores from the junior secondary school students' responses regarding sanguine personality type as aspect of their temperament and their academic achievement in junior secondary school basic technology in Port Harcourt Metropolis. In the table, the calculated mean and standard deviation scores for the sanguine personality type as aspect of their temperament are 2.37 and 0.236 respectively. Since the calculated mean score is less than the average point of 2.5, it means low level of sanguine personality type as aspect of their temperament. Also in the table, the calculated mean and standard deviation scores for the students' academic achievement scores in basic technology are 3.35 and 0.337 respectively. Since the calculated mean score is higher than the average point of 2.5, it means that the level of students' academic achievement scores in basic technology in secondary schools is high. From the foregoing, the researchers conclude that sanguine personality type as aspect of temperament has no influence on the academic achievement level of junior secondary school students in basic technology.

With N = 720, df = 718 and P = 0.05 as shown in Table 1, the calculated r between the sanguine personality type as aspect of their temperament and their academic achievement in basic technology is 0.1924 and the critical value of r is ±0.1946. That being so, the calculated r was not statistically significant at $\alpha > 0.05$ level of significance since it is smaller than the given critical value of r. The hypothesis (HO₁) is thus accepted and the conclusion was that there is no significant relationship between sanguine personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology in Port Harcourt Metropolis.

Hypothesis 2

There is no significant relationship between choleric personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology.

Table 2: Calculated r between choleric personality type as an aspect of students' temperament and academic achievement scores in junior secondary school basic technology

Variable	Mean	Std Dev.	$\sum XY$	r-cal	r-Crit
Choleric Personality	2.23	0.231	1768.35	0.1892*	± 0.1946
Academic Achievement	3.35	0.337			

N = 720 df = 718 P > 0.05 * = Not Significant

Table 2 shows the calculated mean and standard deviation scores from the secondary school students' responses regarding choleric personality type as aspect of their temperament and their academic achievement in junior secondary school basic technology in Port Harcourt Metropolis. In the table, the calculated mean and standard deviation scores for the choleric personality type as aspect of their temperament are 2.23 and 0.231 respectively. Since the calculated mean score is less than the average point of 2.5, it means low level of choleric personality type as aspect of their temperament. Also in the table, the calculated mean and standard deviation scores for the students' academic achievement scores in basic technology are 3.35 and 0.337 respectively. Since the calculated mean score is higher than the average point of 2.5, it means that the level of students' academic achievement scores in junior secondary school basic technology is high. From the foregoing, the researchers therefore conclude that choleric personality type as aspect of temperament has no influence on the academic achievement level of junior secondary school students in basic technology.

With N = 720, df = 718 and P = 0.05 as indicated in Table 2, the calculated r between the choleric personality type as aspect of their temperament and their academic achievement in basic technology is 0.1892 and the critical value of r is ± 0.1946 . That being so, the calculated r was not statistically significant at $\alpha > 0.05$ level of significance since it is smaller than the given critical value of r. The hypothesis (HO₂) is thus accepted and the conclusion was that there is no significant relationship between choleric personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology in Port Harcourt Metropolis. This implies that no significant relationship exists between choleric personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology in Port Harcourt Metropolis.

Hypothesis 3

There is no significant relationship between pragmatic personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology.

Table 3: Calculated r between pragmatic personality type as an aspect of students' temperament and academic achievement scores in junior secondary school basic technology

Variable	Mean	Std Dev.	$\sum XY$	r-cal	r-Crit
Pragmatic Personality	2.45	0.243	1887.66	0.1844*	± 0.1946
Academic Achievement	3.35	0.337			

N = 720 df = 718 P > 0.05 * = Not Significant

Table 3 shows the calculated mean and standard deviation scores from the junior secondary school students' responses regarding pragmatic personality type as aspect of their temperament and their academic achievement in junior secondary school basic technology in Port Harcourt Metropolis. In the table, the calculated mean and standard deviation scores for the pragmatic personality type as aspect of their temperament are 2.45 and 0.243 respectively. Since the calculated mean score is less than the average point of 2.5, it means low level of pragmatic personality type as aspect of their temperament.

Also in the table, the calculated mean and standard deviation scores for the students' academic achievement scores in basic technology are 3.35 and 0.337 respectively. Since the calculated mean score is higher than the average point of 2.5, it means that the level of students' academic achievement scores in basic technology in secondary schools is high. From the foregoing, the researchers therefore conclude that pragmatic personality type as aspect of temperament has no influence on the academic achievement level of junior secondary school basic technology.

With $N = 720$, $df = 718$ and $P = 0.05$ as shown in Table 3, the calculated r between the pragmatic personality type as aspect of their temperament and their academic achievement in basic technology is 0.1844 and the critical value of r is ± 0.1946 . That being so, the calculated r was not statistically significant at $\alpha > 0.05$ level of significance since it is smaller than the given critical value of r . The hypothesis (H_{O3}) is thus accepted and the conclusion was that there is no significant relationship between pragmatic personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology in Port Harcourt Metropolis. This implies that no significant relationship exists between pragmatic personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology in Port Harcourt Metropolis.

Hypothesis 4

There is no significant relationship between melancholy personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology.

Table 4: Calculated r between melancholy personality type as an aspect of students' temperament and academic achievement scores in junior secondary school basic technology

Variable	Mean	Std Dev.	$\sum XY$	r-cal	r-Crit
Melancholy Personality	2.63	0.253	1923.74	0.1925*	± 0.1946
Academic Achievement	3.35	0.337			
$N = 720$		$df = 718$	$P > 0.05$	* = Not Significant	

Table 4 shows the calculated mean and standard deviation scores from the junior secondary school students' responses regarding melancholy personality type as aspect of their temperament and their academic achievement in basic technology in Port Harcourt Metropolis. In the table, the calculated mean and standard deviation scores for the melancholy personality type as aspect of their temperament are 2.63 and 0.253 respectively. Since the calculated mean score is less than the average point of 2.5, it means low level of melancholy personality type as aspect of their temperament. Also in the table, the calculated mean and standard deviation scores for the students' academic achievement scores in basic technology are 3.35 and 0.337 respectively. Since the calculated mean score is higher than the average point of 2.5, it means that the level of students' academic achievement scores in basic technology in secondary schools is high. From the foregoing, the researchers therefore conclude that melancholy personality type as aspect of temperament has no influence on the academic achievement level of junior secondary school students in basic technology.

With $N = 720$, $df = 718$ and $P = 0.05$ as presented in Table 4, the calculated r between the melancholy personality type as aspect of their temperament and their academic achievement in basic technology is 0.1922 and the critical value of r is ± 0.1946 . That being so, the calculated r was not statistically significant at $\alpha > 0.05$ level of significance since it is smaller than the given critical value of r . The hypothesis (H_{O4}) is thus accepted and the conclusion was that there is no significant relationship between melancholy personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology in Port Harcourt Metropolis. This implies that no significant relationship exists between melancholy personality type as an aspect of students' temperament and their academic achievement scores in junior secondary schools in Port Harcourt Metropolis.

DISCUSSION

Based on the results of this study, the researchers discovered low level of sanguine personality type as aspect of their temperament with high level of academic achievement scores in junior secondary school basic technology. It was also discovered that low level of sanguine personality type as aspect of their temperament has no influence on the academic achievement level of junior secondary school students in basic technology since their academic achievement level is high and that no significant relationship exists between sanguine personality type as an aspect of students' temperament and their academic achievement scores in junior secondary schools in Port Harcourt Metropolis. The results of this study confirms the findings of Caspi & Silva (1995) and Easterlin (2001) who discovered that low level of sanguine personality type as aspect of their temperament has no influence on students' academic achievement.

Based on the result of this study, the researchers discovered low level of choleric personality type as aspect of their temperament with high level of academic achievement scores in junior secondary school basic technology. It was also discovered that low level of choleric personality type as aspect of their temperament has no influence on the high level of academic achievement level of secondary school students in basic technology and that no significant relationship exists between choleric personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology in Port Harcourt Metropolis. The results of this study confirms the findings of Caspi & Silva (1995) and Easterlin (2001) who discovered that low level of sanguine personality type as aspect of their temperament has no influence on students' academic achievement.

Based on the result of this study, the researchers discovered low level of pragmatic personality type as aspect of their temperament with high level of academic achievement of students in basic technology in junior secondary schools. It was also discovered that low level of pragmatic personality type as aspect of their temperament has no influence on the high level of academic achievement level of junior secondary school students in basic technology and that no significant relationship exists between pragmatic personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology in Port Harcourt Metropolis. The results of this study confirms the findings of Caspi & Silva (1995) and Easterlin (2001) who discovered that low level of sanguine personality type as aspect of their temperament has no influence on students' academic achievement.

Based on the result of this study, the researchers discovered low level of melancholy personality type as aspect of their temperament with high level of academic achievement scores in junior secondary school basic technology. It was also discovered that low level of melancholy personality type as aspect of their temperament has no influence on the high level of academic achievement of secondary school students in basic technology and that no significant relationship exists between melancholy personality type as an aspect of students' temperament and their academic achievement scores in junior secondary school basic technology in Port Harcourt Metropolis. The results of this study confirms the findings of Caspi & Silva (1995) and Easterlin (2001) who discovered that low level of sanguine personality type as aspect of their temperament has no influence on students' academic achievement.

CONCLUSION

Based on the results and findings of this study, the researchers therefore noted that high level of academic achievement scores in basic technology was recorded among junior secondary school students. Also discovered in this study was low level of sanguine, choleric, pragmatic and melancholy types of personality as aspects of their temperament. The study therefore concludes that there is no significant relationship between sanguine, choleric, pragmatic and melancholy types of personality as aspects of their temperament and their academic achievement scores in junior secondary school basic technology in Port Harcourt Metropolis.

Secondary school Principals in Port Harcourt Metropolis should ensure that their students are highly guided to avoid them being exposed to high level sanguine, choleric, pragmatic and melancholy types of personality as aspects of their temperament. Efforts should be intensified for the junior secondary school student to improve in their level of academic achievement in basic technology. Government should ensure that secondary schools in Port Harcourt metropolis adopt the necessary counselling services to help their

students adapt to their psychological problems in order to improve on their academic achievement. Efforts should be intensified to ensure that counselling services are provided for secondary school students to assist them cope with their level of temperament. This will assist in improving their level of academic achievement. Efforts should be intensified by government to ensure that seminars and workshops are organised to further educate proprietors of private secondary schools on the need to handle students with high level of temperament. This will assist them in improving their academic achievement level.

REFERENCES

- Alexander, D. R., Entwisle, D. A., Blyth, D. A., & McAdoo, H. P. (1988). Achievement in the first 2 years of school: Patterns and processes. *Monographs of the Society for Research in Child Development*. 53, 12-18.
- Caspi, A., & Silva, P. S. (1995). Temperamental qualities at age three predict personality traits in young adulthood: Longitudinal evidence from a birth cohort. *Child Development*. 66, 486-498.
- Easterlin, R.A. (2001). Life circle welfare: Trends and differences. *Journal of Happiness Studies*. 2, 1-12.
- Keirse, D. M. (2004). Keirse temperament distribution. Retrieved on March 19, 2004, from <http://www.keirse.com/cgi-bin/stats.cgi>.
- Keirse.com (2008). The Keirse temperament sorter (KTS-II). Retrieved on July 7, 2008, from <http://www.keirse.com/cgi/aboutkts2.aspx>.
- Keogh, B. K. (2003). *Temperament in the classroom: Understanding individual differences*. Baltimore, MD: Paul H. Brookes.
- Rimm-Kaufman, S. E., & Kagan, J. (2005). Infant predictors of kindergarten behavior: The contribution of inhibited and uninhibited temperament types. *Behavioral Disorders*. 30, 331-347.
- Rothbart, M. K., & Bates, J. E. (2006). Temperament. In Eisenberg, W. D., & Lerner, R. M. (eds.), *Handbook of child psychology*. (99-166), New Jersey: John Willey & Sons.
- Rothbart, M. K., & Derryberry, D. (1981). Development of individual differences in temperament. In Lamb, M. E., & Brown, A. L. (eds.), *Advances in developmental psychology*. (37-86), Hillsdale, New Jersey: Erlbaum.
- Rothbart, M. K., & Posner, M. I. (2005). Genes and experience in the development of executive attention and effortful control. In Jenson, L. A. & Larson, R. (eds.), *New horizon in developmental theory and research*. San Francisco: Jossey-Bass
- Subasi, F. & Hayran, O. (2005). Evaluation of the satisfaction index of the elderly people living in nursing homes. *Archives of Gerontology and Geriatrics*. 41, 23-29.
- Thomas, A., Chess, S., & Birch, H. G. (1968). *Temperament and behavior disorders in children*. New York: New York University Press.