Personality Traits, Cognitive Styles and Academic Success of Secondary School Students in Ondo State

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Abstract: The study investigated the academic success of secondary school students in Ondo State. The study employed the survey design technique. The population for the study consisted of secondary school students III in Ondo State. The sample of 500 students was selected using simple random sampling technique. Three Local Government Areas (LGAs) were selected from the three senatorial district in Ondo State using simple random sampling technique. Fifteen secondary schools were selected from the three LGAs using simple random sampling technique. Thereafter, 500 students were selected across the 15 schools using intact class of the senior secondary school students III. An adapted instrument titled "Personality Traits, Cognitive Styles and Academic Success Questionnaire" (PCAQ) containing four sections was used to collect data from the respondents. Data collected were analysed percentage, Pearson product correlation coefficient and multiple regressions. The results showed that 40.8% of the students possessed high level of academic success; 34.0% had moderate level while the remaining 25.2% of students demonstrated low level of academic success. The results showed that neuroticism with 45.4% was the prevalent trait among the students. Also, the results showed that 68.4% of the students employed field dependent cognitive style. Again, the results showed positive and significant relationship between openness ($r = 0.991$; $p < 0.05$); conscientiousness ($r = 0.991$; $p < 0.05$), extraversion ($r = 0.989$; $p < 0.05$), agreeableness ($r = 0.984$; $p < 0.05$) and neuroticism ($r = 0.984$; $p < 0.05$) and academic success of students. Further, it was showed that field dependent cognitive style had negative and significant relationship at ($r = - 0.477$; $p < 0.05$) while field independent cognitive style had positive and significant relationship ($r = 0.989$; $p < 0.05$). The results revealed that openness ($t = 6.12$; $\beta = 0.41$); conscientiousness ($t = -455$; $\beta = -024$), extraversion ($t = 9.1$; $\beta = 0.28$); agreeableness ($t = 1.66$; $\beta = 0.047$) and neuroticism ($t = 1.92$; $\beta = 0.055$). Also, the results for cognitive styles showed that field dependent ($t = -11.03$; $\beta = -.069$) and field independent yielded ($t = 7.12$; $\beta = 0.00$). While the results of openness, extraversion and neuroticism were significant at 0.05 level of confidence, values of agreeableness and conscientiousness were not significant. Also, both field dependent and field independent cognitive styles were significant at 0.05 level of confidence. It was concluded that more students demonstrated neurotic trait and few had high level of academic success.

Keywords: Academic success, personality traits, cognitive styles, secondary school students.

INTRODUCTION

It is imperative that for any student to realize his/her aspirations such a student must perform well academically. In most cases, aspirations are aborted because of the inability of an individual to attain success in academic. Success in academic may constitute all that students acquire from schooling, and totality of experiences accruing from their exposure to schooling. According to Mishra [1], success is the quality of knowledge, skills, attitudes and value acquired in the cognitive, affective and psychomotor domains of educational objectives for necessary self-reliance, effective citizenship, responsiveness to opportunities and challenges of life. It is believed that poor performance of secondary school students in examinations can hamper the realization of aims of secondary school education in Nigeria and this may have great influence on students' self-esteem, motivation and perseverance. To Chamorro-Premuzic [2] academic success is the performance of students in academic settings. To some extent, academic success means how students demonstrate their level of

competence and mastery of a subject through completion of multiple tests of competence in a particular domain of education. It is the how far and well students can achieve in their academic. From above, it is pertinent to state that the quality of students' academic success is basically determined through effective assessment method used to measure the level of competence and performance exhibited. It is the performance of students in assessments that will ultimately determine their academic success.

In Nigeria, the academic success of secondary school students is usually measure through their performance in the Senior School Certificate Examinations. However, there is no doubt that students in secondary schools are constantly performing poorly in the external examinations such as West Africa Senior School Certificate Examination (WASSCE) and National Examination council (NECO – SSCE). This perennial decline in education matter has become a source of concern to all the stakeholders in the education sector in the country [3]. For instance, Uwadiae [4] claimed that students' performance in the West African Senior School Certificate from 2001-2005 has witnessed mass failure. Also, Bello-Osagie and Olugbamila [5], indicated that results between 2000 and 2012 revealed that the academic performance of students was below fifty percent (50%). The authors further explained that the performance of students in the National Examination Council (NECO – SSCE) showed that only 5.1% of the candidates who sat for the examination obtained credits levels passed and above in five subjects including English Language and Mathematics. Also, in 2010 May/June WASSCE, out of the 1, 135, 557 candidates that sat for the examination, only 37, 071 (24,94%) obtained five credit level passes and above in English language and Mathematics [4]. Again, there was poor performance of students in major subjects such as English Language during the WAEC May/June 2014. The results showed that only 31.28 percent obtained credit out of the candidates who sat for the examination [6].

In Ondo State, the performance of secondary school students in the public examinations is not that better. In the past examinations, the percentage of students from Ondo State who obtained credit passes in five subjects and above including English Language and Mathematics in public secondary schools in the Senor School Certificate Examination conducted by the West African Examinations Council (WASSCE) between 2007 and 2012 ranged from 16.7% and 38%. While in the National Examinations Council results ranged from 3.2% to 27% between 2007 and 2012 [7]. The above results validated the Adeyemi [8]'s position that academic performance of students in JSC and SSCE examinations in Ondo state were discovered to be low. In affirmation with the above, Awosiyan and Opki [9] mentioned that West African Examination Council analysis of Ondo State secondary school candidates'

performance for 2008, 2009 and 2010 showed only 23, 21 and 20% respectively passed in the examination. A cursory look at the above results confirmed that performance has not only remained poor since 2008 to 2012 but was most woeful both in public and private schools between the years. Also, in Ondo State, the percentage of learners who obtained credit passes in five subjects and above including English Language and Mathematics in public secondary schools in the Senor School Certificate Examination conducted by the West African Examinations Council (WASSCE) between 2007 and 2012 ranged from 16.7% and 38%. While in the National Examinations Council results ranged from 3.2% to 27% between 2007 and 2012 [7]. This awful performance in examinations showed the level of students' achievement, in other words, the students' academic success in schools. Some of the consequences of this are that the situation has not only reduced graduate output and increased cost of education. It has also reduced the admission opportunities for students seeking admission for higher degrees.

In the past several studies have identified factors that could affect academic success of students. Some of these factors include learning styles [10]; poorly trained teachers and non-provision of the needed instructional materials [11] and poor study habit [12]. Apart from the above, it is also possible that factors such as students' personality traits and cognitive styles can be responsible for academic success of students.

In the meantime, personality is considered a dynamic organization within an individual which determines his characteristic behaviour and thought. Adeniyi [13] opined that an individual's characteristics, disposition, behaviour, like or dislike form his/her peculiarities which makes him different from other people. Also, Oladele [14] expressed that it is the unique and distinctive characteristics which set a person apart from another. Personality trait resembles the differences between individual's frequency and intensity of thinking, behaving and feeling in certain ways [15, 16]. There is no doubt every individual has a type of trait that is dominating in his personality. The type of trait that an individual displays will go a long way in determining his behaviour and more importantly, his effectiveness. In their submission, Chamorro-Premuzic and Furnham [17] believed that excellence in academic cannot be guaranteed without non-cognitive factors including variables related to personality dispositions. Again, previous studies have also established that personality and academic achievement are related [18, 19, 16].

In the past, studies have shown that specific functions are associated with the Big Five which are openness, conscientiousness, extraversion, agreeableness and neuroticism. For instance, conscientiousness is regarded as the ability to persist in

task- and goal oriented behaviour, in order to reach non-immediate rewards [20]. Conard [17] believed that conscientiousness trait predicts less academic performance. In their support, Cucina and Vasilopoulos [21] found an inverted-U relation between conscientiousness and students performance, indicating that extremely conscientious students had lower scores than did students scoring in the moderate to moderate-high range of that factor. However, Wagerman and Funder [22] and Di Giunta *et al.* [23] reported that conscientiousness is associated to academic achievement at both freshman and senior level in college, and that conscientiousness is an important predictor of academic performance.

Also, DeYoung [24] mentioned that students who are open (openness) will manifest the tendency to explore, detect and enjoy abstract and sensory information To this end, openness measures have often been found to be positively correlated with measure of intelligence [25, 20], hence, it predicts positive academic success. However, scholars such as Furnham, Zhang, and Chamoro [25] have found a negative relationship between extraversion and achievement at higher education; they believed students' interpersonal as well as intrapersonal skills accounted for this negative relationship; in other words, highly extroverted students are more likely to spend their time on social and extra-curricular activities in comparison to less extroverted students.

Another trait is agreeableness. This is the tendency to act altruistic vs. exploiting others [24]. Agreeableness and academic success is also reported to relate. Furnham, Zhang and Chamoro [25]; Duckworth and Seligman [26] in their studies concluded that more agreeable students tended to have higher GPAs and consequently higher academic achievement. The last trait that can be exhibited by an individual is neuroticism. Adeniyi [13], explained that neurotic students find it difficult to easily control their emotion or unable to handle stress well. As a result of this, they suffer abnormalities which can hinder them to perform effectively in their academic. This explained why Lounsbury *et al.* [27] indicated that neuroticism is related to absenteeism and illness. Consequent upon this, neurotic students suffer poorly academic performance [22, 22].

Moreover, Gibbs [28] referred to cognition as the mental process in the brain used to gain knowledge and comprehension of the outside world. Sternberg [29] defined style as an individual difference in approaches to tasks that can make a difference in the way person perceives, learns or thinks. Also, Pitcher [30] defined cognitive style as the relatively stable strategies, preferences and attitudes that determine an individual's typical modes of perceiving, remembering and problem solving. To Shoae, Ahmad and Zade [16], it is an individual characteristics and consistent approach to

organising and processing information Research has established that cognitive ability is one important determinants of academic success [31. Several cognitive styles have been identified. Examples are dependence-field independence and reflexivity-impulsivity dimension, complexity – simplicity cognitive, style conceptualization etc [32]. However, this study dwelt mainly on field independence and field dependence. According to Muhammad [33] field dependent learner is someone who is mostly dependent on the materials given to him in his environment. Noroozi [34] revealed that field dependence students are higher achievers. Contrarily, Daniels and Moore [35]; Hyde [36] and Govers [37] indicated that field independence learners perform better than field dependence in their academic.

Finally, Muhammad [33] pointed that students with field- independent cognitive style have higher academic achievement than students with field-dependent cognitive style. Besides, Ates and Catalogu [38] indicated that individuals with field-dependent cognitive style cannot deal with the subject perceived separately from the surrounding elements. This means that those individuals who have gained more academic achievements tend to be field independent in comparison to those who are less successful in their studies. From the above, it be inferred that field-dependence negatively influence the students' academic success, whereas field-independence enhances positive academic success [39-42]. However, Shoe and Leila [23] revealed positive relationship of field dependence and field independence students and the academic achievement. Arising from the inconsistence findings on the above subject matter, the study therefore sought to examine the relationship between each of personality traits, cognitive styles and academic success of secondary school students.

RESEARCH OBJECTIVES
- Investigate levels of academic success among secondary school students in Ondo State;
- Determine the prevalence personality traits among secondary school students;
- Determine the relationship between personality traits and academic success among secondary school students;
- Ascertain the relationship between cognitive styles and academic success among secondary school students; and
- Determine the relative contribution of personality traits and cognitive styles on academic success among secondary school students

METHODOLOGY
The study adopted the survey design. The population for the study comprised secondary school students in Ondo State. The sample of 500 students was selected using simple random sampling technique.

Three Local Government Areas (LGAs) were selected from the three senatorial district in Ondo State using simple random sampling technique. Again, 15 secondary schools were selected from the three LGAs using simple random sampling technique. Thereafter, 500 students were selected across the 15 schools using intact class of the senior secondary school students III. An adapted instrument titled "Personality Traits, Cognitive Styles and Academic Success Questionnaire"

(PCAQ) containing four sections was used to collect data from the respondents. Data collected were analysed percentage, Pearson product correlation coefficient and multiple regressions.

RESULTS
Research Question One
What are the levels of academic success among secondary school students in Ondo State?

Table-1: Levels of Academic Success of Secondary School Students in Ondo State

Levels of Academic Success	Frequency	Percentage
Low	126	25.2
Moderate	170	34.0
High	204	40.8
Total	500	100.0

The above results showed that 40.8% of the students possessed high level of academic success; 34.0% had moderate level while the remaining 25.2% of students demonstrated low level of academic success.

From the above, it can be concluded that the number of students who possessed high level of academic success was slightly better.

Table-2: Types of Personality Traits Mostly Exhibited by the Secondary School Students

Types of Personality Traits	Frequency	Percentage
Openness	101	20.2
Conscientiousness	46	9.2
Extraversion	86	17.2
Agreeableness	40	8.0
Neuroticism	227	45.4
Total	500	100.0

Table 2 above showed that the personality traits that were mostly exhibited by the students in Ondo State were neuroticism (45.4%); openness (20.2%), extraversion (17.2%), conscientiousness

(9.2%) and agreeableness (8.0%). From the results, it is evident that majority of secondary school students in Ondo State demonstrated neuroticism trait.

Table-3: Types of Cognitive Styles Employed by the Secondary School Students

Cognitive Styles	Frequency	Percentage
Field Independent	158	31.6
Field dependent	342	68.4
Total	500	100.0

From Table 3, 68.4% of the students usually employed field dependent cognitive style while the remaining 31.6% of the students employed field

independent style. The results revealed that most of the students adopted field dependent cognitive style

Table-4: Relationship between Personality Traits and Academic Success Secondary School Students

Variables	N	X	SD	r	p
Openness/Academic Success	500	17.17	5.15	0.991	< 0.05
	500	56.24	18.15		
Conscientiousness/Academic Success	500	17.00	5.29	0.991	< 0.05
	500	56.24	18.15		
Extraversion/Academic Success	500	17.13	3.71	0.989	< 0.05
	500	56.24	18.15		
Agreeableness/Academic Success	500	13.87	4.01	0.984	< 0.05
	500	56.24	18.15		
Neuroticism/Academic Success	500	17.69	6.05	0.984	< 0.05
	500	56.24	18.15		

The results above showed the correlation coefficient between personality traits and academic success of students. The results showed positive and significant relationship between openness (r = 0.991; p < 0.05); conscientiousness (r = 0.991; p < 0.05), extraversion (r = 0.989; p < 0.05), agreeableness (r = 0.984; p < 0.05) and neuroticism (r = 0.984; p < 0.05) and academic success of students. All the results indicated a positive relationship between personality traits and academic success. The results nullified the null hypothesis.

Table-5: Relationship between Cognitive Styles and Academic Success Secondary School   Students

Variables	r	p
Field dependent	-.477	< 0.05
Academic Success		
Field independent	0.989	< 0.05
Academic Success		

Table 5 above showed the results of correlation coefficient between cognitive styles and academic success. The results showed that field dependent cognitive style had negative and significant relationship at (r = - 0.477; p < 0.05) whereas, field independent cognitive style had positive and significant relationship (r = 0.989; p < 0.05). The results rejected the null hypothesis.

Table-6: Relative Contribution of each of the Personality Traits and Cognitive Styles on Academic Success of Secondary School Students

Model		Unstandardized Coefficients		Unstandardized Coefficient		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	18.290	1.768		10.347	0.000
	Openness	1.442	.0233	0.409	6.189	0.000
	Conscientiousness	-.084	0.184	-.024	-.455	0.649
	Extraversion	0.987	0.108	0.281	9.100	0.000
	Agreeableness	0.209	0.126	0.046	1.657	0.098
	Neuroticism	0.142	0.074	0.047	1.923	0.055
	Field dependent	-1.884	0.171	-.069	-11.030	0.000
	Field independent	0.616	0.087	0.213	7.120	0.000
a. Dependent Variable: Academic Success						

Table 6 showed the contribution of each of personality traits and cognitive styles on academic success of secondary school students in the study area. The results as shown in the Table revealed that openness (t = 6.12; β = 0.41); conscientiousness (t = -455; β = -024), extraversion (t = 9.1; β = 0.28); agreeableness (t = 1.66; β = 0.047) and neuroticism (t = 1.92; β = 0.055). Also, the results for cognitive styles showed that field dependent (t = -11.03; β = -.069) and field independent yielded (t = 7.12; β = 0.00). While the results of openness, extraversion and neuroticism were significant at 0.05 level of confidence, values of agreeableness and conscientiousness were not significant. Also, both field dependent and field independent were significant at 0.05 level of confidence.

From the above, the beta weights and t-ratio for each independent variable, the results showed that openness had the highest influence on the dependent variable followed by extraversion, next was the field independent, then field dependent, neuroticism and agreeableness while conscientiousness had the lowest contribution to the dependent variable. Therefore, the results conclude that personality traits (extraversion, neuroticism and openness) had significant contribution to academic success while the contributions of agreeableness and conscientiousness aspect of personality traits were not significant whereas, both field dependent and independent cognitive styles had significant contribution on academic success.

DISCUSSION OF FINDINGS

One the findings emanated from the results was that more secondary school students in Ondo State demonstrated high level of academic success. The findings mean that not too many students demonstrated high performance in their academics. It also authenticated the position of Awosiyan and Opki [43] and Adeyemi [8] that academic performance of students in public examinations in Ondo state was low.

Another finding was that majority of students in the study area demonstrated neuroticism trait. Basically, the neurotic students are believed to suffer from abnormalities which can hinder them to perform effectively in their academic [13, 22]. This findings buttress the fact that few students in Ondo State

demonstrated high level of academic success because of their neurotic behaviour.

Again, it was revealed that field dependent was the prevailing cognitive style among the senior secondary school students in the state. This means that majority of senior secondary school students in Ondo State relied more on external frames of reference. They depended to a greater extent on their superior social skills to solve academic problems.

Moreover, the findings indicated that there existed positive relationship between personality traits and academic success. However, it was revealed that that openness had the highest influence on the dependent variable followed by extraversion, next was neuroticism and agreeableness while conscientiousness had the lowest contribution to the dependent variable. Previous studies had expressed that openness and agreeableness positively correlated with academic success [44], Furnham, Zhang and Chamoro [25] whereas, it was also established that extraversion, conscientiousness and neuroticism predicted low academic performance [25, 21, 27].

Finally, the findings supported Shoe and Leila [37] that field dependence and field independence positively correlated with students' academic achievement. However, Cano [39]; Danili and Reid [40] had earlier expressed that field-dependence negatively influenced the students' academic success, but field-independence enhanced positive academic success [41, 42]. It can be inferred from the above that cognitive styles and students' academic success are significantly related but field independent students have more academic success.

CONCLUSION/RECOMMENDATIONS

The study concluded that most secondary school students in Ondo State exhibited neuroticism trait and employed field dependent cognitive style and those have restricted only few of them to demonstrate high level of academic success. It is thus recommended that senior secondary school students need to change their cognitive style from field dependent to field independent so that they can be highly analytical in perceiving and processing information. It is also recommended that in order for students to overcome abnormalities which can hinder them to perform effectively in their academic, they should be reality and be less emotional about their academic matters.

REFERENCES

1. Koehler, M. J., & Mishra, P. (2008). Introducing tpck. *Handbook of technological pedagogical content knowledge (TPCK) for educators*, 3-29.
2. Chomoro-Premuzic, T. & Furnham, A. (2005). *Personality traits and intellectual competence.* Mahwah, N.J: Lawrence Erlbaum Associates.
3. Atkinson, S. (2004). A comparison of pupil learning and achievement in computer aided learning and traditionally taught situations with special reference to cognitive style and gender issues. *Educational Psychology, 24(5), 695-679.*
4. Uwadiae, I. (2007). School environment variables as determinants of students' performance in secondary schools. In *An unpublished paper presented at the WAEC Monthly Seminar in Lagos*.
5. Bello-Osagie, & Olugbamila, A. (2009). Events that shape education. *The Nations, pb2, December, 31.*
6. Gwarjiko, H. U. I. (2015). Effect of mixed gender streaming on students' performance in English language: a case study of English as a second language classroom in Niger State, Nigeria. *International journal of Academic research and reflection, 3*.
7. Gbore, L. O., & Daramola, C. A. (2013). Relative Contributions of Selected Teachers' Variables and Students' Attitudes toward Academic Achievement in Biology among Senior Secondary Schools Students in Ondo State, Nigeria. *Current Issues in Education*, *16*(1).
8. Adeyemi, T. O. (2011). A comparative study of students' academic performance in public examinations in secondary schools in Ondo and Ekiti States, Nigeria. *Current Research Journal of Economic Theory, 3*(2), 36 – 42.
9. Jato, M., Ogunniyi, S. O., & Olubiyo, P. O. (2014). Study habits, use of school libraries and students academic performance in selected secondary schools in Ondo West Local Government Area of Ondo State. *International Journal of Library and Information Science*, *6*(4), 57-64.
10. Mlambo, V. (2011). An analysis of some factors affecting student academic performance in an introductory biochemistry course at the University of the West Indies. *The Caribbean Teaching Scholar*, *1*(2).
11. Gbadamosi, L. (2014) Educational planning in the 21st Century. A paper presented at the Conference of Directors Planning, Research and Statistics (DPRS) held at *National Institute for Educational Planning and Administration (NIEPA), Ondo.*
12. Uwaidiae, I. (2010). WAEC releases May/June WASSCE results. This day newspaper of 20/08/2010. Retrieved from allafrica.com.nigeria,nig on 6/05/2011.
13. Adeniyi, W. O. (2012). Personality traits and emotional intelligence as determinants of administrative effectiveness of secondary school principals in Southwestern, Nigeria, *Unpublished Ph. D (Dissertation) submitted to the Faculty of Education, Obafemi Awolowo University, Ile-Ife, Nigeria.*
14. Oladele, J. O. (2004). *Fundamentals of educational psychology*: Lagos, Johns-Lad Publishers Ltd.
15. Fleeson, W., & Gallagher, P. (2009). The implications of Big Five standing for the distribution of trait manifestation in behavior: Fifteen experience-sampling studies and a meta-

analysis. *Journal of Personality and Social Psychology, 97*(6), 1097–1114.

16. McAbee, S. T., & Oswald, L. (2013). The criterion-related validity of personality measures for predicting GPA: A meta-analytic validity competition. *Psychological Assessment, 25*(2), 532−544.

17. Conard, M. (2006). Aptitude is not enough: How personality and behavior predict academic performance. *Journal of Research in Personality, 40*, 339-346.

18. Noftle, E., & Robins, R. (2007). Personality predictors of academic outcomes: Big five correlates ofGP A and SAT scores. *Journal of Personality and Social Psychology, 93*(1), 116-130.

19. Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin, 135*(2), 322−338.

20. John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of Personality: Theory and Research, pp. 114−158. New York: Guilford Press.*

21. Cucina, J. M., & Vasilopoulos, N. L. (2005). Nonlinear personality-performance relationships and the spurious moderating effects of traitedeness. *Journal of personality, 73*, 227-259.

22. Laidra, K., Pullmann, H., & Allik, J. (2007). Personality and intelligence as predictors of academic achievement: Across-sectional study from elementary to secondary school. Personality and Individual Differences, 1-11.

23. Di Giunta, L., Alessandri, G., Gerbino, M., Luengo Kanacri, P., Zuffiano, A., & Caprara, G. V. (2013). The determinants of scholastic achievement: The contribution of personality traits, self-esteem, and academic self-efficacy. *Learning and Individual Differences, 27*, 102−108.

24. DeYoung, C. G. (2010). Personality neuroscience and the biology of traits. Social and personality. *Psychology Compass, 4*(12), 1165−1180.

25. Furnham, A., Zhang, J., & Chamoro, T. (2006). The relationship between psychometric and self-estimated intelligence, creativity, personality and academic achievement. *Imagination, Cognition and Personality, 25*(2), 119-145.

26. Duckworth, A. L., & Seligman, M. E. P. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science, 16*(12), 939−944.

27. Lounsbury, J. W., Tatum, H., Gibson, L. W., Park, S. H., Sundstorm, E., Hamrick, F., & Wilburn, D. (2003). The development of a big five adolescent personality scale. *Psychoeducational Assessment, 21*, 111-133.

28. Gibbs, B. G. (2009). "Gender and Cognitive Skills throughout childhood" *Ph.D. Dissertation Graduate Schools of Ohio State University.*

29. Sternberg, R. J., Grigorenkoo, E. L., & Zang, L. (2014). Styles of Learning and Thinking Matter in Institution and Assessment. *Perspectives on Psychological Science, 3*(6) 486-504.

30. Pitcher, R. T (2002). Cognitive learning styles: A review of the field dependent- field independent approach. *Journal of Vocational Education and Training, 54* (1), 177- 132.

31. Ackerman, P. L., & Heggestad, E. D. (1997). Intelligence, personality and interests: Evidence for overlapping traits. *Psychological Bulletin, 121*, 219-245.

32. Messick, S. (1984). The nature of cognitive styles: problems and promises in educational practices, *Educational Psychologist, 19*, 59-74.

33. Muhammad, A. (2001). The role of cognitive style in creative performance. *Journal of Psychology, 45*(11), 16-51

34. Noroozi, D. (2003). Cognitive styles of Students and their relationship with learning. Tehran: Islamic Azad University, the South Branch. Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.*), Handbook of personality: Theory and research, New York: Guilford Press, 114-158*

35. Daniels, H. L., & Moore, D. M. (2000). Interaction of cognitive style and learner control in ahypermedia environment. *International Journal of Instructional Media, 27*(4), 369-383.

36. Hyde, J. S. (2005). The Gender Similarities Hypothesis. *American Psychologist,* 581-592.

37. Govers, A. (2007). Gender differences in Children and Adults in Cognitive Styles, Academic Visual Motor, Emotional and Behavioural Functioning in Clinic Referred Population". *Master's Thesis, p 26.*

38. Ates, S., & Cataloglu, E. (2007). The effect of cognitive styles on conceptual understandings and problem-solving skills in introductory mathematics. *Research in Science and Technological, 25*(2), 16-21

39. Cao, Y. (2006). *Effects of field dependent-independent cognitive styles and cueing strategies on students' recall and comprehension* (Doctoral dissertation).

40. Danili, E., & Reid, N. (2006). Cognitive factors that can potentially affect pupils' test performance. *Chemistry Education Research and Practice, 7, 6*4-83.

41. Hedderich, R. (2004). Energy-converting [NiFe] hydrogenases from archaea and extremophiles: ancestors of complex I. *Journal of bioenergetics and biomembranes*, *36*(1), 65-75.

42. Zhang, L., & Sternberg, R. J. (2005). A threefold model of intellectual styles. *Educational Psychology Review, 17,* 1-53.

43. Jato, M., Ogunniyi, S. O., & Olubiyo, P. O. (2014). Study habits, use of school libraries and students academic performance in selected secondary schools in Ondo West Local Government Area of

Ondo State. *International Journal of Library and Information Science*, *6*(4), 57-64.
44. Chomoro-Premuzic, T., & Furnham, A. (2003). Personality traits and academic exam performance. *European Journal of Personality, 17*, 237-250.