International Journal of Science and Research Archive

eISSN: 2582-8185

Cross Ref DOI: 10.30574/ijsra

Journal homepage: https://ijsra.net/

(RESEARCH ARTICLE)

Check for updates

Social Personality Types as Related to Mathematical Performance of Selected Grade Five Pupils in Santa Cruz District, Division of Laguna: Basis for Proposed Mathematics Intervention Program

Marjorie Vargas Tan *

Department of Education, Callos (Escolapia) Elementary School, Santa Cruz District, Laguna, Philippines.

International Journal of Science and Research Archive, 2025, 16(01), 1994-2000

Publication history: Received on 17 June 2025; revised on 26 July 2025; accepted on 28 July 2025

Article DOI: https://doi.org/10.30574/ijsra.2025.16.1.2148

Abstract

This study explored the relationship between social personality types and the mathematical performance of Grade 5 pupils in Santa Cruz District, Laguna. Using a descriptive research design, the study randomly sampled 304 students across 17 schools. The pupils were classified as introverts, extroverts, or ambiverts based on a structured personality questionnaire. Their corresponding first-quarter grades in mathematics were analyzed. Results revealed that ambivert students achieved the highest average grade (87.13), followed by extroverts (86.18) and introverts (85.27). However, statistical analysis using ANOVA showed no significant difference among the groups ($F=2.48$, $p>0.05$). The findings indicate that although personality may influence classroom behavior and interaction, it does not significantly impact academic performance in mathematics. Teachers are encouraged to understand students' personality types to better support learning strategies. The research recommends further studies on personality-based instruction across subjects. It should express complete and concise description of key points of the study; it should also suggest any implications or applications of the research you discuss in the paper.

Keywords: Social Personality; Mathematics Performance; Introvert; Extrovert; Ambivert; Grade 5 Pupils

1. Introduction

The pandemic has transformed traditional education into more flexible and student-centered learning environments. Distance learning, utilizing modalities such as modular and online systems, emphasizes the individual needs of learners. This change has highlighted the importance of personal characteristics, especially personality, in academic performance. This study is anchored in the belief that a pupil's personality is a crucial factor influencing their learning capacity in subjects like Mathematics. Guided by Hans Eysenck's theory on personality types introvert, extrovert, and ambivert the study explores how these types correlate with academic performance among Grade 5 pupils in Santa Cruz District, Laguna. Understanding this correlation can provide teachers and educational planners with valuable insights into student learning behaviors and strategies for differentiated instruction.

2. Material and methods

A descriptive survey research design was employed to determine the relationship between personality types and mathematics performance. The study included 304 Grade 5 pupils from 17 public elementary schools in Santa Cruz District, Laguna, for School Year 2020–2021. Participants were selected using stratified random sampling. A structured questionnaire adapted from Riphah International University was used to identify the social personality type of each respondent. Pupils' first-quarter grades in Mathematics, obtained from Form 138, were used as the performance metric.

* Corresponding author: Marjorie Vargas Tan

Data were collected through Google Forms due to pandemic restrictions. Statistical analyses included mean, standard deviation, and one-way ANOVA.

3. Results and discussion

Among the respondents, 68.09% were classified as ambiverts, 23.35% as extroverts, and 8.55% as introverts. The average Mathematics grades were: ambiverts 87.13 (Very Satisfactory), extroverts 86.18 (Satisfactory), and introverts 85.27 (Satisfactory). Although ambiverts performed slightly better, the ANOVA results showed no significant difference in mathematics performance based on personality type ($F=2.48 < F\text{-critical}=3.03$; $p>0.05$). These findings suggest that while personality traits may influence behavior and engagement, they do not significantly affect academic outcomes in mathematics. This supports the notion that instructional approaches should consider personality types for engagement rather than performance differentiation.

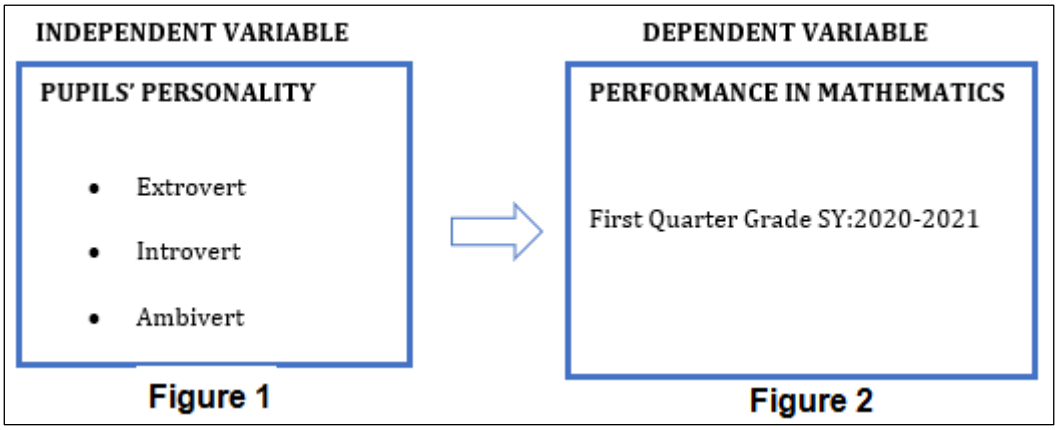

Figure 1 The Research Paradigm of the Study

As indicated in the figure 1, figure 1 shows the independent variables which are the pupils' personalities categorized as introvert, extrovert and ambivert. Figure 2 shows the dependent variable which is the selected grade 5 pupils' mathematical performance. The arrow shows the difference between the given variables.

Table 1 Social Personality Type of Grade Five Students

Pupils Social Personality	F	$\bar{X}$	Percentage	Interpretation
Extrovert	71	3.01	23.35	Moderately Evident
Introvert	26	3.39	8.55	Moderately Evident
Ambivert	207	3.48	68.09	Evident
	304		100	

Legend			
Scale	Weight	Remarks	Verbal Interpretation
5	4.20-5.00	Always	Highly Evident
4	3.40-4.19	Often	Evident
3	2.60-3.29	Sometimes	Moderately Evident
2	1.80-2.59	Seldom	Less Evident
1	1.00-1.79	Never	Not Evident

The ambivert advantage stems from the tendency to be assertive and enthusiastic enough to persuade and close, but at the same time, listening carefully to pupils' interests and avoiding the appearance of being overly confident or excited.

Once again, balance proves more beneficial than extremes -- and another personality myth hits the proverbial rocks.," Grant said.

Understanding how introverted or extroverted an individual can also help teachers in the positive psychology space adapt their approach to suit the subject while in relationships and social bonds and externalize actions can help us adapt our behavior accordingly.

Table 2 Level of Performance in Mathematics of Grade Five Students

Students' Personality	**P-Value**	**F-Value**	**F-Crit**	**Interpretation**
	0.09	2.48	3.03	Not Significant
Pupils' Social Personality	First Quarter Grade in Mathematics	Frequency	Percentage	Verbal Interpretation
Extrovert	86.18	71	23.36	Satisfactory
Introvert	85.27	26	8.55	Satisfactory
Ambivert	87.13	207	68.09	Very Satisfactory
	86.19	304		Satisfactory

Legend	
Rating	Verbal Interpretation
94-100	Outstanding
87.00-92.99	Very Satisfactory
81.00-86.99	Satisfactory
76.01-80.99	Fairly Satisfactory
76-below	Needs Improvement

Table 2 shows the average grade of the pupils in Mathematics in accordance to their personality type. Based on the result above, students with extrovert personality got an average of 86.18 (n=71) and interpreted as "Satisfactory". Introvert pupils obtained an average of 85.27 (n=26) and interpreted as "Satisfactory". Ambivert students got the average score of 87.13 (n=207) and interpreted as "Very Satisfactory". These three personalities have a mean grade of 86.19 and are interpreted as "Satisfactory".

This is also a good academic representation on how grade 5 pupils cope and adjust to the new normal in education, regardless of what learning modality they were using.

The table shows that ambivert with high academic performance showed better performance. However, introverts with the lowest achievement among the social personalities stated have low levels of self-confidence, are far to show their intelligence. Fear that their answer will be criticized by the teacher and peer.

Table 3 Difference in The Performance in Mathematics of Grade Five Pupils of Santa Cruz District Based on Personality Type

	P-Value	**F-Value**	**F-Crit**	**Interpretation**
Students' Personality	0.09	2.48	3.03	**Not Significant**

Table 3 shows the summary of one-way Analysis of Variance computation. The study involves 304 respondents from 17 schools in Santa Cruz District, Division of Laguna.

Since the computed f-value of 2.48 is less than the critical f-value of 3.03 with the degree of freedom of 2 and 301, and the p-value is greater than 0.05 level of significance, therefore, based on the result on table number 3 there is no significant difference in the performance in Mathematics of grade 5 pupils of Santa Cruz District based on their personality. It can therefore be said that the social personality type of a pupil can influence his or her academic performance.

Although cognitive ability is the key predictor of grades and overall academic performance, personality also plays a role. The question that researchers explored in this study was how social personality affects academic performance. Their basic hypothesis was that the effects of personality on academic performance are mediated by their first quarter grade. In fact, previous researches indicate that the ambivert is the most visible personality predictor of academic performance (as important as cognitive ability in terms of prediction), and it's also a strong predictor of success in the workplace.

There are a number of important limitations to this study which the authors duly note such as the use of single-item measures of academic performance in Mathematics and social personality types, however the results provide some food for thought as we consider how personality plays itself out in our children's (and our own) education.

4. Conclusion

This study concludes that social personality types (introvert, extrovert, ambivert) do not significantly affect mathematical performance among Grade 5 pupils in Santa Cruz District. However, ambiverts showed slightly better performance, possibly due to their balanced social behavior and adaptability. The findings emphasize the importance of understanding student personality to tailor instructional strategies and foster inclusive classroom environments. This study benefits educators and researchers by encouraging personality-aware teaching practices that improve engagement and motivation in mathematics.

Compliance with ethical standards

Acknowledgments

The researcher extends her gratitude to the school heads and Grade 5 teachers of Santa Cruz District for their support and cooperation, and to the pupils who participated in the study.

Disclosure of conflict of interest

The author declares no conflict of interest.

Statement of ethical approval

The present research work does not contain any studies performed on animals/human subjects by any of the authors.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] Burns and Hamm (2011). nternational Perspectives on Teaching and Learning Mathematics with Virtual Manipulatives page 96, 166

[2] Cain, S. (2013). Quiet: The power of introverts in a world that can't stop talking. Broadway Books.

[3] Carlo Magno, PhD (2010) Measurement*and*Evaluation*in*the*Philippine*Higher*Education: *Trends*and*Development

[4] Cheng, H., and Furnham, A. (2014). The associations between parental socio-economic conditions, childhood intelligence, adult personality traits, social status and mental well-being. Social indicators research, 117(2), 653-664.

[5] Davey, J., and George, C. (2011). Personality and Finance: The Effects of Personality on Financial Attitudes and Behaviour. International Journal of Interdisciplinary Social Sciences, 5(9).

[6] Dy, Marison and Espiritu-Santo, Klarisse and Ferido, Melissa and Ria, Sanchez. (2015). Stressors and stress responses of Filipino college students. Asia life sciences. 24. 737-759.

[7] Eve-Cahoon, H. (2013). Understanding the introvert preference. Journal of Nursing Education, 42(5), 191-193

[8] Funder DC. (2009) The Personality Puzzle p. 542

[9] Galang, Adrianne. (2013). Paradigms in Personality Assessment: a Taxonomy of Converging Assumptions.

[10] Giné, X., and Yang, D. (2009). Handbook of good psychiatric management for borderline personality disorder. Journal of development Economics, 89(1), 1-11.

[11] Grant, J. E., Mooney, M. E., and Kushner, M. G. (2012). Prevalence, correlates, and comorbidity of DSM-IV obsessive-compulsive personality disorder: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. Journal of psychiatric research, 46(4), 469-475.

[12] Ivy Jane M. Tolentino (2018) Personality Traits and Academic Performance of Students who are Children of Overseas Filipino Workers: Basis for Intervention Program. Tin-aw. Vol. 2 no. 1

[13] Kahnweiler, J. B. (2009). The introverted leader: Building on your quiet strength. Berrett-Koehler Publishers.

[14] Karten, N. (2013). Leading as an introvert. CIO, 73

[15] Kim, T. Y., Hon, A. H., and Crant, J. M. (2009). Proactive personality, employee creativity, and newcomer outcomes: A longitudinal study. Journal of Business and Psychology, 24(1), 93-103.

[16] Little, Brian. (2008). Personal Projects and Free Traits: Personality and Motivation Reconsidered. Social and Personality Psychology Compass. 2. 1235 - 1254. 10.1111/j.1751-9004.2008.00106.x.

[17] Marini, V. A., and Stickle, T. R. (2010). Evidence for deficits in reward responsivity in antisocial youth with callous-unemotional traits. Personality Disorders: Theory, Research, and Treatment, 1(4), 218.

[18] Mayer, J. D. (2007). Personality: A systems approach. Boston: Allyn and Bacon

[19] Nobel, K., Brodin, T., and Sih, A. (2010). Personality traits and dispersal tendency in the invasive mosquitofish (Gambusia affinis). Proceedings of the Royal Society B: Biological Sciences, 277(1687), 1571-157

[20] Norris, C. J., Decety, J., Monteleone, G., and Nusbaum, H. (2009). In the eye of the beholder: individual differences in perceived social isolation predict regional brain activation to social stimuli. Journal of cognitive neuroscience, 21(1), 83-92.

[21] Patel, P. C., and Thatcher, S. M. (2014). The science of personality. Journal of Management, 40(7), 1932-1979.

[22] Personality is the organized, developing system within the individual that represents the collective action of that individual's major psychological subsystems (Mayer, 2007, p. 14).

[23] Petrilli, S. (2016). Semiotics and education, semioethic perspectives. Journal of Philosophy of Education. ;50(2):179–195.

[24] Tony R., (2021)"Empowerment, Personality, and Leader-Member Exchange Quality in Physicians" (2021). Walden Dissertations and Doctoral Studies. 9885.

[25] Ryckman RM. 2009 *Theories of personality*. 9th ed. Belmont, CA: Cengage Learning; .

[26] Cain, S. (2012). *Quiet: The Power of Introverts in a World That Can't Stop Talking*. New York: Crown Publishing Group.

[27] Ta'eed V. (2008). The social classroom: integrating social network use in education. In: Katz Y, editor. *Handbook of research on social software and developing community ontologies*. Hershey (PA): IGI Global;.

[28] Vedel, Anna and Poropat, Arthur. (2017). Personality and Academic Performance. 10.1007/978-3-319-28099-8_989-1.

[29] Wills F.(2008). Skills in Cognitive Behaviour Counselling and Psychotherapy,p.94

[30] Yacat, Jay. (2013). Filipino Psychology (Sikolohiyang Pilipino). 10.1002/9781118339893.wbeccp224.

[31] Zhang V. (2008). The Role of Personality in Second Language Acquisition

[32] Aliana C. Garcia, Arienne Mae G. Cheung And Madelle Loredo – Abuyo (2015). CAS Research Journal Psychological Research Vol. 2 No.2 May 2015 https://lpulaguna.edu.ph/wp-content/uploads/2016/10/correlation-of-the-academic-performance-and-grit-among-the-college-of-arts-and-sciences-batch-2014-students-of-lpu-laguna.pdf

[33] Apruebo, R. (2007). Personality Psychology. Manila: Educational Publishing House.

[34] Baladhay, J. (2013) Basic education teachers' concept of effective teaching: Inputs to teacher education curriculum in the Philippines

[35] Belen R. (2008) The Study Habits and Attitudes, Academic Aptitude, Personality Profile and Academic Performance of the Students of TIPQC. The Research Journal Quezon City. Volume 5 no. 1. https://ejournals.ph/article.php?id=9237

[36] Belly, A., Bestion, E., Richard, M., and Cote, J. (2014). Partners' personality types and mate preferences: predation risk matters. Behavioral Ecology, 25(4), 723-733.

[37] De Goma,D3:D12 I.A., Moneva, J.C. (2020). Introvert – Extrovert Personality Types and Self-confidence- A Case Study from Philippines. IRA International Journal of Education and Multidisciplinary Studies (ISSN 2455-2526), 16(1), 68-75. doi: http://dx.doi.org/10.21013/jems.v16.n1.p10

[38] DiTiberio, J. K., and Jensen, G. H. (2018). Writing and personality: Finding your voice, your style, your way. Routledge.

[39] Drenth K, de Koning, B. B., Loyens, S. M., Rikers, R. M., Smeets, G., and van der Molen, H. T. (2012). Generation Psy: Student characteristics and academic achievement in a three-year problem-based learning bachelor program. Learning and Individual differences, 22(3), 313-323.

[40] Eyong, E. I., David, B. E., and Umoh, A. J. (2014). The influence of personality trait on the academic performance of secondary school students in Cross River State, Nigeria. IOSR Journal of Humanities and Social Science, 19(3), 12-19.

[41] Ferguson, K. M. (2009). Exploring family environment characteristics and multiple abuse experiences among homeless youth. Journal of interpersonal violence, 24(11), 1875-1891.

[42] Garner, A. A., Greening, L., Stoppelbein, L., and Luebbe, A. M. (2013). Reward and punishment sensitivity are differentially associated in children. Journal of Research in Personality, 47(6), 719-727.

[43] Gibson, B., Goldberg, A., and Zhu, X. (2012). Improving reading to improve math. Scientific Studies of Reading, 16(4), 316-340.

[44] Grimes, J. O., Cheek, J. M., and Norem, J. K. (2011, January). Four Meanings of Introversion: Social, Thinking, Anxious, and Inhibited. Poster presented at Society for Personality and Social Psychology, San Antonio, TX.

[45] Igbojinwaekwu, P. C. (2016). Comparative Effects of Guided and Unguided Multiple Choice Objective Questions Tests on Students' Mathematics Academic Achievement According to Gender. Journal of Educational and Social Research, 6(2), 193.

[46] Irina and Sofia. (2018). The axiological orientation of students' personality. Psychology of Russia: State of Art. 11. 95-105. 10.11621/pir.2018.0108.

[47] Laney EK. (2016). Beyond self-interest: Humility and the quieted self. In: Brown KW, Leary MR, editors. *The Oxford handbook of hypo-egoic phenomena*. Oxford: Oxford University Press; 2016. p. 243–256.

[48] Jung, C. G. (2014). *The archetypes and the collective unconscious*. 2nd ed. London: Routledge;

[49] Kurtus, R. (2012). *Tricks for good grades*. Morrisville (NC): Lulu.com;

[50] Laguador, J. M., and Dizon, N. C. (2013). Academic achievement in the learning domains and performance in licensure examination for engineers among LPU's mechanical and electronics engineering graduates. *Int J Manag IT Eng*. 2013;3(8):347–356.

[51] Maningas, Alexander Roger S. Castronuevo, Eva A. (2017) The Bedan Journal of Psychology 2017. Pp. 6-7.

[52] Marcus, B., Ashton, M. C., and Lee, K. (2013). A note on the incremental validity of integrity tests beyond standard personality inventories for the criterion of counterproductive behaviour. Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration, 30(1), 18-25.

[53] Marfil, M., Matrángelo, G., Yaccarini, C., and Travis, D. (2020). Contributions of Centrality of Events and Personality to the relationship between Traumatic Events and Mental Disorders. {PSOCIAL}, 6(2), 72-78.

[54] Olga (2020). Physical Education as the Basis of Students' Personality Development. Development of education. 16-19. 10.31483/r-96746.

[55] Robles J. and Agcaoli K. (2013). Personality and College Adjustment of Freshman Students of Polytechnic University of the Philippines : A Correlational Study

[56] Sharma, S., Bottom, W. P., and Elfenbein, H. A. (2013). On the role of personality, cognitive ability, and emotional intelligence in predicting negotiation outcomes: A meta-analysis. Organizational Psychology Review, 3(4), 293-336.

[57] Taylor, A. (2013). Reconfiguring the natures of childhood. Routledge.

[58] Yen, S., Gagnon, K., and Spirito, A. (2013). Borderline personality disorder in suicidal adolescents. Personality and mental health, 7(2), 89-101.