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Dominant Temperament Traits and Student Challenges Among Science Education Majors at Ifugao State University

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Abstract

This study explored the dominant temperament traits among students in the Bachelor of Secondary Education major in Science at Ifugao State University – Potia Campus and examined the challenges they encounter based on their temperament types, Sanguine, Melancholy, Choleric, and Phlegmatic. Using a mixed-methods research design, quantitative data were gathered through standardized questionnaires, and qualitative responses were collected via open-ended questions. A total of 57 students participated, selected through cluster sampling across third-year levels. Descriptive statistics identified the dominant temperament for each demographic profile, while thematic analysis revealed patterns in student experiences. Findings showed that Sanguine students were dominant among females and younger students, often struggling with focus in noisy environments; Melancholic students expressed self-critical tendencies and anxiety about performance; Choleric students exhibited assertiveness but clashed in group settings; and Phlegmatic students avoided leadership and conflict. These insights have implications for differentiated instruction, guidance counseling, and student support services tailored to temperament.

Keywords: *Temperament, Student Challenges, Sanguine, Choleric, Melancholy, Phlegmatic*

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Introduction

Recognizing individual differences among students has become essential in understanding learning behavior, motivation, and academic outcomes in education systems worldwide. Research underscores that demographic factors such as gender, socioeconomic status, and geographic background significantly influence students' temperament and development. For instance, Strickhouser and Sutin (2020) found that lower socioeconomic status correlates with less adaptive temperament traits, such as lower sociability and persistence factors that affect long-term educational achievement. Likewise, Willoughby et al. (2015) revealed that emotional regulation in children was more strongly associated with poverty than race, highlighting how environmental factors shape temperament development.

In the Philippine educational context, personality traits are increasingly recognized for their influence on student performance. Studies by Tus et al. (2021) and Rivera (2023) emphasized that personality significantly affects academic success and that understanding these traits can enhance teaching strategies and curriculum development. Similarly, Cainday et al. (2023) found strong correlations between personality traits and work engagement in higher education, showing that individual differences extend their impact beyond classroom learning. Despite these findings, there is a noticeable gap in the exploration of specific temperament types namely Sanguine, Melancholic, Choleric, and Phlegmatic among Filipino students, particularly among Science majors in teacher education programs.

In Ifugao province, where geographic isolation and cultural heritage shape educational experiences, understanding individual differences is vital to addressing the unique challenges faced by students. Ormilla (2022) reported that socio-economic and psychological factors significantly affect academic outcomes among learners in the Alfonso Lista District, while Alangui (2018) emphasized how indigenous identity influences student perseverance and attitudes toward education. For Science majors who often face rigorous academic demands and the pressure of mastering both content and pedagogy recognizing temperament traits can offer valuable insights into their learning styles, coping mechanisms, and sources of motivation. Such understanding is especially important in regions like Ifugao, where access to educational resources may be limited and cultural diversity is a defining factor.

Understanding the temperament profiles of future Science educators is particularly important as it allows institutions to design interventions that are responsive to their unique emotional and motivational needs. By identifying challenges associated with specific temperament types, teacher education programs can develop more inclusive and supportive learning environments. Ultimately, this research contributes to the broader objective of improving the quality of science education by recognizing and addressing the diverse needs of learners preparing Science majors not only to succeed academically but also to become effective, empathetic educators in the future.

Research Objectives

This study aims to assess the dominant temperament traits among Science majors in the College of Education and explore how these traits vary across demographic factors such as age, sex, year level, and academic program. Furthermore, the study seeks to identify the challenges experienced by students with different temperament types through qualitative interviews, highlighting how these traits affect their academic and emotional experiences.

Methodology

Creswell (2014) emphasizes that outlining a study's methodology including aspects such as research design, location, participants, tools, and methods of analysis is crucial for maintaining clarity, accuracy, and the potential for replication. This chapter presents the methodological approach used to investigate the dominant temperament traits of Bachelor of Secondary Education – Major in Science students at Ifugao State University – Potia Campus. It details the research framework, study environment, respondent profile, instruments used, data collection process, and the statistical procedures applied to answer the research questions.

Research Respondents

The study focused on students enrolled in the Bachelor of Secondary Education Major in Science, specifically from the first-year, second-year, and third-year levels. Using cluster sampling, each year level was treated as a separate cluster, and all students within these clusters were invited to participate, ensuring both practicality and inclusivity in the selection process. A total of 57 students participated in the study: 21 from the first-year level (Science 1), 18 from the second-year level (Science 2), and 18 from the third-year level (Science 3).

Table 1*. Distribution of Respondents*

Year level	Number of students
First year	21
Second year	18
Third year	18
Total	**57**

Research Instrument

The instrument used in this study was adapted from established temperament assessment frameworks, specifically those of Thomas and Chess (1977), Rothbart (2006), and Goldsmith (2024). It was designed to assess the dominant temperament traits of students namely Sanguine, Melancholy, Choleric, and Phlegmatic and the intensity of these traits based on emotional and behavioral indicators. The instrument consists of two major parts: the quantitative section, which contains 24 statements evenly distributed among the four temperament types, and the qualitative section, which includes open-ended questions aimed at exploring deeper insights into the students' emotional and behavioral patterns.

A 3-point Likert scale was employed to determine the intensity level of each temperament trait. This scale was used to evaluate how frequently or strongly each respondent identifies with particular temperament-related behaviors:

2.50 – 3.00 = High intensity
1.50 – 2.49 = Medium intensity
1.00 – 1.49 = Low intensity

Statistical treatment

The following statistical tools and analysis methods were employed to address the research questions of the study. Descriptive statistics, including measures such frequency,

and percentage, were used to analyze the demographic profiles of the respondents and to provide a general summary of the students' temperament traits (Trochim, 2020).

For the second research question, descriptive statistics such as frequency were applied to summarize the responses related to each temperament trait (Tronchim, 2020)

To address the third research question, a thematic analysis was utilized to identify, analyze, and interpret recurring patterns and themes from the open-ended responses (Braun & Clarke, 2006).

Lastly, a Paired t-test was conducted to determine whether there were significant differences between selected demographic variables and the students' temperament traits. The paired t-test is appropriate for comparing the means of two related groups or matched measurements from the same group (Drummond, 2011).

Results/Findings

This part of the study presents the results based on the research objectives. It includes the data collected, the interpretation of these findings, and support from related studies.

1. Demographic Profile of Students

This section presents the profile of respondents from the Bachelor of Secondary Education major in Science in terms of age, sex, and year level.

Table 1: Demographic profile in terms of age

Age	Frequency	Percentage
18	7	12.28%
19	11	19.30%
20	20	35.09%
21	14	24.56%
22	5	8.77%

The age distribution shows that the majority of respondents are 20 years old (35.09%), followed by 21-year-olds (24.56%). This suggests that most students are in the typical age range for second and third-year college students, with a smaller proportion of older students. The 22-year-olds make up just 8.77%, indicating that the program generally supports timely completion of studies. This age range aligns with findings from Musa et al. (2020) that highlight typical age clusters in higher education. The concentration of students around 20–21 years old also reflects a period of academic and personal development, where students are transitioning from introductory courses to more specialized studies.

Table 2: Demographic profile in terms of gender

Gender	Frequency	Percentage
Male	13	22.81%

Female	44	77.19%

The gender distribution reveals a clear predominance of female students, making up 77.19% of the respondents, while male students account for only 22.81%. This gender imbalance is consistent with trends observed in teacher education programs in the Philippines, where female enrollment tends to exceed male participation (Ormilla, 2022). This could be influenced by cultural perceptions of teaching as a female-dominated profession. The high female representation suggests a need to explore gender-specific support systems that encourage greater male involvement in education, especially in fields like science, which tend to have lower male representation.

Table 3: Demographic profile in terms of year level

Age	Frequency	Percentage
First Year	21	36.84%
Second Year	18	31.58%
Third Year	18	31,58%

The distribution of students across year levels shows a relatively even spread, with the largest proportion of respondents in their first year (36.84%), followed by second and third-year students (31.58% each). This suggests that the BSEd Science program effectively attracts new students and retains them through to the second and third years. The even distribution of second and third-year students indicates minimal attrition, which could reflect strong support systems and an engaging curriculum. These findings highlight the program's ability to maintain student interest and academic progress, ensuring that students continue their studies as they advance through the program.

2. Dominant traits of the students of Bachelor of Secondary Education major in Science

The dominant temperament traits of students are analyzed by age, sex, year level, and program (science major).

Table 4: Dominant Traits in terms of age

Temperament Traits	**Age**									
	18		**19**		**20**		**21**		**22**	
	Frequency	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Sanguine	2	33.33%	4	36.36%	11	55%	9	64.29%	0	0%
Melanchoy	0	0%	3	27.27%	3	15%	1	7.14%	0	0%
Choleric	3	50%	4	36.36%	4	20%	4	28.57%	3	75%
Phlegmatic	1	16.67%	0	0%	2	10%	0	0%	1	25%
	Choleric		**Choleric**		**Sanguine**		**Sanguine**		**Choleric**	

The data shows that younger students, particularly those aged 19–21, predominantly exhibit Sanguine traits, with the highest concentration at age 21 (64.29%),

suggesting that they are social, enthusiastic, and expressive. On the other hand, Choleric traits become more pronounced among the older age group, especially at age 22, where 75% of students display this dominant trait. This shift can be attributed to the natural maturation process, where older students tend to become more assertive, focused, and confident in their academic and personal decisions. This aligns with Thomas and Chess's (1977) model, which suggests that temperament changes with age, reflecting greater emotional regulation and social assertiveness as students mature.

Table 5: Dominant Traits in terms of gender

Temperament Traits	**Gender**			
	Male		**Female**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Sanguine	3	23.08%	25	56.82%
Melanchoy	3	23.08%	4	9.09%
Choleric	6	46.15%	12	27.27%
Phlegmatic	1	7.69%	3	6.82%
	Choleric		**Sanguine**	

The gender-based analysis shows that female students predominantly exhibit Sanguine traits (56.82%), characterized by sociability and expressiveness, while male students tend to show more Choleric traits (46.15%), which are associated with assertiveness and leadership. This mirrors gendered patterns often observed in educational settings, where females are more likely to be social and expressive, while males are more dominant and assertive. This finding is consistent with Rivera's (2023) study, which highlighted that female students are typically more socially engaged and communicative, whereas male students display more leadership and competitive behaviors. These differences may influence how students interact in group settings and approach academic challenges.

Table 6: Dominant Traits in terms of year level

Temperament Traits	**Year Level**					
	1st year		**2nd year**		**3rd year**	
	Frequency	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Sanguine	11	52.38%	6	33.33%	10	55.56%
Melanchoy	1	4.76%	3	27.27%	3	16.67%
Choleric	8	38.10%	8	44.44%	3	16.67%
Phlegmatic	1	4.76%	1	5.56%	2	11.11%
	Sanguine		**Choleric**		**Sanguine**	

First-year and third-year students primarily exhibit Sanguine traits (52.38% and 55.56%, respectively), indicating that they are likely to be sociable, enthusiastic, and engaged in the social aspects of their studies. In contrast, second-year students show a higher prevalence of Choleric traits (44.44%), which suggests a period of increased academic confidence and assertiveness. The prominence of Sanguine traits in first-year students could reflect their excitement and adjustment to university life, while the dominance of Choleric

traits in second-year students may be linked to a stronger desire to take control of academic and social environments as they become more comfortable in their program. These findings highlight the importance of tailoring academic support to the developmental stage of students.

3. Perceived Challenges Based on Temperament Traits (Thematic Analysis)

Table 7: Thematic analysis on perceived challenges of the based on their dominant temperament traits

Temperament Traits	Indicator	Themes	Summary
Sanguine	Do you find it hard to focus or finish your schoolwork? How does being around friends or a noisy place affect your schoolwork?	Distractibility; Social overstimulation	Students shared they lose focus easily when surrounded by friends or noise; they enjoy social interaction but it impairs academic focus.
Melanchoy	What do you feel when your work is not as good as you want it to be? Do you feel stressed when doing hard schoolwork? Why?	Self-criticism; Academic anxiety	Responses highlighted frustration and worry, especially when expectations are not met. Students tend to overthink and experience internal pressure.
Choleric	Is it hard to work with classmates who don't follow your ideas? What do you do when others disagree with you?	Leadership tension; Conflict handling	Most students admit feeling irritated when others don't follow their plans. They often push for their methods and may become argumentative.
Phlegmatic	Is it hard to speak up or lead in group activities? What do you do when there's a problem?	Passivity; Conflict avoidance	Students rarely initiate or lead. They prefer to keep peace and avoid arguments, even if it means not solving the issue directly.

The thematic analysis of perceived challenges highlights how students' dominant temperament traits impact their academic experiences. Sanguine students reported difficulties with maintaining focus, especially in noisy or socially stimulating environments, which can lead to distractions and hinder their academic performance. Melancholic students, on the other hand, expressed higher levels of academic anxiety and self-criticism, particularly when they failed to meet their own high expectations. Choleric students often experienced leadership tensions and conflicts with classmates, as they struggled to accept differing opinions and methods. Lastly, Phlegmatic students faced challenges with passivity and conflict avoidance, preferring to avoid leadership roles and disagreements, which could affect group dynamics. These findings underscore the need for tailored support strategies that address each temperament's unique challenges, ensuring that all students can thrive in their academic environments.

Conclusions

Based on the demographic profile of the respondents, most students were 20 years old, female, and in their first or third year of the Bachelor of Secondary Education majoring in Science program. The dominant temperament trait identified among the students was Sanguine, which was particularly prevalent among females, younger age groups, and first-year students. Choleric traits were more commonly observed in males and older age groups. Students experienced temperament-specific challenges in their academic life: Sanguine students often struggled with maintaining focus in noisy or social environments, while Melancholic students felt frustrated when they failed to meet their academic expectations and experienced stress during difficult tasks. Choleric students found it challenging to work with peers who disagreed with or did not follow their suggestions, and Phlegmatic students were often reluctant to take the lead or speak up during group activities, preferring to avoid conflicts. In conclusion, the study highlights that students' dominant temperament traits significantly influence their academic behavior, social interactions, and responses to classroom challenges. Understanding these traits can assist in developing tailored interventions to enhance student engagement and academic success.

Recommendations

For educators, it is important to adapt instructional strategies that cater to the varying temperament traits of students, such as using structured tasks for Sanguine students and providing independent reflection time for Melancholic students. For guidance counselors, establishing counseling and advisory programs focused on temperament awareness is essential to help students understand their academic behaviors and develop effective coping strategies. Educational institutions should offer training and seminars for faculty members to enhance their awareness of student temperament traits, allowing them to integrate this understanding into teaching, classroom management, and student support. For future researchers, it is recommended to replicate this study across different programs and campuses to validate the findings and explore how temperament influences other aspects of student development, such as leadership and peer relationships.

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