Humanities and Social Sciences Letters
2025 Vol. 13, No. 4, pp. 1226-1240
ISSN(e): 2312-4318
ISSN(p): 2312-5659
DOI: 10.18488/73.v13i4.4412

A study of the critical thinking influences, the big five personality traits, and motivation factors on university students' liberal course achievement

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Article History
Received: 26 November 2025
Revised: 18 August 2025
Accepted: 3 September 2025
Published: 26 September 2025

Keywords
Big five personality traits
Critical thinking
Liberal education
Motivation.

ABSTRACT

The study explores the impact of critical thinking, the Big Five personality traits, and motivation on undergraduate achievement in liberal courses. A quantitative survey design was employed, involving 400 undergraduate students from a renowned university in China. The data were analyzed manually using SPSS version 25 software. The results revealed that critical thinking did not significantly affect students' achievement in liberal courses. Similarly, no significant relationship was found between the Big Five personality traits and students' performance. However, a statistically positive relationship was found between personality traits and motivation, suggesting these factors may contribute to improving student outcomes in liberal courses. The Big Five personality traits and motivation approach significantly play a role in enhancing student performance, while critical thinking alone does not directly influence liberal course achievement. The study's findings are valuable for curriculum developers, educators, and academic leaders in higher education. Institutions can better support student success and optimize teaching strategies in liberal education by understanding the interplay between personality, motivation, and academic performance.

Contribution/Originality: This study offers a novel conceptual framework linking liberal course achievement to student development. By integrating diverse perspectives on critical thinking, personality growth, and motivation, it provides a comprehensive analysis of how liberal education influences these key areas, thereby contributing new insights to the field of educational research.

1. INTRODUCTION

Since the early 2000s, people's enthusiasm for technology and digitization has been declining due to several factors, including recession, natural disasters, and the threats to human life that technology cannot resolve (Diamandis & Kotler, 2020). The technologists and digitalists lacked the disappointment and passion of psychologists, anthropologists, socialists, and liberals in assuming the role of balancing human disorder (Selwyn, 2014). This is the causal factor. China emphasizes the importance of liberal education offered to students in higher education institutions. Young people can evaluate the value of liberal courses for their future careers, although they have long been introduced either from abroad or by local students studying abroad (Israel, 1983). Among the learning inadequacies in the past, students specialized in one field, while liberal courses covered not only digitalization and

technologies but also other fields, such as history, geography, health sciences, mathematics, economics, etc (Montás, 2017; Pinto & Leite, 2020). Therefore, liberal education is an education that provides a strong foundation for students to face life with confidence and optimism in the future.

Since students are the country's heirs, it is also assumed that liberal education aims to expose Chinese people, particularly students, to the world (Johnston & Hanamitsu, 2015). China is now one of the world's economic powerhouses, and it is very appropriate to embrace liberal education, which was once viewed with cynicism by developed countries (Yang, 2023). Currently, China is opening its doors to established foreign institutions and offering liberal education. The response has been very encouraging, and many students have chosen it despite the high costs and ongoing government assistance. Based on this scenario, a study on the influence of critical thinking, the Big Five personality traits, and motivation on liberal education is appropriate and vital.

In the increasingly challenging struggle of life resulting from various crises such as climate change, economic issues, and social upheavals, there is a matter of concern for the community, especially among teachers, where mastery of courses in liberal arts is also at risk. Many students face low mastery levels, particularly in history and music. Therefore, this study aims to identify whether critical thinking, the Big Five personality traits, and motivation are related to students' achievement in liberal courses. According to Tosh (2019), Historical education is not only about learning what was before or what has passed, but it also offers significant benefits for learners. First, it instills a sense of belonging to the country and the nation. Second, it inculcates a democratic stance among students and helps preserve it in their lives and society. Democratic means acting and behaving rationally based on universal values, acting by consensus, and respecting the rights of others. Music education among students helps develop self-identity and self-respect because it relies on a strong philosophy compared to other forms of education. Music education is not only about creating and enjoying melodies and rhythmic compositions with various tones but also influences the formation of a creative and innovative identity (Reimer, 2022). Therefore, music education has versatility across various fields and can be pursued as a career. For example, in film production, background music, songs, software, advertisements, and many other areas can be explored by students based on their interests and expertise. Similarly, liberal courses such as communication, language, health, science, etc., offer benefits to students in mastering these subjects.

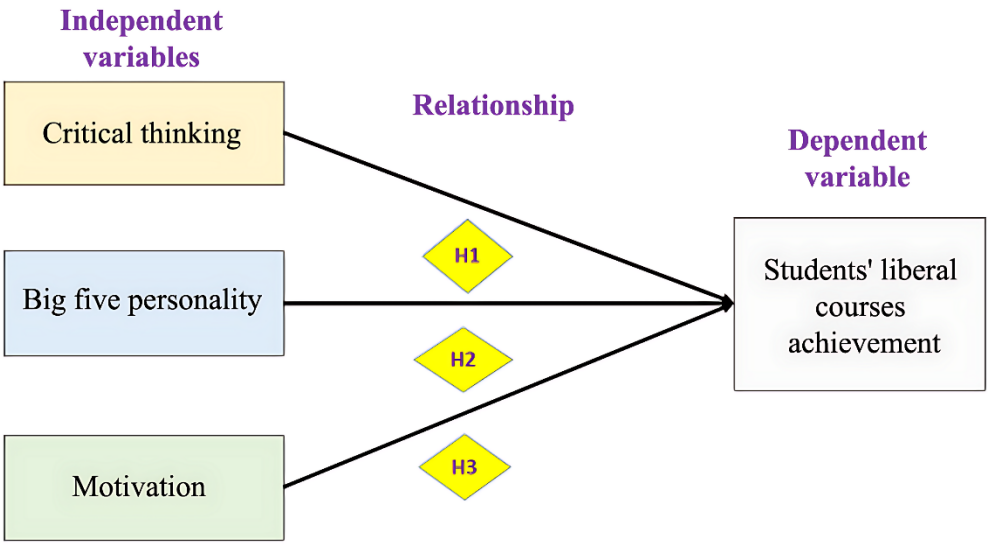

Figure 1. Conceptual framework study

Figure 1 Shows the study's conceptual framework. There are three independent variables: critical thinking, the Big Five personality traits, and motivation. The study contains three hypotheses, which are as follows:

H1: There is a significant relationship between critical thinking and students' achievement in liberal courses.

H2: There is a significant relationship between the Big Five personalities and students' achievement in liberal courses.

H3: There is a significant relationship between motivation and students' achievement in liberal courses.

2. LITERATURE REVIEW

2.1. Critical Thinking in Relation to Liberal Courses

Assaf and Tsafrir (2017) and Fatafta (2023) argue that liberal education courses develop individual abilities to make decisions based on material and moral restrictions, believe in change, have critical thinking, possess an innovative philosophy, and rely on individual experiences. According to Johnston and Hanamitsu (2015), liberal courses include subject disciplines that can be used in conjunction with core subjects in the educational setting. According to Smith (2017),, the courses promote comprehensive knowledge and understanding of the discipline being pursued. It is also a process of teaching and learning based on the liberation of the mind and participation through dialogue and mutual influence between individuals and groups in the learning and educational environment, which results in the acquisition of renewed knowledge and practices that lead to change and push the human being toward the development process, making him the most important component in the development equation.

According to Scott (2014), liberal education is structured and based on philosophy. It has four elements, including liberating general education, emphasizing questions that have many answers, a broad perspective across all corners of the world, extraordinary experience, and citizenship, and can also be witnessed in the history and evaluation of the development of liberal education in the United States (Fong, 2004). They are used for learning and courses that only revolved around the humanities and sciences. But the passage of time and the debate about its need change with time. The concept of liberal learning is no longer confined to the domain of general education. The term denotes any study that cultivates the abilities to communicate effectively, think knowledgeably, insightfully, and critically, work cooperatively, and behave ethically and responsibly. Therefore, liberal education can vary from one institution to another and also between countries. Additionally, half of the country is taking steps to sustain and enhance learning through external or practical training. The purpose and concept remain the same, though the only thing that has changed is the addition of computer skills in accordance with the digital age.

The term "critical thinking" typically refers to the capacity to analyze, evaluate, and constructively critique information or arguments logically and systematically. It entails active and skillful conceptualization, application, analysis, synthesis, and evaluation of information gathered from observation, experience, reflection, reasoning, or communication. Critical thinking skills may be defined as strategies for identifying the most effective means of achieving a desired outcome (Halpern, 2013). Brookfield (2013) posits that critical thinking constitutes a survival skill of adulthood. Adult life is characterized by a series of micro- and macro-level decisions, choices, and judgments. Such an approach helps to guarantee that this will occur by subjecting the assumptions that underpin those decisions to scrutiny. Habermas (1987) and Scott-Baumann (2023) postulate that it commences when one ceases to universalize one's own experience. Furthermore, critical thinking is a set of skills that can be acquired by any individual. Those who have acquired these abilities can perceive the outcomes of their own and others' statements, construct and convey effective arguments, and make more informed decisions (Epstein, 2003). According to Bolandifar (2017), critical thinking involves making observations and utilizing information to consider and remain open to alternatives (to some extent) when making decisions. These practices were not part of my traditional education. In the 1962 definition or conception, several features are applied in critical thinking practices, i.e., (a) emphasis on detailed criteria; (b) emphasis on good judgment in an imprecise environment because criteria do not automatically yield critical thinking decisions; and (c) attention to the credibility of sources. However, according to Moore (2013), There are seven definitional strands identified in critical thinking, which are as follows: i) as judgment; ii) as skepticism; iii) as simple originality; iv) as sensitive readings; v) as rationality; vi) as activist engagement with knowledge; and vii) as self-reflexivity. This multiplicity of meanings has important implications for university teaching and learning. Wittgenstein's concept of

meaning as use has a significant impact on the study's design and results. Hendrycks et al. (2021) defined it "motivation is the art of analyzing and evaluating for a better outcome or improvement."

Hepner (2015) provides a history of critical thinking in his handbook of research on enhancing critical thinking in higher education. According to him, almost certainly, college-level learning outcomes have a desire to develop critical thinking skills. The definition of critical thinking varies considerably across different academic disciplines. This chapter provides an overview of the historical development of critical thinking in higher education along with an examination of various strategies for fostering critical thinking skills and assessment instruments used to evaluate these skills. Furthermore, this chapter delineates the necessity for the academy to transition from merely referencing the advancement of critical thinking abilities in an array of institutional documents to prioritizing such abilities through the reinstatement of liberal education. Liberal education is an approach to learning that equips individuals with the capacity to navigate complexity, diversity, and change. It provides students with a comprehensive understanding of the wider world, encompassing scientific, cultural, and societal phenomena, while also enabling them to pursue in-depth study in a specific area of interest. A liberal education enables students to develop a sense of social responsibility as well as transferable intellectual and practical skills, including communication, analytical and problem-solving abilities, and the capacity to apply knowledge and skills in real-world contexts (Roth, 2020). It follows that critical thinking constitutes a vital component of the liberal curriculum.

Godwin (2015) defines liberal education and provides an overview of the current trend based on a 2013 empirical study. In her article, she highlights the necessity of critically analyzing new international developments in higher education to enhance the likelihood of implementing socially just policies and programs. She illustrates the implications for the global emergence of liberal education by suggesting that liberal education as a higher education philosophy could both reinforce and resist neoliberal practices. She presents a number of counter-narratives related to history, students and faculty, learning and teaching, access and elitism, and cultural hegemony as a reaction to a dominant economic framework that rationalizes the development of liberal education programs.

Cheng and Wan (2017) did research on 3,869 Grade 12 students in Hong Kong. They conducted a classroom study on how liberal studies affect critical thinking skills and tendencies. Students were exposed to correlation analysis and structural equation modeling. The results of the study found that there is a strong relationship between critical thinking, correlation analysis, and structural equation modeling. Both suggestions for future studies are to combine analysis, correlation, and structural modeling to enhance critical thinking and tendencies.

Chen (2021) in his study, several strategies to foster critical thinking among students were suggested. First, use various methods. Second, set the goal of fostering critical thinking, and third, provide empirical references. According to him, the integration of critical thinking skills in English requires high-quality foreign language talent. Therefore, teachers need to improve their English language and speaking skills.

Some prior studies show that the relationship between critical thinking and students' liberal course achievement is very significant. Therefore, the present study intends to hypothesize Ho1: There is no significant relationship between critical thinking and students' liberal course achievement.

2.2. Big Five Personality in Relation to Liberal Courses

The term "personality" is used to describe the dynamic integration of an individual's total subjective experience and behavioral patterns. These encompass both conscious, concrete, and habitual behaviors as well as experiences of the self and the surrounding world, conscious and explicit psychic thinking, and habitual desires and fears. Additionally, they include unconscious behavioral patterns, experiences, views, and intentional states. This integration is dynamic as it implies an organized, integrated association of multiple traits and experiences that influence each other. It can be considered the final outcome of the coordination of multiple dispositions. In this regard, personality represents a more complex and sophisticated entity than a mere aggregation of its component features (Millon, 2016). Personality development encompasses numerous additional influences on an individual's growth

(Brewer, 2019). The study of personality development provides insights into these and other issues, often demonstrating the complex and multifaceted nature of the influences on individual personality development (Ashton, 2022). The question of personality is a complex matter, and there is ongoing debate about it, especially among psychologists. Many of them have concluded that there are at least five dimensions that represent human personality characteristics: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Identifying which aspect of personality needs to be improved or overcome becomes easier based on these five dimensions (Ötken & Cenkci, 2015).

Burks et al. (2015) conducted a study involving 100 undergraduate students at a liberal arts college in the Midwest, USA. They assessed their academic performance. There are five main features. First, pro-social behavior is a large and negative predictor of graduation outcomes. Second, proactivity, which includes diligence and persistence. Third, inhibition or caution, which is a positive predictor of graduation. Fourth, non-standard cognitive skills are also positive predictors of graduation. Fifth, success in vocational jobs, according to Burks, Carpenter, Goette, and Rustichini (2009). Researchers concluded that personality is the primary factor influencing liberal arts achievement among students.

Djupe (2018) conducted a survey of 534 students to determine the personality profiles exhibited by Denison students. Based on the five-factor model known as the Big 5 personality index, it includes openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (emotional stability). They often describe their self-determination as neat and reliable, which is considered the core of conscientiousness. Students are open to experience and tend to avoid describing themselves as conventional and uncreative. Additionally, students reported being trustworthy and sympathetic. The survey results indicate that, among liberal arts students or courses, character and personality development are significant factors influencing their education.

Seong-Jhin (2020) analyzes various phenomena that occurred when personality courses were conducted in liberal arts classes at universities. The researchers employed problem-based learning (PBL) and coaching in the context of personality courses. 310 college students were selected as study subjects, and their reflection journals, evaluation papers, interview materials, and the teacher's observation journals were subjected to analysis in accordance with the principles of grounded theory. The explicit outcomes demonstrated that students exhibited enhanced communication skills and problem-solving abilities, reported high levels of enjoyment, interest, and satisfaction, established their own values, recognized the importance of developing their personalities, and demonstrated active engagement in the learning process. The findings indicate that it is essential to proactively integrate the PBL approach into liberal arts curricula to enhance higher education quality. Furthermore, it would be beneficial to implement coaching to enhance the capabilities of tutors, who serve as learning facilitators.

In some previous studies, such as Burks et al. (2015), Djupe (2018) and Seong-Jhin (2020), it was shown that the Big Five personality traits have a relationship with liberal courses. Therefore, the study hypothesizes that the Big Five and students' liberal course achievement do not have a significant relationship as follows: H_02: There is no significant relationship between the Big Five personalities and students' liberal course achievement.

2.3. Motivation About Liberal Courses

The word motivation originates from the Latin word "motivus," which means "moving to cause." (Reeve, 2024). Motivation is a force to act involving psychological processes that influence a person's behavior, either internally or externally. It is also known as the concept of pull and push. Push means involving internal changes that can trigger the effects of changes in oneself. On the other hand, pull represents an external influence that changes a person's behavior. Therefore, pull and push are complex combinations that can be said to motivate a person's behavior to change. Motivation can be classified into two principal categories: intrinsic and extrinsic motivation. Motivation, defined as the energizing of behavior in pursuit of a goal, constitutes a fundamental element of our interaction with the world and with each other (Brown, 2023). Motivation can be defined as the phenomenon that explains the

processes that give rise to individual energy and endurance, and it can also be considered a pathway toward specific behaviors (Reeve, 2024; Seli, 2019). The most basic definition of motivation can be reduced to the concept of desire (Baumeister, 2016). Based on the definition, motivation is an effort to increase the stimulation of a person's behavior to achieve a desired goal. In the context of education and students, motivational programs are held to shape behavior to be motivated to master something as an added value, not only towards achieving the goals of the program but also in challenging life (Marín Marín, 2020).

According to Smith (2017), liberal education has no other purpose than the liberation of humanity. A liberal education cannot do anything other than itself to liberate the human personality. In his view, liberal education or courses must free people from cultural narrowness and favoritism. It must provide psychological and intellectual motivation. He is optimistic that Christianity can motivate and see the world as broad and open. In contrast, it allows one to perceive that the world is poor, disorderly, and unsafe to live in.

Jun and Shin (2020) employed the attention, relevance, confidence, and satisfaction (ARCS) model to assess the impact of a computational thinking class on students' learning motivation. The study devised a comprehensive instructional strategy aligned with each motivational factor (attention, relevance, confidence, and satisfaction) as outlined in the ARCS model. The experimental group exhibited markedly elevated levels of motivation with regard to the subject of computational thinking. The learning motivation of students majoring in computer-related disciplines was markedly higher than that of the control group. The study identified high relevance (R) and high satisfaction (S) among non-majors. In light of these findings, this study proposes enhancements to the efficacy of computational thinking classes within liberal arts education (Bikar et al., 2022).

Williams, Stafford, Corliss, and Reilly (2018) conducted a survey on the factors influencing students enrolling in massive open online courses (MOOCs). This survey involved 15,655 participants taking part in the 8 courses offered. The findings of the study show that the motivation of students to participate and register for the course varies, for example, in humanities/liberal arts courses, art, and science, technology, engineering, and mathematics (STEM). It is due to personal and career interests. It is positively related to human leukocyte antigen (HLA). There is also a difference in the involvement and goals of the course. Therefore, researchers suggest that MOOC research on cooking leads to improvements in terms of course offerings that align with student goals.

Based on previous studies by Smith (2017) and Jun and Shin (2020), we can conclude that motivation has a significant relationship with liberal courses. This present study hypothesizes the relationship between motivation and liberal courses based on the following hypothesis: Ho3: There is no significant relationship between motivation and students' liberal course achievement.

3. METHODOLOGY

This study employed a survey research design to explore the research question concerning students' achievement in liberal courses. Several constructs were considered to determine whether the issue relates to critical thinking, the Big Five personality traits, or motivation. The choice of this method was based on challenges encountered at International Tien University in China. Consequently, permission was obtained to conduct the study.

3.1. Sample Study

In the Faculty of Humanities and Liberal Arts, there are 11,000 undergraduate and master's students. According to Krejcie and Morgan (1970), a sample size of 11,000 requires at least 375 respondents. Therefore, a survey was conducted on 400 students at the university, selected randomly according to the list of students registered by intake.

3.2. Instruments

This study uses four existing instruments. Critical thinking, the Big Five personality traits, and motivation are independent variables (IVs). Students' achievement in liberal courses is a dependent variable (DV). Local scholars and subject experts have validated the contents of the instruments used to collect data.

3.2.1. Critical Thinking

The critical thinking instrument consists of three dimensions and demonstrates moderate Cronbach's alpha reliability: function (.663), level (.651), and tendency (.623). It contains 10 items.

3.2.2. The Big Five Personalities (John, Donahue, and Kentle, 1991)

The Big Five personality instrument has five dimensions and indicates high reliability: openness (.874), neuroticism (.802), extraversion (.809), conscientiousness (.783), and agreeableness (.878). It contains 20 items.

3.2.3. Motivation

The motivation instrument has three dimensions and indicates a high Cronbach's alpha: interest (.923), value (.918), and perceived (.809). It contains 26 items.

3.2.4. Students' Liberal Course Achievements

The students' liberal courses have two courses analyzed: history and music.

3.3. Data Collection Procedure

Data collection was conducted online and was supported by a letter of appointment for research participants and a letter of consent. The study took place in the second semester of 2023 (August to September 2023). It was approved by the Faculty of Psychology and Education at the University Malaysia Sabah and the Education Planning and Research Division of the Ministry of Education, Malaysia. Additionally, Xi'an International University in the People's Republic of China granted permission to conduct the study among its students.

3.4. Data Processing

The data collected from the field study will be processed manually one by one to ensure that feedback in Google Forms has been responded to accurately. Questionnaire forms that are returned by hand will be manually entered into the software carefully. The researcher has contacted respondents online for clarification of incomplete forms. Forms that are incomplete and could not be contacted are excluded from analysis. The collected data was processed using IBM SPSS software. The data has been filtered to ensure that the search results are complete and contain no missing values. Additionally, the data set is free from straight-line and extreme responses (3). (Bikar, Talin, Rathakrishnan, Nazarudin & Rabe, 2023). Once the data is processed and complete without any missing values, the process of cleaning the dataset is carried out to check the necessary assumptions in linear regression analysis. First of all, the researcher has identified the Mahalanobis distance and configured the critical value (Ghorbani, 2019). Third, the researcher filtered cases within the critical value range and excluded them from the process analysis. Fourth, it was also identified that items in the constructs have similar concepts and meanings. Additionally, the researcher conducted an exploratory factor analysis (EFA) to ensure that items in the construct have a cut-off level >.3 to achieve reliability, as measured by Cronbach's alpha>.6 (Howard, 2016). Low items causing reliability less than .6 were dropped. Fifth, the researcher has run a multicollinearity test to ensure the constructs do not violate the assumption of homoscedasticity. Table 1 indicates that the tolerance is less than 1 and the variance inflation factor (VIF) is less than 10. Therefore, the data set showed that it did not violate the assumption of multicollinearity (Oke, Akinkunmi, & Etebefia, 2019).

3.5. Data Analysis

Descriptive analysis has been conducted, indicating measures of central tendency and dispersion. The normality test revealed that the data did not follow a normal distribution; however, it was successfully transformed using log10 and cube root methods. The descriptive analyses detail the gender and age ranges of respondents, along with normality tests for all constructs used in field data collection. Table 1 shows data related to the respondent's gender. Out of a total of 400 respondents involved in the study, 200 (50%) are males and 200 (50%) are females.

Table 1. Collinearity diagnostic

Constructs	Collinearity statistics	
	Tolerance	VIF
Students' liberal course achievement	0.984	1.016
Critical thinking	0.833	1.200
Big Five personality	0.991	1.010
Motivation	0.831	1.203

Table 2. Gender descriptive analysis

Gender	Frequency	Percent
Male	200	50
Female	200	50

Table 2 is about the age ranges of the respondents. Based on the outcome analysis, it shows that the participating students are between the ages of 17 and 24, who were selected randomly. The highest percentage of age is students who are 19 years old (32.5%), and the lowest is students who are 17 years old, 4 (1.0%). The representation of the sample indicates that the age range of 19 to 22 is the most responsive to the influence of critical thinking, the Big Five personality traits, and motivation on liberal course achievement at the university.

Table 3. Sample age ranges

Age	Frequency	Percent
17	4	1.0
18	60	15.0
19	130	32.5
20	76	19.0
21	51	12.8
22	48	12.0
23	28	7.0
24	3	0.8
N=400		

Table 3 presents the age distribution of the 400 undergraduate students who participated in the study. The majority of respondents were 19 years old, accounting for 32.5% of the sample (n = 130). This was followed by students aged 20 (19.0%, n = 76) and 18 (15.0%, n = 60). Participants aged 21 and 22 represented 12.8% (n = 51) and 12.0% (n = 48) of the sample, respectively. Smaller proportions were found among students aged 23 (7.0%, n = 28), 17 (1.0%, n = 4), and 24 (0.8%, n = 3). These results suggest that the majority of participants were within the typical undergraduate age range of 18 to 22 years.

Table 4. Constructs descriptive analysis

Constructs	Mean	Std. deviation	Skewness	Kurtosis
Students' liberal course achievement	120.176	15.736	-3.533	-2.183
Critical thinking	2.434	0.458	-3.836	-0.047
Motivation	1.33	0.083	0.123	-0.012
Big Five personality	3.431	0.420	-0.336	5.156

Table 4 shows the mean and standard deviation of each construct. The highest mean is students' liberal course achievement (M = 120.176 and SD = 15.736), while motivation is the lowest (M = 1.330 and SD = 0.083). The table also shows the normality test outcomes, indicating that there is statistical evidence that the construct is slightly skewed and kurtotic, with values outside the range of + and - 1.96. However, overall, the constructs are still within the acceptable ranges for skewness (+ and - 2) and kurtosis (+ and - 10). According to Demir (2022), a large sample size is considered approximately to follow a normal distribution.

Table 5 is the construct correlation matrix, which shows that each construct has a strong correlation. This indicates that the collected data is suitable for use in regression analysis. In other words, there is no overlap of meaning or concept in the instruments used to unravel the issue of students' liberal course achievements.

Table 5. Constructs a correlation matrix

Constructs	Students' liberal courses achievements	Critical thinking	Big Five personality	Motivation
Students' liberal course achievements		0.060	-0.097	0.076
Critical thinking			-0.005	0.407**
Big Five personality				-0.019
Motivation				

Note: **. Correlation is significant at the 0.01 level (2-tailed). N = 400.

Similarly, in Table 6, the correlation between sub-constructs and other constructs is very low, except for the sub-constructs of music and history, which reach a moderate level of 0.493. Similarly, the relationship between the sub-constructs of interest and value is at a level of 0.693.

Table 6. Sub-constructs correlation matrix

Sub-constructs	Music	History	Function	Level	Tend	Open	Conscientious	Extraver	Agree	Neuro	Interest	Value	Perci
Music	1												
History	0.493**												
Function	0.071	-0.039											
Level	0.109*	0.103*	0.313**										
Tendency	0.028	0.016	0.543**	0.319**									
Openness	-0.068	-0.005	0.012	0.000	0.03								
Conscientiousness	-0.065	-.099*	-0.075	-0.074	-0.011	0.369**							
Extraversion	-0.082	-.149**	-0.002	-0.046	-0.003	0.234**	0.359**						
Agreeable	0.061	0.007	0.034	-0.027	0.015	-0.097	-0.167**	-0.06					
Neuroticism	-0.005	-0.029	0.025	0.071	0.02	0.311**	0.144**	0.293**	0.179**				
Interest	0.075	0.038	0.135**	0.348**	0.127*	-0.002	-0.022	0.015	0.009	-0.008			
Value	0.097	0.061	0.168**	0.408**	0.183**	-0.01	0.023	0.034	-0.054	0.024	0.693**		
Perceived	-0.049	-0.006	0.170**	0.019	0.172**	-0.043	-0.081	-0.026	-0.02	-0.032	-0.430**	-0.362**	1

Note: **. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

4. RESULTS

The study aims to investigate the influence of critical thinking, the Big Five personality traits, and motivation on liberal courses. The following hypotheses were proposed.

H_{01}: There is no significant influence of critical thinking on students' liberal course achievement.

H_{02}: There is no significant influence of the Big Five personality on students' liberal course achievement.

H_{03}: There is no significant influence of motivation and students' liberal course *achievement.*

The dependent variable is the students' liberal course achievement, which was regressed on predicting variables: critical thinking, the Big Five personality traits, and motivation. The independent variables have not significantly predicted students' liberal course achievement ($F(3, 396) = 2.441$, p-value = 0.64), indicating that the three factors under study have no impact on students' liberal course achievement. Moreover, the $R^2 = 0.018$ depicts the model explaining 1.8% of the variance in students' liberal course achievement.

Table 7 presents regression outcomes.

Table 7. Regression analysis outcomes

Hypotheses	Regression weight	β	*t*	P-value	Results
Ho1	Critical thinking --> students' liberal courses achievement	6.288	0.655	0.513	Supported
Ho3	Personality --> students' liberal courses achievement	-3.562	-1.909	0.057	Supported
Ho3	Motivation --> students' liberal courses achievement	13.919	1.339	0.181	Supported
R	0.018				
F (3, 209)					

Furthermore, an additional assessment was conducted to determine the impact of each factor on students' academic performance in the liberal arts. H1 evaluates whether critical thinking significantly and positively affects the students' liberal course achievement ($\beta = 6.288$, $t = 0.655$, and p-value = 0.513). Hence, H1 is supported. H2 also evaluates whether the Big Five personalities have significantly and positively affected the students' liberal course achievement ($\beta = -1.909$, $t = -3.562$, and p-value = 0.057). H2 is also supported. Finally, H3 evaluates whether motivation has significantly and positively affected the students' liberal course achievement ($\beta = 13.919$, $t = 1.339$, and p-value = 0.181). H3 is also supported. Table 1 indicates the analysis.

5. DISCUSSION

This study aims to find explanations for the decline in students' achievement in the liberal arts program offered at the university. The main purpose of offering liberal courses is for several reasons: First, it aligns with the development of the rapidly changing world and is followed by a chain of natural crises and social conflicts that hinder not only a person's career but also affect a person's mental resilience and identity. Second, liberal courses serve as a bulwark of defense in ensuring that students, as heirs to the nation's prosperity and sovereignty, are capable of fulfilling their duties in the effort to provide versatile, competitive, and sufficient human capital for a sustainable life. Third, today's world faces global climate change, war, and power competitions everywhere. Therefore, the institution is taking measures regarding the performance in history and music courses among students. The present study is highly relevant, and it is important to find solutions to these problems. The implications of this decline in performance affect many parties, including students, institutions, lecturers, and the government.

Based on the study goals and research questions, determine whether critical thinking has a significant relationship with a student's liberal course achievement. The results show that it is not significant. Therefore, this finding supports the null hypothesis that there is no significant relationship between critical thinking and students'

liberal course achievement. This finding is not consistent with previous studies (Chen, 2021; Cheng & Wan, 2017; Godwin, 2015; Hepner, 2015). This means that the study of critical thinking has no influence on students' liberal course achievement.

On the second goal, the study seeks clarification on whether the Big Five personality traits have a significant relationship with students' liberal arts achievement. Statistically, it is not significant, but it is close to significance. This finding can be interpreted as indicating that the Big Five personality traits are among the factors that need improvement so that student achievement can also be influenced. This finding is not consistent with previous studies (Burks et al., 2015; Djupe, 2018; Seong-Jhin, 2020). The second hypothesis, which posits that there is no significant relationship between the Big Five personality traits and students' performance in liberal arts courses, is therefore supported based on the aforementioned evidence. In other words, the Big Five personality traits are not statistically influential on students' liberal arts course achievement. The same applies to the third goal of the study, which seeks to explain whether motivation has a significant relationship with students' liberal arts achievement.

The results of the study show that motivation can be perceived as having an influence on students' liberal course achievement based on statistics that approach with a small margin. Although the null hypothesis Ho3: There is no significant influence of motivation on students' liberal course achievement is supported, the motivation factor is an important element that must always be nurtured among students. The study was also not in line with the findings of previous studies (Jun & Shin, 2020; Smith, 2017; Williams et al., 2018). In other words, statistically, evidence is simply a number. However, this research model can still be improved by adopting an alternative approach. As a result of this finding, we can conclude that the research model has been implemented according to the procedure, and the indications of significant findings are very close. The instrument used demonstrates a high level of Cronbach's alpha reliability. Therefore, this study can be considered a method to enhance student performance in liberal arts courses among university students.

6. LIMITATION

There are several limitations to the study that has been conducted. First, this study only uses students' liberal course achievement in the aspects of history and music. Second, the data set of this study did not reach the level of normal distribution except for motivation. However, the non-normal distribution of students' liberal course achievement and critical thinking is not very critical and is statistically close to the normal distribution. A large sample size does not face the issue of normal distribution.

7. RECOMMENDATION

Some recommendations were made for future studies based on a study that found no significant relationship between critical thinking, the Big Five personality traits, and motivation in predicting students' liberal course achievements. Aspects of critical thinking, the Big Five, personality, and motivation are essential for improving student performance. They are predictive of a significant relationship with students' performance in examinations. Therefore, it is recommended that similar or slightly different studies be conducted, focusing on comprehensive aspects of liberal education, including science, health and sports education, mathematics, geography, and others. Additionally, it is suggested that the choice of instruments should include measurement concepts aligned with the study's aims. Finally, it is recommended to select appropriate study approaches, analyses, or tests. The studies can be compared with findings from other research.

8. POLICY SUGGESTIONS

Based on the numerous sources of literature and the comparison of liberal education in several developed countries such as the USA, UK, Australia, and others, the Chinese Ministry of Education and universities need to re-evaluate the liberal education programs offered to students to make them more relevant to development and structural

changes. Universal human existence requires Chinese people to be forward-thinking and not be stuck with outdated ideas. Emphasis on subjects such as history, music, art, politics, and others should be global if students are to penetrate the job market and produce global products. Additionally, the liberal education program should also expose students to the cultures and customs of other countries. For example, many Asians who are Muslims face difficulties visiting and consuming Chinese products that are not "halal" from a Muslim perspective. Therefore, policy changes in the provision of liberal education need to align with global circulation, which is becoming more balanced. Liberal education should serve not only as a fundamental education that enhances students' academic abilities but also as a means to develop open-minded and versatile characters in all areas of life.

9. CONCLUSION

Liberal education or courses are essential in providing human capital in a country. Social conflicts throughout the world, which are featured in most scientific studies and books by writers of high caliber, give awareness and insight to this study. Advances in science and technology need to be balanced with a liberal education so that the generation has self-awareness about the human spirit within, responsibility to the country, nation, and people in a democratic manner, and a sense of love for universal humanity. Responsibility for all citizens aligns with the philosophy of liberal education. Success in technology and digitalization means nothing if people are not creative and innovative enough to prevent theft and scams of others' property. Therefore, the empowerment of liberal education in most institutions in China is actively carried out. There are indications that the achievement of students in history and music is falling continuously. Therefore, this study should be conducted to find solutions to the problem of dominance in liberal education. Although the findings of the study did not show significance, they can still be adapted as mechanisms to improve student performance in universities. This study is highly beneficial to those involved in education, whether in schools or higher education institutions. Additionally, this study makes a significant contribution to the development of literature in the field of student performance management, particularly within the context of liberal education.

Funding: This study received no specific financial support.
Institutional Review Board Statement: The Ethical Committee of the Faculty of Psychology and Education, University Malaysia Sabah, Malaysia has granted approval for this study on 16 October 2024 (Ref. No. FPE2024111613).
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: Conceptualization, methodology, correspondence, project administration, Soon Singh Bikar Singh (SSBS); research materials, writing, reviewing, editing, formatting, Zhao JingYi (ZJY); research materials, writing, reviewing, editing, formatting, Huang ChangLi (HCL); editing, formatting, Ibnis Shaid Abdul Rajun (ISAR); data collection, Zhao HanYu (ZHY). All authors have read and agreed to the published version of the manuscript.

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