The Relationship between Personality Traits and V.A.R.K. Learning Styles among Undergraduate Education Students

Nursyazasyazana Shahirah Binti Mohd Raful., Muhammad Noor Hizami Hamidi*

Faculty of Education, Universiti Teknologi MARA (UiTM), Puncak Alam, Malaysia

***Corresponding Author**

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ABSTRACT

Background: Understanding the cognitive and psychological diversity of learners is essential for developing inclusive and effective educational environments. The interaction between inherent personality traits and preferred learning modalities significantly impacts student engagement and academic outcomes, particularly in teacher-education programs where future educators learn to accommodate diverse classrooms. **Objective:** This study aimed to identify the prevalence of Big Five personality traits among undergraduate education students and to determine the relationships between these personality traits and V.A.R.K. learning styles (Visual, Auditory, Read/Write, Kinesthetic). **Methods:** A quantitative cross-sectional design was utilized. Through stratified random sampling, 334 undergraduate students from the Faculty of Education at Universiti Teknologi MARA (UiTM) Puncak Alam were recruited. Data were collected using the validated Big Five Inventory (BFI) and the V.A.R.K. Questionnaire. Data were analyzed using descriptive statistics and Pearson product-moment correlations. **Results:** Descriptive analysis revealed that Openness to Experience was the most prevalent personality trait ($M = 35.32$, $SD = 5.55$), while Neuroticism was the least prevalent ($M = 24.59$, $SD = 4.64$). Correlation analyses demonstrated significant associations between personality traits and learning preferences. Agreeableness correlated positively with Kinesthetic learning ($r = 0.379$, $p < .01$) and negatively with Read/Write ($r = -0.241$, $p < .01$). Conscientiousness also positively correlated with Kinesthetic learning ($r = 0.247$, $p < .01$). Conversely, Neuroticism showed a positive association with Read/Write ($r = 0.254$, $p < .01$) and a negative association with Kinesthetic learning ($r = -0.343$, $p < .01$). **Conclusion:** Personality traits are significantly associated with distinct learning style preferences among education students. Recognizing these psychological and cognitive patterns allows educators to implement multimodal, personalized instructional strategies, ultimately fostering more inclusive and adaptive academic environments.

Keywords: Personality Traits, V.A.R.K. Learning Styles, Big Five Inventory, Higher Education, Educational Psychology.

INTRODUCTION

Learning styles are critical in defining how students process, interpret, and apply knowledge. Recognizing and accommodating these diverse preferences enables educators to cultivate inclusive classrooms that optimize student engagement, motivation, and academic performance [1, 2]. This is particularly vital in Malaysian higher education institutions—such as the Faculty of Education at Universiti Teknologi MARA (UiTM) Puncak Alam—where future educators are trained. Equipping pre-service teachers with an understanding of individual learning preferences ensures they can deploy flexible, multimodal instructional strategies in their future careers [3, 4].

The V.A.R.K. model, developed by Fleming and Baume, provides a robust framework for categorizing learning preferences into Visual, Auditory (Aural), Read/Write, and Kinesthetic modalities [5]. While the V.A.R.K. model outlines how students prefer to receive information, personality psychology offers insight into why these differences exist. The Five-Factor Model (FFM)—comprising Openness, Conscientiousness, Extraversion,

Agreeableness, and Neuroticism—remains one of the most empirically validated frameworks for assessing behavioral tendencies that dictate academic involvement and interaction [6, 7].

Despite extensive independent research on personality traits and learning styles, their interaction remains underexplored within the multicultural context of Malaysian higher education [8, 9]. Without a nuanced understanding of how personality traits correlate with specific learning modalities, instructional design often defaults to generic methodologies that fail to engage diverse student populations [10]. Therefore, this study aimed to address this gap by identifying the prevalence of FFM personality traits and determining their relationship with V.A.R.K. learning styles among undergraduate education students at UiTM Puncak Alam.

METHODS

Research Design and Setting

A quantitative, cross-sectional correlational design was employed to investigate the relationship between personality traits and learning styles at a single point in time. The study was conducted at the Faculty of Education, Universiti Teknologi MARA (UiTM) Puncak Alam, Malaysia.

Participants and Sampling

The target population consisted of approximately 2,400 undergraduate students. A stratified random sampling method was utilized to ensure proportional representation across different academic years and specific education programs (e.g., Physical and Health Education, TESL, Science Education). Based on the Krejcie and Morgan (1970) guideline, a sample of 334 students (162 males, 172 females) was recruited [11].

Research Instruments

Data were collected via an online structured questionnaire comprising three sections: demographics, the Big Five Inventory (BFI), and the V.A.R.K. Questionnaire.

Big Five Inventory (BFI): Personality traits were measured using the BFI, which assesses the FFM dimensions (Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism) on a 5-point Likert scale ranging from 'Strongly Disagree' to 'Strongly Agree' [12].

V.A.R.K. Questionnaire: Learning style preferences were identified using the standard V.A.R.K. scenarios, allowing students to indicate their preferred modalities (Visual, Auditory, Read/Write, Kinesthetic) for processing information [5].

Procedure, Ethics, and Data Analysis

Ethical approval was granted by the UiTM Ethics Research Committee (Ref: ED/REC/F/11884). Informed consent was obtained from all participants prior to data collection, ensuring anonymity and confidentiality. Data were analyzed using SPSS. Descriptive statistics (means, standard deviations) profiled the prevalence of personality traits, while Pearson product-moment correlations were utilized to test for significant relationships between personality dimensions and V.A.R.K. continuous scores. Significance was set at $p < .05$.

RESULTS

Demographic Information

The sample consisted of 334 undergraduate students, with a relatively balanced gender distribution (48.5% male, 51.5% female). The majority of participants were aged 21-23 years (46.7%) or 24-26 years (28.1%). Academic year representation was evenly distributed: Year 1 (22.8%), Year 2 (22.8%), Year 3 (25.7%), and Year 4 (28.7%).

Prevalence of Personality Traits

Descriptive analysis of the BFI revealed that Openness to Experience yielded the highest mean score (M = 35.32, SD = 5.55), indicating a student body highly receptive to new ideas. Agreeableness (M = 30.54, SD = 4.87) and Conscientiousness (M = 29.37, SD = 4.19) also demonstrated high prevalence. Extraversion showed moderate levels (M = 26.54, SD = 3.78), while Neuroticism reported the lowest mean score (M = 24.59, SD = 4.64), indicating relative emotional stability within the cohort (Table 1).

Table 1: Descriptive Statistics for Personality Traits (N = 334)

Personality Trait	**Mean**	**Std. Deviation**
Openness	35.32	5.55
Agreeableness	30.54	4.87
Conscientiousness	29.37	4.19
Extraversion	26.54	3.78
Neuroticism	24.59	4.64

Correlation Between Personality Traits and V.A.R.K. Learning Styles

Pearson correlations identified several significant relationships between FFM traits and V.A.R.K. learning styles. Extraversion was positively correlated with Kinesthetic learning ($r = 0.126$, $p = .022$) and negatively with Read/Write ($r = -0.162$, $p = .003$). Agreeableness demonstrated a strong positive correlation with Kinesthetic styles ($r = 0.379$, $p < .001$) and negative associations with both Aural ($r = -0.168$, $p = .002$) and Read/Write styles ($r = -0.241$, $p < .001$).

Conscientiousness positively correlated with Kinesthetic learning ($r = 0.247$, $p < .001$) but negatively with Read/Write styles ($r = -0.177$, $p = .001$). Conversely, Neuroticism showed positive associations with Aural ($r = 0.162$, $p = .003$) and Read/Write learning ($r = 0.254$, $p < .001$), while displaying a strong negative correlation with Kinesthetic learning ($r = -0.343$, $p < .001$). Openness to Experience yielded no statistically significant correlations with any V.A.R.K. modality (Table 2).

Table 2: Pearson Correlations between Personality Traits and V.A.R.K. Styles (N=334)

Trait	**Visual**	**Aural**	**Read/Write**	**Kinesthetic**
Extraversion	-.027	.044	-.162*	.126*
Agreeableness	-.060	-.168**	-.241**	.379**
Conscientiousness	-.084	-.044	-.177**	.247**
Neuroticism	.000	.162**	.254**	-.343**
Openness	.006	-.012	.033	-.024

* $p < .05$, ** $p < .01$ (2-tailed).

DISCUSSION

This study established the prevalence of Big Five personality traits and their correlational relationship with V.A.R.K. learning styles among undergraduate education students. Descriptive findings revealed that Openness

to Experience, Agreeableness, and Conscientiousness were highly prevalent. These traits reflect adaptability, responsibility, and intellectual curiosity—qualities considered essential for effective pedagogical practice and classroom management [13]. The low prevalence of Neuroticism indicates a general emotional stability within the cohort, which is highly advantageous for pre-service teachers.

Correlation analyses demonstrated that personality dimensions significantly associate with specific information-processing modalities. Agreeableness and Conscientiousness were notably positively linked with Kinesthetic learning and negatively linked with text-based (Read/Write) formats. This suggests that highly cooperative and disciplined students in this cohort exhibit a preference for experiential, hands-on learning tasks [14]. Conversely, students scoring higher in Neuroticism displayed a preference for structured Read/Write and Aural modalities, actively avoiding Kinesthetic learning. This indicates that emotionally sensitive learners may favor highly predictable, text-based, or lecture-based environments over the dynamic ambiguity of physical or interactive exercises [15].

These findings underscore the necessity of multimodal instructional design in higher education. By recognizing that varying personality profiles gravitate toward specific sensory modalities, educators can transition away from monolithic lecture formats toward differentiated instruction that incorporates visual aids, auditory discussions, textual analyses, and kinesthetic applications.

Limitations of the study include its cross-sectional design, which limits causal inference, and the reliance on self-reported instruments, which may introduce response bias. Future research should consider longitudinal methodologies and explore these dynamics across diverse academic faculties.

CONCLUSION

The results of this study confirm a significant relationship between Big Five personality traits and V.A.R.K. learning styles among undergraduate education students. By demonstrating that distinct personality profiles align with specific sensory learning preferences, the study highlights the inadequacy of generic, 'one-size-fits-all' pedagogical strategies. Integrating an awareness of psychological and cognitive diversity into teacher-education programs is critical for fostering inclusive, adaptable, and highly effective academic environments.

Declarations

Ethical Considerations: Ethical approval for this study was granted by the UiTM Ethics Research Committee (Ref. number: ED/REC/F/11884). Informed consent was obtained from all participants.

Conflicts of Interest: No conflicts of interest are known.

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