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Exploring the Relationship Between Personality Traits and Online Experiences of Graduate School Students at Wenzhou University

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A B S T R A C T

This study explored the correlation between personality traits and online learning experiences among graduate students at Wenzhou University. Using a descriptive-correlational design, it analyzed responses from 30 graduate students selected through convenience sampling. The Big Five Personality Traits model and an online learning experience questionnaire were employed. Results revealed that conscientiousness was the most dominant trait, and students had generally positive online learning experiences. A significant positive correlation was found between conscientiousness and online learning satisfaction. These findings suggest that personality influences how students engage with and perceive online education. The study recommends tailoring online learning strategies to accommodate individual personality traits to enhance academic performance and student satisfaction in virtual learning environments.

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INTRODUCTION

The rapid digitization of education, accelerated by the COVID-19 pandemic, has significantly reshaped higher education worldwide. The pandemic prompted universities to invest in digital platforms to ensure continuity and flexibility in learning (Aditya, 2020). In China, online learning has evolved from a contingency solution into a core educational modality, especially in graduate programs where learners often balance academic demands with professional and personal responsibilities (Baig, 2023). As digital platforms become more central to academic delivery, understanding the factors that influence student engagement, adaptability, and satisfaction in online learning environments has become increasingly crucial.

Among these factors, personality traits have emerged as a significant area of inquiry in educational psychology and instructional design. A growing body of research shows that personality influences not only academic performance but also student behaviour, motivation, and perception of learning environments (Osei et al., 2022; Tetzer et al., 2023). In online learning, where self-regulation, autonomy, and adaptability are critical, individual differences in personality traits can significantly mediate learning outcomes. For graduate students, who are expected to exhibit higher levels of independence and academic discipline, this relationship may be even more pronounced (Baruth & Cohen, 2023).

At Wenzhou University, a leading institution in eastern China known for its educational reforms, the transition to online platforms has been met with both enthusiasm and resistance. While many students appreciate the flexibility of digital instruction, others struggle with feelings of isolation, low motivation, or technical challenges (Hasan & Bao, 2022). These varied responses highlight the need to examine how personality traits influence students' perceptions and behaviours in online learning environments. Furthermore, limited empirical work has been done to explore how demographic variables, such as sex and age, may intersect with personality to shape these experiences in the Chinese higher education context.

This study addresses this gap by exploring the correlation between personality traits and online learning experiences among graduate students at Wenzhou University. Specifically, it aims to (1) determine whether there are significant differences in the personality traits of students when grouped by sex and age; (2) examine the relationship between personality traits and their online learning experiences; and (3) assess the challenges graduate students face in online learning environments.

This study is guided by several hypotheses based on the theoretical frameworks and existing literature. It is hypothesized that there are significant differences in the Big Five personality traits of graduate students at Wenzhou University when grouped by sex and by age. Furthermore, each of the Big Five personality traits is expected to have a significant correlation with students' online learning experiences, including their levels of engagement, satisfaction, and the challenges they encounter. Specifically, it is anticipated that students who score higher in conscientiousness and openness will report more positive experiences with online learning, such as better engagement and adaptability. In

contrast, students with higher levels of neuroticism are expected to report more negative experiences, including higher levels of stress, anxiety, or dissatisfaction. Lastly, it is also hypothesized that the intersection of personality traits with demographic variables such as sex and age will have a significant impact on how students perceive and navigate their online learning environments.

To guide this inquiry, the study draws upon two well-established theoretical frameworks: The Big Five Personality Traits model and Self-Determination Theory.

Despite a growing interest in the psychological factors affecting online learning, existing studies have largely focused on undergraduate populations or generalized cohorts in Western contexts. There remains a notable gap in context-specific research that examines how personality traits influence the online learning experiences of graduate-level students in Chinese universities—particularly in culturally distinct and reform-oriented institutions like Wenzhou University. This study seeks to fill that gap.

THEORETICAL REVIEW

The Big Five Personality Traits

The Big Five model, also known as the Five-Factor Model (FFM), provides a comprehensive taxonomy of personality, consisting of five major dimensions: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (Feher & Vernon, 2021; Zell & Lesick, 2021). These traits have been widely validated across cultures, including in Chinese populations (Zhang et al., 2021), and are frequently employed to predict academic behaviors and outcomes.

In online learning, openness is often associated with intellectual curiosity and a willingness to engage with novel learning modalities, making students more adaptable to new technologies (Orona & Pritchard, 2022). Conscientiousness correlates with self-regulated learning, time management, and persistence—essential skills for navigating asynchronous or self-paced courses (Cheng et al., 2023). Extraversion and agreeableness, on the other hand, shape how students engage with collaborative tools such as discussion forums or group projects. Finally, neuroticism, which reflects emotional instability, has been linked to anxiety and low self-efficacy in digital learning settings (Yu, 2021).

This study applies the Big Five model to classify personality traits among graduate students and analyze how these traits influence online learning outcomes, including engagement, satisfaction, and resilience in the face of challenges.

Self-Determination Theory (SDT)

The Self-Determination Theory emphasizes the importance of fulfilling three innate psychological needs—autonomy, competence, and relatedness—for optimal motivation and personal growth. In learning environments, students who feel autonomous (in control of their learning), competent (able to succeed), and connected to others are more likely to be intrinsically motivated and engaged (Ryan & Deci, 2024).

In online education, these needs are especially salient. Autonomy is embedded in the format, where students often manage their own schedules and learning paths. Competence may be challenged or supported by instructional design and technical accessibility. Relatedness can be diminished due to physical distance but may be restored through structured interactions and peer collaboration.

Research suggests that personality traits modulate the degree to which these needs are met. For example, conscientious students may experience a strong sense of competence and autonomy due to their disciplined approach to learning, while extraverted students may seek opportunities for interaction to satisfy their need for relatedness (Cheng et al., 2023; Ting et al., 2020). On the other hand, students high in neuroticism may perceive online learning environments as threatening or isolating, undermining their intrinsic motivation (Baruth & Cohen, 2023; Yu, 2021).

By integrating the Big Five Personality Traits and Self-Determination Theory, this study provides a robust conceptual framework for understanding how personality differences shape online learning experiences, and how educational design can better support diverse learners.

METHODOLOGY

This study employed a Descriptive Correlational Research Design to examine the relationship between the personality traits of graduate students and their online learning experiences. The descriptive component focused on outlining the specific personality profiles of the participants, while the correlational aspect aimed to identify associations between these traits and students' experiences in online learning environments. The study involved 120 graduate students enrolled at Wenzhou University in China. Personality traits were assessed using the Big Five Inventory (BFI), which measures openness, conscientiousness, extraversion, agreeableness, and neuroticism. A separate questionnaire, developed or adapted from validated instruments, was used to gather data on various aspects of online learning, including engagement, satisfaction, institutional support, adaptability, flexibility, and the challenges encountered.

To determine if there is a significant correlation between the different personality traits and the online learning experiences of the graduate students, Spearman Rank Correlation was utilized due to the non-normal distribution of data as indicated by the Shapiro-Wilk test. A T-test was then conducted to test the significance of the computed correlation coefficients. To assess the level of challenges experienced in online learning, the mean was used to generalize the data while the standard deviation was employed to measure the disparity among responses. These analyses helped quantify the extent to which personality traits are related to the students' experiences and difficulties in online learning settings.

Additionally, to explore differences in personality traits across demographic variables, the Mann-Whitney U test was applied to determine whether significant differences existed between groups based on sex and age. This non-parametric method was deemed appropriate considering the data's

distribution. The combined use of descriptive and inferential statistical methods enabled the researchers to effectively examine both the general patterns and specific relationships within the data, providing insights into how personality factors might influence or relate to the online learning experiences of graduate students at Wenzhou University.

RESULTS

The Differences in the Personality Traits of Students by Sex and Age

Table 1. Mann-Whitney Test on the Personality Traits of Graduate Students at Wenzhou University According to Sex

Personality Traits	Sex	Mean	SD	Quality Description	p-value	Interpretation
Openness	Male	3.19	0.5034	Agree	0.028	Significant
	Female	2.86	0.6705	Agree		
Conscientiousness	Male	3.12	0.4669	Agree	0.628	Not Significant
	Female	3.02	0.7012	Agree		
Extraversion	Male	2.99	0.5541	Agree	0.001	Significant
	Female	2.56	0.7426	Agree		
Agreeableness	Male	3.13	0.4202	Agree	0.089	Not Significant
	Female	2.86	0.6549	Agree		
Neuroticism	Male	3.12	0.4687	Agree	0.011	Significant
	Female	2.81	0.6258	Agree		

Table 1 presents the results of the Mann-Whitney U test used to determine whether there are significant differences in the five personality traits of graduate students at Wenzhou University when grouped according to sex. The findings indicate that male and female graduate students differ significantly in three of the five personality traits: Openness ($p = 0.028$), Extraversion ($p = 0.001$), and Neuroticism ($p = 0.011$). This implies that the sex of the graduate students has an effect on these specific personality traits. In the three personality traits, male students reported higher mean scores than female students: Openness: Males ($M = 3.19$) vs. Females ($M = 2.86$), Extraversion: Males ($M = 2.99$) vs. Females ($M = 2.56$), Neuroticism: Males ($M = 3.12$) vs. Females ($M = 2.81$). This implies that the male graduate students tend to have higher openness, extraversion, and emotional stability (neuroticism) compared to the female graduate students.

For Conscientiousness (p = 0.628) and Agreeableness (p = 0.089), no statistically significant differences were observed between male and female respondents, though males had slightly higher mean scores in both traits. This implies that conscientiousness and agreeableness is not affected by the graduate students' sex. Across all traits, both sexes had mean scores within the "Agree" range, indicating a general tendency to exhibit these traits positively.

Table 2. Mann-Whitney Test on the Personality Traits of Graduate Students at Wenzhou University According to Age

Personality Traits	Age	Mean	SD	Quality Description	p-value	Interpretation
Openness	21 to 25	3.07	0.5752	Agree	0.549	Not Significant
	26 to 30	3.03	0.5880	Agree		
Conscientiousness	21 to 25	3.10	0.5722	Agree	0.771	Not Significant
	26 to 30	3.08	0.5936	Agree		
Extraversion	21 to 25	2.88	0.6547	Agree	0.245	Not Significant
	26 to 30	2.70	0.6824	Agree		
Agreeableness	21 to 25	3.07	0.4839	Agree	0.477	Not Significant
	26 to 30	2.96	0.5839	Agree		
Neuroticism	21 to 25	3.03	0.5524	Agree	0.186	Not Significant
	26 to 30	2.93	0.5483	Agree		

Table 2 displays the results of the Mann-Whitney U test conducted to examine whether there are significant differences in the personality traits of graduate students at Wenzhou University when grouped according to age (21–25 and 26–30 years old). Across all five personality traits—openness, conscientiousness, extraversion, agreeableness, and neuroticism—the p-values ranged from 0.186 to 0.771, all above the 0.05 significance level. This indicates that there are no statistically significant differences in personality traits between the two age groups. It implies that the age of the graduate students does not affect their personality traits.

Both age groups consistently had mean scores within the "Agree" range across all traits, showing generally positive personality tendencies regardless of age. Slight variations in means were observed (e.g., higher extraversion and agreeableness in the 21–25 group), but these were not significant enough to suggest meaningful differences in psychological disposition.

The Relationship between Personality Traits and Online Learning Experiences

Table 3. The Relationship between Personality Traits and Online Learning Experiences of Graduate Students at Wenzhou University

Personality Traits	Online Learning Experiences	Correlation Coefficient	Descriptive Equivalent	p-value	Interpretation
Openness	Engagement and Participation	0.52	Moderate Correlation	0.001	Significant
	Satisfaction with Course Quality and Structure	0.54	Moderate Correlation	0.001	Significant
	Support	0.32	Weak Correlation	0.001	Significant
Conscientiousness	Adaptability and Flexibility	0.35	Weak Correlation	0.001	Significant
	Engagement and Participation	0.39	Weak Correlation	0.001	Significant
	Satisfaction with Course Quality and Structure	0.41	Moderate Correlation	0.001	Significant
	Support	0.34	Weak Correlation	0.001	Significant

Extraversion	Adaptability and Flexibility	0.48	Moderate Correlation	0.001	Significant
	Engagement and Participation	0.60	Strong Correlation	0.001	Significant
	Satisfaction with Course Quality and Structure	0.47	Moderate Correlation	0.001	Significant
	Support	0.38	Weak Correlation	0.001	Significant
Agreeableness	Adaptability and Flexibility	0.49	Moderate Correlation	0.001	Significant
	Engagement and Participation	0.56	Moderate Correlation	0.001	Significant
	Satisfaction with Course Quality and Structure	0.49	Moderate Correlation	0.001	Significant
	Support	0.40	Moderate Correlation	0.001	Significant
Neuroticism	Adaptability and Flexibility	0.47	Moderate Correlation	0.001	Significant
	Engagement and Participation	0.66	Strong Correlation	0.001	Significant

	Satisfaction with Course Quality and Structure	0.55	Moderate Correlation	0.001	Significant
	Support	0.51	Moderate Correlation	0.001	Significant
	Adaptability and Flexibility	0.52	Moderate Correlation	0.001	Significant

Table 3 presents the correlation coefficients between the Big Five personality traits and various dimensions of online learning experiences among graduate students at Wenzhou University. The correlations were measured using Spearman Rank Correlation, with significance set at $p = 0.001$ for all relationships. All personality traits showed significant positive correlations with the four domains of online learning experiences: Engagement and Participation, Satisfaction with Course Quality and Structure, Perceived Support, and Adaptability and Flexibility. This implies that having a higher personality trait will yield a better online learning experiences in the various dimensions.

Openness showed moderate correlations with engagement ($r = 0.52$) and course satisfaction ($r = 0.54$), and weak but significant correlations with support ($r = 0.32$) and adaptability ($r = 0.35$). Conscientiousness was moderately correlated with adaptability ($r = 0.48$) and satisfaction ($r = 0.41$), and weakly with the other domains. Extraversion had a strong correlation with engagement ($r = 0.60$), and moderate correlations with other domains, particularly adaptability ($r = 0.49$). Agreeableness showed consistent moderate correlations across all online learning domains. Neuroticism, often associated with emotional sensitivity, demonstrated a strong correlation with engagement ($r = 0.66$) and moderate correlations with the remaining three aspects.

The significant relationships across all traits indicate that personality plays a meaningful role in shaping students' online learning experiences. Specifically, students who scored higher in extraversion, agreeableness, and neuroticism tended to report higher engagement and satisfaction. The strongest correlation was observed between extraversion and engagement/participation ($r = 0.60$). This suggests that outgoing and socially-inclined students are more likely to thrive in collaborative or interactive online settings.

Interestingly, neuroticism also correlated strongly with engagement ($r = 0.66$). While typically associated with stress or anxiety, this finding may suggest that students with higher neurotic tendencies could be more invested, cautious, or emotionally reactive, leading to greater involvement in academic activities, possibly to compensate for uncertainty. Students who were more open to experience tended to express higher satisfaction with course quality ($r = 0.54$), likely due to their curiosity and willingness to explore flexible learning environments.

The consistent moderate correlation of agreeableness with all domains indicates that students who are cooperative and empathetic perceive more support and adapt better to online systems. The moderate correlation with adaptability (r = 0.48) suggests that self-disciplined and goal-oriented students are more successful in adjusting to the demands of online learning, such as managing time and completing tasks independently.

The Challenges Encountered by Graduate Students in Online Learning

Table 4. The Level of Challenges Encountered by Wenzhou University Graduate Students in Online Learning

Challenges	**Mean**	**SD**	**Descriptive Equivalent**
Technical Difficulties	2.83	0.6906	Agree
Motivation	2.78	0.7396	Agree
Time management	2.75	0.7097	Agree
Usability of the platform	2.76	0.6775	Agree
Isolation	2.51	0.7825	Agree

Table 4 presents the mean scores and standard deviations on the challenges encountered in online learning among graduate students at Wenzhou University. The responses were rated on a Likert scale, with higher scores indicating stronger agreement that the issue posed a challenge.

All five areas of difficulty received mean scores within the "Agree" range, indicating that students consistently acknowledged experiencing challenges in these areas. The top three challenges based on mean values were: Technical Difficulties (M = 2.83, SD = 0.6906), Motivation (M = 2.78, SD = 0.7396), and Time Management (M = 2.75, SD = 0.7097). The highest-rated challenge highlights that internet connectivity, device reliability, and software/platform issues continue to hinder the online learning experience for many students. Challenges related to self-motivation and managing time suggest that students may struggle with the self-directed nature of online learning. Without the structure of face-to-face classes, maintaining focus and balancing academic responsibilities with other commitments becomes more difficult. This is particularly critical in courses with synchronous requirements or high multimedia demands.

Usability of the platform also emerged as a moderate concern (M = 2.76), while isolation received the lowest mean (M = 2.51, SD = 0.7825), though still within the "Agree" range. Although most universities have standardized their learning management systems (LMS), a mean score of 2.76 for usability implies that interface design, navigation difficulties, or lack of training may still affect the user experience. While rated lowest among the five, isolation remains a

recognized challenge. The relatively high standard deviation (SD = 0.7825) indicates variability in how students experience social disconnect, possibly depending on their personalities (e.g., extraversion) or the nature of their program.

DISCUSSION

The Differences in the Personality Traits of Students by Sex and Age

The findings confirm that sex significantly influences certain personality traits among graduate students at Wenzhou University, with males scoring higher in openness, extraversion, and neuroticism. These differences align with existing research that recognizes gender-based psychological and behavioral tendencies in academic contexts (Osei et al., 2022). When viewed through the lens of the Big Five Personality Traits, the higher openness among male students suggests a greater inclination toward intellectual exploration and digital adaptability—traits that enhance engagement with novel online learning modalities (Orona & Pritchard, 2022). Similarly, males' higher extraversion may position them to thrive in collaborative or interactive digital environments, addressing their need for relatedness as highlighted by Self-Determination Theory (Ryan & Deci, 2024). Conversely, their elevated neuroticism indicates emotional sensitivity and potential vulnerability in high-stakes learning settings, reinforcing the need for targeted mental health support and stress management strategies (Baruth & Cohen, 2023; Yu, 2021).

These gender-based differences are consistent with previous findings from Özkarar-Gradwohl and Turnbull (2021), who observed cross-cultural patterns of higher neuroticism and lower extraversion among females, but noted contextual variations that could reverse these trends in certain academic or cultural environments. In China, for example, shifting gender norms in education and evolving professional expectations may contribute to role reversals in how traits are expressed or reported among graduate students (Si, 2022). The absence of significant personality trait differences across age groups suggests that the developmental span between 21 and 30 years may be too narrow to capture meaningful psychological variation. Both age groups exhibited similar personality profiles, which is consistent with research asserting the relative stability of personality traits in early adulthood (Zell & Lesick, 2021). This reinforces the idea that institutional support systems should prioritize trait-based, rather than age-based, differentiation. From a programmatic perspective, universities can better allocate resources by focusing on the distinct psychological needs of students, rather than age demographics alone.

The Relationship between Personality Traits and Online Learning Experiences

The study revealed robust correlations between personality traits and online learning experiences, substantiating theoretical assumptions drawn from both the Big Five framework and Self-Determination Theory. Neuroticism, surprisingly, showed the strongest correlation with engagement and participation, a finding that may reflect heightened vigilance or academic anxiety driving involvement. While neuroticism is often negatively framed, this result indicates its

complex role in motivation, potentially aligning with SDT's view that unmet psychological needs (e.g., competence or security) can still elicit effortful behaviour. Similarly, extraversion correlated strongly with engagement, supporting the premise that socially oriented students are more likely to participate in peer forums and group activities—thereby fulfilling their relatedness needs (Ting et al., 2020).

These findings align with those of Gatzka (2021), Zhang and Wang (2023), who demonstrated that conscientiousness and openness are significant predictors of academic success and student satisfaction, especially in environments requiring self-discipline and cognitive flexibility. Moderate correlations for openness and conscientiousness across all domains point to the central role of self-regulated learning and adaptability in online environments. Open students may embrace the flexible structure of digital courses, while conscientious individuals are more likely to persist and organize their studies effectively—demonstrating high autonomy and competence (Cheng et al., 2023). Agreeableness, with its consistent moderate correlations, suggests that empathetic and cooperative students feel more supported and navigate digital learning with ease, contributing to both satisfaction and adaptability.

Furthermore, evidence from Levin (2022) supports the idea that students' personality traits directly shape their perceived ease of use and usefulness of learning management systems, highlighting the value of adaptive technology design in fostering engagement. These patterns reinforce the importance of designing instructional strategies that recognize and leverage personality-driven behaviours, allowing educators to address gaps in engagement or satisfaction more effectively.

The Challenges Encountered by Graduate Students in Online Learning

The challenges identified—technical difficulties, motivation, time management, usability, and isolation—are consistent with previous studies on online learning environments, particularly in post-pandemic contexts (Hasan & Bao, 2022). These barriers can be interpreted through the lens of Self-Determination Theory: technical issues undermine students' sense of competence, poor time management erodes autonomy, and isolation hampers relatedness. Furthermore, students' ability to overcome these challenges appears intertwined with their personality traits. For example, conscientious students may better manage their time, while extraverts are likely to mitigate isolation through active participation in collaborative tasks.

This suggests that personality-aware instructional design can serve as a practical solution to these enduring issues. Tailoring support programs based on personality profiles—for instance, offering peer mentorship for extraverted or agreeable students, and structured learning plans for conscientious learners—can enhance motivation and satisfaction. Likewise, platform usability and IT infrastructure improvements can address the basic psychological need for competence, especially for students struggling with digital literacy. The integration of flexible, customizable learning tools can also support the autonomy of open and self-directed learners.

Recent studies also emphasize the importance of promoting digital resilience, especially among students with higher neuroticism or low confidence in their tech skills (Sharma et al., 2021; Sun et al., 2022). This includes embedding technical training and digital well-being resources into course design. Promoting social presence and emotional connectedness, as proposed by Garrison (2022) in the Community of Inquiry (CoI) framework, may further complement SDT by addressing students' need for interaction, especially in asynchronous settings.

CONCLUSIONS AND RECOMMENDATIONS

This study has demonstrated that personality traits significantly influence online learning experiences among graduate students at Wenzhou University. The findings revealed that while sex affects certain traits—specifically openness, extraversion, and neuroticism—age does not appear to be a significant factor. Furthermore, all five personality traits exhibited statistically significant positive correlations with key dimensions of online learning, including engagement, satisfaction, perceived support, and adaptability. Notably, extraversion and neuroticism had the strongest relationships with engagement and support, respectively, suggesting that students' emotional and social dispositions play a critical role in their ability to thrive in virtual learning environments. These results affirm the relevance of integrating psychological profiles into the design and delivery of online education, particularly at the graduate level where self-regulation and motivation are paramount.

Based on these findings, it is recommended that universities, particularly those transitioning into or maintaining hybrid and online modalities, consider incorporating personality assessments into academic advising and instructional design. Tailoring online support systems to accommodate diverse personality profiles can enhance learning outcomes and student well-being. For instance, providing structured peer interaction may support extraverted learners, while clear, self-paced modules with timely feedback may help conscientious and neurotic students manage anxiety and build competence. Additionally, faculty training programs should include components on personality-informed pedagogy to foster inclusive, responsive online teaching practices. Further research may expand this work by exploring longitudinal effects of personality on academic performance and incorporating other demographic and contextual variables to deepen our understanding of digital learning in higher education.

FURTHER STUDY

The current age grouping (21–30) may not capture broader developmental differences. Future studies might consider including older age groups or longitudinal designs to explore personality evolution over time.

Longitudinal studies can investigate how personality traits influence long-term academic success or persistence in online learning, especially as digital education becomes more widespread.

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