Czesław Kiński
Uniwersytet Warmińsko-Mazurski w Olsztynie
https://orcid.org/0000-0001-9148-8950
czeslaw.kinski@uwm.edu.pl

Bartosz Kiński
Katolicki Uniwersytet Lubelski Jana Pawła II
https://orcid.org/0009-0009-5358-4920
bartoszkinski@student.kul.pl

Agata Przyborowska
Uniwersytet Warmińsko-Mazurski w Olsztynie
https://orcid.org/0009-0008-7428-9915
agata.przyborowska@uwm.edu.pl

Big Five personality traits, attitudes towards Artificial Intelligence and the use of AI solutions in foreign language learners

The main aim of the study is to investigate the relationship between foreign language learners' Big Five personality traits and their attitudes towards Artificial Intelligence (AI), as well as to examine the connection between those attitudes and learners' use of AI-generated solutions in their foreign language education. 429 foreign language university students were asked to complete an online questionnaire. Subsequently, statistical analysis of the data was carried out to obtain results, which indicated that conscientiousness and extraversion correlated positively with positive attitudes towards AI, while agreeableness, neuroticism and intellect/imagination correlated negatively with those attitudes. Furthermore, it was found that

extraversion, conscientiousness and neuroticism were positively correlated with the frequency of AI usage in foreign language learning, while intellect/imagination was negatively correlated with both the frequency of AI usage and the perceived usefulness of AI tools in foreign language learning. Finally, the study revealed an association between the frequency of AI use and the perceived usefulness of AI-generated tools, as well as a strong direct effect of the frequency of AI usage in foreign language learning on attitudes towards AI. Overall, the use of AI-generated tools appears to be more dependent on the learner's attitudes towards AI than their personality traits.

Keywords: foreign language learning, learner personality, Big Five, Artificial Intelligence, adaptation, learner attitudes

Słowa kluczowe: nauka języka obcego, osobowość ucznia, Wielka Piątka, sztuczna inteligencja, adaptacja, postawy uczniów

1. Introduction

Artificial Intelligence (AI) generated solutions in foreign language learning are becoming an increasingly popular topic, both among researchers as well as practising teachers (Jiang, 2022; Huiling et al., 2023; Gruzdeva et al., 2024; Huiling et al., 2024; Karataş, 2024). Despite this growing significance of AI, relatively little is known about the influence of personality traits on learner attitudes towards AI and their use of AI tools in the foreign language learning process. As certain personality traits, such as conscientiousness and extraversion from the Big Five model of personality, have been reported to influence attitudes towards AI, learning behaviours and outcomes (Stein et al., 2024), it might be interesting to verify whether the same associations will be observed within the specific context of foreign language education. Therefore, our study aims at examining the relationship between learners' personality traits as described by the Big Five model (Costa and McCrae, 1987; Goldberg 1990) and their attitudes towards artificial intelligence, as well as their use of AI-generated solutions in foreign language learning. In addition, it sets out to examine the effect of learner attitudes towards AI on their actual use of AI solutions in their language education.

2. Literature review

2.1. Personality as the pathway to adaptation

From the earliest stages of his research, Allport, the father of all trait-based approaches to personality, emphasized that one of the main aspects of personality is its adaptability to the requirements of the environment (Allport, 1937). He defines personality as "the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to the environment" (Allport, 1937: 48). This definition highlights not only the adaptive function of personality traits, but also their motivational and regulatory value: human behaviour depends on the interaction of a personal disposition (a trait) with a given functional context (situation), leading to the best possible adaptation. The trait-based approach to personality sparked years of research aimed at the development of a universal framework encompassing the key personality dimensions, which has eventually led to the creation of the so-called "Big Five" models of personality built upon five main personality factors (Fiske, 1949; Cattell, 1965; McCrae, Costa, 1987; Goldberg, 1990; Hofstee, 1992). Although the trait-oriented models have faced some criticism in general (Mischel, 1968; Block, 1977), the efficacy and usefulness of the Big Five models, especially Costa and McCrae's (1987) model (Soto, 2019), have led to their recognition as the main, cross-cultural taxonomy of human personality (John, Soto, Naumann, 2008; Strelau, 2020).

2.2. Big Five dimensions and their correlates

Depending on the methodology applied, the Big Five models include different, but closely aligning dimensions (Strelau, 2020). The OCEAN model, representing the empirical approach, developed by Costa and McCrae (1987) includes the following dimensions: *openness to experience, conscientiousness, extraversion*, *agreeableness* and *neuroticism*. The first trait, openness to experience, includes traits such as imagination, aesthetics, idealism, and general open-mindedness; conscientiousness is synonymous with qualities like self-discipline, common sense, and prudence; extraversion refers to sociability, assertiveness, a high level of activity, positive emotionality, and a tendency toward sensation-seeking; agreeableness encompasses traits such as trust, altruism, humility, and the avoidance of conflict; neuroticism refers to negative emotionality, i.e., a tendency to experience anxiety, depression, impulsiveness, or hostility (McCrae, Costa, 1987; McCrae, Costa, 1995; Kaya et al., 2024).

A representative of the lexical tradition, Goldberg's Big Five (1990), introduces a slight change to the model. Instead of openness to experience, Goldberg (1990) proposes a dimension called *intellect* or *culture* which characterizes people who are creative, smart, philosophical, reflective and introspective. The other dimensions remain unchanged from the OCEAN model and are understood as described above. Both approaches, empirical and lexical, are widely recognized and applied in both diagnostic and scientific fields of study (Oleś, 2000; Cieciuch, Laguna, 2014).

2.3. Artificial Intelligence (AI) as a new realm for adaptation

Artificial intelligence (AI) can be defined as a set of technologies capable of performing various tasks that typically require human intelligence, with some degree of autonomy and the ability to learn, adapt, and process large volumes of data (Stein et al., 2024). As its processing capacity far exceeds human abilities, AI has already dominated many areas of daily life and various professions, including IT, computer science, robotics, medicine, and even psychology. On the one hand, AI can make our lives more comfortable and foster intellectual growth, but on the other, it poses significant risks. As Stein et al. (2024: 1) note, "AI could lead to the downsizing of human jobs, the creation of new intelligent weaponry, or a growing lack of control over emerging technologies." Some researchers also highlight that AI may promote unethical behaviour, leading to human suffering (Gratch, Fast, 2022; Cao et al., 2023), encounter difficult moral dilemmas, such as in healthcare (Anywanwu et al., 2024), and tend towards unethical decisions (Lei Ma et al., 2018; Zhang et al., 2022; Zhang et al., 2023). Given the complexity of the impact of AI, reactions range from enthusiasm for its potential, through ambivalence, to even distrust or conspiracy theories (Stein et al., 2024). As AI continues to reshape our lives, it represents a new area in which humanity must again adapt (Matthews et al., 2021).

2.4. Attitudes Towards AI vs. the Big Five Traits

Given the diverse reactions to AI, researchers have sought to determine whether there is any connection between the Big Five personality traits and attitudes toward AI. Research by Stein et al. (2024) shows that people in general have a slightly positive attitude toward AI. A tendency to trust automation more than humans, particularly when confidence in one's own judgment is limited, has also been observed (Lewandowsky et al.,

2000). In terms of personality correlates, the Stein et al. research shows that agreeableness is the only trait significantly predicting attitudes toward AI: the more agreeable a person, the more open they are to using AI technologies. Similar results are found in Park and Woo (2022), those with high agreeableness levels display positive affect and attitudes towards two of the examined dimensions of AI, functionality and sociality. Openness to experience also shows a tendency to predict attitudes to AI, though it does not reach statistical significance. In Ozbey and Yasa's study (2025), it correlated most with the perception that AI is useful for the future of medicine. Other Big Five traits do not appear to predict positive or negative attitudes toward AI (Stein et al., 2024). Interestingly, Stein et al. (2024) found out that a conspiracy mentality is a significant predictor of negative attitudes toward AI, particularly among those who view the new technologies with distrust. While the conspiracy mentality factor lies outside the Big Five, it could be considered an opposite of "trust," which is a sub-quality of agreeableness. Trust in AI is a well-studied area (Glikson, Woolley, 2020; Sharan, Romano, 2020; Choung et al., 2022; Omrani et al., 2022; Riedl, 2023), and a meta-analysis of 58 empirical studies (Riedl, 2023) identifies the key predictors of trust in AI as agreeableness and openness to experience. The relationship between extraversion and trust in AI is more complex: although extraverts tend to initially trust AI more, their trust is more easily shaken if AI-technologies make mistakes (Elson et al., 2018). Park and Woo (2022) point out that extraverts show rather negative attitudes towards AI and actual technology use in general. The correlation between conscientiousness and trust in AI remains unclear, with some studies showing a positive and others showing a negative correlation (Riedl, 2023). Neuroticism, meanwhile, is negatively correlated with trust in AI in only a few studies. Interestingly, those who present high levels of neuroticism tend to assess the sociality of AI more positively, perceiving AI as a means to satisfy their needs for connection and relatedness (Park, Woo, 2022). Moreover, Ibrahim et al. (2025) highlight that neuroticism serves as an indicator of reduced AI adaptability, especially among women, who tend to present lower adoption rates, contributing to a gender gap in AI use. Overall, the evidence consistently suggests that agreeableness and openness to experience are the most significant predictors of attitudes toward AI.

2.5. AI in foreign language education

AI in education (AIED) is a complex issue, with opinions ranging from enthusiasm to caution. On the one hand, AI has the potential to stimulate intel-

lectual growth, offer personalized adjustments, and enhance the efficiency of both teachers and students (Loeckx, 2016; Luckin, Holmes, 2016; Seldon, Abidoye, 2018; Holmes, 2022;). On the other hand, it raises concerns due to its potential for unethical behaviour, discrimination, and social harm (Pedro et al., 2019; Xuesong et al., 2021; Selwyn, 2022). One area where AI in education seems to be gaining momentum is Foreign Language Learning (FLL). AI-driven technologies have greatly impacted feedback mechanisms, student performance assessments, real-time interactive tools, and platforms that boost language skills (Zaghlool, Khasawneh, 2023). Research has shown that AI-led feedback significantly enhances students' linguistic skills (Alsadoom, 2021; Karataş et al., 2024), as do Automated Writing Evaluation (AWE) tools like *Grammarly*, especially for written communication (Thinh et al., 2020). AI-driven applications, such as *ChatGPT*, have also been found useful for fostering creative thinking and promoting a deeper understanding of foreign cultures (Karataş et al., 2024). Moreover, teachers benefit from AI simplifying lesson preparation and providing comprehensive, personalized feedback (Ayotunde et al., 2023). While AIED has many benefits, it is important to use it cautiously. As Alhrabi (2023: 11) notes, "students will likely use text generators and other emerging writing tools regardless of their effectiveness or ethics." Therefore, it is the teacher's responsibility to ensure that students use these tools appropriately, balancing AI use with interpersonal interaction and critical thinking (Karataş et al., 2024).

Having considered the perspectives mentioned above, our study aims to check the extent to which a learner's personality traits may influence their attitudes towards AI and their use of AI-generated tools in foreign language learning. Our research questions are as follows:

1. What is the relationship between a learner's personality traits and their attitudes towards artificial intelligence?
2. What is the relationship between a learner's personality traits and their use of AI-generated solutions in foreign language learning?
3. What is the relationship between a learner's attitudes towards AI and their use of AI-generated solutions in foreign language learning?
4. Does the perceived usefulness of AI tools in foreign language learning mediate the relationship between the frequency of AI usage in foreign language learning and attitudes towards AI?

3. Method

3.1. Context and participants

There were 429 participants in the study: 186 male, 226 female, 4 non-binary, 13 who preferred not to disclose their gender, all foreign language university students from the following institutions based in Poland: the Polish-Japanese Academy of Information Technology in Warsaw, the University of the National Education Commission in Kraków, the University of Warmia and Mazury in Olsztyn, and the University of Warsaw. Average age was 20.81 (SD = 2.11), and minimum foreign language proficiency level was B1 (intermediate), as specified by the Common European Framework of Reference for Languages (CEFR). The informants came from both Bachelor's (Years 1-3) and Master's (Years 4-5) programmes. At the time of the study, all the students were being given extensive tuition in English, both in practical, skill-based classes as well as professional courses.

3.2. Instruments

3.2.1. The Mini-IPIP Scales

The Mini-IPIP (International Personality Item Pool) scales, developed by Donnellan et al. (2006), are a 20-item tool designed to provide an assessment of the Big Five factors of personality: extraversion, agreeableness, conscientiousness, intellect/imagination, and neuroticism, with four items for each Big Five trait. One sample item from the scales is: *Talk to a lot of different people at parties*. In order to ensure accurate measurement of the traits, a number of items on the scales are reverse scored, e.g., *Am not interested in abstract ideas*. All the items are rated on a 5-point Likert scale, with the following format: *very inaccurate* (1), *moderately inaccurate* (2), *neither inaccurate nor accurate* (3), *moderately accurate* (4), *very accurate* (5). The scales were given in the original language, English, due to the fact that all the respondents were able to understand and respond to the items. The reliability analyses suggested good internal consistency for all five scales (extraversion: Cronbach's α = 0.78; agreeableness: Cronbach's α = 0.72; conscientiousness: Cronbach's α = 0.70; intellect/imagination: Cronbach's α = 0.71; neuroticism: Cronbach's α = 0.71). However, it should be noted that we excluded one item from the neuroticism scale (*Seldom feel blue)* as it significantly lowered the internal consistency of the scale (Cronbach's α = 0.56). A possible explanation for this will be addressed in the discussion of the results.

Given the choice of other Big-Five measures, such as the 60-item NEO Five-Factor Inventory (NEO-FFI; Costa, McCrae, 1992), the 40-item Big Five Mini-Markers (Saucier, 1994), the 50-item International Personality Item Pool – Five Factor Model (IPIP-FFM; Goldberg, 1999), and the 44-item Big Five Inventory (BFI; John, Srivastava, 1999) we decided to use the mini-IP-IP scales for two reasons. First, completing lengthy questionnaires may be strenuous for respondents, resulting in their decision not to complete the study, or, at best, in their refusal to take part in future studies, or, at worst, in careless responses, thus affecting the validity of their answers. Second, the Mini-IPIP scales had respectable internal consistencies given their length and content breadth, ensuring a comparable pattern of criterion-related validity (Donnellan et al., 2006). It has to be noted that we chose to reject the Ten-Item Personality Inventory (TIPI) measure of the Big Five, developed by Gosling et al. (2003) as it contains only two indicators per factor, which can lead to estimation problems and limited modeling flexibility (Bollen, 1989; Kline, 2004).

3.2.2. ATTARI-12

In order to provide a comprehensive and reliable measurement of AI-related attitudes, we decided to use the ATTARI-12 questionnaire (Stein et al., 2024), which incorporates 12 items related to the classic trichotomy of human attitudes, i.e., cognition, emotion, and behaviour. One sample item from the scale is *AI offers solutions to many world problems*. All the items are rated on a 5-point Likert scale, with the following format: *strongly disagree* (1), *disagree* (2), *neither agree nor disagree* (3), *agree* (4), *strongly agree* (5).

Our choice of the ATTARI-12 stemmed from our intention to use a tool that would assess attitudes towards AI on a full spectrum between aversion and enthusiasm; for this reason, we rejected scales such as the AI Anxiety Scale (AIAS; Wang, Wang, 2019), or the Threats of Artificial Intelligence Scale (TAI; Kieslich et al., 2021), as these focus on negative impressions and concerns over AI, failing to account for the possibility of positive attitudes. Furthermore, before testing the specific uses of AI-related solutions in foreign language learning, we wanted to investigate attitudes towards AI as a general concept, independent of specific use context, e.g., work, education or recreation, and the ATTARI-12 meets this particular requirement perfectly. In addition, we observed an excellent Cronbach's α of 0.92 for the ATTARI-12.

3.2.3. Foreign Language Learning Applications of AI Solutions

Prior to the formulation of the scale measuring a learner's use of AI-generated solutions in foreign language learning, we asked a group of 20 foreign language university students to list areas of their language education in which such solutions may prove to be useful, as well as reasons why they might choose to employ AI-generated tools while learning a foreign language.

Based on their responses, we created two short scales with the items being rated on a 5-point Likert scale: Artificial Intelligence in Foreign Language Learning – Frequency (AIFLL-F) and Artificial Intelligence in Foreign Language Learning – Usefulness (AIFLL-U). The first scale consists of four items, referring to the frequency of using AI-generated tools; it was given the following format: *never* (1), *rarely* (2), *sometimes* (3), *frequently* (4), and *always* (5), and it shows a good internal consistency (Cronbach's α = 0.79). A sample item from the scale is *I utilize AI-generated exercises to practice grammar*. The second scale, referring to the perceived usability of AI-generated tools was rated as follows: *strongly disagree* (1), *disagree* (2), *neither agree nor disagree* (3), *agree* (4), and *strongly agree* (5). A sample item from the scale is *I feel more confident in my language skills when using AI-generated tools*. With this scale, we observed a very good Cronbach's α of 0.80.

3.3. Procedure

Before the distribution of the questionnaires, participants were briefly informed about the purpose of collecting the data and encouraged to provide honest answers to the questions. In addition, they were informed that the questionnaire did not ask for any data considered sensitive by the General Data Protection Regulation, and that the information they provided would not be disclosed to anyone else nor used for any other objective than research purposes. The informants were advised that their participation in this study was voluntary and that they could withdraw at any time. They were subsequently provided with a QR code and a link to the survey on Google Forms, which they completed electronically, using their mobile phones, tablets or laptops.

3.4. Data analysis

We used the IBM SPSS 29.0 software to compute the descriptive statistics and correlations between the variables. The Lilliefors-corrected Kolmogor-

ov-Smirnov test was performed to check the normality of distribution of the analysed variables. Mediation was analysed using the PROCESS macro with 10,000 bootstrapped resamples and a 95% confidence interval.

4. Results

We started the analysis of empirical data by calculating the descriptive statistics and testing for the normality of distribution for each variable. As shown in Table 1, The Lilliefors-corrected Kolmogorov-Smirnov tests indicate that none of the variables have a normal distribution. However, since the value of skewness did not exceed 2.0 and kurtosis did not exceed 7.0, the normality of variables was assumed (Kim, 2013).

Table 1. Descriptive statistics, Lilliefors-corrected Kolmogorov-Smirnov tests results and Cronbach's α values

Variable	M	SD	Min	Max	K-S	p	Skewness	Kurtosis	Cronbach's α
ATTARI-12	3.10	0.85	1	5	0.08	< .001	−0.31	−0.44	0.92
Extraversion	2.90	0.95	1	5	0.07	< .001	0.08	−0.58	0.78
Agreeableness	3.67	0.77	1.25	5	0.10	< .001	−0.51	0.27	0.72
Conscientio-usness	3.12	0.86	1	4.75	0.09	< .001	−0.29	−0.58	0.70
Intellect/Imagi-nation	3.91	0.80	1	5	0.11	< .001	−0.80	0.62	0.71
Neuroticism	3.03	0.67	1.33	4.67	0.11	< .001	−0.23	−0.35	0.71
AIFLL-F	2.47	1.06	1	5	0.09	< .001	0.33	−0.78	0.79
AIFLL-U	2.47	1.02	1	5	0.09	< .001	0.23	−0.57	0.80

Note. ATTARI-12 – attitudes towards AI, AIFLL-F – Artificial Intelligence in Foreign Language Learning – Frequency, AIFLL-U – Artificial Intelligence in Foreign Language Learning – Usefulness.

Source: own study.

4.1. Simple correlation analysis

Spearman's rho correlation was used to test the hypotheses regarding the relationships between the variables. The results are presented in Table 2.

Table 2. Spearman's rho correlation coefficients between the analysed variables

	Variable	1	2	3	4	5	6	7	8
1	ATTARI-12	–							
2	Extraversion	0.09*	–						
3	Agreeableness	–0.15**	0.24**	–					
4	Conscientiousness	0.11*	–0.09*	–0.08*	–				
5	Intellect/Imagination	–0.08*	0.14**	0.18**	–0.01	–			
6	Neuroticism	–0.10*	0.07	0.17**	–0.19**	–0.07	–		
7	AIFLL-F	0.45**	0.08*	0.01	0.11**	–0.15**	0.09*	–	
8	AIFLL-U	0.46**	0.01	–0.04	0.036	–0.14**	–0.04	0.56**	–

Note. ATTARI-12 – attitudes towards AI, AIFLL-F – Artificial Intelligence in Foreign Language Learning – Frequency, AIFLL-U – Artificial Intelligence in Foreign Language Learning – Usefulness, *$p < 0.05$. ** $p < 0.01$.

Source: own study.

The results show statistically significant, although very weak correlations between all Big Five personality traits and attitudes towards AI – conscientiousness ($\rho = 0.11$) and extraversion ($\rho = 0.09$) are positively correlated with attitudes towards AI, while agreeableness ($\rho = -0.15$), neuroticism ($\rho = -0.10$) and intellect/imagination ($\rho = -0.08$) are negatively correlated with attitudes towards AI. Intellect/imagination is the only variable that was significantly correlated with age ($\rho = 0.10$). There are a few significant correlations between the Big Five personality traits and the engagement with AI in foreign language learning. Extraversion ($\rho = 0.08$), conscientiousness ($\rho = 0.11$) and neuroticism are positively correlated with the frequency of AI usage in foreign language learning, while intellect/imagination is negatively correlated with both the frequency of AI usage in foreign language learning ($\rho = -0.15$) and the perceived usefulness of AI tools in foreign language learning ($\rho = -0.14$). On the other hand, the frequency of AI usage in foreign language learning ($\rho = 0.45$) and the perceived usefulness of AI tools in foreign language learning ($\rho = 0.46$) show moderate positive correlations with attitudes towards AI.

4.2. Testing for mediation effect

As presented in Table 3, the frequency of AI usage in foreign language learning was associated with the perceived usefulness of AI tools in foreign language learning ($b = 0.53$, $SE = 0.04$, $p < 0.001$), while the perceived useful-

ness of AI tools in foreign language learning was associated with attitudes towards AI ($b = 0.25$, $SE = 0.04$, $p < 0.001$). The mediation analysis showed that the association between the frequency of AI usage in foreign language learning and attitudes towards AI was significantly mediated by the perceived usefulness of AI tools in foreign language learning, as indicated by a 95% confidence interval that did not include zero ($b = 0.13$, $SE = 0.03$, $95\%CI = [0.08, 0.18]$). Nonetheless, the direct effect of the frequency of AI usage in foreign language learning on attitudes towards AI remained significant ($b = 0.24$, $SE = 0.04$, $p < 0.001$), meaning that the perceived usefulness of AI tools in foreign language learning partially mediated the relationship. The indirect effect accounted for 35.77% of the total effect.

Table 3. Simple mediation model: the role of the perceived usefulness of AI tools in foreign language learning (M) in the relationship between the frequency of AI usage in foreign language learning (X) and attitudes towards AI (Y)

Predictor	AIFLL-U			ATARI-12		
	b	SE	t	b	SE	t
Constant	1.153	0.10	11.12***	1.91	0.10	19.03***
AIFLL − F	0.53	0.04	13.80***	0.24	0.04	5.98***
AIFLL − U	−	−	−	0.25	0.04	5.99***
	$R^2 = 0.31$			$R^2 = 0.28$		
	$F (1, 427) = 190.50$ ***			$F (2, 426) = 80.67$ ***		

Note. ATTARI-12 − attitudes towards AI, AIFLL-F − Artificial Intelligence in Foreign Language Learning − Frequency, AIFLL-U − Artificial Intelligence in Foreign Language Learning − Usefulness, *** $p < 0.001$.

Source: own study.

5. Discussion

The study investigated the relationship between learner Big Five personality traits and their attitudes towards Artificial Intelligence. It also examined the connection between learner personality traits, their attitudes towards AI, and their use of AI-generated solutions in foreign language learning.

The results showed weak positive correlations between conscientiousness and extraversion and attitudes towards AI, which may be justified by the rather general nature of these traits and the different possible demonstrations thereof, e.g., extraversion may manifest in one's seeking social interactions and engaging in conversations with other people, rather than technology, which could have a weakening effect on the positive

correlation with attitudes towards AI. On the other hand, extraversion is also often associated with pursuing new experiences or activities that provide excitement, in which case the positive correlation with attitudes towards AI could be stronger. In the same manner, the weak negative correlation between agreeableness, neuroticism or intellect/imagination and attitudes towards AI can also be explained by the broad-spectrum character of the traits. For instance, agreeableness is often linked with empathy and sensitivity to other people's feelings, which could strengthen the negative correlation with one's attitudes towards AI, where interaction may be perceived as more mechanical or dehumanized. However, if one perceives AI in more human terms, e.g., due to the apparently communicative language used by chatbots, the correlation might be positive. Furthermore, agreeableness is also connected with trust, i.e., the belief that the world is generally a peaceful place and that others have good intentions, in which case the correlation with attitudes towards AI might also turn out to be positive. Consequently, it appears that research into the specific facets of each Big Five trait is necessary to provide more definitive results.

As already indicated, we decided to exclude one item (*Seldom feel blue*) from the neuroticism scale, as it significantly reduced its internal consistency. A possible explanation for this situation is that this specific reversed item captures a slightly different dimension of the trait. For example, it could be argued that it may be measuring a distinctive aspect of neuroticism, e.g., chronic sadness, while the other items focus on emotional stability or reactivity.

Another point worth mentioning here is that there may be other factors affecting one's use of technology in general, or AI in particular. Roehrick et al. (2023) indicate that while extraversion is linked to more frequent technology use, and conscientiousness is connected with less frequent and shorter interaction with technology, it is the contextual factors, such as location or social ties, that play a more vital role. In keeping with this, a foreign language learner's interaction with AI-generated solutions might depend on the nature of their learning environment, the quality of the relationship with other learners in the case of group learning, or even the type of relationship with the teacher. In addition, all of these contextual factors affect one's engagement in the learning process, which may in turn influence one's choice to employ or dismiss AI-generated solutions.

Finally, as the relationship between the frequency of AI usage in foreign language learning and attitudes towards AI was mediated by the perceived usefulness of AI-generated strategies to a limited extent, it is reasonable to investigate other possible mediators. These include the cultural context, previous experience with AI technology, specific AI-reliant types of

software used by learners, learner emotions while interacting with AI-generated solutions, the influence of peer recommendations regarding AI products, as well as the overall perception of AI in one's foreign language education, e.g., whether it is treated as a necessary tool or a welcome addition. Such studies may contribute to a deeper understanding of the mechanism between the attitudes towards AI and the frequency of using AI solutions in the learning process.

Our study was obviously subject to a few limitations. First, despite the fact that the participants were selected from a number of tertiary education institutions, they mostly came from one cultural background. Furthermore, they were relatively homogenous in terms of their age and linguistic competence. Because of these restraints, it is recommended that similar studies be carried out in order to verify if similar tendencies may be observed across other cultural contexts, other educational levels, age groups and levels of linguistic proficiency.

6. Conclusion

Due to the limitations, our research findings may not be applicable in all contexts; however, they still provide several important considerations for both theoreticians and practitioners involved in foreign language education. First, as the study reveals a relatively low impact of personality traits on the use of AI-generated strategies in one's learning, teachers do not need to worry excessively about tailoring AI tools to fit their students' personality type, and instead benefit from the universality of these solutions. As AI-generated strategies are effective across different personality traits, teacher may employ them with the confidence that they will benefit a wide range of students. Moreover, while extracurricular forms of language learning, e.g., private tuition, are often connected with additional costs, properly mediated and more inclusive AI-based teaching practices might provide the necessary support to all students, thus potentially reducing inequalities in learning outcomes, at least to a certain extent. Finally, as our results show a relatively high impact of attitudes towards AI on the use of AI tools in foreign language learning, both teachers and researchers may concentrate on factors other than personality that affect the learner and their learning process, such as the said attitudes, motivation, locus of control, or the learning environment, to name only a few. In conclusion, it seems that maintaining a strong, respectful teacher-student relationship is essential to ensure that AI technologies enhance rather than replace critical thinking and the learning process (Alharbi, 2023; Kim et al., 2022; Creely, 2023; Guilherme, 2019). Ultimately,

even in the face of new, powerful technologies, it is human relationships that have the power to help mitigate the associated risks and dangers, as well as maximize the potential of the available resources.

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