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Exploring the impact of EFL learners' perceptions of AI usage in language learning on their perceived writing anxiety: A correlational study

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Abstract

As in many fields, the use of Artificial Intelligence (AI) in education is increasing exponentially. In English Language Teaching and Learning, in particular, there is an accumulating body of research exploring this phenomenon. Given the potential benefits of AI, understanding language learners' perspectives on its use in language education has become crucial. Informed by the Technology Acceptance Model (TAM), which provides a framework for understanding users' perceptions in the adoption of new technologies, this study investigated the perceptions of 135 students at a Turkish state university. Additionally, it explored the learners' levels of foreign language writing anxiety and examined the relationship between their perceptions of AI use and their writing anxiety. The study adopted a correlational research design, and data were collected through Perceptions of AI Usage Scale (PAS) developed by Aydın (2024), and the Second Language Writing Anxiety Inventory (SLWAI) developed by Cheng (2004). PAS results indicated that learners generally held moderate perceptions of AI in language learning, while concerns about the production of inappropriate language content by AI tools were also noted. SLWAI results revealed that learners experienced moderate levels of writing anxiety across its three subscales. Additionally, the study found a weak positive relationship between learners' perceptions of AI use and their writing anxiety, suggesting no significant correlation. These findings contribute to the growing body of literature by offering insights into learners' perceptions of AI use in language education and highlighting the complex interplay between AI use and foreign language writing anxiety.

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INTRODUCTION

With the rapid developments in digital technologies, there is a growing interest among educators in integrating these tools into educational contexts (Dogan et al., 2023). Although Artificial Intelligence (AI) has been used for many decades, recent advancements have attracted significant attention in the field of language learning and teaching due to AI's potential to offer "personalized, flexible, inclusive, and engaging" learning experiences (Luckin et al., 2016, p. 11). Given these opportunities, AI is increasingly regarded as a pivotal tool in language education as it can enhance learning outcomes "by adapting to the individual features (talent and background) and expectations (aims and objectives) of each student" (Kushmar et al., 2022, p. 271).

Given the importance of English proficiency in today's globalized world, educators are turning to AI to improve language instruction. While the integration of AI into education dates back to the 1980s (e.g. Bailin, 1988), its application in language learning has gained prominence in recent years. Studies highlight several benefits of AI in this context, including personalized learning and improved learner autonomy (Rawas, 2024; Rusmiyanto et al., 2023). Despite these advantages, research on AI's influence on writing anxiety remains inconclusive. While some studies suggest that AI can reduce anxiety by providing instant feedback (Hawanti & Zubaydulloevna, 2023), others report that increased reliance on AI tools may heighten writing anxiety (Yu, 2024).

Research gap and focus of the current study

While prior research has examined the impact of AI usage on writing anxiety (e.g. Yu, 2024; Wang, 2024; Shen & Tao, 2025), limited attention has been paid to how learners' perceptions of AI tools relate to their experiences of foreign language writing anxiety. Although the role of AI in enhancing writing skills and reducing anxiety has been studied independently, few studies have focused on the relationship between learners' attitudes toward AI tools and their emotional responses to writing tasks. This study seeks to address this gap by examining how learners' perceptions of AI usage in language learning relate to their levels of writing anxiety. In doing so, it aims to contribute to the growing body of research on AI in language education by investigating learners' perceptions of AI tools, their writing anxiety levels, and the relationship between these two variables.

In sum, the integration of AI in language learning presents significant opportunities for enhancing language skills, particularly in writing. While learners often report positive perceptions of AI tools, concerns about overreliance and other ethical issues persist. Guided by The Technology Acceptance Model (TAM), which offers a well-established framework for understanding learners' willingness to adopt educational technologies, this study aims to deepen the understanding of how learners' perceptions of AI influence their writing-related emotional experiences.

LITERATURE REVIEW

Introduction

First coined by John McCarthy in 1956 (Russell & Norvig, 2010; Zawacki-Richter et al., 2019), AI encompasses various technologies, including data mining, machine learning, neural networks, and natural language processing (Baker et al., 2019; Almelhes, 2023), which aim to simulate human-like intelligent behaviours such as carrying out tasks involving cognitive dimensions such as learning, decision-making, and adjusting to different situations (Chen et al., 2020).

The integration of AI into education, known as AIEd, has gained significant attention over the past three decades (Luckin et al., 2016; Zawacki-Richter et al., 2019; Zhao et al., 2024) since it has revolutionized many aspects of the learning experience. AI offers numerous opportunities to enhance educational practices and learner outcomes and address challenges which traditional education is incapable of tackling (Ahmad et al., 2021).

AI tools are being increasingly implemented to support learning, providing personalized learning experiences (Luckin et al., 2016; Baker et al., 2019; Afzaal et al., 2024). Additionally, through interactive AI tools, AIEd can make the learning process more engaging for learners (Luckin et al., 2016), as well as being more flexible due to the ubiquitous nature of these applications. AI tools can also alleviate stress (Ahmad et al., 2021), which is often a barrier to learning.

This literature review explores the intersection of AI and language learning, with a focus on learners' perceptions of AI, their perceived levels of foreign language writing anxiety and the relationship between these two constructs. Additionally, the Technology Acceptance Model (TAM), which helps explain how learners adopt new technologies, will be discussed as a theoretical framework guiding this study.

AI in language learning

AI has increasingly been integrated into language education in various ways, providing support across multiple skills. The use of AI tools in language learning can assist learners in improving their skills in the target language and offer them a more personalized learning experience considering their needs and pacing (De la Vall & Araya, 2023). For instance, Kim (2019) found that AI-powered tools support learners in enhancing their linguistic skills by offering personalized learning experiences.

AI-powered tools such as Grammarly, QuillBot, and the latest chatbots such as ChatGPT have transformed the ways learners interact with language tasks, providing real-time feedback, error correction, and suggestions for improvements in written texts, which fosters autonomy in L2 writers. Nobles & Paganucci (2015) suggest that other than offering immediate feedback, AI tools also provide interaction with real-world audiences, and multimodal writing opportunities. A growing body of research suggests that AI tools like Automated Writing Evaluation (AWE) systems help learners improve their writing proficiency through diagnosing writing problems and offering areas for improvement (Godwin-Jones, 2022). Being also time-saving for teachers, AWE systems as well as ITSs, which use Natural Language Processing (NLP), are among the most utilised AI tools in language classrooms (Huang et al., 2023).

Along with these affordances, research by Nazari et al. (2021) showed that the use of Grammarly helped learners improve engagement, self-efficacy, and emotional responses to writing. Similarly, Zhao (2023) found that Wordtune positively affected learners' writing quality.

Recent studies have focused on ChatGPT as a tool for writing support. For example, Imran & Almusharraf (2023) explored the use of ChatGPT as a co-author and writing assistant, highlighting its potential to assist in "generating text, initial drafts, brainstorming ideas, and summaries of the literature" (p. 10). Similarly, Barrot (2023) emphasizes ChatGPT's capacity to provide "timely and adaptive feedback" (p. 1), contributing to improved writing outcomes for language learners.

Given all the affordances of AI-powered digital tools, learners are increasingly turning to these tools. For instance, Zhao et al. (2024) found that students used various digital tools during their writing process such as Grammarly, Quillbot, Wordtune, translation tools as well as ChatGPT.

Learners' perceptions of AI in language learning

Understanding learners' perceptions of AI tools is crucial for the successful implementation of these technologies in language education (Uppal & Hajian, 2024). Research suggests that learners generally have positive attitudes towards AI integration (Belda-Medina & Calvo-Ferrer, 2022; Yatri et al., 2023; Lee et al., 2024; Persulessy et al., 2024), appreciating the personalized feedback (Alqaed, 2024), personalized learning experiences (Aydin & Zeinolabedini, 2024; Korkmaz & Akbıyık, 2024) error correction features and facilitating language skills (Chen et al., 2023; Korkmaz & Akbıyık, 2024), increased engagement, interaction and autonomy that AI tools provide (Alqaed, 2024; Korkmaz & Akbıyık, 2024). For instance, a study by Alqaed (2024) found that EFL learners viewed

AI tools as highly effective for improving their English across multiple skills, many learners noting the significance of immediate feedback features. Aydin & Zeinolabedini (2024) also noted that AI tools improve motivation while reducing anxiety. Another study yielding a positive attitude towards AI was by Syahnaz and Fithriani (2023). They found that learners responded positively to an AI-based tool, especially valuing its support in improving content, language use, and reducing linguistic errors in academic writing.

However, there are also concerns about the use of AI in language learning, including issues such as overreliance on AI (Chen et al., 2023; Yatri et al., 2023; Alqaed, 2024; Lee et al., 2024), the risk of plagiarism (Yatri et al., 2023), privacy concerns (Aydin & Zeinolabedini, 2024), reliability and inaccuracies (e.g. Kushmar et al., 2022; Glaser, 2023), and interference with creativity (Yatri et al., 2023; Aydin & Zeinolabedini, 2024). Learners worry that excessive use of AI might reduce their ability to think critically or develop original ideas.

Despite these concerns, many studies indicate that learners are generally optimistic about AI's role in enhancing their language learning experience, especially in providing personalized learning experiences and real-time feedback. Specifically, through non-judgmental personalized feedback, AI tools can reduce anxiety and foster a stress-free environment for language learners.

Theoretical framework: Technology Acceptance Model (TAM)

To better understand how learners accept and adopt AI tools, this study draws on the Technology Acceptance Model (TAM) (Davis, 1989). TAM posits that users' acceptance of new technology is influenced by two key constructs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). In the context of language learning, PU refers to learners' beliefs regarding the effectiveness of AI tools in enhancing their language learning experience. PEOU, on the other hand, reflects learners' perceptions of how easy it is to use these tools.

TAM also includes constructs such as Attitude Toward Using (ATU), Behavioural Intention to Use (BIU), and Actual System Use (ASU); however, these variables are beyond the scope of this study since the scale PAS (Perceptions of AI Usage Scale) mainly involves items regarding PU. Research on TAM has shown that PU is the most significant factor influencing the intention to use new educational technologies (Venkatesh & Davis, 2000; Granić & Marangunić, 2019) while PEOU plays a significant secondary factor (Venkatesh & Davis, 2000).

In this study, the AI perceptions scale (PAS) is utilized to assess language learners' general attitudes and perceptions towards AI tools in language learning, with a focus on PU, including learners' perceived benefits of AI tools such as enhancing language proficiency, autonomy, personalized learning, reducing anxiety as well as some items which involve concerns regarding AI use. Therefore, rather than rigidly separating the constructs of TAM, the study focuses on language learners' general perspectives.

Second/foreign language writing anxiety

Foreign language writing anxiety is a specific type of anxiety that affects language learners, particularly when writing in a second or foreign language (Cheng, 2002). Foreign language writing anxiety is a "language-skill-specific" anxiety (Cheng et al., 1999, p. 417), distinct from general language anxiety and first language writing anxiety and is strongly linked to writing performance (Atay & Kurt, 2006; Cheng et al., 1999; Badrasawi et al., 2016; Cantina, 2016).

Learners often experience anxiety due to a variety of factors, such as fear of negative evaluation (Cheng,2004; Rezaei & Jafari, 2014; Kirmizi & Kirmizi, 2015; Cantina, 2016), inadequate language proficiency (Zhang, 2011; Rezaei & Jafari, 2014; Erdel, 2024), and low self-confidence or self-efficacy (Cheng et al., 1999; Zhang, 2011; Choi, 2013; Rezaei & Jafari, 2014; Erdel, 2024), to name a few.

The relationship between writing anxiety and writing performance is well-documented in the literature. Research has shown that high levels of writing anxiety can significantly hinder learners' ability to produce high-quality written work (Atay & Kurt, 2006; Cheng et al., 1999; Badrasawi et

al., 2016). To mitigate this anxiety, strategies such as free-writing, peer feedback, process writing, positive feedback and encouragement (Atay & Kurt, 2006) and collaborative writing (Choi, 2013; Cantina, 2016) have been proposed. However, the integration of AI tools in language learning offers a promising approach to reducing writing anxiety by providing learners with personalized feedback and a low-pressure environment to practice writing.

In sum, the reviewed literature provides an overview of how AI tools are being used in language learning, the ways learners perceive these technologies, and the impact of writing anxiety on performance. While existing research addresses each of these areas individually, there is limited empirical work exploring how they interact. To address this, the present study focuses on the relationship between learners' perceptions of AI tools and their writing anxiety, adopting a TAM-informed perspective.

In the light of the reviewed literature, the present study aims to address the following research questions:

RQ1: What are learners' perceptions of AI usage in language learning?
RQ2: What are learners' perceived levels of foreign language writing anxiety?
RQ3: What is the relationship between learners' perceptions of AI usage in language learning and their perceived levels of foreign language writing anxiety?

The hypotheses guiding this study are as follows:
H_0: There is no significant correlation between learners' overall attitude towards AI use in language learning and their perceived writing anxiety levels.
H_1: There is a significant correlation between learners' overall attitude towards AI use in language learning and their perceived writing anxiety levels.

METHODOLOGY

Research design

This study adopts a correlational research design to explore the relationship between language learners' perceptions of artificial intelligence (AI) usage in language learning and their perceived levels of foreign language writing anxiety. Correlational designs, which are among the nonexperimental quantitative research (Creswell, 2011; Johnson & Christensen, 2024), are suitable for investigating the relationship between two or more variables (Creswell, 2011). Unlike an experiment, correlational design does not involve the control or manipulation of the variables (Creswell, 2011; Roni et al., 2020; Johnson & Christensen, 2024). Correlational designs have two main types, which are explanatory design and prediction design (Creswell, 2011, p. 340). Among the two types, this study falls within the explanatory correlational research design since it aspires to investigate how two variables, namely, learners' perceptions of AI usage in language learning and their perceived levels of writing anxiety, are related to one another. This type of research does not seek to look for any causal relationships (Creswell, 2011; Johnson & Christensen, 2024). It rather allows the researcher to investigate potential relationships between the two variables, which could inform future educational strategies to promote the adoption of AI by language learners.

Participants

The study was conducted with the participation of the undergraduate students enrolled in the Department of English Language Teaching, Faculty of Education at Muğla Sıtkı Koçman University in the spring term of the 2024-2025 academic year. For the better representation of the population, all the grades from 1st to 4th year students were included in the study, thus the population included various language levels and demographics. The data were collected from a total of 135 students, consisting of 86 females, and 49 males. Their ages ranged from 18 to 49 (M= 1.64, SD=.483).

Participants were recruited through convenience sampling, which is among the non-probability sampling methods. Convenience sampling involves choosing the nearest and easily reachable participants (Tavakoli, 2012) based on an "inclusion criteria" (Golzar et al., 2022). To be included in the current study, participants needed to meet three criteria: (1) being enrolled in the Department of English Language Learning at Muğla Sıtkı Koçman University, (2) being at the age of 18 or above, and (3) being willing to participate in the study. Demographic information of the participants is summarized in Table 1.

Table 1. Demographic information of the participants

Demographic Variable	Category	Frequency (N)	Percentage (%)
Gender	Male	49	36.3
	Female	86	63.7
Age Group	18-19	32	23.7
	20-21	44	32.6
	22-23	47	34.8
	24-25	10	7.4
	26-27	1	0.7
	28-50	1	0.7
Academic Level	Freshman	42	31.1
	Sophomore	25	18.5
	Junior	31	23.0
	Senior	37	27.4
Total		135	100.0

Data collection instruments

To reach the objectives of this study, data were collected through two data collection instruments.

The first data collection instrument was PAS (Perceptions of AI Usage Scale) developed by Aydın (2024), which comprises 17 items. The items are rated on a 5-point Likert scale (1=Completely Disagree, 5=Completely Agree). The PAS probes the perceptions of foreign language learners regarding the use of AI in language learning. The scale has two sub-dimensions which are "Contributions to Foreign Language Learning" (14 items), and "Concerns" (3 items). Items include statements like "I believe that AI-supported learning is more effective than traditional methods", and "The integration of AI tools into language classes contributes to autonomous learning". The total Cronbach's coefficient α was calculated as .88 by Aydın (2024), which shows a high internal consistency since .70 and above is generally considered acceptable for demonstrating reliability (Tavakol & Dennick, 2011). As for the current study, the reliability was calculated as.89.

The second data collection instrument was SLWAI (Second Language Writing Anxiety Inventory) developed by Cheng (2004), consisting of 22 items which are also rated on a 5-point Likert scale (1=Strongly Disagree, 5=Strongly Agree). The SLWAI is a scale which measures writing anxiety levels of foreign or second language learners. It has three sub-dimensions which are

"Somatic Anxiety" (7 items), "Avoidance Behaviour" (7 items), and "Cognitive Anxiety" (8 items). The total Cronbach's coefficient α was calculated as .91 by Cheng (2004). Regarding the current study, a Cronbach's alpha of .92 was found, indicating strong internal consistency and reliability.

Data collection

Prior to the implementation of the scales, piloting was conducted with the participation of 20 students who were not included in the study. These students were also enrolled in the same department to ensure accurate representation of the target population. They were selected for the piloting using convenience sampling and based on their consent to participate. The piloting was administered through Google forms, an online survey platform, in a classroom setting in their faculty. The participants were encouraged to give feedback regarding the clarity of the items to get rid of any ambiguous or difficult to understand wording (Cohen et al., 2018). The two scales took 15 minutes to complete. Since the feedback from the participants did not demonstrate any difficulties or ambiguities, no changes were made in the scale items. After the piloting was completed, the Cronbach's alpha was calculated to check internal consistency for both scales. The Cronbach's alpha for the PAS was assessed as .85 while it was calculated as .72 for the SLWAI, both of which indicated acceptable reliability.

Following the piloting, the participants were visited in their department, and they were informed about the details of the study as well as the two data collection instruments. Their participation was completely voluntary, and they were assured that their responses would be kept confidential. They were also informed that they could withdraw from the study any time they wished and were also given an informed consent form within the Google Forms. When they were fully informed about the study, they were asked whether they would like to participate in the study. 42 participants from the Freshman, 25 from the Sophomore, 31 from the Junior, and 37 from the Senior levels volunteered to take part in the study, with a total number of 135. Demographic information of the participants is given in Table 1 above.

As Creswell (2011) suggests, in this type of research, the data are collected "in one sitting", which means the scales should be administered to the participants "at one point in time" (p. 340). Thus, the PAS and SLWAI were administered to the participants at the same time within their lecture schedules through Google forms between 3rd-13th March, 2025 in the Department of English Language Teaching at Muğla Sıtkı Koçman University.

Data analysis

The data gathered through two instruments were analysed using IBM SPSS Statistics (Version 30.0). Once the data were collected, a Cronbach's coefficient test was run to verify the internal consistency of the scales. As mentioned earlier in the instruments section, it was calculated as .89 for the PAS, and as .92 for the SLWAI. Since the results of the test ensured a high reliability, the descriptive statistics (mean, standard deviation, minimum, and maximum values) were calculated to summarize participants' responses to both scales. Following this, the Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted on the total scores of both scales to examine whether the data followed a normal distribution. The results revealed that the Kolmogorov-Smirnov test was significant for both PAS_Total ($p < .001$) and SLWAI_Total ($p < .001$), suggesting a deviation from normality. Similarly, the Shapiro-Wilk test yielded significant results for PAS_Total ($p = .001$) and SLWAI_Total ($p = .028$), further indicating that the data was not normally distributed. Since the normality test indicated that the data was not normally distributed, a Spearman's Rank-Order Correlation analysis was conducted to examine the relationship between learners' perceptions of AI in language learning and their writing anxiety. This non-parametric test was chosen as it does not assume normality and is suitable for assessing monotonic relationships between variables.

All statistical tests were conducted at a 95% confidence level ($\alpha = .05$). Findings were interpreted based on conventional effect size guidelines and presented in the next section.

FINDINGS

Descriptive analysis of PAS Scale

Table 2. Descriptive statistics for total scores of PAS

Variable	N	Mean	Std. Deviation	Min.	Max.
PAS_Total	135	59.27	11.885	27	84
Valid N (listwise)	135				

As shown in Table 2, the mean score of PAS_Total was 59.27 (SD = 11.89), indicating that participants generally had a moderately positive perception of AI in language learning. The minimum and maximum scores ranged from 27 to 84, suggesting a relatively wide distribution of responses, which means that while some participants had lower perceptions of AI, others viewed it more positively. The standard deviation (SD = 11.89) shows that there was some variability in participants' responses, though the spread is not extreme. This variation indicates the presence of diverse experiences and perceptions among the participants in the sample.

Following this, to further understand participants' perceptions of AI, the descriptive statistics for the two subscales were analysed separately. Table 3 illustrates the descriptive statistics for the Contributions Subscale.

Table 3. Descriptive statistics for PAS - Contributions Subscale

Item	N	Min	Max	M	STD
1- [I believe that AI-supported learning is more effective than traditional methods.]	135	1	5	3.67	1.085
2- [AI tools can enhance my communicative skills.]	135	1	5	3.76	1.141
3- [The integration of AI tools into language classes contributes to autonomous learning.]	135	1	5	3.84	1.038
4- [The integration of AI tools in language classes contributes to personalized learning.]	135	1	5	3.89	1.063
5- [The integration of AI tools in language classes contributes to adaptive learning.]	135	1	5	3.80	1.071
6- [AI tools provide emotional support in language learning.]	135	1	5	2.86	1.192
7- [AI tools help to reduce my anxiety level.]	135	1	5	3.43	1.243
8- [I find AI tools helpful in practicing my pronunciation skills.]	135	1	5	3.50	1.275
9- [AI tools enhance my listening comprehension.]	135	1	5	3.47	1.257
10- [I think that AI tools positively impact my reading comprehension.]	135	1	5	3.73	1.204
11- [I find that AI tools enhance my speaking performance.]	135	1	5	3.39	1.240
12- [I believe that AI tools can positively influence my writing skills.]	135	1	5	3.93	1.073
13- [I believe that AI tools positively influence writing quality.]	135	1	5	3.93	1.111
14- [My participation in classroom activities has increased after I started using AI tools.]	135	1	5	3.22	1.291

Valid N (listwise)	135

The descriptive analysis of the PAS items within the Contributions Subscale reveals that learners generally have moderate perceptions of AI in language learning, with mean scores ranging from 2.55 (PAS15) to 3.93 (PAS12, PAS13) on a 5-point Likert scale, indicating that most items fall between the neutral to moderately agree range (around 3.00 to 4.00). This suggests that participants' responses were generally concentrated around the middle of the Likert scale (1 = Completely Disagree to 5 = Completely Agree), indicating moderate levels of agreement regarding the use of AI in language learning, although there was variability across different items. Some items showed a stronger tendency towards agreement, while others had a more balanced distribution of responses, indicating moderate variations in participants' perceptions. For instance, items such as PAS12 (I believe that AI tools can positively influence my writing skills), and PAS13 (I believe that AI tools positively influence writing quality) had the highest mean scores (3.93) with lower SD values, indicating that participants generally agree that AI positively impacts their writing skills and writing quality. In addition, their responses to PAS4 (The integration of AI tools in language classes contributes to personalized learning), PAS3 (The integration of AI tools into language classes contributes to autonomous learning), and PAS5 (The integration of AI tools in language classes contributes to adaptive learning) also yielded relatively higher mean scores with lower SD values. This finding suggests that participants perceive the use of AI in language learning as useful in terms of providing personalized, autonomous, and adaptive learning opportunities.

The standard deviations varied between 1.038 to 1.291, indicating a relatively consistent spread of responses across the items, with some variation in the extent of response variability. For instance, PAS3 had a lower standard deviation (1.038), which suggests a greater agreement among participants on that item, while PAS14 (My participation in classroom activities has increased after I started using AI tools) had a higher standard deviation value (1.291), reflecting a more diverse range of opinions.

Table 4. Descriptive statistics for PAS - Concerns Subscale

Item	N	Min	Max	M	STD
15- [I believe that overreliance on writing with AI tools debilitates my critical thinking skills.]	135	1	5	2.55	1.280
16- [I think the use of AI debilitates my problem-solving abilities.]	135	1	5	2.65	1.186
17- [AI tools produce inappropriate language content.]	135	1	5	3.64	1.187
Valid N (listwise)	135				

Table 4 above presents descriptive statistics of the items within Concerns Subscale. The table shows that some items have lower mean scores with relatively higher SD values. Although these items are negatively worded, since they were reverse-coded, these lower mean scores reflect more positive attitudes toward AI tools, and higher mean scores reflect more negative perceptions. For instance, PAS15 (I believe that overreliance on writing with AI tools debilitates my critical thinking skills) had the lowest mean score (M = 2.55) with a relatively high SD value (SD = 1.280), indicating that participants did not believe that AI significantly undermines their critical thinking while showing a considerable disagreement among participants about the effect of AI on critical thinking. Similarly, PAS16 (I think the use of AI debilitates my problem-solving abilities) had a mean score of 2.65 (SD = 1.186) implying that, overall, participants did not believe that the use of AI tools significantly impairs their problem-solving skills. However, the moderate standard deviation suggests that some participants may still have concerns or doubts about the impact of AI on problem-solving, leading to more diverse opinions on this topic. In contrast, for PAS17 (AI tools produce inappropriate language content), which is another reverse-coded item, the mean score of

3.64 (SD = 1.187) indicates that participants, on average, somewhat agreed with the statement that AI tools produce inappropriate language content, reflecting a more negative perception of AI tools in this regard.

Overall, the findings suggest that participants generally perceive AI as useful in language learning. However, while participants' responses are mostly positive regarding the role of AI in language learning, the results also indicate that participants hold moderate opinions.

Descriptive analysis of SLWAI Scale

Table 5. Descriptive statistics for total scores of SLWAI

Variable	N	Mean	Std. Deviation	Minimum	Maximum
SLWAI_Total	135	59.03	16.138	24	96
Valid N (listwise)	135				

As Table 5 illustrates, the mean score for SLWAI_Total is 59.03, which indicates a moderate level of writing anxiety as Cheng (2004) states that a mean score between 50 and 65 shows a moderate level of anxiety. The standard deviation of 16.138 suggests a wide dispersion of scores. The minimum score observed was 24, and the maximum was 96, indicating that participants' perceptions of foreign language writing anxiety varied considerably. This diversity suggests that there are differences in the participants' levels of foreign language writing anxiety.

To have a deeper understanding of the participants' levels of foreign language writing anxiety, descriptive statistics for the three subscales were analysed separately. Table 6 presents descriptive statistics for Somatic Anxiety subscale.

Table 6. Descriptive statistics for SLWAI - Somatic Anxiety Subscale Items

Items	N	Min.	Max.	M	SD
2-[I feel my heart pounding when I write English compositions under time constraint.]	135	1	5	2.88	1.282
6- [My mind often goes blank when I start to work on an English composition.]	135	1	5	2.63	1.250
8- [I tremble or perspire when I write English compositions under time pressure.]	135	1	5	2.90	1.229
11- [My thoughts become jumbled (disorganized) when I write English compositions under time constraint.]	135	1	5	2.93	1.244
13- [I often feel panic when I write English compositions under time constraint.]	135	1	5	2.84	1.317
15- [I freeze up when unexpectedly asked to write English compositions.]	135	1	5	2.60	1.277
19- [I usually feel my whole body rigid and tense when I write English compositions.]	135	1	5	2.33	1.146
Valid N (listwise)	135				

As Table 6 shows, the mean scores for the items in the Somatic Anxiety subscale ranged from 2.33 to 2.93, with a standard deviation ranging from 1.146 to 1.317. These results suggest that participants generally reported mild to moderate levels of somatic anxiety when writing English compositions. Specifically, the lowest mean score was observed for item 19 *(I usually feel my whole body rigid and tense when I write English compositions)* (M = 2.33, SD = 1.146), indicating that bodily

tension was not a dominant reaction for most participants. On the other hand, the item 11 *(My thoughts become jumbled (disorganized) when I write English compositions under time constraint)* had a mean score of 2.93 (SD = 1.244), indicating a slightly higher degree of agreement though still generally indicating moderate levels of somatic anxiety.

The relatively high standard deviations across the items, ranging from 1.146 to 1.317, suggest notable variability in the responses, implying that participants had differing experiences and levels of somatic anxiety in response to writing tasks. Despite the overall trend of mild to moderate anxiety, the spread of scores shows that some participants may experience more intense physical reactions (such as trembling or sweating) than others when faced with writing tasks.

The descriptive statistics for the second subscale, which is Avoidance Behaviour, are presented in Table 7 below.

Table 7. Descriptive statistics for SLWAI - Avoidance Behaviour Subscale Items

Items	N	Min.	Max.	M	SD
4- [I often choose to write down my thoughts in English.]	135	1	5	2.78	1.131
5-[I usually do my best to avoid writing English compositions.]	135	1	5	2.37	1.164
10- [I do my best to avoid situations in which I have to write in English.]	135	1	5	2.53	1.251
12- [Unless I have no choice, I would not use English to write compositions.]	135	1	5	2.49	1.177
16- [I would do my best to excuse myself if asked to write English compositions.]	135	1	5	2.53	1.280
18- [I usually seek every possible chance to write English compositions outside of class.]	135	1	5	2.98	1.129
22- [Whenever possible, I would use English to write compositions.]	135	1	5	2.86	1.154
Valid N (listwise)	135				

As Table 7 shows, the Avoidance Behaviour subscale of the SLWAI includes seven items. Three of the items, which are 4, 18, and 22, are positively worded and thus reverse-coded prior to the descriptive statistics test. These items originally reflect active engagement with English writing, which is conceptually contrary to avoidance behaviour. After reverse coding, higher scores across all items indicate higher avoidance.

Although these reverse-coded items yielded slightly higher mean scores (e.g., Item 18: M = 2.98, SD = 1.129), in their original form, they indicate a tendency against avoidance. As for the other four items, which are directly indicative of avoidance behaviour, their mean values were lower (e.g. Item 5: M = 2.37, SD = 1.164), which suggests that avoidance behaviours were not prevalent among the participants.

Across the subscale, standard deviation values ranged between 1.129 and 1.280, indicating a moderate level of variability in participants' responses. Although this variability indicates some individual differences in avoidance tendencies, no extreme dispersion was observed, which means that participants' levels of avoidance were similar overall.

In sum, the findings suggest that participants have a relatively low to moderate level of avoidance behaviour in terms of writing in English.

Table 8. Descriptive statistics for SLWAI - Cognitive Anxiety Subscale Items

Items	N	Min.	Max.	M	SD

1- [While writing in English, I'm not nervous at all.]	135	1	5	2.55	1.164
3- [While writing English compositions, I feel worried and uneasy if I know they will be evaluated.]	135	1	5	2.95	1.248
7- [I don't worry that my English compositions are a lot worse than others'.]	135	1	5	2.54	1.131
9- [If my English composition is to be evaluated, I would worry about getting a very poor grade.]	135	1	5	2.94	1.220
14- [I am afraid that the other students would deride (make fun of) my English composition if they read it.]	135	1	5	2.28	1.213
17- [I don't worry at all about what other people would think of my English compositions.]	135	1	5	2.61	1.203
20- [I am afraid of my English composition being chosen as a sample for discussion in class.]	135	1	5	2.59	1.211
21- [I am not afraid at all that my English compositions would be rated as very poor.]	135	1	5	2.93	1.182
Valid N (listwise)	135				

Table 8 above presents the descriptive statistics for Cognitive Anxiety subscale, which is the last subscale of SLWAI. As can be seen in the table, the subscale comprises eight items involving mental aspects of anxiety such as worry, and negative thoughts related to foreign language writing.

Four of these items (1, 7, 17, 21) express feelings that are contrary to cognitive anxiety, and thus they were reverse coded before the tests were run. When examined, these reverse-coded items yielded mean scores ranging from 2.54 (Item 7) to 2.93 (Item 21). These mean scores indicate that participants were less likely to agree with these statements which suggest a lack of anxiety. For instance, the item with the lowest mean score was Item 7 (I don't worry that my English compositions are a lot worse than others'). The mean score of 2.54 for this item indicates a mild agreement that participants have some level of anxiety when writing in English.

The mean scores for the remaining items (3, 9, 14, 20) ranged from 2.28 (Item 14: "I am afraid that the other students would deride my English composition") to 2.95 (Item 3: "While writing English compositions, I feel worried and uneasy if I know they will be evaluated"). This also suggests that, on average, participants had a moderate level of cognitive anxiety related to writing in English. More specifically, participants expressed varying degrees of concern regarding the evaluation and potential social judgment of their written English compositions.

The standard deviations for the items ranged from 1.131 (Item 7) to 1.248 (Item 3), indicating variability in how participants expressed their cognitive anxiety. Some items, such as Item 3, showed relatively higher variability, which suggests that participants' levels of cognitive anxiety about their English compositions varied more, whereas others, like Item 7, had lower variability, indicating more uniform responses.

To sum up, these results illustrate that participants exhibit varying levels of cognitive anxiety, though the general trend indicates moderate anxiety. Additionally, their concerns are mainly centred on evaluation and judgment.

Tests of normality

Following the descriptive analyses of the two scales, tests of normality were run for the total scores of both instruments. Table 9 illustrates the results of the normality tests.

Table 9. Tests of normality for PAS and SLWAI

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PAS_Total	.117	135	<.001	.963	135	.001
SLWAI_Total	.119	135	<.001	.978	135	.028

a. Lilliefors Significance Correction

As Table 9 shows, the Kolmogorov-Smirnov and Shapiro-Wilk tests indicated that PAS_Total (K-S = .117, p < .001; S-W = .963, p = .001) and SLWAI_Total (K-S = .119, p < .001; S-W = .978, p = .028) were both significantly non-normal. Since the result revealed that the data were not normally distributed, Spearman's Correlation test, which is a non-parametric statistical test, was selected for further analysis to examine the correlation between the two scales.

Spearman's correlation test

Table 10. Spearman's correlation test

			PAS_Total	SLWAI_Total
Spearman's rho	PAS_Total	Correlation Coefficient	1.000	.132
		Sig. (2-tailed)	.	.128
		N	135	135
	SLWAI_Total	Correlation Coefficient	.132	1.000
		Sig. (2-tailed)	.128	.
		N	135	135

A Spearman's Rank-Order Correlation test was run to determine the relationship between the total scores of PAS and SLWAI. As Table 10 illustrates, the results showed a weak relationship between the two variables, suggesting no significant correlation ($rs(133) = .132$, $p = .128$). This result indicates that there is a positive relationship between the two variables; however, since the *p*-value is greater than .05, this relationship is not statistically significant. This finding suggests that the relationship between the total scores of the two surveys does not show a significant effect in the analysed sample.

DISCUSSION

Learners' perceptions of AI in language learning

The first research question of the present study explored learners' perceptions of Artificial Intelligence (AI) use in language learning, guided by the Technology Acceptance Model (TAM) (Davis, 1989). As stated earlier, the scale (PAS) used to assess learners' perceptions of AI use in language learning consisted of items that focus primarily on PU, which is the most significant construct of TAM. While not explicitly including items that measure PEOU, the PAS scale involved three items that fall under the "Concerns" subscale. This indicates that the PAS scale aligns only partially with TAM and may be better understood within an extended version of the model, which incorporates variables regarding concerns.

The descriptive results of the PAS scale suggest that learners generally hold moderately positive views toward AI tools in language learning, indicating that they generally viewed these tools as beneficial in language learning contexts. This is particularly reflected in the "Contributions Subscale", where items regarding AI's positive influence on writing skills and writing quality received the highest mean score. These findings align with PU, as learners believed that AI tools held the potential to enhance their writing quality, consistent with recent studies (e.g. Zhao, 2023; Al-Sofi, 2024). The findings also suggest that learners perceive AI tools as an assistant which can support personalized learning, autonomy, and adaptive learning experiences, aligning with PU.

Learners' positive beliefs regarding AI integration suggest that AI tools are perceived as useful and effective in enhancing their language proficiency. These findings are consistent with findings from recent studies (e.g. Yetkin & Özer-Altınkaya, 2024; Alqaed, 2024; Aziza, 2025; Benek, 2025; Ozer, 2024).

With respect to the Concerns Subscale, which included reverse-coded items, the findings revealed relatively low mean scores for the statements which express AI tools' undermining impact on their critical thinking skills in case of overreliance and on their problem-solving abilities, indicating that learners did not perceive AI tools as hindrances, and instead illustrating a tendency towards the use of these tools in their language-related tasks. This finding contrasts with the view proposed by Kasneci et al. (2023), who argue that reliance on AI-generated information without personal effort may adversely affect learners' critical thinking and problem-solving skills. Although not specified as a concern regarding overreliance on writing with AI tools, findings from other studies indicate that learners are usually concerned about overreliance on AI tools (e.g. Aziza, 2025; Alqaed, 2024; Ozer, 2024), which contrast the findings of this study. However, the item regarding the production of language content by AI tools received somewhat a high mean score, which suggests that learners do not completely trust AI tools, demonstrating their concern about inappropriate language content AI might produce. This indicates that while learners are aware of the potential of AI tools for aiding in their language improvement, they are also sceptical about the reliability of the information or language provided by these tools including unnatural or incorrect language. This finding is echoed in other recent studies (e.g. Al-Sofi, 2024; Alqaed, 2024; Yetkin & Özer-Altınkaya, 2024).

Overall, these findings demonstrate that most participants viewed AI tools as beneficial for developing their language skills, indicating an acceptance despite some persisting concerns, particularly about the quality of AI-generated language content. Although the Technology Acceptance Model (TAM) has been widely used to examine users' attitudes toward technology, it does not explicitly account for users' concerns such as overreliance, cognitive impact, or content reliability, especially in the context of emerging AI tools. In the present study, the PAS scale used to measure learners' perceptions of AI included a distinct subdimension addressing such concerns, which is an aspect not captured by TAM. This suggests that, while TAM remains useful for examining learners' acceptance of technology, it may not fully capture the complexity of learner perceptions in AI-supported educational environments, particularly as these technologies continue to evolve. Given that TAM has been extended over time with additional constructs to better capture user experience, incorporating concern-related dimensions into future adaptations could promote a more comprehensive understanding of technology acceptance, particularly in AI-supported educational contexts.

Learners' perceived levels of writing anxiety

The second research question of the study probed learners' perceived levels of foreign language writing anxiety, which was assessed by SLWAI. The results of the total score of SLWAI indicate a moderate overall level of foreign language writing anxiety, with a mean score of 59.03. However, the broad range of scores (24 to 96) with a relatively high standard deviation (SD = 16.138) demonstrate that there was a considerable variation among participants, implying that they had differing writing anxiety levels. This variation could be attributed to factors such as low level of language proficiency, fear of negative evaluation, and inadequate writing practice or prior writing experience, all of which have been identified as significant factors in previous studies (Cheng, 2004; Zhang, 2011; Erdel, 2024; Atay & Kurt, 2006). The findings of the total scores of SLWAI show similar variability in some previous studies, which yielded varying levels of writing anxiety (e.g. Erdel, 2024; Genç & Yaylı, 2019), while they are in line with some studies which found moderate levels of writing anxiety (e.g. Öztürk & Saydam, 2014; Ateş, 2013; Ekmekçi, 2018).

With respect to the subscales, the descriptives for the first subscale "Somatic Anxiety" demonstrate that participants had a mild to moderate levels of somatic anxiety with a mean score

ranging from 2.33 to 2.93. The standard deviation scores distributed between 1.146 and 1.317 suggest a notable variation in participants' responses, indicating that they had differing levels of somatic anxiety when faced with writing tasks in English. This implies that some learners might be experiencing more physical tension as a component of somatic anxiety than others. These findings contrast with some previous studies, which showed higher levels of somatic anxiety (e.g. Erdel, 2024; Çağlar Kabınkara, 2023). This could be mostly attributed to language proficiency, which is among the most significant factors that contribute to writing anxiety.

Regarding the "Avoidance Behaviour" subscale, the findings illustrated that participants had a low to moderate levels of avoidance behaviour. The item with the lowest mean score (I usually do my best to avoid writing English compositions.), (M = 2.37, SD = 1.164), demonstrates that participants did not strongly identify with avoidance behaviour, suggesting that although some learners experience writing anxiety, it does not necessarily result in avoiding writing tasks. In addition, although item 18 (I usually seek every possible chance to write English compositions outside of class.) yielded a mean score of 2.98 which is relatively high (SD = 1.129), since it is positively worded, the results indicate a slight tendency against avoidance behaviour. Overall, the results of Avoidance Behaviour subscale suggest that participants do not strongly avoid writing in English. These results are in line with recent studies (e.g. Çağlar Kabınkara, 2023; Keyvanoğlu & Atmaca, 2023), though they showed slightly higher mean scores. The moderate avoidance behaviour observed among participants may be influenced by factors such as self-efficacy beliefs, and perceived competence in writing.

Finally, the descriptives for the last subscale "Cognitive Anxiety" also yielded moderate levels of anxiety among the participants. The reverse-coded items in the subscale yielded mean scores ranging from 2.54 (Item 7) to 2.93 (Item 21), indicating moderate levels of cognitive anxiety. This suggests that participants somewhat experience worry and negative thoughts while engaged in writing in English. Item 7 produced the lowest mean score; however, since it was a reverse-coded item, the mean score implies that participants mildly hold a fear of comparison, which is also connected with negative self-evaluation. This finding is in line with prior studies which emphasize the role of fear of judgment along with negative self-evaluation. As Cheng (2004) points out, cognitive anxiety is characterized by negative self-evaluation, worry about performance, and concern about others' judgments. These results resonate with recent studies (e.g. Çağlar Kabınkara, 2023; Keyvanoğlu & Atmaca, 2023).

In conclusion, the findings indicate that participants experience moderate levels of anxiety across different types when engaged in L2 writing tasks. The findings align with previous literature emphasizing that foreign language writing inherently triggers anxiety among learners due to its complex cognitive and emotional requirements. Additionally, varied anxiety levels of participants could be attributed to individual differences such as self-efficacy, perceived writing competence, language proficiency, prior writing experiences, and attitude towards writing, all of which play a crucial role in learners' writing experiences (Choi, 2013; Cheng, 2004; Erkan & Saban, 2011).

The relationship between learners' perceptions of AI and their writing anxiety

In accordance with the final research question, the relationship between participants' perceptions of AI usage in language learning and their perceived levels of L2 writing anxiety was investigated. As stated in the findings section, the results of the Spearman's Rank-Order Correlation test demonstrated a subtle relationship between these two variables, indicating no significant correlation ($rs(133) = .132$, $p = .128$). Although recent studies have not explicitly investigated the relationship between learners' general views of AI and their foreign language writing anxiety, there are some studies which explored AI-assisted writing and writing anxiety, which have yielded mixed results. For instance, Yu (2024) found a significant positive correlation between AI-assisted writing frequency and writing anxiety among Chinese university students, suggesting that frequent AI use may increase anxiety levels. However, Sumakul et al. (2022) reported positive student perceptions of AI in writing classes, noting that it aided students in their

writing process, assisted them with grammar and vocabulary in writing, and made learning enjoyable. Similarly, Phan (2023) found favourable student attitudes towards AI writing tools, particularly regarding accessibility, adaptability, and ease of use, though technology anxiety remained a challenge. Zhang (2024) tested AI-mediated language instruction and found that AI tools improved learners' writing skills. Liu (2024) investigated the interplay between writing anxiety and AI use and found that learners with higher writing anxiety are more inclined to use AI in writing. Another study conducted by Shen & Tao (2025) suggests that AI-based writing self-efficacy could alleviate writing anxiety, implying that learners with confidence in using AI tools for writing experience less writing anxiety.

The studies collectively highlight the complex relationship between AI use, learner perceptions, and writing anxiety, suggesting that whereas AI tools offer valuable benefits such as immediate feedback, personalized and adaptive learning and various affordances in language learning and foreign language writing, careful implementation is crucial to avoid potential negative effects of these technologies on learners' writing anxiety as well as overreliance, among others.

CONCLUSION

This study revealed that participants held moderately positive attitudes toward the use of AI in language learning, though their responses varied. This indicates that while some learners found AI highly useful, others were hesitant, particularly due to concerns about the quality of AI-generated content. Additionally, participants demonstrated low to moderate levels of foreign language anxiety. Though not statistically significant, a weak but positive relationship was observed between their perceptions of AI tools and their writing anxiety.

These findings not only deepen our understanding of learners' experiences with AI but also offer practical implications for language education in AI-integrated contexts. First, the generally positive perceptions suggest that, when carefully integrated, AI tools have the potential to support language development and increase learner motivation (Zhang, 2024). Language instructors and curriculum designers should recognize these benefits and incorporate AI tools into instruction with careful planning (Son et al., 2023). Effective integration requires both learners and instructors to develop AI literacy through continuous training and support (Chu et al., 2022; Kasneci et al., 2023). This includes reducing technology-related anxiety through scaffolding and structured guidance, which may, in turn, enhance AI self-efficacy and promote greater tool acceptance.

Importantly, addressing learners' concerns about AI should be a central part of this training. Curriculum designers should include instruction that emphasizes critical evaluation of AI-generated content, awareness of its limitations, and ethical use in language learning contexts (Kasneci et al., 2023).

Despite the participants' relatively high language proficiency, the findings revealed that their writing anxiety persisted. In addition, although the relationship between learners' AI perceptions and their foreign language writing anxiety was not statistically significant, the observed positive relationship highlights the potential of AI tools to help reduce writing anxiety. Pedagogically, instructors are encouraged to apply strategies such as peer feedback, process writing, free-writing, positive reinforcement (Atay & Kurt, 2006), and collaborative writing (Choi, 2013) in their classrooms to alleviate language learners' writing anxiety, while integrating AI tools to scaffold the writing process. Building learners' AI-based writing self-efficacy is also crucial as it appears to be a key factor in mitigating writing anxiety (Shen & Tao, 2025). Furthermore, incorporating higher-order thinking strategies like "planning, monitoring, and evaluating" into AI-supported writing environments may further support learners' confidence and positively impact their writing anxiety (Shen & Tao, 2025, p. 83).

In addition to these pedagogical implications, the results point to potential directions for extending current theoretical models of technology acceptance. Although TAM has been instrumental in explaining technology acceptance, it does not account for learner concerns such as overreliance, ethical issues, or trust in AI-generated content. Given the model's history of

incorporating new constructs, integrating concern-related dimensions could improve its applicability to emerging technologies in educational contexts.

In conclusion, educators and curriculum designers need to ensure that AI literacy becomes a core component of language education. To maximize the benefits of AI tools and address learner concerns, students must be equipped with the skills to use these technologies effectively and to critically assess AI-generated content.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study is limited to the participants drawn from a single state university in Türkiye, which may narrow the generalizability of the findings. The results of the study may not apply to broader populations, as learners' individual differences, educational contexts, and their experiences with AI tools may vary across institutions and regions. Additionally, the study focused on learners' general perceptions of AI tools and their overall writing anxiety, without examining the potential influence of demographic variables such as gender, age, academic level, or prior experience with AI tools. Future research could explore these variables to provide a fuller understanding of learner differences.

While the sample size was sufficient for the statistical analyses conducted, it may not fully capture the diversity of learner experiences with AI tools. Future studies could consider recruiting larger and more heterogeneous participant groups from varied educational contexts to enhance generalizability.

Finally, as this study employed a solely quantitative design, it did not capture the in-depth perspectives or experiences of participants. Future research could benefit from incorporating qualitative methods such as interviews, open-ended surveys, or classroom observations to gain a richer and more comprehensive understanding of learners' attitudes, the contextual factors influencing their engagement with AI, and the challenges they may face in AI-supported learning environments.

Ethical Approval: This study was approved by the Scientific Research Ethics Committee of Muğla Sıtkı Koçman University (Protocol No: 240151, Approval number: 140). Participation was voluntary and anonymous. Before the online survey, participants were informed about the purpose of the study and proceeding with the online survey was considered as consenting to the study.

References

Afzaal, M., Shanshan, X., Yan, D., & Younas, M. (2024). Mapping artificial intelligence integration in education: A decade of innovation and impact (2013–2023)—A bibliometric analysis. *IEEE Access, 12*, 113275–113299. https://doi.org/10.1109/ACCESS.2024.3443313

Ahmad, S. F., Rahmat, M. K., Mubarik, M. S., Alam, M. M., & Hyder, S. I. (2021). Artificial intelligence and its role in education. *Sustainability, 13*(22), 12902. https://doi.org/10.3390/su132212902

Almelhes, S. A. (2023). A review of artificial intelligence adoption in second-language learning. *Theory and Practice in Language Studies, 13*(5), 1259–1269. https://doi.org/10.17507/tpls.1305.21

Al-Sofi, B. B. M. A. (2024). Artificial intelligence-powered tools and academic writing: To use or not to use ChatGPT. *Saudi Journal of Language Studies, 4*(3), 145–161. https://doi.org/10.1108/SJLS-06-2024-0029

Alqaed, M. A. (2024). AI in English language learning: Saudi learners' perspectives and usage. *Advanced Education, 12*(25), 125–142. https://doi.org/10.20535/2410-8286.318972

Atay, D., & Kurt, G. (2006). Prospective teachers and L2 writing anxiety. *Asian EFL Journal*, *8*(4), 100-118.

Ateş, S. (2013). *Foreign language writing anxiety of prospective EFL teachers: How to reduce their anxiety levels*(Unpublished master's thesis). Yükseköğretim Kurulu Ulusal Tez Merkezi. https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=370433

Aydın, S. (2024). *Construction and validation of the Perceptions of AI Usage Scale in a foreign language learning context* [Unpublished manuscript].

Aydin, S., & Zeinolabedini, M. (2024). *Integrating artificial intelligence into foreign language learning: Learners' perspectives* [ERIC Document No. ED662814]. ERIC. https://files.eric.ed.gov/fulltext/ED662814.pdf

Aziza, E. (2025). Learner perceptions and attitudes towards AI in English language learning. *Prospects of Teaching English for Professional Purposes in Non–Philological Higher Education Institutions: Problems and Solutions*, 703–709. https://wosjournals.com/index.php/pteconf/article/view/1872

Badrasawi, K. J., Zubairi, A., & Idrus, F. (2016). Exploring the relationship between writing apprehension and writing performance: A qualitative study. *International Education Studies, 9*(8), 134–143. https://doi.org/10.5539/ies.v9n8p134

Bailin, A. (1988). Artificial intelligence and computer-assisted language instruction: A perspective. *CALICO Journal, 5*(3), 25–45.

Baker, T., Smith, L., & Anissa, N. (2019, February). *Educ-AI-tion rebooted? Exploring the future of artificial intelligence in schools and colleges*. Nesta. https://media.nesta.org.uk/documents/Future_of_AI_and_education_v5_WEB.pdf

Barrot, J. S. (2023). Using ChatGPT for second language writing: Pitfalls and potentials. *Assessing Writing, 57*, 100745. https://doi.org/10.1016/j.asw.2023.100745

Belda-Medina, J., & Calvo-Ferrer, J. R. (2022). Using chatbots as AI conversational partners in language learning. *Applied Sciences*, 12(17), 8427. https://doi.org/10.3390/app12178427

Benek, K. (2025). EFL learners' and teachers' perceptions of AI-powered language learning technologies: Benefits and challenges. *International Journal of Instruction, 18*(2), 103–120. https://doi.org/10.29333/iji.2025.1827a

Cantina, J. M. (2016). Linking anxiety in second language with students' writing performance. *Journal of Higher Education Research Disciplines, 1*(1), 21–32. https://www.nmsc.edu.ph/ojs/index.php/jherd/article/view/55

Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE Access, 8*, 75264–75278. https://doi.org/10.1109/ACCESS.2020.2988510

Chen, H. H. J., Yang, C. T. Y., & Lai, K. K. W. (2023). Investigating college EFL learners' perceptions toward the use of Google Assistant for foreign language learning. *Interactive Learning Environments, 31*(3), 1335–1350. https://doi.org/10.1080/10494820.2020.1833043

Cheng, Y. S., Horwitz, E. K., & Schallert, D. L. (1999). Language anxiety: Differentiating writing and speaking components. *Language Learning, 49*(3), 417–446. https://doi.org/10.1111/0023-8333.00095

Cheng, Y. S. (2002). Factors associated with foreign language writing anxiety. *Foreign Language Annals*, *35*(6), 647–656. https://doi.org/10.1111/j.1944-9720.2002.tb01903.x

Cheng, Y. S. (2004). A measure of second language writing anxiety: Scale development and preliminary validation. *Journal of Second Language Writing, 13*(4), 313–335. https://doi.org/10.1016/j.jslw.2004.07.001

Choi, S. (2013). *Language anxiety in second language writing: Is it really a stumbling block?* (Master's thesis). University of Hawai'i at Mānoa. https://scholarspace.manoa.hawaii.edu/items/49202f93-1ac4-4a65-bbcd-36bb5bae04f5

Chu, H. C., Hwang, G. H., Tu, Y. F., & Yang, K. H. (2022). Roles and research trends of artificial intelligence in higher education: A systematic review of the top 50 most-cited articles. *Australasian Journal of Educational Technology*, *38*(3), 22-42. https://doi.org/10.14742/ajet.7526

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge. https://doi.org/10.4324/9781315456539

Creswell, J. W. (2011). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson.

Çağlar Kabınkara, D. N. (2023). *Relationship between EFL students' writing anxiety and their achievement in EFL context* (Unpublished master's thesis). Yükseköğretim Kurulu Ulusal Tez Merkezi. [Tez No: 825164]

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

De la Vall, R. R. F., & Araya, F. G. (2023). Exploring the benefits and challenges of AI-language learning tools. *International Journal of Social Sciences and Humanities Invention, 10*(01), 7569–7576. https://doi.org/10.18535/ijsshi/v10i01.02

Dogan, M. E., Goru Dogan, T., & Bozkurt, A. (2023). The use of artificial intelligence (AI) in online learning and distance education processes: A systematic review of empirical studies. *Applied Sciences, 13*(5), 3056. https://doi.org/10.3390/app13053056

Ekmekçi, E. (2018). Exploring Turkish EFL students' writing anxiety. *The Reading Matrix: An International Online Journal, 18*(1), 158–175. https://www.researchgate.net/publication/324825129_

Erdel, D. (2024). A thorough investigation into foreign language writing anxiety in a Turkish EFL context. *Erzincan Üniversitesi Eğitim Fakültesi Dergisi, 26*(1), 25–37. https://doi.org/10.17556/erziefd.1373734

Erkan, D. Y., & Saban, A. İ. (2011). Writing performance relative to writing apprehension, self-efficacy in writing, and attitudes towards writing: A correlational study in Turkish tertiary-level EFL. *The Asian EFL Journal Quarterly March 2011 Volume 13, Issue*, *13*(1), 164-192.

Genç, E., & Yaylı, D. (2019). The second language writing anxiety: The perceived sources and consequences. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi (PAU Journal of Education)*, *45*, 235–251. https://doi.org/10.9779/PUJE.2018.231

Glaser, N. (2023). Exploring the potential of ChatGPT as an educational technology: An emerging technology report. *Technology, Knowledge and Learning, 28*(4), 1945–1952. https://doi.org/10.1007/s10758-023-09684-4

Godwin-Jones, R. (2022). Partnering with AI: Intelligent writing assistance and instructed language learning. *Language Learning & Technology, 26*(2), 5–24. http://doi.org/10125/73474

Golzar, J., Noor, S., & Tajik, O. (2022). Convenience sampling. *International Journal of Education & Language Studies*, *1*(2), 72-77. https://doi.org/10.22034/ijels.2022.162981

Granić, A., & Marangunić, N. (2019). Technology acceptance model in educational context: A systematic literature review. *British Journal of Educational Technology*, *50*(5), 2572-2593. https://doi.org/10.1111/bjet.12864

Hawanti, S., & Zubaydulloevna, K. M. (2023). AI chatbot-based learning: Alleviating students' anxiety in English writing classroom. *Bulletin of Social Informatics Theory and Application, 7*(2), 182–192. https://doi.org/10.31763/businta.v7i2.659

Huang, X., Zou, D., Cheng, G., Chen, X., & Xie, H. (2023). Trends, research issues and applications of artificial intelligence in language education. *Educational Technology & Society, 26*(1), 112–131. https://doi.org/10.30191/ETS.202301_26(1).0009

Imran, M., & Almusharraf, N. (2023). Analyzing the role of ChatGPT as a writing assistant at higher education level: A systematic review of the literature. *Contemporary Educational Technology, 15*(4), Article ep464. https://doi.org/10.30935/cedtech/13605

Johnson, R. B., & Christensen, L. B. (2024). *Educational research: Quantitative, qualitative, and mixed approaches* (8th ed.). Sage Publications.

Kasneci, E., Seßler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., ... & Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for

education. *Learning and individual differences*, *103*, 102274. https://doi.org/10.1016/j.lindif.2023.102274

Keyvanoğlu, F. B., & Atmaca, Ç. (2023). An investigation into preparatory class EFL students' L2 writing anxiety. *Yükseköğretim ve Bilim Dergisi, 13*(1), 73–85. https://doi.org/10.5961/highereducsci.1135409

Kim, N. Y. (2019). A study on the use of artificial intelligence chatbots for improving English grammar skills. *Journal of Digital Convergence*, *17*(8).

Kim, N. Y. (2019). A study on the use of artificial intelligence chatbots for improving English grammar skills. *Journal of Digital Convergence, 17*(8), 37–46. https://doi.org/10.14400/JDC.2019.17.8.037

Kırmızı, Ö., & Kırmızı, G. D. (2015). An investigation of L2 learners' writing self-efficacy, writing anxiety and its causes at higher education in Turkey. *International Journal of Higher Education, 4*(2), 57–66. https://doi.org/10.5430/ijhe.v4n2p57

Korkmaz, H., & Akbıyık, M. (2024). Unlocking the potential: Attitudes of tertiary level EFL learners towards using AI in language learning. *Participatory Educational Research, 11*(6), 1–19. https://doi.org/10.17275/per.24.76.11.6

Kushmar, L. V., Vornachev, A. O., Korobova, I. O., & Kaida, N. O. (2022). Artificial intelligence in language learning: What are we afraid of? *Arab World English Journal (AWEJ), Special Issue on CALL* (8), 262–273. https://doi.org/10.24093/awej/call8.18

Lee, Y.-J., Davis, R. O., & Lee, S. O. (2024). University students' perceptions of artificial intelligence-based tools for English writing courses. *Online Journal of Communication and Media Technologies*, *14*(1), e202412. https://doi.org/10.30935/ojcmt/14195

Liu, Z. (2024). Second language writing anxiety and ChatGPT adoption as an automated writing evaluation tool. *Journal of Applied Research in Higher Education*. Advance online publication. https://doi.org/10.1108/JARHE-06-2024-0260

Luckin, R., Holmes, W., Griffiths, M. & Forcier, L. B. (2016). *Intelligence Unleashed. An argument for AI in Education.* London: Pearson. https://static.googleusercontent.com/media/edu.google.com/tr//pdfs/Intelligence-Unleashed-Publication.pdf

Nazari, N., Shabbir, M. S., & Setiawan, R. (2021). Application of artificial intelligence powered digital writing assistant in higher education: Randomized controlled trial. *Heliyon, 7*(5), e07014. https://doi.org/10.1016/j.heliyon.2021.e07014

Nobles, S., & Paganucci, L. (2015). Do digital writing tools deliver? Student perceptions of writing quality using digital tools and online writing environments. *Computers and Composition*, *38*, 16-31. https://doi.org/10.1016/j.compcom.2015.09.001

Ozer, O. (2024). AI language models: A breach of academic integrity in online language learning? *Studies in Language Assessment, 13*(1), 237–262. https://www.altaanz.org/uploads/5/9/0/8/5908292/7._sila_13_1__ozer.pdf

Öztürk, G., & Saydam, D. (2014). Anxiety and self-efficacy in foreign language writing: The case in Turkey. *Başkent University Journal of Education*, 10–21. http://buje.baskent.edu.tr/index.php/buje/article/view/32

Persulessy, S. I., Nikijuluw, R. P. V., & Jakob, J. C. (2024). Utilizing artificial intelligence in language learning: What about engineering students' perception? *Journal of English Education Program (JEEP)*, *5*(1), Article 71159. https://doi.org/10.26418/jeep.v5i1.71159

Phan, T. N. L. (2023). Students' perceptions of the AI technology application in English writing classes. *Proceedings of the AsiaCALL International Conference*, *4*, 45–62. https://doi.org/10.54855/paic.2344

Rawas, S. (2024). ChatGPT: Empowering lifelong learning in the digital age of higher education. *Education and Information Technologies*, *29*, 6895-6908. https://doi.org/10.1007/s10639-023-12114-8

Rezaei, M., & Jafari, M. (2014). Investigating the levels, types, and causes of writing anxiety among Iranian EFL students: A mixed method design. *Procedia-Social and Behavioral Sciences*, *98*, 1545-1554. https://doi.org/10.1016/j.sbspro.2014.03.577

Roni, S. M., Merga, M. K., & Morris, J. E. (2020). *Conducting quantitative research in education*. Springer.

Rusmiyanto, R., Huriati, N., Fitriani, N., Tyas, N. K., Rofi'i, A., & Sari, M. N. (2023). The role of artificial intelligence (AI) in developing English language learners' communication skills. *Journal on Education*, *6*(1), 750-757.

https://nasim.hormozgan.ac.ir/ostad/UploadedFiles/395003/395003-8414788631563835.pdf

Russell, S., & Norvig, P. (2010). *Artificial intelligence: A modern approach* (3rd ed.). Prentice Hall.

Shen, X., & Tao, Y. (2025). Metacognitive strategies, AI-based writing self-efficacy and writing anxiety in AI-assisted writing contexts: A structural equation modeling analysis. *International Journal of Teaching and Society, 7*(1), 70–87. https://doi.org/10.58304/ijts.20250105

Son, J. B., Ružić, N. K., & Philpott, A. (2023). Artificial intelligence technologies and applications for language learning and teaching. *Journal of China Computer-Assisted Language Learning*. https://doi.org/10.1515/jccall-2023-0015

Syahnaz, M., & Fithriani, R. (2023). Utilizing artificial intelligence-based paraphrasing tool in EFL writing class: A focus on Indonesian university students' perceptions. *Scope: Journal of English Language Teaching*, *7*(2), 210-218. https://doi.org/10.30998/scope.v7i2.14882

Sumakul, D. T. Y. G., Hamied, F. A., & Sukyadi, D. (2022). Students' perceptions of the use of AI in a writing class. In *Proceedings of the 67th TEFLIN International Virtual Conference & the 9th ICOELT 2021 (TEFLIN ICOELT 2021)* (pp. 52–57). Atlantis Press. *Advances in Social Science, Education and Humanities Research, 624*. https://doi.org/10.2991/assehr.k.220201.009

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd

Tavakoli, H. (2012). *A dictionary of research methodology and statistics in applied linguistics*. Rahnama press.

Uppal, K., & Hajian, S. (2025). Students' perceptions of ChatGPT in higher education: A study of academic enhancement, procrastination, and ethical concerns. *European Journal of Educational Research, 14*(1), 199–211. https://doi.org/10.12973/eu-jer.14.1.199

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, *46*(2), 186-204. https://doi.org/10.1287/mnsc.46.2.186.11926

Yatri, D., Anugerahwati, M., & Setyowati, L. (2023). Artificial intelligence (AI) in language learning (English and Arabic class): Students' and teachers' experience and perceptions. *Transformational Language, Literature, and Technology Overview in Learning (TRANSTOOL)*, 3(1), 1–12. https://doi.org/10.55047/transtool.v3i1.1338

Yetkin, R., & Özer-Altınkaya, Z. (2024). AI in the language classroom: Insights from pre-service English teachers. *E-Learning and Digital Media*. Advance online publication. https://doi.org/10.1177/20427530241267011

Yu, Z. (2024). The study of the correlation between AI-assisted EFL writing frequency and writing anxiety among Chinese university students. *Academic Journal of Humanities & Social Sciences, 7*(7), 7–15. https://doi.org/10.25236/AJHSS.2024.070702

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – Where are the educators? *International Journal of Educational Technology in Higher Education, 16*, 39, 1–27. https://doi.org/10.1186/s41239-019-0171-0

Zhang, H. (2011). *A study on ESL writing anxiety among Chinese English majors: Causes, effects and coping strategies for ESL writing anxiety* [Master's thesis, Kristianstad University]. DiVA. https://urn.kb.se/resolve?urn=urn:nbn:se:hkr:diva-8247

Zhang, Y. (2024). Artificial intelligence in language instruction: Impact on English learning achievement and L2 motivational self-system. In *Proceedings of the International CALL Research*

Conference (pp. 321–326). Castledown Publishers. https://doi.org/10.29140/9780648184485-48

Zhao, X. (2023). Leveraging artificial intelligence (AI) technology for English writing: Introducing Wordtune as a digital writing assistant for EFL writers. *RELC Journal, 54*(3), 890–894. https://doi.org/10.1177/00336882221094089

Zhao, X., Cox, A., & Cai, L. (2024). ChatGPT and the digitisation of writing. *Humanities and Social Sciences Communications, 11*, Article 482. https://doi.org/10.1057/s41599-024-02904-x