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Online Language Anxiety in Higher Education: Evidence from Exploratory and Confirmatory Factor Analyses

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Abstract

The objective of this research is to identify the underlying components of English language learners' anxiety in online learning during the COVID-19 and to verify the coherence of the component model with the empirical data. A total of 408 Thai EFL university students, who were selected via a simple random sampling method, were assessed with the Online World Languages Anxiety Scale (OWLAS). An exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA) were conducted using LISREL 8.80 to verify the factor structure of Online English Language Anxiety (OELA). The results of the EFA indicate six emerged underlying components: 1) use of English skills online, 2) negative feelings in online learning, 3) positive feelings in online learning, 4) online interaction, 5) cross-linguistic interference, and 6) attitudes to self and English classes. Considering the indices, the model was fit with the empirical data, with X^2 *= 1115.24, df = 625, p-value = 0.048,* X^2/df *= 1.784, GFI = 0.96, AGFI = 0.97, CFI = 0.99, SRMR = 0.043, RMSEA = 0.045. Factor loading values of each index were between 0.50-0.88. The indicators that had the highest weight value or most significantly influenced students' OELA were 'attitudes to self and English classes' and the least was 'cross-linguistic interference'.*

INTRODUCTION

The Global Risk Report (2021) revealed that 2019's coronavirus pandemic (COVID-19) had a psychological impact on citizens causing them to develop post-traumatic stress symptoms, fear, hopelessness, depression, as well as anxiety. It had a substantial repercussion on educational systems globally due to the full closure of almost every academic institution. The teaching and learning management were shifted from face-to-face (F2F) instruction to digital learning context (Ramírez et al., 2021), or emergency remote teaching (Hodges et al., 2020), which was a temporary shift of instructional delivery to an alternative delivery mode due to crisis circumstances. Due to differences in economic status, the inequality extends to the education sector as 80% of students around the world had to halt their studies, and 30% of students worldwide lacked distance learning equipment and encountered mental health problems (Global Risk Report, 2021). It was believed that at least one academic year was missed during the lockdown, which increased dropout rates in low-income families. Homeschooling became an option for several families; however, it was found to increase family stress and anxiety, and significantly reduced

the students' performances in universities. Thus, university students were found to be more vulnerable and easily affected by a pandemic (Bruffaerts et al., 2018). Particularly, those who had been attending online classrooms experienced different levels of psychological pressure and stress (Wang & Zhao, 2020).

The COVID-19 pandemic ultimately made a substantial and long-lasting impact on educational systems globally. In Thailand, starting from the first wave of the COVID-19 at the very end of the second semester of the 2019 academic year (March 2020) to the fifth wave in the second semester of the 2021 academic year (December 2021-April 2022), totaling more than five semesters, or more than 35 weeks (UNESCO, 2021), in almost two academic years since the outbreak began, students had been missing onsite and learning online instead. The entire 2022 academic year (June 2022-April 2023) attempted to put onsite learning back in effect, though with the continuous fluctuation rate of both teachers and students who tested positive for COVID-19, some online make-up classes were inevitably scheduled during the semester.

The online English courses in the context of the current study are to be discussed as follows: 1) mode of learning, 2) platform, and 3) online learning activities employed. According to the modes of learning, a blended learning approach proposed by Kaur (2013) has been delivered to the online class. The students had 1) a synchronous virtual instruction (i.e., live online class via MS Teams), 2) a asynchronous virtual instruction (i.e., online instant messaging through Teams when the teacher provided the comments on the students' tasks and posted feedback to the students), and 3) a self-paced asynchronous learning (i.e., video clips, online self-assessment) for students to review the lessons at their own pace and take self-assessment quizzes. Students and their peers also had to partake in several online learning activities such as group brainstorming and discussion, presentations, and groupwork assignments.

Learning anxiety has been notably investigated by many educational theorists. Several studies by FL theorists have explored anxiety in a FL classroom-based context (Blake, 2008; Chametzky, 2019; Horwitz et al., 1986; Krashen, 1981; Pichette, 2009; von Worde, 2003). Anxiety and stress are barriers for FL learners (Horwitz et al., 1986). Students may possibly feel anxious because of the difficulties of using and understanding the rules of language and feel incompetent to speak out due to the fear of making a mistake, lacking self-esteem, and having an unfavorable assessment (Aslim-Yetiş & Çapan, 2013). Although FL anxiety (FLA) has been studied previously in a traditional classroom, few studies have examined anxiety factors in online language learning context (Pichette, 2009; Shirvan & Taherian, 2018; Russell, 2020; Zhao, 2022). With insufficient understanding of the problems that can arise in the online setting, educators, administrators, and course designers are unable to help students who are struggling to learn online when anxiety occurs in such a learning environment. There is still unclear investigation of underlying factors affecting English language online learning anxiety of those students in the Thai university context. Thus, this research aims to investigate the variables and analyze these anxiety components that have not yet apparently been explored and to verify the coherence of the component model with empirical data.

LITERATURE REVIEW

Online learning anxiety

Anxiety is an affective factor which has been claimed to affect learning in general, and specifically the language learning process (Horwitz et al., 1986). Anxiety can manifest both physiological symptoms (e.g., a strong heartbeat, high blood pressure, sweating, changes in body temperature, shortness of breath, changes in chemicals in the body), and psychological symptoms (e.g., difficulty thinking, confusion, fear, anxiety, nervousness) (Craske et al., 2011). Study anxiety can have both positive effects, such as encouraging learners to struggle with learning new things, increasing alertness and drive, creating a challenge, and improving academic performance for some learners (Toth, 2009) and negative effects that cause discomfort and anxiety, and worsen academic performance for other learners. However, the latter is likely to be a more common case (Atef-Vahid & Kashani, 2011).

The level of anxiety of the students fluctuates over time during an online course, which depends on their individual contexts (Shirvan & Taherian, 2018). Chinese undergraduate students showed higher anxiety in online learning in the new semester than before the new semester began during the pandemic (Wang et al., 2020). Likewise, the Thai university students had a significant level of the online learning anxiety (Chimwong, 2020). The samples in this study are aged between 19 and 22, categorized as a Generation Z (born after 1997) group, who mostly experienced anxiety during online learning, specifically when they had online discussions and written communication (Elshami et al., 2021). In the current study, the EFL students' possible levels of online learning anxiety were evaluated by the pre-screening online questionnaire. Regarding the Online Learning Anxiety Scale, the questions cover the issue of online learning environment, online learning problems, course content, learning ability, assignment, assessment, and COVID-19 situation. The criteria for considering the level of anxiety were five levels: 4.21-5.00, 3.41-4.20, 2.61-3.40, 1.81-2.60, and 1.00-1.80, which was considered to have the highest, high, moderate, low, and the lowest level of anxiety respectively (Wanichbuncha, 2007). Consequently, the participants were pre-screened as positive for anxiety and were selected from those who met the cut-off of being anxious with a high or highest anxiety in online learning.

Foreign language anxiety (FLA)

Anxiety can inhibit FL learning process (Horwitz et al., 1986; Tanielian, 2014). There are three different types of FLA: 1) communication anxiety or fear or shyness of using that language to communicate with others; 2) test anxiety or fear of being judged on whether to succeed in an academic test; and 3) fear of negative evaluation or anxiety about being evaluated by others in society (Horwitz et al., 1986). According to Gardner (1985), not all types of anxiety would affect FL learning, but a construct of anxiety that is unique to L2 acquisition. This is supported by Trang (2012) who found only a weak relationship between general anxiety and FL proficiency. Learning English is a complicated integration of self-awareness, beliefs, feelings, and behaviors related to language learning in the classroom, which result from diversified language learning processes (Horwitz et al., 1986).

A specific situation can cause a change in students' anxiety (Shirvan & Taherian, 2018). Language anxiety is a kind of situation-specific anxiety, which involves fear of a specific situation or event. Such anxiety happens only in the language classroom. Language classrooms are not like any other learning activities (Myers, 2008) as learners have to leave their comfort zone (Chametzky, 2013), where they may feel uncertain and unsafe to speak in an unfamiliar language and the feeling that they are incompetent, to embarrass themselves, to frustrate their self-expression, and to challenge their self-esteem and sense of identity (MacIntyre, 1999; Trang, 2012). Then it gets even more stressful when it comes to speaking English in front of peers and teachers (Tanielian, 2014). Thus, FLA is negative awkward feelings with those learning a non-native language.

Previous research affirms that anxiety may cause language learners to experience reduced cognitive skills, self-confidence, personal agency, control, and willingness to communicate (Oxford, 2017). Several studies including a recent meta-analysis confirm a strong negative relationship between FLA and language learning outcomes (Aida, 1994; Botes et al., 2020; Chen & Chang, 2004; Price, 1991; Trang, 2012), and particularly this relationship among Thai learners (Chantha et al., 2018; Santikarn, 2020; Tanielian, 2014).

Anxiety in online language learning

FL courses are one of the most difficult courses to be learnt online according to the subtle characteristic of skills and knowledge vital for language competence (Bollinger, 2017). Learners are required to interact verbally with their peers (Pichette, 2009). FLA that emerges in F2F classroom settings could explain only one-third of the anxiety that appears in online language learning (Doğan, 2020). Online language learners have been connected with learners' experience in the online environment and complex learning environments (Chametzky, 2013), insufficient computer knowledge, and internet access and technical problems (Coryell & Clark, 2009). Therefore, online learners' anxiety may occur as having no experience with the online learning environment, fearing, or having had a bad previous experience with technology, or technology fears (Anderson & Williams, 2011; Chametzky, 2019). FL anxiety in online settings is more intensified than traditional learning environments due to an isolated setting detached from instructor and peers, less interaction and prompt feedback, lack of confidence during self-learning, and using computer and internet technologies into the learning environment (Doğan, 2020). A recent study confirms a significant positive correlation between the students' online learning anxiety and their FL classroom anxiety (Doğan, 2020; Zhao, 2022).

English language learning anxiety scale

Theory of FLA (Horwitz et al., 1986) plays a vital role in language anxiety research. It was later developed to the Foreign Language Classroom Anxiety Scale (FLCAS) which has been extensively accepted and employed as English language learning anxiety scale in both traditional and online settings (Pichette, 2009). FLCAS appears to measure anxiety primarily related to speaking situations (Rodriguez & Abreu, 2003). Many scholars using such measurements found that the level of anxiety among learners in English subjects was moderate (Lian & Budin, 2014; Paranuwat, 2011) to high (Bughio & Pathan, 2015; Nahavandi & Mukundan, 2013), and the reasons of the

greatest anxiety for learners is shyness or fear of using the language to communicate with others (Santikarn, 2019). However, FLCAS excludes native language skill aptitude of the learners (Sparks & Ganschow, 1995), meaning that it leaves the possibility that the L2 learning problems may share difficulties with regard to the learners' oral or written L1 ability.

Chametzky (2019) later expanded the FLCAS to the Online World Languages Anxiety Scale (OWLAS) (see Appendix) which emphasizes on both language learning anxiety constructs and online learning setting components simultaneously. OWLAS covers eleven variables: 1) comfort, 2) embarrassment, 3) concern, fear, and overwhelm, 4) help, 5) linguistic interference, 6) listening, 7) inadequacies, 8) oral production, 9) the need to practice saying or writing before submission, 10) positive thinking, and 11) putting oneself down. OWLAS was employed in this study within a Thai context, not only because it concerns the key elements of shyness, communication apprehension, and inadequacies as some previous scales (e.g., FLCAS), but also it 1) reflects both positive and negative feelings when students attending online class 2) considers the effects of different characteristics between L1 (i.e., Thai – a tonal language) and L2 (i.e., English – an intonational language) where it is rather difficult for Thai learners to pick up the English language (e.g., no stress in Thai pronunciation while stress is vital in English pronunciation) 3) focuses more on the most difficult language skill for Thai learners, i.e., speaking 4) includes items with regard to technology, online learning skills, language or language learning. As a result, some of the items, which were also portrayed as vital elements in previous FLA scales, may not be considered as specifically related to online learning (e.g., item 5, 7, 13, 20, 21, 22, 24, and 25), but still influence the learners' online language learning anxiety.

OBJECTIVE

This study aims (1) to empirically identify the variables of language learning anxiety and analyze these anxiety components that Thai EFL university students experience when learning English online during the pandemic and (2) to verify the coherence of the component model with the empirical data.

RESEARCH METHODOLOGY

This quantitative research employed exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to examine component variables of the Online English Language Anxiety (OELA) model for Thai EFL students in higher education.

Participants

This survey research includes a sample of 408 non-English majored undergraduate students, taking English language courses in the second semester of the 2020 academic year at a public university in the east of Thailand, aged between 19 and 22 years, who was selected by a simple random sampling method. In accordance with the sample size criterion in the general rule for

factor analysis of Hair et al. (2019), the sample size should be 1 item per 10 observations. There is a total of 33 items in OWLAS (Chametzky, 2019), therefore at least 330 cases are deemed adequate. The data collection was done using online questionnaires.

Instrument

The questionnaire consists of two parts: 1) General information of the respondents and 2) The Online World Languages Anxiety Scale (OWLAS) (Chametzky, 2019) with a total of 33 five-point Likert scale items (see Appendix). "World languages" in the scale was modified to the word "English language". The scale has been translated from the original English into the Thai version with permission from Chametzky (see Appendix), the OWLAS scale developer, and some words in the statement were adjusted to fit the context of learning English through online platform in Thailand. The Thai version of the questionnaire was tested for content validity; the CVI was between .83 and 1.00, where > .80 considered as having a good content validity (Polit & Beck, 2006), and for the translated tool, a threshold of .80 or higher may be used (Polit & Hungler, 1999).

The questionnaire was tested on 30 university students having completed online English courses to analyze the reliability of the scale. With the Cronbach's alpha coefficient method, the scale reliability was .92 and the discriminant power was .59 to .89, analyzed by using the Pearson's correlation coefficient.

After approval by the Human Research Ethics Committee at the University (COE No. COE64/072), all participants were sent a link to the online survey via the online communication channel between the English teachers and the groups of the students. The Microsoft form online questionnaires were distributed in May 2021, a month approximately after the participants had completed the English language courses online. This is to ensure that they had already learned English online for the whole previous semester. The self-check informed consent form appeared in the first part of the questionnaire for the participants to consent or refuse to participate in the study. There were 408 complete responses out of 450 participants returning the questionnaires, accounting for a total of 90.68% response rate.

Data analysis

The data were analyzed using statistical software packages as follows:

1. General information of the respondents was analyzed using descriptive statistics, i.e., frequency and percentage.

2. Data analysis, according to the first objective, using EFA by Principal

Component Analysis (PCA) illustrating the results information as follows: 1) considering the index value of KMO (Kaiser-Meyer-Olkin measure of sampling adequacy) 2) factor extraction 3) factor rotation using orthogonal varimax rotation method by summarizing the results of the analysis of the relationship between the variables. By considering the indicators with component

weights of 0.5 or more, considering the combined variance of components with eigenvalues greater than or equal to 1.0, and having the number of indicators of each component from 3 or more, there should be at least 3 indicators per 1 latent variable, according to the general principles in defining a single probability model known as the Three Indicator Rule (Marsh et al., 2004).

3. Data analysis, according to the second objective, using CFA consisting of a first-order CFA to analyze the structural validity of the observed variables in each component, and second-order CFA to analyze and verify the structural validity of the OELA model comprising of 6 elements. Then, the statistical values for the consistency test of the model were considered as follows:

- Chi-square value is a statistical hypothesis test used in the analysis of contingency tables. If the chi-square value is very low, the closer to the center meaning that the model is consistent with empirical data.
- The comparative fit index (CFI) is between 0 and 1.00. If it is greater than 0.95, it indicates that the model is consistent with the empirical data.
- The relative chi-square (X^2/df) is to compare the goodness of fit between models with different degrees of freedom. The relative chi-square value should not be greater than 2.
- The goodness of fit index (GFI) is between 0 and 1.00. If it is greater than 0.95, it indicates that the model is consistent with the empirical data.
- The adjusted goodness of fit index (AGFI) ranges from 0 to 1.00. If it is greater than 0.95, the model is consistent with the empirical data.
- The standardized root mean square residual (SRMR) value is between 0 and 1.00. If the value is less than 0.05, then the model is consistent with the empirical data.
- The root mean square error of approximation (RMSEA) value is between 0 and 1.00. If the value is less than 0.05, the model is consistent with the empirical data.

FINDINGS

The findings of the study will be presented based on the research questions as follows:

1. General information

The results of the analysis of general information of 408 participants were as follows. The majority of participants: 342 (83.81%) of them aged 19-20, 293 (71.81%) women, 43.25% of them was from Faculty of Management Sciences, followed by Engineering (25.15%), Science (22%), International Maritime College (14.58%), and Economics (5.02%) respectively, and the mostly obtained grade in online English subjects was C+ (39.46%), followed by B+ (25.74%), B (12.75%), C (10.54%), A (6.86%), and D+ (4.65%) accordingly.

2. Results according to the first objective using EFA: The variables of language learning anxiety

Factor analysis of OELA that the researcher tested the preliminary agreement for EFA and

found that 33 variables had a positive linear relationship. The Kaiser Meyer-Olkin (KMO) measure of sampling adequacy was analyzed for the suitability of the studied variables, which was .819, well above the recommended value of > .800, indicating that this set of variables was suitable for the composition analysis or good correlation among the items (Kim & Mueller, 1978). Analyzing the Bartlett's Test of sphericity, it was found that the chi-square was 4,763, the df was 528, and it was also significant (Sig. = .000). Each variable had enough correlation to group the variables. From extraction of components by PCA using orthogonal varimax rotation method, all 6 components were obtained, the eigenvalues were 1.679-5.022, and the total variance was 52.706%, indicating that factor analysis is feasible for this data set as shown in Table 1.

Table 1

KMO measurements and bartlett's test and total variance explained

Kaiser-Meyer-Olkin Measure of sampling adequacy		.819
Bartlett's test of sphericity	approx. Chi-Square	4,763
	df	528
	Sig.	.000

Component	Eigenvalue	% of Variance	Cumulative %
1	5.022	15.217	15.217
2	3.797	11.507	26.724
3	2.813	8.525	35.249
4	2.328	7.055	42.304
5	1.754	5.315	47.619
6	1.679	5.087	52.706

As presented in Table 2, all the 6 components of OELA were named according to the relationship between content and variables in each component presented as follows: UES as indicative of using integrated English skills in the online environment; NFO reflecting insecure feelings when being tested in the online FL environment; PFO indicating the confidence in using English skills and technological tools in the online environment; OIN reflecting the help request from the instructor and peers according to the lack of the other two parties' onsite presence; CLI representing the negative effects of L1 on L2 acquisition, or that of L2 on L3 learning process; and ASE indicating the self-understanding on English class contribution and comparison with peers.

Table 2

Name of component

Component	Name of Component	Question item	Number
1	Using English Skills online (UES)	1, 2, 3, 4, 5, 6, 7, 13	8
2	Negative Feelings in Online learning-(NFO)	20, 21, 22, 23, 24, 25, 26	7
3	Positive Feelings in Online learning (PFO)	8, 9, 10, 11, 12, 14, 15, 29	8
4	Online Interaction (OIN)	17, 18, 19	3
5	Cross-Linguistic Interference (CLI)	30, 31, 32, 33	4
6	Attitudes to Self and English classes (ASE)	16, 27, 28	3

3. Results according to the second objective using CFA: The coherence of the component model with the empirical data

Confirmatory Factor Analysis of OELA model with empirical data by estimating parameters using the maximum likelihood estimation method, it was found that the first model was inconsistent with the empirical data. Therefore, model modifications were made by relaxing the constraints of preliminary agreements and allowing the discrepancy of the observed variables to be correlated. After the model modification, when considering the model fit indices, i.e., the Relative chi-square (X^2/df), Goodness of fit index (GFI), Comparative fit index (CFI), Adjusted goodness of fit index (AGFI), Root mean square error of approximation (RMSEA), and Standardized root mean square residual (SRMR), it shows that the model is in good agreement with the empirical data as illustrated in Table 3.

Table 3
Model fit indices of OELA

Goodness of fit indices	Criteria	Model Fit Indices		
		Before the model modification	After the model modification	Interpretation
P-value	$p > .05$	0.003	0.582	pass
Relative Chi-square	χ^2/df < 2.00	4.523	1.784	pass
Goodness of fit index	GFI > .95	0.84	0.96	pass
Comparative fit index	CFI > .95	0.85	0.99	pass
Adjusted goodness of fit index	AGFI > .95	0.91	0.97	pass
Root mean square error of approximation	RMSEA < .05	0.152	0.045	pass
Standardized root mean square residual	SRMR < .05	0.034	0.043	pass

The analysis of structure validity using the CFA was carried out by using the measurement model of OELA. From the second-order component analysis (second-order CFA), it was found that the measurement model of OELA among Thai EFL students was appropriate and consistent with the empirical data. The harmonization index was $X^2 = 1115.24$, df = 625, p-value = 0.582, X^2/df = 1.784, GFI = 0.96, AGFI = 0.97, CFI = 0.99, SRMR = 0.043, RMSEA = 0.045, $R^2 = 0.431$. A reasonably appropriate model should result in high standardized regression weights (e.g., > .70) and correlations between factors that are not excessively high (e.g., < .90). Each component has a component weight between 0.50-0.88, standard error (SE) is between 0.05-0.21, and the observed variable reliability coefficient (R^2) is between 0.25-0.77. The highest weights were attitudes to self and English classes, positive feelings in online learning, negative feelings in online learning, use of English skills online, online interaction, and cross-linguistic interference with factor loadings of 0.88, 0.83, 0.80, 0.57, 0.53, and 0.50 respectively as demonstrated in Table 4.

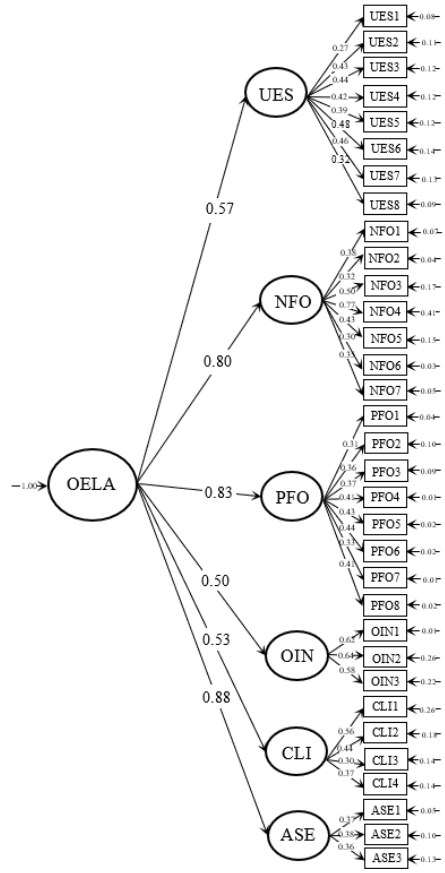
Table 4

Factor loadings

Component	Factor Loading		R^2
	β	*SE*	
Using English Skills online	0.57**	0.05	0.33
Negative Feelings in Online learning	0.80**	0.16	0.64
Positive Feelings in Online learning	0.83**	0.15	0.68
Online Interaction	0.53**	0.08	0.25
Cross-Linguistic Interference	0.50**	0.14	0.28
Attitudes to Self and English classes	0.88**	0.21	0.77
χ^2 = 1115.241, df = 625, p-value = 0.582, χ^2/df = 1.784, GF I= 0.964, AGFI = 0.972, CFI = 0.990, SRMR = 0.043, RMSEA = 0.045			

** p<0.01

Based on the substantial findings from the EFA, the measurement model of components of OELA is proposed as follows:



χ^2 = 1115.241, df = 625, p-value = 0.582, χ^2/df = 1.784, GF I= 0.964, AGFI = 0.972, CFI = 0.990, SRMR = 0.043, RMSEA = 0.045

Figure 1 The measurement model of components of OELA

DISCUSSION

The *'Attitudes to self and English classes'* component is the most important area among the six components which influences English language anxiety on a digital platform. Therefore, a teacher should highly concentrate on the three variables of this component, which mainly focuses on the beliefs and attitudes relating to a student's self and English classes. Learners' beliefs about language learning can have a negative relationship with their anxiety (Paranuwat, 2011). Thai students perceive the benefits and significance of learning English; however, they have negative attitudes in practicing English and are reluctant to sacrifice time for it (Jindathai, 2015). The majority of Thai EFL students who struggle with their English may also not put as much effort into studying English during examination periods because English may not be that important or relevant to their own non-English academic and professional pursuits. Those individuals, who benefit from a high level of self-esteem, self-confidence, and self-perceived competence, are expected to experience lower degree of FLA and thus, achieve more success in their language learning process (Onwuegbuzie et al., 1999; Price, 1991; Zare & Riasati, 2012). The findings are in line with Price (1991)'s study that the majority of highly anxious learners believe that their language skills are inferior to their peers. Feelings of incompetence and lack of confidence can be lessened when learners work together in a group searching for information online, sharing the given information with their team members, and asking peers if something is not understood, including learning from those peers with a higher English proficiency.

The factor *'Positive feelings in online learning'* confirms that as students gain language learning experience and increased language competence, their language anxiety tends to decrease. The items illustrate the features of relaxed feelings in learning, testing, and using technology online, and being confident in language competence. Likewise, previous studies indicate that students who had prior online experiences experienced less anxiety (Elshami et al., 2021; Pichette, 2009). The findings showed that while some students had anxiety in online learning, their counterparts had positive feelings in online learning and enjoyed it. The reason is because some learners prefer autonomous or self-paced learning and thus, feel safe in online classes behind the veil of anonymity without having to expose their physical appearances, or write down their comments in the chat box with the camera on; sitting back and relaxing without giving a response significantly reduces their learning anxiety (Kaisar & Chowdhury, 2020). In online classes, most of the students are likely to turn off their cameras and microphones, and only take part in listening to the lectures exclusively. Absence of direct communication and appearance in the class somehow offers learners an anxiety-free and comfortable environment. Teachers should keep track of their students to see if they have higher online self-efficacy or feel relatively comfortable online as positive feelings in online learning have been shown to minimize anxiety (Elshami et al., 2021). To do so, teachers can ask how the students feel about learning online by allowing them to express themselves through writing or having written discussion boards anonymously via online tools. This not only alleviates online language learning anxiety, but also improves engagement in online learning. The more positive beliefs concerning learning that learners hold, the less FL learning anxiety they experience.

All items of the *'Negative feelings in online learning'* component demonstrate the tense and nervous feelings of learners according to their expectations in fulfilling the course and university

academic requirements for graduation. To reduce anxiety, the assessment criteria for an online study platform may need to be readjusted. For example, the assessment may shed more light on task assignments, quizzes, and redesigned exams, instead of a few big exams with long test hours and long test question items as seen in traditional platforms. In an online language class which tends to be one-way in communication, learners can feel isolated and distracted as they do not feel the presence of their classmates and teachers. To reduce their negative feelings and anxiety, teachers should provide a two-way communication experience for them, in the form of personal audio calls or video conferences occasionally. During the delivery of online classes, network problems raise learners' listening anxiety since some words or exact pronunciations from the teachers may be unintelligible and learners may not be able to follow the lessons synchronously. Therefore, providing them with some recorded lecture or tutorial videos may help to lessen both study anxiety and test anxiety.

The component *'Using English skills online'* mainly focuses on the speaking skill. Speaking is considered the most anxiety-provoking activities (Horwitz, 1995) while non-oral language learning activities, such as reading and writing, diminish learners' anxiety (Pichette, 2009). Encouraging learners for speaking activities can be even more challenging in an online learning context. Language learners experience anxiety where they are limited in their communicative abilities in the L2 (Horwitz, 2001; Horwitz et al., 1986), and less cooperative in answering questions or participating in the oral classroom activities. Although Generation Z students possess the best skills in using digital resources (Elshami et al., 2021), they are more likely to encounter anxiety and difficulties using English skills online in terms of discussion. In order to reduce the students' anxiety, a teacher can encourage them to brainstorm ideas in a group in a breakout room, which is a private online group channel where only team members of a specific group can access (e.g., MS Teams) for discussion. Students can feel less anxious because creating collaborative communities of learning (e.g., group work) can contribute to a low-anxiety classroom situation. Providing learners with a first-hand opportunity to speak among group peers, rather than calling out them to answer individually immediately, alleviates anxiety. Moreover, students can also enhance their confidence in speaking by taking advantage of the technology afforded by online platforms (e.g., audio-visual recording of the presentation as a mockup presentation) to conduct rehearsals as many times as preferred before delivering the actual live presentation to the class. Learner anxiety is likely to be reduced when learners have opportunities to rehearse their presentations before speaking up in the class (Tasanameelarp & Girgin, 2020). This means can also be used for hybrid learning where learners rehearse online before performing the actual presentation onsite. Apart from speaking anxiety, writing anxiety also counts in online classes as it can intervene in the decoding and processing of text (Saito et al., 1999), which in turn drops students' writing performance.

Due to its one-way communication style, *'Online interaction'* or online learning requires learners' oral interactions in communicating and collaborating with peers and asking for help when needed. Shyness or fear is often encountered when communicating with people in general (McCroskey, 1970). Learners could request help from peers in an onsite classroom if they do not understand something, but they are unlikely to do so in an online classroom (Kaisar & Chowdhury, 2020). The findings reveal that Thai students tend to seek help or ask questions from their teacher privately through the online personal chat box or an one-on-one audio and

video call, rather than asking in class publicly. However, this also shows that with novel computer-mediated communication features on an online platform, students and teacher can now interact orally much more easily than previously. Past studies show that although online learners may experience detached feelings from their fellow students and teacher in both physical and psychological dimensions, they may be willing to learn if assistance is provided when requested (Russell & Murphy-Judy, 2020). Lower levels of anxiety were associated with higher levels of teacher support or help and student participation in their language classes (Palacios, 1998).

Languages do have effects on each other. The items of *'Cross-linguistic interference among L1, L2 and L3'* involve the Linguistic Coding Differences Hypothesis (LCDH) stating that the interplay between anxiety and receptive and productive language skills (e.g., listening, speaking, audio memory) in L2 learning can be expected, and that the L1 learning deficits drive the L2 incompetence (Sparks & Ganschow, 1995). Language transfer is "the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquitted" (Odlin, 1989, p. 27). When the language transfer is negative, it is considered as linguistic interference. Transfers may cross-linguistically from L1 to L2, L2 to L3, and L2 to L1. For example, learning L2 (i.e., English) simultaneously with L3 (i.e., Japanese) may seem confusing for students who speak Thai (L1) to some extent. Not only lexically and orthographically, but also syntactically as the sentence structure of a L2 (i.e., S+V+O) can be completely different from that of a L3 (i.e., O+V+S). However, if the L2 is English and the L3 is French, it may be easier for Thai students to perceive the lexical transfer between these two FLs due to several similar characteristics between the two languages. According to Odlin (1989), structural differences between languages are difficult, which tends to lead to interference errors in the L2. There is often a clear effect of L2 knowledge affecting the L3 acquisition (Leung, 2005). In Na Ranong's (2009) study of learners who speak Thai (L1), the strongest interference from L2 (advanced English) to L3 (beginner Chinese) was also observed. However, the findings are incongruent with a few studies that found no significant relationship between the L1 learning background and L2 anxiety; that is, L1 learning background cannot always predict L2 anxiety (Chen & Chang, 2004).

CONCLUSION

The COVID-19 stimulated the entire educational community into realizing the importance of competency-based education and the need for digital technology to fully facilitate online teaching sooner than expected. In order to achieve the vision of Thailand 4.0 vision in the 21st century – the era of digital disruption – both learners and teachers must possess knowledge and skills in digital literacy (DL) (Lammana, 2020; OECD, 2019). Educational institutions must support the creation and use of digital teaching materials (Andew, 2012). In terms of pedagogical and practical contributions, language instructors should consider integrating technology in their teaching methods, the integration of CALL into the language curriculum design, and a redesigned assessment for students' performance that fits better in the digital teaching and learning spaces (Ramírez et al., 2021). Also, sufficient interaction with other students, the teacher, and native speakers of the L2 should be considered for language learners in digital

pedagogical practices. The academic institutions need to urgently facilitate their teaching staff with online language pedagogy and trainings where language pedagogy, educational technology pedagogy, and online pedagogy are integrated more thoroughly (Russell, 2020). Online learning anxiety should be appropriately aligned with possible outcomes of productive and efficient language teaching and learning in the Next Normal and even post-pandemic education, in order to decrease and manage learners' anxiety and enhance interaction in an online learning environment.

However, there are some limitations to the current study as it only provides specific data from a single state university. Participants responding to the questionnaire in this study were within particular economic and social contexts, which may be different from those of a private university. This study also only identifies anxiety factors among Thai learners of an online English class, and consequently, the conclusion may be different if the study was applied to learners of other languages from other countries. An examination on structural equation modellings such as the analysis of a causal model would be beneficial for future research. The following research designs may strengthen the findings: a qualitative study of an in-depth interview and focus group discussion exploring the OELA, or an experimental study examining the OELA among four groups of participants with different interventions: 1) no intervention (F2F instruction), 2) a synchronous online instruction, 3) a self-paced asynchronous learning, and 4) a hybrid online learning. Intervention studies that aim to reduce anxiety and enhance student learning in the relatively new online environment may benefit university students greatly in particular.

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Appendix

1. The online world languages anxiety scale

Statements
1. I am anxious when I need to record myself speaking in the foreign language.
2. I have sufficient time and opportunities to prepare before I give an oral response in the foreign language.
3. I get anxious when I have to do listening exercises in the e-book or online homework and cannot understand the speakers in the foreign language.
4. I have to write down my answers so I feel confident in them before I can record them for class.
5. I have to practice saying my answers several times so I feel confident in them before I can record them for class.
6. I am anxious about making mistakes in the online foreign language class when I participate orally.
7. I am anxious about making mistakes in the foreign language when I submit written work in my class.
8. I would enjoy taking more online foreign language classes.
9. I am at ease during oral tests.
10. I am at ease during written tests.
11. I feel confident in my speaking abilities in class.
12. I feel confident when I write in the foreign language.
13. I would feel anxious if I were around native speakers of the foreign language and tried speaking with them in their native language.
14. I am comfortable doing several things at one time (for example, reading and listening or writing and listening) in my online foreign language class.
15. I am comfortable using all the required technological tools (for example, but not limited to web browser, learning management system [like Blackboard], multimedia tools, Discussion Board, and so on) in my online foreign language class.
16. Based on what I read and hear in the course area, I think other students are doing better in this class than I.
17. I ask for help from the instructor publicly in the Discussion board when I have questions.
18. I ask for help from the instructor privately via e-mail when I have questions.
19. I ask for help from other students when I have questions.
20. I am concerned about the consequences of failing my online foreign language class.
21. In my online foreign language class, I become so nervous that I forget things I studied.
22. Because my class moves so quickly, I am anxious about falling behind in the coursework.
23. I feel more tense and nervous in my online foreign language class than in my other classes (traditional or online).
24. I feel overwhelmed by the number of grammar rules you have to learn to speak a foreign language.
25. Because of my anxiety, I become more confused when I study for a test.
26. I feel overwhelmed by the complexity of the online learning environment.
27. I do not know how the required assignments and tasks contribute to my success in the online foreign language course.
28. I use positive thinking (or other calming stimuli) to reduce my anxiety and stress from the online foreign language class.
29. I want to take another online foreign language class.
30. I have studied one or more foreign languages prior to this one.
31. Words from other foreign languages "pop up" when I try to use the current language.
32. I am anxious when words from other foreign languages "pop up" while I am trying to use the current language.
33. My lack of understanding of grammar in my native language makes it difficult for me to succeed in my online foreign language class.

2. Permission to translate the OWLAS scale from English to Thai