The influence of mindfulness, resilience, and self-efficacy on foreign language anxiety among chinese college students

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Article Info	ABSTRACT
	This study explores the effects of mindfulness, resilience, and self-efficacy on foreign language anxiety among Chinese college students and identifies the most significant predictor of foreign language anxiety. Employing a quantitative approach, data were collected from 323 English as a foreign language students using validated scales measuring these variables. Pearson correlation analyses revealed significant negative correlations of self-efficacy ($r=-0.538$, $p<0.01$), resilience ($r=-0.372$, $p<0.01$), and mindfulness ($r=-0.331$, $p<0.01$) with foreign language anxiety. Multiple regression analysis indicated that self-efficacy was the most impactful variable for predicting foreign language anxiety, while mindfulness also significantly predicted foreign language anxiety, but resilience did not. These findings underscore the pivotal part played by self-efficacy in reducing foreign language anxiety and suggest that enhancing self-efficacy can improve language study experiences. The research offers meaningful understandings regarding the mechanisms of foreign language anxiety and offers practical recommendations for educators to implement strategies aimed at boosting students' self-efficacy, with implications for future research and practice.

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1. INTRODUCTION

Chinese college students face considerable challenges in learning foreign languages, particularly English. Despite years of English education prior to university, many students still struggle with language acquisition. Traditional teacher-centered approaches often fail to address individual needs, leading to disengagement and a lack of motivation. Additionally, the uniform and limited learning environment restricts effective self-study. Variations in students' language backgrounds, motivations, and psychological resilience further complicate their learning experiences. These issues result in students feeling overwhelmed and making slow progress toward their language learning goals. Among these challenges, foreign language anxiety (FLA) is particularly prominent. Characterized as a unique combination of self-perceptions, mental attitudes, emotional responses, and behaviors related to classroom language learning [1], foreign language anxiety is a well-established psychological phenomenon that significantly impacts language learning. Research indicates that foreign language anxiety can hinder progress, diminish motivation, and negatively affect academic performance [2], [3]. It can also lead to avoidance behaviors, worsening learning difficulties. For Chinese college students, foreign language anxiety represents a major barrier to academic success and mental well-being, a situation worsened by the high-pressure educational environment and intense competition. This highlights the need for addressing foreign language anxiety in this context.

Recent research has explored various facets of anxiety in foreign language learning. Studies have defined and classified different types of anxiety, examined their causes, and assessed their impact on academic performance [4]–[6]. Efforts have also focused on strategies to reduce anxiety, including the creation of supportive classroom environments, anxiety-reducing teaching techniques, and the integration of technology [7]–[9]. These strategies are crucial for enhancing the learning experience and supporting students. However, these studies often focus on individual interventions rather than a comprehensive approach that considers the interplay of multiple psychological factors. Furthermore, research has investigated additional variables that influence foreign language anxiety. Such as enhancing learners' emotional intelligence has been linked to greater enjoyment of foreign languages and reduced foreign language anxiety [10]. Research has found that while foreign language anxiety negatively correlates with intrinsic motivation, it positively correlates with extrinsic motivation and amotivation [11] Understanding these psychological factors' interplay provides deeper insights into their effects on foreign language anxiety. Integrating these variables can help researchers and educators develop targeted approaches to alleviate tension and boost foreign language acquisition outcomes.

Among these variables, mindfulness has emerged as a significant factor. Mindfulness, a stable individual trait, reflects a state of consciousness characterized by clarity and focus on present experiences. It involves intentionally maintaining a non-judgmental awareness of and full engagement in the present moment, without clinging to or being influenced by thoughts or emotions [12]. Studies have increasingly highlighted its relevance in reducing foreign language anxiety. Mindfulness plays a direct and substantial role in reducing foreign language anxiety [13]. Certain mindfulness traits may be more effective in reducing foreign language anxiety than others, indicating the need for targeted mindfulness interventions in language education. Similarly, mindfulness training has been shown to reduce oral anxiety and increase students' confidence in speaking English, further emphasizing its potential in the classroom [14]. Although these studies underscore the contribution of mindfulness to manage FLA, further research should be undertaken to explore how particular mindfulness features interact with individual differences and educational settings.

Resilience, a key concept in positive psychology, is closely linked to mindfulness and can be enhanced through mindfulness practices [15], [16]. Rather than eliminating anxiety, resilience helps individuals manage adversity and continue progressing [17]. It involves reframing stressful events to cope more effectively [18]. Both mindfulness and resilience have been found to significantly reduce foreign language anxiety, suggesting that incorporating these elements into teaching could improve students' ability to manage anxiety and enhance their learning experience [19]. Structural equation modeling has demonstrated that enjoyment increased resilience and academic success while lowering anxiety [20]. These results emphasize the significance of resilience in reducing anxiety and improving performance, offering valuable insights for integrating mindfulness and resilience training into educational practices.

Self-efficacy, a dynamic construct rather than a fixed trait, has a crucial part in influencing foreign language anxiety. Research consistently demonstrates a significant negative correlation between FLA and self-efficacy, indicating that students with higher self-efficacy tend to experience lower levels of FLA [21]. Moreover, studies have found that enhancing learners' self-efficacy can effectively alleviate FLA, and this alleviation subsequently improves their language performance [22], [23]. These investigations emphasize the essentiality of self-efficacy in managing foreign language anxiety and suggest that strategies aimed at boosting self-efficacy can not only reduce foreign language anxiety but also enhance language learning outcomes.

Despite significant advances in understanding the factors influencing foreign language anxiety, existing research often examines these variables in isolation rather than in combination. The ongoing study endeavors to bridge this void through integrating mindfulness, resilience, and self-efficacy to offer a thorough comprehension of their collective impact on FLA among Chinese college students.

The novelty of this research is clearly reflected in several aspects that significantly contribute to advancing the understanding of FLA among Chinese college students. Firstly, the study takes a holistic approach by examining the combined impact of three psychological constructs, mindfulness, resilience, and self-efficacy on foreign language anxiety. This approach is a departure from traditional research methods that typically examine these factors separately. By investigating how these factors interact, the study provides a more thorough comprehension of their combined influence on FLA. This integrated perspective has not been extensively explored in existing literature, making the study's findings particularly valuable in offering new insights into how these factors work together to mitigate anxiety in foreign language learning.

Secondly, the research addresses three primary questions that have not been fully answered in previous studies. These questions are: i) how do mindfulness, resilience, and self-efficacy each correlate with FLA among Chinese college students? ii) to what extent do these factors collectively predict FLA? and iii) which of these factors is the most significant predictor of FLA? by answering these questions, the study provides a deeper nuanced comprehension of how these elements function in foreign language learning. This deepens the field's understanding of FLA and offers a more holistic approach to addressing it.

Lastly, the innovative approach of this study offers practical implications for educators. By identifying how mindfulness, resilience, and self-efficacy interact to reduce FLA, the research provides

valuable insights into more effective strategies for tackling anxiety in the classroom. The findings suggest that by fostering these psychological traits, educators can help students build the skills needed to overcome anxiety, improving language learning outcomes. The potential to apply these findings in high-pressure educational environments contributes to the development of targeted interventions that are more likely to lead to improved academic accomplishments and overall student thriving.

2. METHOD

2.1. Research design

The present investigation employs a quantitative research methodology utilizing descriptive analysis, correlation analysis and regression modeling to explore the effects of mindfulness, resilience, and self-efficacy on foreign language anxiety among Chinese college students. Data were gathered through a cross-sectional survey conducted via a self-administered, voluntary, and anonymous online questionnaire. Those involved in the study were given a briefing on the study's goals and gave their verbal consent before participating. The sample consisted of randomly selected students from Liupanshui Normal University, ensuring a diverse representation of the student population.

2.2. Population and sample of the study

The study population was assembled from 1,681 freshmen and sophomores at Liupanshui Normal University, all of whom were engaged in the study of English as a non-native language. Stratified and random sampling techniques were used in multiple stages. First, stratified sampling divided the students into two groups: first-year students (916 students, accounting for 54.49% of the total) and second-year students (765 students, accounting for 45.51% of the total). Using the Yamane formula with a margin of error (e) set at 0.05, a sample size of 323 students was calculated. Random sampling was then used to select approximately 176 first-year students and 147 second-year students.

2.3. Research instrument

This research employed the Chinese adaptation of the foreign language classroom anxiety scale, derived from a validated translation of the original English version [24]. This translation was previously tested among Chinese university students, making it a suitable choice for the present study. To ensure clarity and cultural relevance, the revised version was translated into Chinese. The modified one included 17 items, with 15 statements worded positively and 2 negatively, aimed at assessing general anxiety levels in English classroom settings. To measure mindfulness, the researcher utilized the Chinese version of the mindful attention awareness scale, adapted from the widely used version [25]. The modified scale in this study was made up of 10 components, each evaluated on a six-point Likert scale, with higher scores indicating greater self-awareness and attentiveness to one's traits and daily activities. To assess resilience, the researcher utilized the Chinese adaptation of the Connor-Davidson Resilience scale, developed and validated in prior research [26]. This version was selected for its cultural relevance and strong psychometric properties. The modified scale comprised of 15 items rated on a five-point Likert scale where elevated scores imply a stronger degree of resilience. The study also employed general self-efficacy scale, adapted for use with Chinese college students [27], to measure self-efficacy levels. This version was chosen for its reliability and predictive validity in this population. Some items that were not relevant to college students were either modified or excluded to increase the scale's relevance. The modified general self-efficacy scale consisted of 7 items, rated on a four-point Likert scale, with greater numerical values reflecting enhanced self-belief and a more optimistic view of one's abilities. The general self-efficacy scale demonstrated strong reliability with a Cronbach's alpha of 0.903.

2.4. Data collection procedures

Before collecting data, approval to carry out the survey was obtained from the ethics committees of Srinakharinwirot University (Approval No. SWUEC-672243). Wenjuanxing was selected for the survey because it is widely used and accessible in mainland China, making it suitable for reaching many participants. The platform's support for Chinese ensured that English as foreign language students could understand and respond accurately. Participants were informed about the study's goals, methods, and the importance of their input before data collection started. This ensured they were well-informed and could ask questions. Afterward, the data were scored based on the criteria of the study instrument, and statistical software was used for analysis.

2.5. Data analysis

A three-step analytical approach was employed in this study. First, descriptive statistics analysis was conducted to summarize the central tendencies, dispersions, and overall patterns of the data, providing a foundational understanding of the dataset. Next, Pearson correlation analyses were conducted to assess and

quantify the strength and direction of associations among the variables. This preliminary analysis aimed to reveal the linear relationships among mindfulness, resilience, self-efficacy and FLA, offering initial insights into how these variables interact with one another.

Building on these preliminary findings, a multiple regression technique was implemented to determine both the individual and combined contributions of the studied variables to FLA. In this analysis, foreign language anxiety was treated as the dependent variable, while the three psychological factors served as independent variables. By evaluating individual regression coefficients (β) and their statistical significance, the analysis clarified the specific impact of each factor on foreign language anxiety. Additionally, the overall predictive power of these factors was assessed through R-squared and adjusted R-squared values. Multicollinearity was also checked using the variance inflation factor (VIF) to ensure the reliability of the regression results. This comprehensive approach provided detailed insights into both the individual and collective impact of mindfulness, resilience and self-efficacy on FLA.

3. RESULTS AND DISCUSSION
3.1. Descriptive analysis

As displayed in Table 1, the mean score for foreign language anxiety is 51.03 (SD=11.15), signifying that learners are subject to a moderate level of anxiousness, with some variability across the sample (ranging from 20 to 81). The mean score for mindfulness is 38.18 (SD=7.36), showing a moderate level with a reasonable distribution. The resilience score has a mean score of 51.54 (SD=8.53), suggesting that learners generally exhibit moderate resilience levels. Finally, the mean self-efficacy score is 18.44 (SD=2.46), demonstrating a moderate level of self-efficacy, with relatively low variability among the students.

Table 1. Descriptive statistics

Variables	Mean	Std. deviation	Levels	Minimum	Maximum	N of items	N of learners
FLA	51.03	11.15	Moderate	20	81	17	323
Mindfulness	38.18	7.36	Moderate	15	60	10	323
Resilience	51.54	8.53	Moderate	25	75	15	323
Self-efficacy	18.44	2.46	Moderate	7	28	7	323

3.2. Pearson correlation analysis of mindfulness, resilience, self-efficacy, and foreign language anxiety

As illustrated in Table 2, FLA is negatively correlated with mindfulness (r=-0.331, p<0.01), resilience (r=-0.372, p<0.01), and self-efficacy (r=-0.538, p<0.01), suggesting that greater levels of these factors are connected with lower levels of foreign language anxiety. These correlations are statistically significant at the 0.01 level, underscoring the importance of these factors in reducing foreign language anxiety. Moreover, mindfulness is positively correlated with both resilience (r=0.398, p<0.01) and self-efficacy (r=0.376, p<0.01), indicating that increased mindfulness tends to be associated with higher levels of resilience and self-efficacy. These positive correlations highlight the potential for these variables to interact and jointly influence FLA.

Table 2. Results of pearson correlation

Variables	Foreign language anxiety	Mindfulness	Resilience	Self-efficacy
Foreign language anxiety	1			
Mindfulness	-0.331**	1		
Resilience	-0.372**	0.398**	1	
Self-efficacy	-0.538**	0.376**	0.513**	1

Note: **p < 0.01, the correlation is significant.

3.3. Multiple regression analysis: predictors of foreign language anxiety

The results presented in Table 3, indicate that self-efficacy (β=-0.442, p<0.001) proves to be the most crucial factor in predicting foreign language anxiety. In comparison, mindfulness has a smaller negative effect (β=-0.127, p=0.015), indicating a statistically significant but less substantial influence. Resilience, with an unstandardized coefficient of -0.124 and a standardized Beta (β=-0.095, p=0.090), does not significantly predict foreign language anxiety, suggesting its impact is minimal in this model. The collinearity statistics (tolerance and VIF) for all predictors indicate low multicollinearity, with VIF values below 1.5, confirming the reliability of the regression results.

To further evaluate the overall effectiveness of the predictive model, a regression analysis was conducted. As depicted in Table 4, the regression analysis indicates that the model, which includes self-efficacy, mindfulness, and resilience as factors predicting foreign language anxiety, accounts for 31.5%

of the variance in foreign language anxiety (R^2=0.315, F=48.971, p<0.001). The adjusted R^2 value of 0.309 suggests that the model retains good predictive power even after adjusting for the number of predictors.

Table 3. Multiple regression model for predicting foreign language anxiety

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
	B	Std. error	Beta			Tolerance	VIF
(Constant)	91.063	3.677		24.768	0.000		
Mindfulness	-0.192	0.078	-0.127	-2.451	0.015	0.802	1.248
Resilience	-0.124	0.073	-0.095	-1.700	0.090	0.688	1.453
Self-efficacy	-1.426	0.178	-0.442	-7.995	0.000	0.702	1.425

Table 4. Regression model summary for predicting foreign language anxiety

Model	R	R^2	Adjusted R^2	Std. error of the estimate	F	Sig.
1	0.562[a]	0.315	0.309	9.26669	48.971	0.000[b]

[a]Predictors: (constant), self-efficacy, mindfulness, and resilience.
[b]Dependent variable: foreign language anxiety.

3.4. Discussion

This study investigated the effects of mindfulness, resilience, and self-efficacy on foreign language anxiety among Chinese college students. While earlier studies have separately explored the impact of these factors on foreign language anxiety [28], limited attention has been given to how they collectively influence foreign language anxiety. By examining these variables together, this study addresses this gap by providing a more comprehensive understanding of their combined effects and identifies the most significant predictor of foreign language anxiety.

It was demonstrated that enhanced levels of mindfulness, resilience, and self-efficacy are inversely correlated with foreign language anxiety among Chinese college students. Specifically, the correlation between mindfulness and foreign language anxiety was significant (r=-0.331, p<0.01), signifying that individuals who are more mindful experience lower levels of foreign language anxiety. This finding is consistent with preceding studies, which states that mindfulness is negatively correlated with FLA and suggests that mindfulness reduces anxiety by fostering awareness and acceptance of the present moment [29]–[31]. It was indicated that mindfulness can help students regulate their attention, emotion, behavior, and thinking, thereby reducing anxiousness and improving learning outcomes. Mindfulness cultivation in quotidian contexts shows significant stress-reduction effects on learners, which substantiates its therapeutic potential in addressing anxiety specific to foreign language acquisition. In relation to the study of languages, mindfulness may help students focus on their current tasks without becoming overwhelmed by anxiety related to potential errors or future performance. These findings suggest that fostering mindfulness may be critical in reducing foreign language anxiety and enhancing overall language learning experiences.

Similarly, a significant correlation was found between resilience and foreign language anxiety (r=-0.372, p<0.01). This indicates that resilience helps students manage the challenges of foreign language learning, although its influence appears to be less significant than that of self-efficacy. Resilience may enable students to persist in the face of difficulties, but it may not directly mitigate anxiety related to specific learning situations as effectively as self-efficacy. This aligns with research findings suggesting that while resilience is important in coping with life challenges, it has a more limited direct effect on academic anxieties [32]. Foreign language anxiety is more significantly impacted by certain learning scenarios and the self-efficacy in one's language capabilities.

Of the three factors, self-efficacy demonstrated the strongest negative correlation with foreign language anxiety (r=-0.538, p<0.01). This outcome is in accordance with prior studies, which also found a significant negative correlation between self-efficacy and foreign language anxiety [33], and discovered that individuals with higher self-efficacy tended to suffer from lower levels of foreign language anxiety, particularly in speaking performance [34]. Similarly, self-efficacy has been shown to impact on foreign language anxiety directly, highlighting its importance as a factor that can significantly reduce anxiety levels [35]. Additionally, consistent with earlier research, this study confirms that self-efficacy and FLA are moderately to strongly negatively correlated, indicating the potential of self-efficacy improvement as a key strategy for mitigating FLA and boosting overall linguistic performance [36]. Students with higher self-efficacy tend to have more confidence in their ability to complete language tasks, which significantly reduces their foreign language anxiety levels. Regression analysis confirmed this finding, with self-efficacy emerging as the stronger predictor of FLA (β=-0.442, t=-7.995, p<0.001). This result reinforces the idea that fostering self-efficacy in students can lead to substantial reductions in foreign language anxiety, thereby improving their language learning

experiences. Previous studies similarly highlight the crucial function of self-efficacy in managing academic anxiety and stress, emphasizing its importance in coping with such challenges.

While mindfulness had a significant negative impact on foreign language anxiety (β=-0.127, t=-2.451, p<0.01), resilience showed a weaker, statistically non-significant effect (β=-0.095, t=-1.700, p=0.090). This suggests that cultivating mindfulness can help students manage anxiousness, potentially engendering a more positive and lower stressful learning experience [37], [38]. In contrast, the effect of resilience in the current research appears weaker pronounced as opposed to prior investigations, which reported a stronger impact of resilience on reducing foreign language anxiety. Although higher resilience may still contribute to lowering anxiety, its influence appears to be less substantial compared to other factors in this study. Thus, interventions focused on enhancing self-efficacy and incorporating mindfulness practices may be more effective in reducing foreign language anxiety, with resilience playing a supplementary role.

The R² value of 0.315 indicates that 31.5% in the divergence of foreign language anxiety is interpretable through these three variables. This demonstrates the collective importance of mindfulness, resilience, and self-efficacy in influencing foreign language anxiety levels. However, since nearly 70% of the variance remains unexplained, it is essential to explore other determinants which may be involved in causing FLA. These may include language proficiency, cultural background, and teaching methods, which could offer a more holistic understanding of anxiety in language learning contexts.

There are indeed limitations inherent in this study. The cross-sectional nature of its design restricts the capacity to establish causal relationships, and the regional sample of Chinese college students may reduce the generalizability of the findings to other contexts. It is advisable that future research utilize longitudinal designs to assess the long-term impact of mindfulness and self-efficacy on foreign language anxiety. Additionally, studies involving more diverse populations would help determine whether these findings are applicable across different educational settings.

Another important avenue for future research might involve examining the interplay between other psychological factors and FLA. For instance, examining the influence of personality traits, motivation, or cultural identity on anxiety could yield deeper insights into how students experience and manage foreign language anxiety. Furthermore, research on interventions that integrate both mindfulness and self-efficacy training in educational settings could provide practical strategies for reducing anxiety and improving language learning outcomes. Understanding the long-term effects of such interventions would be especially valuable for instructors and educational administrators aiming to to develop conducive educational surroundings.

What has been discovered in this study entails practical ramifications for school leaders, administrators, and educators. Given that self-efficacy emerged as the principal significant indicator for FLA, enhancing students' self-efficacy through targeted interventions, such as confidence-building exercises and constructive feedback, could be particularly effective in reducing anxiety. Moreover, incorporating mindfulness practices into the curriculum may help students manage stress and stay focused during language learning. By developing and implementing interventions that address both mindfulness and self-efficacy, educational institutions can adopt more effective strategies for alleviating foreign language anxiety and promoting positive language learning experiences. One promising approach to enhancing self-efficacy is through group counseling, which has gained traction in educational settings.

Currently, the use of group counseling as an intervention to reduce anxiety is gaining traction in educational settings [39], [40]. Group counseling provides both preventive and therapeutic benefits in psychology. It creates a safe, supportive space where members can openly share their concerns and receive encouragement, promoting emotional expression and trust [41]. Future studies may explore to design a group counseling program specifically focused on enhancing self-efficacy as an approach to lower foreign language anxiety of college students. Through fostering a collaborative environment, this intervention will allow participants to share their experiences and strategies, which can contribute to building confidence and resilience in language learning contexts. Through this targeted group counseling intervention, educational institutions can provide a structured support system that empowers students to confront their foreign language anxiety with greater confidence. By enhancing self-efficacy, this initiative seeks to cultivate a more reassuring and immersive academic experience, enabling students to thrive academically and personally.

This study adds to the expanding collection of research on positive psychology in education by emphasizing the crucial role of psychological well-being in academic success. It underlines the essentiality of managing both emotional and cognitive aspects of learning, extending beyond foreign language anxiety to broader discussions on academic stress and student mental health.

4.   CONCLUSION

This study reveal that all three examined factors are negatively associated with FLA, with self-efficacy emerging as the most significant predictor. This result highlights the crucial importance of focusing on self-efficacy in interventions designed to reduce foreign language anxiety, offering valuable

insights for educators, decision-makers, and researchers within the domain of foreign language education. Given the strong connection between self-efficacy and FLA, this study proposes several strategies to boost students' self-efficacy in language learning. Educators should create opportunities for small successes through practical language use, cultivate environments where students can observe their peers' achievements, and offer consistent positive feedback and encouragement. Additionally, incorporating mindfulness practices and relaxation techniques can help students manage stress and remain focused during learning. For students, improving self-efficacy and reducing foreign language anxiety involves engaging in activities that lead to small, incremental successes, learning from successful peers, and accepting constructive feedback. Practicing mindfulness and relaxation techniques through group counseling interventions can also help manage anxiety, enhancing their overall language learning experience.

While this study provides meaningful insights into the psychological factors affecting foreign language anxiety, certain limitations cannot be disregarded. The regional focus on Chinese college students may restrict the generalizability of the findings to broader contexts. Future investigations are recommended to consider a wider range of samples and investigate the interventions that target self-efficacy and mindfulness to reduce foreign language anxiety. In conclusion, this work enriches the increasing body of scholarship on positive psychology in the educational field, emphasizing the critical function of self-efficacy and mindfulness in managing foreign language anxiety. By addressing these factors, educators can create more supportive learning environments that foster both emotional well-being and academic success.

AUTHOR CONTRIBUTIONS STATEMENT
This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C	: **C**onceptualization		I	: **I**nvestigation		Vi	: **Vi**sualization
M	: **M**ethodology		R	: **R**esources		Su	: **Su**pervision
So	: **So**ftware		D	: **D**ata Curation		P	: **P**roject administration
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CONFLICT OF INTEREST STATEMENT
The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. Authors state no conflict of interest.

INFORMED CONSENT
We have obtained informed consent from all individuals included in this study. All participants were fully informed about the purpose of the research, and their participation was voluntary. Their responses were anonymized and used solely for the purpose of this study.

ETHICAL APPROVAL
The research involving human participants was conducted in accordance with all relevant national regulations and institutional policies, adhering to the principles of the Helsinki Declaration, and has been approved by the Ethics Committee of Srinakharinwirot University (Approval No. SWUEC-672243).

DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author, [HL], upon reasonable request.

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