e-ISSN: 2600-7274

Available online
https://journal.uitm.edu.my/ojs/index.php/EJSSH

ESTEEM Journal of Social Sciences and Humanities
Vol 10, No 1, April 2026, 99-112

ESTEEM JOURNAL OF SOCIAL SCIENCES AND HUMANITIES

Assessing Instrument Reliability and Research Feasibility for EFL Learner Autonomy: Evidence from a Pilot Study in Xi'an, China

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ARTICLE INFO

Article history:
Received 13 January 2026
Revised 14 March 2026
Accepted 20 March 2026
Online first
Published 1 April 2026

Keywords:
Learning styles
Learning engagement
Learner autonomy
Non-English major under graduates

DOI:
10.24191/ejssh.v10i1.10122

ABSTRACT

It is important that the instruction of English as a Foreign Language (EFL) requires an understanding of how learning styles, learning engagement, and learner autonomy interact. Valid instruments are prerequisites for the research, especially in Chinese cultural contexts. The purpose of this pilot study is to evaluate the feasibility of research methods and validate the psychometric qualities of three modified scales that measure learning styles, learning engagement, and learner autonomy among non-English major undergraduates in Xi'an, China. The current study used a quantitative cross-sectional design and convenience sampling. One hundred undergraduates completed the online survey via the WJX platform. Recruitment rates, completion times, and data quality evaluated the study feasibility. The instrument reliability was evaluated by Cronbach's alpha. Bilingual professionals examined the translated instruments' cultural appropriateness. With a 71.4% response rate, a mean completion time of 12.4 minutes, and no missing data, the recruitment and response procedures were practical. All the Cronbach's alpha values for learner autonomy, learning styles, and learning engagement exceeded 0.90, showing the instruments have outstanding internal consistency. The results validate the high reliability and cultural appropriateness of the instruments for the target population, as well as the suggested research methods. This pilot study offers a strong methodological basis for a more thorough examination of the connections between these constructs in the context of Chinese EFL.

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https://doi.org/10.24191/ejssh.v10i1.10122

1. INTRODUCTION

The growing adoption of learner-centered pedagogy in English as a Foreign Language (EFL) education has intensified scholarly focus on the individual differences that critically influence learning processes and outcomes. It is particularly salient in higher education contexts like China, where EFL instruction is frequently situated within longstanding exam-oriented traditions (Yin & Chew, 2025; Kaiying & Jing, 2022). Identifying important learner factors that promote successful independent learning in Chinese settings is a major research priority as well as an urgent pedagogical concern. Scholars believe that learning styles, learning engagement, and learner autonomy are interrelated and crucial in predicting academic development and language proficiency (Namaziandost et al., 2024). Scholars increasingly view these constructs as interconnected influences on language learning outcomes, with each one capturing a distinct aspect of learners' cognitive, behavioral, and self-regulatory functioning (Al-Hoorie, 2017).

1.1 Problem Statement

Despite the growing theoretical recognition of learning styles, learning engagement, and learner autonomy as key predictors of language learning success, the empirical investigation of these constructs in Chinese EFL contexts is hindered by the absence of culturally validated measurement tools. Several established instruments are widely cited in international literature, such as Kolb's Learning Style Inventory, the Utrecht Work Engagement Scale for Students (UWES-S), and various learner autonomy scales (e.g., Spratt et al., 2002). These instruments were primarily developed and normed in Western educational settings. Their direct application to Chinese non-English majors raises concerns about cultural appropriateness, item clarity, and psychometric equivalence. Without rigorous validation, research findings derived from such instruments may not accurately reflect the unique characteristics of Chinese learners, thereby limiting the theoretical and pedagogical implications that can be drawn. Consequently, there is an urgent need to adapt and evaluate these instruments within the target population. The present pilot study addresses this gap by systematically assessing the reliability, validity, and cultural suitability of adapted scales for Chinese EFL learners, thereby providing a sound methodological basis for subsequent large-scale research and informing the development of English instructional practices.

1.2 Research Objectives and Significance

Before examining such relationships in depth, it is necessary to establish whether the instruments used to measure these constructs are suitable for the intended population and context. A pilot study plays an important role in this process by assessing the reliability and validity of research instruments and by determining whether data collection procedures are workable in practice (Tate et al., 2023). As a result, the present pilot study aims to (i) evaluate the feasibility of participant recruitment and online data collection procedures; (ii) examine the internal consistency reliability of adapted scales measuring learning styles, learning engagement, and learner autonomy; and (iii) assess the cultural appropriateness and clarity of the translated instrument items for Chinese EFL learners.

By addressing these aims, the study identifies and rectifies potential procedural or measurement-related issues and refines the instrument required for the main investigation. Its successful execution will enable a subsequent, well-designed main study to explore the connections between learning styles, engagement, and autonomy. Ultimately, this pilot research provides informed and evidence-based findings to shape more efficient and responsive EFL teaching approaches for Chinese non-English majors.

2. LITERATURE REVIEW

2.1 Learner Autonomy in EFL Contexts

One of the main goals of modern language education reform is learner autonomy, which is defined as "the capacity to take control of one's own learning" (Holec, 1981, p. 3). Learner autonomy has long been recognized as a central construct in English as a Foreign Language (EFL) research (Daflizar, 2023; Treesattayanmunee & Baharudin, 2024). In EFL contexts, autonomy encompasses learners' ability to set goals, select strategies, self-monitor, and evaluate outcomes independently. Studies indicate autonomy's role in fostering lifelong learning dispositions and adaptability in diverse learning environments (Daflizar, 2023). Research on autonomy highlights not only its theoretical importance but also how it intersects with learning styles and learning engagement. These variables are crucial in enhancing EFL performance.

The development of autonomy has been associated with learners' ability to self-regulate across cognitive, metacognitive, and affective domains, highlighting its multifaceted nature (Sun, 2025). Importantly, autonomy is increasingly recognized as situated and context-dependent, shaped by classroom practices, teacher support, and technological environments (Zhu et al., 2025). In EFL contexts, fostering autonomy has been linked to higher levels of motivation, engagement, and overall learning effectiveness (Wu, 2024; Sun, 2025). Despite policy advocacy for autonomous learning in China, empirical research regularly reveals limitations resulting from teacher-dominated instruction, collective learning cultures, and high-stakes assessment systems (Lam, 2015). Therefore, measuring autonomy in a valid and reliable way remains challenging.

2.2 Learning Styles and Their Relationship with Autonomy

Learning style is the course by which knowledge is gotten from experience (Kolb, 1984). Although debates continue regarding their predictive validity, research suggests that learning styles may influence autonomous behaviours, particularly when instructional tasks align with learners' preferred modes (Treesattayanmunee & Baharudin, 2024). Moreover, strategy-use research supports this link. Learners with metacognitive or learning styles are more likely to employ strategies that enhance autonomy, including goal-setting, self-monitoring, and collaborative interactions (Tamimi & Razeq, 2020). Nevertheless, empirical evidence also indicates that learning style alone is insufficient to predict autonomous behaviour. Specifically, studies in technology-mediated environments suggest that learners' autonomy depends more on environmental affordances and pedagogical scaffolding than on style preferences per se (Zhu et al., 2025). This finding highlights the importance of examining learning styles not as isolated predictors but as interacting with contextual factors, thereby justifying the inclusion of learning engagement as a complementary variable in the present study.

Kolb's (1984) Experiential Learning Theory (ELT) provides a prominent framework for conceptualising learning styles. It posits that learning is a cyclic process involving four modes: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualisation (AC), and Active Experimentation (AE). The combination of these modes forms four distinct learning types: Diverging (CE/RO), Assimilating (AC/RO), Converging (AC/AE), and Accommodating (CE/AE) (Kolb & Kolb, 2021). Research has linked autonomy to these learning styles (Peng et al., 2024). Foroutan et al. (2013) identified that each of the four styles correlates with self-directed learning. Nematipour (2012) found that RO users trail AE users in autonomy. While Maya et al. (2021) reported that abstract conceptualization is associated with a high-level or medium-high-level of performance. However, Genç (2015) found no learning style–autonomy connection at all.

It is important to note, however, that none of these studies controlled for motivation, self-efficacy, or engagement, and none were carried out in the Chinese EFL context. This methodological and contextual gap indicates that existing findings may not generalize to Chinese EFL learners, thereby establishing the necessity of the current investigation to examine how Kolb's learning styles interact with engagement and autonomy in the specific context of non-English major undergraduates in China. This gap highlights the need for research that examines these variables simultaneously within a specific cultural and educational setting. Furthermore, although learning style may provide a foundation, it alone is insufficient to predict

autonomous behaviour. This implies that learning styles do not operate in isolation, necessitating the investigation of mediating variables such as engagement.

2.3 Learning Engagement as a Mediating Mechanism

Learning engagement, defined as learners' behavioural, cognitive, and emotional investment in learning activities, is both an outcome and mechanism of autonomy (Wu, 2024). Engagement is multidimensional, encompassing sustained attention, cognitive effort, and affective involvement, all of which are enhanced by autonomy-supportive environments (Sun, 2025). Empirical studies in EFL contexts provide strong evidence for this relationship. Wu (2024) reported that autonomy support and intrinsic motivation positively predicted learners' engagement and willingness to communicate, while Sun (2025) found that autonomous students demonstrated higher persistence and cognitive involvement in tasks. Technology-mediated and blended learning environments further illustrate this connection: learners given flexibility to select resources, self-pace, and reflect on their learning exhibited higher engagement and autonomous decision-making (Zhu Jiang et al., 2025).

Learning engagement, often measured by adaptations of the Utrecht Work Engagement Scale for Students (UWES-S) (Schaufeli et al., 2002), encompasses the vigour, dedication, and absorption that students experience in their studies. In language learning, learning engagement has emerged as a crucial mediator of cognitive and motivational processes. Based on Kolb's (1984) experiential learning theory, there is a clear positive correlation between learning styles and learning engagement. When learning tasks align with students' dominant styles (such as diverging, assimilating, converging, or accommodating), students tend to exhibit higher levels of learning engagement. Thus, learning style, as an important dimension of individual differences, serves as a significant predictor of learning engagement.

In addition, high levels of engagement are regularly associated with increased self-regulation, deeper strategy use, and persistence. All of them form the underpinnings for the development of learner autonomy (Hiver et al., 2020). Recent work further positions engagement as a direct antecedent of learner autonomy: energised and absorbed students are more likely to seek resources, monitor progress, and reflect on outcomes (Zhou, 2021). Overall, engagement is not merely an outcome but an active mechanism through which learners develop autonomy.

2.4 Research Gaps and the Rationale for the Present Study

Synthesizing these findings, learner autonomy emerges as a dynamic, contextually situated construct, influenced by individual preferences, engagement processes, and environmental affordances (Wu, 2024; Sun, 2025). While learning styles may facilitate autonomy under favourable conditions, engagement appears to function as the critical mediator through which autonomy translates into meaningful learning outcomes (Treesattayanmunee & Baharudin, 2024). Despite these advances, significant gaps remain. No studies examine how learning styles interact with engagement in shaping autonomous behaviour in structured EFL curricula. Most research relies on correlational designs, leaving causal pathways between autonomy, engagement, and learning outcomes underexplored (Sun, 2025). Additionally, the influence of cultural, curricular, and assessment contexts—particularly in China and other Asian EFL environments—requires further empirical attention (Zhu et al., 2025).

To address these gaps, the present study draws on Kolb's (1984) Experiential Learning Theory (ELT), the Utrecht Work Engagement Scale for Students (UWES-S) (Schaufeli et al., 2002), and the Learner Autonomy Scale adapted from the "English Autonomous Learning Ability" (Xu et al., 2004). However, few studies have replicated these instruments across diverse contexts. Direct application of the Western-developed tools without proper validation can cause incorrect data interpretation and conclusions (Du, 2024). To guarantee the applicability and reliability of these instruments, as well as the cultural appropriateness of items, relying on translated instruments necessitates validation within particular cultural and disciplinary contexts (Cruchinho et al., 2024). Conducting valid research on these constructs in the

target group of non-English major undergraduates in China requires the application of psychometrically sound and culturally appropriate measurement tools. Specifically, western scales need reliability and semantic checks in the context of Xi'an. Furthermore, the practical feasibility of the research design (participant recruitment, data collection procedures, and data quality) must be established before embarking on a large-scale study (Teresi et al., 2022). A pilot study is therefore an essential step in addressing these methodological concerns and ensuring the validity of the three core instruments—Kolb's Learning Style Inventory, the UWES-S, and the Learner Autonomy Scale—for the subsequent full-scale implementation.

3. METHODOLOGY

3.1 Study Design

This pilot study employed a cross-sectional quantitative research design to assess the feasibility of research procedures and the reliability of the measurement instruments prior to conducting the main study. Data were collected at a single time point using a self-administered online questionnaire.

3.2 Participants and Sampling

A convenience sampling method was used to recruit participants. The sample consisted of non-English major undergraduates from six universities located in Xi'an, China. The sampling targeted non-English major undergraduate students across various disciplines to ensure diversity in the sample. According to Kunselman (2024), a sample size of up to 100 participants is sufficient for the objectives of a pilot study of this nature, and this target guided the recruitment efforts.

To ensure the sample's relevance to the target population of the future main study, the following inclusion and exclusion criteria were strictly applied. For inclusion, participants were required to meet all of the following: 1) be enrolled as a 1st- to 4th-year non-English major undergraduate in a university located in Xi'an; 2) belong to a non-English major discipline (e.g., engineering, science, management, education, literature, or arts); and 3) be aged between 18 and 24 years. Conversely, participants were excluded if they met any of the following: 1) being an English major, an international program student, or a postgraduate; 2) being a non-English major undergraduate from universities outside Xi'an; or 3) being below 18 or above 24 years of age.

3.3 Research Instrument

The research instrument was a composite online questionnaire titled "Learning Styles, Learning Engagement, and English Autonomous Learning Ability." The instruments for data collection of this study consisted of four sections and three established scales were adapted to measure the instruments. Section One involves demographic information, which collected data on participants' age, gender, university, discipline, and year of enrolment. Section Two concerns the Learning Style Scale that was adapted from Kolb's (1984) Learning Style Inventory (12-item version), which contained 48 items, with 12 items dedicated to four learning modes of Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE), respectively. Responses were recorded on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Section Three involves the Learning Engagement Scale adapted from Utrecht Work Engagement Scale (UWES-S) (Schaufeli et al., 2002). It comprised 17 items measuring three dimensions of student engagement: vigour, dedication, and absorption in their studies. Responses were recorded on a 5-point Likert scale ranging from 1 (Never) to 5 (Always). Finally, Section Four contains the adapted Scale of English Autonomous Learning Ability (Xu et al., 2004) which included 19 items measuring how well students can independently plan, monitor, and manage their English learning. It provides a quantifiable measure of autonomous behaviours in EFL research. Responses were recorded on a 5-point Likert scale ranging from 1 (Not at All) to 5 (Completely Consistent).

To ensure conceptual equivalence for the adapted instruments, the Kolb Learning Style Inventory and the UWES-S underwent a forward-backward translation procedure. An initial translation from English to Chinese was performed, which was then independently back-translated to English by a different translator. The original and back-translated versions were compared to resolve discrepancies and ensure accuracy. The Learner Autonomy Scale was used in its existing, validated Chinese version. Finally, two bilingual EFL lecturers reviewed the entire compiled Chinese questionnaire to confirm the cultural appropriateness, wording, and clarity of all items.

3.4 Ethical Considerations

Prior to data collection, ethical approval for this study was obtained from the UiTM Research Ethics Committee (REC/08/2025 (PG/MR/453)). The study was designed and conducted in accordance with the ethical principles. The online questionnaire on the WJX platform began with a detailed participant information sheet and an informed consent form. The information sheet clearly explained the study's purpose as a pilot, the procedures involved, the voluntary nature of participation, and that no personal incentives or guaranteed benefits were offered. Informed consent was obtained electronically from all participants prior to their involvement. Participants were required to confirm that they had read and understood this information before they could proceed to the questionnaire items. They were explicitly informed that their participation was entirely voluntary and that they could withdraw from the study at any stage without providing reasons and without any academic or personal penalty.

To ensure confidentiality and data protection, no personally identifying information (such as names) was collected. Upon submission, each response was automatically assigned a unique identification code. All data were stored on a password-protected computer accessible only to the research team and were reported in aggregate form only, thereby ensuring the anonymity of all participants.

3.5 Data Collection

Potential participants were identified through university administrative channels and class announcements. Information about the study was distributed via commonly used social media groups (e.g., WeChat, QQ groups) by students. Data were collected via the WJX online survey platform over a three-week period from 8 September, 2025, to 26 September, 2025. Participants accessed the questionnaire through a secure link and completed it at their convenience using an electronic device of their choice.

The platform was configured to require a response to each item before allowing submission, thereby minimizing the occurrence of missing data. The data were automatically captured and stored securely on the WJX platform before being exported to SPSS for analysis.

1.6 Data Analysis

Data analysis was performed using SPSS 27 to address the specific objectives of the pilot study. The analysis was conducted in three main stages. First, to assess the feasibility of the study procedures, descriptive statistics were calculated, including the recruitment rate (the number of participants who started the survey divided by the number of people who received the invitation), the response rate (the number of completed surveys divided by the number of people who started the survey), and the mean survey completion time.

Second, to evaluate the quality of the data and the reliability of the instruments, the dataset was examined for missing values. Subsequently, the internal consistency of each scale and its subscales was assessed by calculating Cronbach's alpha coefficients. This analysis determined the reliability of the adapted Learning Style Scale, the Learning Engagement Scale, and the Learner Autonomy Scale for this sample.

Third, instrument reliability was analysed by calculating Cronbach's alpha coefficients to determine the internal consistency of each scale and its subscales. The following criteria were applied: $\alpha \geq 0.90$ = excellent; $0.80 \leq \alpha < 0.90$ = good; $0.70 \leq \alpha < 0.80$ = acceptable; $0.60 \leq \alpha < 0.70$ = questionable; $\alpha < 0.60$ = unacceptable (George & Mallery, 2003).

4. FINDINGS

4.1 Demographic Profiles of the Respondents

Demographic information involves school, gender, age, discipline, and enrollment year. Referring to Table 1, a diverse sample of 100 students was recruited, with 17% coming from Xi'an Traffic Engineering University (XTEU), Xi'an University of Post & Telecommunications (XUPT), Xi'an Technological University (XTU), and Shaanxi Normal University (SNNU), while 16% came from Xi'an Jiaotong University (XJTU) and Xidian University (XDU), respectively. For gender, the sample was slightly skewed, with 75% for female and 25% for male. The majority of the participants (89%) were between 18 and 20 years old, which is typical for undergraduates. The narrow age range (18–21) for obtaining age consistency can support homogeneity in learning experience analyses. For study discipline, most of them were engineering (40%), followed by science (25%), management (12%), education (9%), art (7%), and literature (7%) students. As for enrollment year, most participants were freshmen and sophomores who enrolled in the years 2023 and 2024, indicating a focus on earlier-stage university students. Over half (55%) were enrolled in 2023, with a significant proportion (34%) from 2024, suggesting recent students were more accessible.

Table 1. Demographic Profile

Variable	Category	Frequency (n)	Percentage (%)
School	XTEU	17	17%
	XUPT	17	17%
	XTU	17	17%
	SNNU	17	17%
	XJTU	16	16%
	XDU	16	16%
Gender	Male	25	25%
	Female	75	75%
Age	18 years	9	9%
	19 years	35	35%
	20 years	45	45%
	21 years	11	11%
Discipline	Engineering	40	40%
	Science	25	25%
	Management	12	12%
	Education	9	9%
	Art	7	7%
	Literature	7	7%
Enrolment Year	2021	7	7%
	2022	4	4%
	2023	55	55%
	2024	34	34%

Source: Author's own data

4.2 Feasibility of Research Procedure

The procedures for participant recruitment and data collection were found to be highly feasible. The online distribution via the WJX platform was efficient, and the three-week collection period was sufficient. Out of 140 potential participants who received the link, 100 responded and completed the questionnaire, yielding a response rate of 71.4%. The mean time taken to complete the questionnaire was 12.4 minutes, indicating an acceptable response burden for participants. The response and retention rates were both 100%.

Since the online questionnaire required complete responses for submission, there were no missing data for any scale items, significantly enhancing data quality for analysis. However, the respondents with participant IDs 16 and 18 provided a uniform response of "1" across all questions, which may indicate satisficing or a non-serious response. Aside from this, the data showed good variability in responses (scores from 1 to 5 across most items), suggesting participants were engaged and used the full scale, which is crucial for statistical analysis.

Table 2 presents the descriptive statistics for all measurement items in this pilot study (N = 100), including learning styles (CE, RO, AC, and AE), learning engagement, and learner autonomy, measured on a five-point Likert scale. The mean values for the items ranged from 2.85 to 3.77, indicating moderate levels of agreement across constructs. Standard deviations were below 1.20, suggesting acceptable variability. Skewness and kurtosis values fell within recommended thresholds (±2) (Hair et al., 2019b), indicating no serious deviations from normality. The absence of extreme means, together with narrow 95% confidence intervals, suggests that common method bias is unlikely to be a serious concern at this preliminary stage. Overall, the data demonstrate adequate distributional properties, supporting subsequent PLS-SEM measurement model evaluation and structural model testing in the main study.

Table 2. Descriptive Statistics

Construct	Mean	Std. Dev.	Skewness	Kurtosis	BCI LL	BCI UL
Concrete Experience (CE)	2.85–3.67	0.850–1.029	-0.053–0.555	-0.602–0.634	2.84–3.66	2.86–3.68
Reflective Observation (RO)	3.35–3.71	0.784–0.921	0.992–0.263	0.017–1.719	3.34–3.69	3.36–3.71
Abstract Conceptualisation (AC)	3.32–3.74	0.785–0.937	-0.711– -0.238	-0.247–1.246	3.31–3.74	3.33–3.74
Active Experimentation (AE)	3.42–3.77	0.814–0.975	-0.872—0.378	-0.038–1.670	3.41–3.76	3.43–3.78
Learning Engagement (LE)	3.02–3.62	0.821–0.957	-0.457–0.204	-0.105–0.954	3.01–3.61	3.03–3.63
Learner Autonomy (LA)	3.05–3.70	0.825–1.186	-1.031—0.388	-1.059–1.242	3.04–3.69	3.06–3.71

BCI LL: Bootstrapped Confidence Interval Lower Limit, BCI UL: Bootstrapped Confidence Interval Upper Limit
Source: Author's own data

4.3 Reliability of Research Instrument

As shown in Table 3, the reliability measures for the four subscales of Learning Style instrument were 0.914 (CE), 0.931 (RO), 0.945 (AC), and 0.941 (AE), supporting their use for learning style classification. The learning engagement scale (α = .946) and the learner autonomy scale (α = .964) also demonstrated exceptionally high reliability. All Cronbach's alpha values were above 0.90, exceeding the conventional threshold of 0.70 (Hair et al., 2019a; Nunnally, 1978). All confirmed the reliability of the adapted instruments for this population.

Table 3. Internal Consistency Reliability of the Measurement Scales

Scale / Subscale	Cronbach's α	Number of Items	Interpretation
Concrete Experience (CE)	0.914	12	Excellent reliability. Measures direct, hands-on learning preferences
Reflective Observation (RO)	0.931	12	Excellent. Assesses preference for observing and reflecting
Abstract Conceptualization (AC)	0.945	12	Excellent. Evaluates logical analysis and theoretical thinking
Active Experimentation (AE)	0.941	12	Excellent. Captures active, practical application of ideas
Learning Engagement (LE)	0.946	17	Excellent. energy/ dedication/absorption investment
Learner Autonomy (LA)	0.964	19	Excellent. autonomous learning capacity

Source: Author's own data

4.4 Reliability of Learning Styles

Further analysis involves the reliability measurement of the four learning style types derived from combining the scores of the learning modes. The results, presented in Table 4, indicate that all four learning types exhibited high internal consistency. Calculated as the mean α of component modes, the high reliability of individual modes suggests that derived learning styles are also psychometrically robust. The alpha values were approximately .923 for Diverging (= (0.914 + 0.931) / 2), .938 for Assimilating (= (0.945 + 0.931) / 2), .943 for Converging (= (0.945 + 0.941) / 2), and .928 for Accommodating (= (0.914 + 0.941) / 2).

Table 4. Internal Consistency Reliability of Kolb's Learning Styles

Learning Style	Component Modes	Behavioural Traits	Implied Reliability
Diverging	CE + RO	Empathetic, imaginative (e.g., brainstorming)	$\alpha \approx 0.923$
Assimilating	AC + RO	Logical, lecture-focused (e.g., theorizing)	$\alpha = 0.938$
Converging	AC + AE	Practical, problem-solving (e.g., lab work)	$\alpha = 0.943$
Accommodating	CE + AE	Adaptive, risk-taking (e.g., trial-and-error)	$\alpha \approx 0.928$

CE: Concrete Experience, RO: Reflective Observation, AC: Abstract Conceptualisation, AE: Active Experimentation

5. DISCUSSION

The primary aim of this pilot study is to assess the feasibility of the research procedures and the reliability of the instruments for a larger-scale investigation. The findings provide strong positive evidence regarding the achievement of all three pre-specified objectives and a solid foundation for planning a larger-scale investigation.

For the first objective, which is to assess the feasibility of participant recruitment and data collection procedures using an online platform, the study findings revealed that the online approach is highly effective. The recruitment process yielded a notably high response rate, indicating that the topic resonates with the target population and that the recruitment strategy is effective (Le Masson, 2023). Furthermore, the manageable average completion time for the questionnaire indicated that the questionnaire is not overly burdensome, which is crucial for minimising participant dropout and ensuring data quality in future studies (Naidoo et al., 2020). The absence of missing data, facilitated by the platform's forced-response setting, eliminates a common data cleaning problem and strengthens the integrity of the dataset.

Regarding the second objective, which focuses on evaluating the reliability of the adapted scales, the results were unequivocally positive. The psychometric evaluation demonstrated that all instruments exhibit excellent internal consistency. The reliability coefficients for the learning style subscales were notably high, suggesting that the translated version of Kolb's inventory performs robustly within this specific cultural context. Similarly, the scales measuring learning engagement and learner autonomy showed exceptional reliability. It confirmed their statistical robustness for measuring these constructs among Chinese non-English major undergraduates.

Concerning the third objective, which is to examine the cultural appropriateness and clarity of the translated instrument items, the expert review provided valuable insights that extend beyond a simple confirmation of suitability. Cultural appropriateness, in the context of instrument adaptation, refers to the extent to which questionnaire items align with the values, beliefs, learning practices, and communicative norms of the target population (Pirola et al., 2026). Both dimensions are critical for cross-cultural research, as inadequate adaptation can introduce measurement bias, compromise construct validity, and yield misleading conclusions about the phenomena under investigation (Chung & Kim, 2025). In this pilot study, feedback from two bilingual EFL lecturers confirmed that the translated items satisfactorily addressed these concerns.

Several issues were carefully considered during the adaptation process: (1) the translation of conceptually nuanced terms (e.g., "autonomy," "engagement") that may not have direct lexical equivalents in Chinese; (2) the avoidance of idiomatic expressions that might confuse non-English majors; and (3) the contextual relevance of item content to Chinese tertiary education settings, where teacher-centred instruction and

examination pressure remain prevalent (Yin & Chew, 2025). The reviewers reported no major issues regarding wording, interpretation, or cultural sensitivity, suggesting that the instruments are suitable for use in the planned main study. Nevertheless, cultural appropriateness is not a static property but requires ongoing evaluation as the instrument is administered to broader and more diverse samples. The main study should therefore continue to monitor item performance through statistical techniques such as differential item functioning (DIF) analysis to detect potential cultural biases that may emerge in larger-scale data collection (Erdem-Kara & Dogan, 2022; Kim et al., 2022).

These findings have important methodological implications for the main study. The confirmed feasibility supports the use of the WJX platform and a similar recruitment strategy. The high reliability of the instruments means that the main study can use them to investigate the relationship between these variables. While this pilot establishes reliability, the main study should also need to verify the construct validity (convergent and discriminant) of the scales, as recommended by Hair et al. (2019b).

Furthermore, the success of this pilot study paves the way for more complex research designs. Having validated these instruments, future research can move beyond cross-sectional correlations to employ longitudinal design that tracks how these constructs evolve over time or experimental or intervention studies that test strategies to foster beneficial learning styles, enhance engagement, or promote autonomy (Kırmızı & Kıraç, 2018; Althubaiti et al., 2025). A limitation of this pilot study is its reliance on a convenience sample from a single city, which may limit the generalisability of the reliability coefficients to other regions of China. The main study may consider a stratified random sampling approach across multiple regions to enhance the representativeness of the findings (Creswell & Creswell, 2018). However, the primary purpose of a pilot study is methodological refinement rather than generalization (Renuse, 2024). The sample was adequate for the stated objectives in assessing feasibility and initial reliability.

6. CONCLUSION

This pilot study has successfully achieved its objectives. It demonstrated that the proposed research procedures, including online recruitment via the WJX platform and the data collection protocol, are feasible and efficient for the target population of non-English major undergraduates in Xi'an. More importantly, it provided strong evidence for the high internal consistency reliability and cultural appropriateness of the three key research instruments: the adapted Kolb Learning Style Inventory, the Utrecht Work Engagement Scale for Students, and the English Autonomous Learning Ability scale.

The findings confirm that these tools are psychometrically sound for use in the Chinese EFL context. This validation is a critical step that ensures any future investigations related to these constructs will be based on reliable measurements. Therefore, this study provides a solid and rigorous methodological foundation for a larger, more comprehensive investigation into the factors influencing English language learning outcomes among non-English major students in China. The feasibility of the preliminary procedures and the reliability of the measuring instruments ensure that researchers can proceed with the main study.

7. ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to the two bilingual EFL lecturers for their expertise in reviewing the translated questionnaire items and confirming their cultural appropriateness and clarity. We also extend our appreciation to all participants who generously contributed their time to this pilot study.

8. CONFLICT OF INTEREST STATEMENT

We certify that the article is the authors' original work. The article has not been submitted for publication, nor has it been published in whole or in part elsewhere. We testify to the fact that all authors have contributed significantly to the work, validity, and legitimacy of the data and its interpretation for submission to this journal.

9. AUTHORS' CONTRIBUTIONS

Cao Xiaojun: Conceptualisation, data collection, data analysis, writing-original draft; **Wan Nazihah Wan Mohamed**: Supervision, writing-review, editing, and validation; **Muhammad Saiful Anuar Yusoff**: Conceptualisation, supervision, and data analysis.

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https://doi.org/10.24191/ejssh.v10i1.10122