Language motivated strategies, altruistic behavior and blended learning environment of Chinese EFL undergraduates

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Abstract

This study investigated the interplay among language motivated strategies, altruistic behavior, and the blended learning environment on Chinese EFL (English as a Foreign Language) undergraduates. Employing a quantitative, descriptive research design, data were collected from 429 undergraduates across six public and private universities in China using an online survey tool. The collected data were analyzed using SPSS 28.0. The findings showed that students generally felt confident about their ability to learn English but suffered from anxiety during exams. They were good at managing their study time and willing to help classmates. The blended learning environment was well-liked, especially for its ability to encourage interaction and collaboration. Interestingly, freshmen and students in public universities reported better time management skills. Female students were more cooperative, supportive, and better at designing learning activities. The study also found strong connections between the three variables. Effective learning strategies led to more helpfulness among students. Blended learning environments that were well-designed encouraged students to use more effective learning strategies and be more helpful to each other. The researchers proposed a program to improve English learning based on these findings. The program includes setting clear goals, using interesting materials, providing positive feedback, teaching methods to reduce test anxiety, improving time management skills, forming study groups, creating mentorship programs, designing collaborative tasks, providing psychological support, using a variety of teaching methods and technology, combining resources, evaluating learning, and offering rewards.

Keywords: language motivated strategies, altruistic behavior, blended learning environment, Chinese EFL undergraduates

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1. Introduction

In the context of globalization, the importance of English as an international language is increasingly prominent worldwide. In China, English has become an indispensable skill, vital for an individual's career development and the country's international exchanges. In particular, English as foreign Language (EFL) undergraduates are facing increasing pressure and challenges. These challenges can be attributed to a variety of linguistic, psychological, sociological and other factors, such as limited access to the language environment, lack of learning motivation, improper use of learning strategies, lack of altruism, and so on. To meet these challenges, researchers and educators have been exploring effective teaching methods and strategies to improve undergraduates' English learning motivation, promote altruistic behavior, and create a more conducive environment for learning.

Language motivated strategies include various strategies adopted by learners to enhance their language-learning process. Motivation and learning strategies are the elements of the learning process (Rocael et al., 2015). Motivation, understood as cognitive curiosity, affects the willingness to learn. A student with an intrinsic motivation for learning who believes that the task of learning will generate expectations that will lead to a high degree of participation in their learning activities (Stolk & Martello, 2015; Trenshaw et al., 2014). In addition, students who believe that their chances of success in the learning process depend on their efforts and feel capable of completing their learning tasks tend to adopt meaningful learning methods in their learning process (Nelson Laird et al., 2014). These strategies are psychological operations that students can do to promote the accomplishment of tasks. There are different types of strategies: cognitive, metacognitive, and resource management. Understanding these strategies can provide a valuable perspective on how students can accomplish language learning tasks and clarify the factors that contribute to successful language acquisition.

Altruistic research spans multiple disciplines and covers diverse aspects of altruistic behavior. In the psychological literature, altruism is often equated with help (Batson, 2010), also referred to as altruism in other disciplines (Fehr & Fischbacher, 2003), this involves distributing resources like time, money, goods, energy, information, and cognitive assets to those who need or merit them. Altruism is perceived as a moral behavior that molds our interactions and provides a variety of moral benefits to society. Altruism is the responsibility of his moral behavior to others (Bykov, 2017). Empathy and compassion play crucial roles internally in influencing altruistic actions. Batson (2010) introduced the empathy-altruism hypothesis to explain altruism. Only when others feel empathetic will a person help her for altruistic reasons. A different theory regarding altruism suggests that individuals with altruistic traits often prioritize aiding others and making ethical choices. The teaching of altruism is supported theoretically by the assumptions of "well-becoming through teaching/helping" and "teaching/helping rush". Through the hypothesis, learners become "well-becoming agents of change" (Murphey, 2014). According to this theory, altruistic teaching is about educating others without egocentric motivations and turning learners as agents of change by engaging them in social relationships.

Researchers increasingly recognize the importance of altruism in educational settings. Altruism is an act of selflessness or concern for the well-being of others. In educational settings, altruism can take various forms, such as helping peers with learning difficulties or providing support to classmates when needed. Investigating altruism in an EFL context can provide unique insights into how students collaborate with peers, potentially enhancing the overall learning experience. The integration of information technology into education, particularly in creating network platforms, has heightened the interest in blended teaching among academic communities both domestically and internationally (Porter et al., 2014; Park &Yun, 2018; Chen & Ma, 2019; Zheng, 2019; Graham et al., 2019; Zheng & Su, 2020). With the goal of guiding students to learn independently and realizing efficient

teaching, blended teaching has been adopted by more and more foreign language teachers and has become an effective way of foreign language education and teaching reform and an important variable affecting the effect of foreign language learning (Chen, 2015; Hu & Jin, 2015; Zheng & Su,2020).

In China, English is a compulsory course for university undergraduates. In recent years, the university English teaching environment has undergone significant changes, and the traditional face-to-face classroom setting is inadequate for the demands of the information era, especially online education and blended teaching mode have gradually become the development trend of higher education (Zhang et al., 2019). Therefore, blended teaching will become the "new normal" of future education (Feng et al., 2021). In recent years, the research on language-motivated strategies, altruistic behavior and blended learning environments has attracted more and more attention. However, there has been relatively little research on the relationship between these variables, especially in the Chinese undergraduate population. Therefore, this paper filled this research gap by investigating the language-motivated strategies, altruistic behaviors, and blended learning environments of Chinese undergraduates, and exploring the potential influence between them. Understanding these relationships is crucial for the following reasons:

First, understand learning motivation. Studying the motivation of language learners is essential for designing more effective teaching strategies. Understanding the language motivation strategies of Chinese undergraduates can help educators better understand their learning motivation, to provide targeted support and incentives. Secondly, promote the cultivation of altruistic behavior. The altruistic behavior research involved in this paper helps understand learners' social interaction and cooperative behavior in the process of language learning. This is not only beneficial for improving learners' social skills and teamwork ability but also provides an important clue for building a positive learning environment. Third, optimize of blended learning environment. Studying how blended learning environments affect language-motivated strategies and altruistic behavior can provide insights into the effectiveness of this educational approach. Blended learning merges in-person instruction with digital activities and materials. Investigating the effects of blended learning on language motivation strategies and altruism may reveal whether this approach improves learners' engagement, motivation, and overall academic achievement. Finally, due to China's economy's swift growth and escalating worldwide impact, prioritizing EFL undergraduate studies in China becomes essential. Effective English communication skills have become the key to personal growth opportunities and career success. Therefore, understanding how Chinese undergraduates use language motivation strategies, how they engage in altruistic behaviors, and how they adapt to blended learning environments will help to formulate effective English education policies and practices in China.

In general, the research explored the relationship between Chinese university students' language-motivated strategies, altruistic behavior and blended learning environment. The findings of this study can provide the most effective method for educators, policymakers and curriculum designers to promote the successful language learning experience of Chinese EFL undergraduates.

Objectives of the Study - Generally, this aimed to study Chinese EFL undergraduates, analyzing from three perspectives, language motivated strategies, altruistic Behavior and blended Learning Environment to form a more effective language learning program. This paper specifically sought to describe the respondents' demographic profiles regarding sex, year level, and school type; determine their language motivation strategies, including self-efficacy, text anxiety, and time management; identify their altruistic behaviors, such as sharing, helping, cooperating, and comforting; assess the blended learning environment concerning pedagogical, social, and technical design; test the differences of responses when grouped according to demographic profiles; examine the relationships among language motivation strategies, altruistic behaviors, and the blended learning environment; and propose a language learning program to enhance the EFL learning of Chinese undergraduates.

2. Methods

Research Design - Babbie (2020) defines a research methodology known as a quantitative, descriptive design

systematically gathers, analyzes, and displays numerical data to characterize traits, trends, or patterns in a particular population or phenomenon. Commonly, this design aims to address queries regarding the "what" rather than the "why" of events, offering an overview of the present situation. In this study, quantitative research, mainly descriptive was employed to get the research result. Corresponding questions are put forward to collect participant information and investigate the correlation between language motivated strategies, altruistic behavior and blended learning environment of Chinese EFL undergraduates.

Participants of the Study - This study was conducted from six public and private universities in China. The six universities with the middle educational quality from different provinces. There are four year levels of undergraduates related to the survey. The year levels are from the first to the fourth. The total population is 50000 and by using the Raosoft sampling, with a 95% confidence level, and a 5% margin of error, a total of 429 undergraduates investigated and submitted their data through an online survey tool Questionnaire Star.

Data Gathering Instrument - The study primarily utilized a questionnaire survey. The questionnaire is divided into four parts: Respondents Profile, Language Motivated Strategies Questionnaire, Altruistic Behavior Questionnaire, and Blended Learning Environment Questionnaire. Three questionnaires were used to collect the situation of the respondents. Before the survey questionnaire starts, the personal information of the respondents was first collected, mainly including sex, year level and school type. To ensure participants fully comprehend the questions, the questionnaire was provided in both Chinese and English. Three questionnaires comprised 61 items, each measured on a 4-point Likert scale. The response options for each item ranged from 1 to 4: strongly disagree, disagree, agree, and strongly agree. These categories were presented in a clear order. All items were phrased positively, with higher values on the scale reflecting positive evaluations of language learning strategies, altruistic behavior, and blended learning environments.

Questionnaire 1 investigated the Language Motivated Strategies. The survey was developed by Lee et al. (2020) and was adapted to investigate motivational strategies used by EFL undergraduates in English-blended learning environments in three major dimensions: self-efficacy, test anxiety and time and study management. This study employs three sub-scales to examine the structure of motivation and learning strategies within a blended learning environment. The author selected the following subscales: self-efficacy in learning and performance (n = 8), test anxiety (n = 5), and time and study management (n = 8). Self-efficacy measures two aspects: performance expectations and an individual's self-assessment of their ability to master a task. Test anxiety is an emotional factor that includes both emotional and cognitive elements. Emotionality refers to the emotions and physiological responses, such as worry, while the cognitive component involves awareness and concern about performance. Time and study management includes scheduling, planning, and managing study time, including allocating study time and making effective use of it. The learning environment is the environment for studying the course.

Questionnaire 2 dealt on students' altruistic behavior in a blended learning environment. The questionnaire was developed by Leontopoulou in 2010. It is used to measure students' altruistic behavior. He proposed 20 questions based on four dimensions of altruism: sharing, helping, cooperating, and comforting. According to his classification of altruistic behavior, five behaviors were selected from a longer list, with each behavior belonging to one of these five categories. All questions are positively worded, so higher scores on the scale indicate higher levels of altruistic behavior.

Questionnaire 3 is designed to evaluate the respondents' blended learning environment across three dimensions: pedagogical design, social design, and technical design, encompassing a total of 20 items. This instrument was developed by Lu in 2021. Regarding pedagogical design, there are 7 items for examining various aspects of pedagogical design, mainly including the clarity of learning objectives, the organization of the curriculum, the influence of environmental structure on learning, the clarity of assignment expectations, careful planning of activities, the effectiveness of course content, and the presentation of course content. As for social design, there are also 7 items for examining interactions, feedback, evaluations, attitudes, etc., between teachers and students, and among students. In terms of technical design, there are 6 items, primarily assessing students'

self-management of learning time, location, method, etc.

To ensure the questionnaire's reliability, a preliminary study was conducted with 30 undergraduate students from both a public and a private university. Data were gathered using Questionnaire Star, then coded and analyzed using SPSS 28.0. The Cronbach's Alpha coefficient for each subscale and the overall questionnaire was calculated. Table 0 displays the reliability results for the three variables studied, showing Cronbach's Alpha coefficients ranging from 0.726 to 0.831 for all subscales. Consequently, the internal consistency reliability coefficients for each subscale and the entire questionnaire exceed 0.70, which is considered acceptable (Dörnyei 2010).

Data Gathering Procedure - For data collection, the questionnaires were distributed through the online platform Questionnaire Star targeting undergraduates from six diverse Chinese universities. First, the researcher sent the QR codes generated by Questionnaire Star to the teachers of six schools, whose classes have experienced or are undergoing blended learning. The teachers distributed the questionnaire codes to the students in their classes and explained the purpose and use of the questionnaire, thus fostering a positive attitude towards filling out the questionnaire, and ensuring the effectiveness of the collected questionnaires. Secondly, students used WeChat to open the scan function, scan the QR code generated by Questionnaire Star, click on the start button to fill out the questionnaire, enter the questionnaire filling page, and fill out the questionnaire content one by one. After completing the questionnaire, students clicked the submit button to submit the completed questionnaire to the Questionnaire Star platform. Furthermore, the author needed to track and follow up on unfinished questionnaires, ensuring the maximum collection of questionnaires, collecting data from the recovered questionnaires, and organizing the unqualified data manually or in other ways. Finally, data were collected and analyzed using SPSS 28.0, interpreting, analyzing, and comparing participants' responses through frequency counts, percentages, rankings, and weighted averages.

Ethical Considerations - This survey consistently adheres to core ethical principles to ensure all participants receive adequate protection and welfare. Before formal participation, participants have been fully informed of the research objectives, procedures, and their relevant rights to ensure informed consent. To safeguard confidentiality and anonymity and restrict access solely to the research team, the researcher opted to remove personal identifiers and store data securely. The study is committed to minimizing potential harm, with all participants being entirely voluntary and able to withdraw at any time without incurring subsequent risks or consequences. It aims to provide insights into effective learning strategies and blended learning environments for the benefit of participants and the education sector. Those involved were selected impartially, ensuring individuals from diverse backgrounds are welcomed with equal rights. Throughout all stages of this research, the integrity and transparency of the work was assured by genuinely studying and strictly adhering to ethical standards. This study ensures that all participants are treated ethically, following the principles mentioned. Furthermore, ethical approval was obtained from the research center at the University of the Lyceum in the Philippines.

Data Analysis - First, the researcher collected the questionnaire data, organized and ensured accuracy and completeness. Then, she calculated the weighted mean for each variable to assess its level. The weighted mean takes into account the importance of different questions or sub-items. The interpretation of the Likert scale is verbally explained as follows: a range of 3.50-4.00 indicates strongly agree, 2.50-3.49 indicates agree, 1.50-2.49 indicates disagree, and 1.00-1.49 indicates strongly disagree. Spearman correlation analysis was used to assess the relationship between language motivation strategies, altruistic behavior, and blended learning environments.

3. Results and discussion

Table 1 provides the respondents' agreement on language motivated strategies. The composite mean obtained is 2.98, indicating the respondents' level of agreement with the three aforementioned indicators. Self-efficacy is considered one of the significant factors influencing individual behavior, emotions, and psychological well-being (Bandura, 2019). According to the data in the table, self-efficacy received the highest weighted mean in students' language learning motivation strategies, reaching 3.08. This indicates that students have a high evaluation of their

abilities and confidence in language learning, and this confidence positively impacts their motivation and performance.

Table 1

Language Motivated Strategies

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Self-Efficacy	3.08	Agree	1
2. Test-Anxiety	2.95	Agree	2
3. Time and Study Management	2.91	Agree	3
Composite Mean	2.98	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Despite a weighted average of 2.95, ranking second but still within the "agree" range, this suggests that exam anxiety may be a hindrance in the learning process. This may imply that students generally feel a certain level of exam anxiety, but it does not completely affect their motivation for language learning. Cheng et al. (2014) highlighted the intricate relationship between motivation and anxiety related to exams, emphasizing how performance is influenced by the significance of exams for stakeholders and their intended purposes. Data implied that students have received certain evaluations in terms of time management, with a weighted average of 2.91, ranking third. This indicates that students have some ability to handle study tasks and time arrangements, which may be crucial for effectively utilizing a blended learning environment. This means that although classroom time is reduced by 30% to 79%, the learning effectiveness remains the same. Consequently, decreasing in-person instruction time in a blended learning environment proves to be just as effective as conventional classroom teaching (Müller & Mildenberger, 2021). Overall, this study demonstrated that Chinese EFL undergraduate students exhibit a strong sense of self-efficacy in language learning, moderate test anxiety, and relatively good time and study management skills. These findings contribute to understanding students' learning motivations and behaviors, providing some basis for designing more effective language teaching.

Table 2

Altruistic Behavior

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Sharing	3.06	Agree	1
2. Helping	3.02	Agree	2.5
3. Cooperating	2.94	Agree	4
4. Comforting	3.02	Agree	2.5
Composite Mean	3.01	Agree	

Legend: 3.50-4.00=Strongly Agree;2.50-3.49=Agree;1.50-2.49=Disagree;1.00-1.49=Strongly Disagree

Table 2 shows altruistic behaviors in the dimensions of sharing, helping, cooperation, and comforting. The composite mean is 3.01, all falling under the category of 'Agree' indicating respondents' agreement with the four dimensions. This suggests that Chinese EFL undergraduate students exhibit positive altruistic behaviors in a blended learning environment, including sharing, helping, cooperation, and comforting. This aligns with Neli and Sukmawati (2019) emphasizing the significance of empathy and consideration for others in students' altruistic behaviors, such as sharing, cooperating, helping, and contributing.

Dimension 1 is about sharing, with a weighted average of 3.06, ranking first. Sharing refers to the willingness to share personal knowledge, resources, or experiences with others to promote collective learning and growth. Chinese EFL undergraduate students have demonstrated a higher willingness to share in a blended learning environment, which may indicate their recognition of the importance of knowledge sharing for the entire learning community. This finding is consistent with Fauzi et al. (2018) examined the knowledge-sharing behavior of Muslim scholars in Malaysian higher education institutions using the Theory of Planned Behavior and Social Capital Theory to identify influencing factors. Similarly, Islam et al. (2024) viewed knowledge-sharing behavior as a determinant of innovative behavior, emphasizing the direct impacts of knowledge-sharing self-efficacy and self-leadership. These research findings further support the view that sharing behavior contributes to building cooperative relationships, enhancing learning motivation, and improving academic performance.

Dimension 2 represents the willingness to help, with a weighted average of 3.02, ranking second only to 'sharing'. However, ranking after 'sharing' does not imply a lower willingness to help. Among Chinese EFL undergraduate students, they demonstrate a high willingness to help in a blended learning environment, which may reflect their cooperative spirit and teamwork. Qian et al. (2020) delved into the ethical implications of helping behavior, distinguishing between active (intrinsic motivation) and passive (responding to external factors) help. Their research suggests that active help contributes to building good interpersonal relationships, enhancing cooperation and trust, and improving individual learning experiences. Conversely, passive help may lead to self-exhaustion and moral detachment, thereby increasing the likelihood of engaging in unethical behavior. Therefore, the classroom learning environment for Chinese EFL university students is essentially characterized by active help, which contributes to cultivating good interpersonal relationships, promoting teamwork, enhancing trust, and improving individual learning experiences.

Dimension 3 is about comforting, with a weighted average of 3.02, equivalent to 'Helping,' falling within the realm of 'Agree,' ranking third. In a blended learning environment, Chinese EFL undergraduate students demonstrate a higher willingness to comfort, which may reflect their attitude toward caring for others, and focusing on the learning and class atmosphere. According to Miyazono and Inarimori (2021) study, help behavior induced by empathy through the 'Self-Other Merge Hypothesis' (SMH) of group identity, finding that empathy-induced helping behavior doesn't fit within the conventional egoism/altruism dichotomy. Instead, they suggested a new categorization: at the individual level, empathy-driven assistance is altruistic, while at the group level, it is egoistic. This indicates that emotional support contributes to establishing a positive learning environment, fostering mutual understanding and solidarity among classmates, thereby enhancing overall learning outcomes.

Although the cooperative score in Dimension 4 is slightly lower, ranking fourth with a weighted average of 2.94, it still falls within the 'Agree' range. Cooperation here refers to the willingness to work together with others, collaborate on tasks, or achieve goals jointly. Chinese EFL undergraduate students may lag slightly in cooperation, but still fall within the 'Agree' range. This may indicate some level of enthusiasm for teamwork, though not as much as sharing and helping. According to Derlega and Grzelak (2013) the phenomena to be explained in developing theories of cooperation and helping behavior are complex and diverse. While positive social behavior is believed to benefit others, the motivations for such behavior may be difficult to determine. For example, cooperating with others may initially be to please them in the short term, but ultimately may be to exploit or control them. Thus, broad intentions or personal goals may underlie positive social behavior. This may perhaps explain why cooperation ranks last among the four dimensions. It's worth noting that cooperation requires more time and resources, so it's not always widely adopted in learning environments. This aligns with previous research findings, supporting the aforementioned conclusions.

Table 3

Blended Learning Environment

Indicators	Weighted Mean	Verbal Interpretation	Rank
1.Pedagogical Design	2.95	Agree	3
2.Social Design	3.07	Agree	1
3.Technical Design	3.05	Agree	2
Composite Mean	3.02	Agree	

Legend: 3.50-4.00=Strongly Agree;2.50-3.49=Agree;1.50-2.49=Disagree;1.00-1.49=Strongly Disagree

Table 3 primarily addresses three aspects of the blended learning environment: instructional design, social design, and technological design, along with their composite mean. These indicators were utilized by researchers to assess the efficacy of the blended learning environment. The composite mean is 3.02, which falls within the 'Agree' range. This indicates that, overall, the blended learning environment in the study was recognized and accepted by students and played a positive role in facilitating learning. Specifically, the research results for Social Design show a weighted average of 3.07, verbally interpreted as "agree," and ranking first. This indicates that the blended learning environment excels in promoting interaction and collaboration among students. Social design may encompass a range of activities, such as online discussions, collaborative projects, and other social learning

activities. For example, Armellini and Rodriguez (2021) researched students' learning experiences in proactive blended learning environments, emphasizing the importance of pedagogical transformation and social interaction in higher education. Additionally, researchers have explored high school students' views and engagement in a virtual reality-based blended learning environment, emphasizing the importance of social, instructional, and cognitive presence in improving the learning experience. (Zhang et al., 2020). These findings further support the effectiveness of blended learning environments in terms of social design.

The study results for Technical Design show a weighted average of 3.05, which is verbally interpreted as 'agree' and ranks second. This indicates that the technical facilities, platforms, or tools used in the research play a positive role in supporting the learning process. These technologies may include learning management systems, online resources, and other technical support. For example, Lavrentieva et al. (2020) discussed the importance of computer-centered technology in facilitating information exchange and support in the educational process. Additionally, Fleischmann (2020) highlighted the impact of the COVID-19 pandemic on the shift toward online learning and the transition to web-based communication tools. Furthermore, Asamoah (2020) examined the use of educational technologies such as learning management systems, particularly in enhancing student interaction and flexible learning experiences. These studies further support the significance of technical design in aiding the learning process.

Research on Pedagogical Design indicates a weighted average of 2.95, verbally interpreted as "agree". This suggests that blended learning environments are somewhat recognized in terms of instructional design. It might imply that the blended learning settings in the study considered effective teaching strategies in designing course content, learning activities, and assessment methods. Dreamson (2020) discussed the application of meta-connective teaching methods to address challenges and opportunities in online design education. Additionally, Srinivasan et al. (2021) focused on strategies for implementing flexible blended educational formats, including curriculum design, teaching strategies, infrastructure, and student welfare. Table 4 illustrates the association between language motivation strategies and altruistic behavior. The computed r-values indicate a moderate positive correlation, and the resulting p-values were below the alpha level. This signifies a significant relationship, implying that improved language motivation strategies correspond to enhanced altruistic behavior.

Table 4

Relationship Between Language Motivated Strategies and Altruistic Behavior

Self-Efficacy	r-value	p-value	Interpretation
Sharing	.342**	0.000	Highly Significant
Helping	.192**	0.000	Highly Significant
Cooperating	.342**	0.000	Highly Significant
Comforting	.294**	0.000	Highly Significant
Test Anxiety			
Sharing	.350**	0.000	Highly Significant
Helping	.226**	0.000	Highly Significant
Cooperating	.415**	0.000	Highly Significant
Comforting	.470**	0.000	Highly Significant
Time and Study Management			
Sharing	.281**	0.000	Highly Significant
Helping	.239**	0.000	Highly Significant
Cooperating	.248**	0.000	Highly Significant
Comforting	.284**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

In terms of sharing, helping, cooperating, and comforting, self-efficacy exhibits significant positive correlations with these four altruistic behaviors. Specifically, the correlation coefficients (r-values) range from 0.192 to 0.342, and all p-values are 0.000, indicating a very high level of significance. This implies that individuals with higher levels of perceived self-efficacy are more inclined to engage in altruistic behaviors such as sharing, helping, cooperating, and comforting. Similar to self-efficacy, test anxiety shows significant negative correlations with four aspects of altruistic behavior: sharing, helping, cooperating, and comforting. The correlation coefficients range from 0.226 to 0.470, with all p-values being 0.000, indicating a high level of significance. This implies that

lower levels of test anxiety are associated with a higher likelihood of individuals exhibiting altruistic behaviors such as sharing, helping, cooperating, and comforting.

Also, time and study management exhibit a significant positive correlation with four aspects of altruistic behavior: sharing, helping, cooperating, and comforting. The correlation coefficients range from 0.239 to 0.284, with p-values all at 0.000, indicating a high level of significance. This suggests that individuals with stronger time management skills are more likely to demonstrate altruistic behaviors such as sharing, helping, cooperating, and comforting. These results indicate that self-efficacy, test anxiety levels, and time management abilities all exhibit consistent relationships with prosocial behavior, meaning individuals with higher self-efficacy, lower test anxiety levels, and stronger time management abilities are more likely to demonstrate prosocial behaviors such as sharing, helping, cooperating, and comforting.

The relationship between language learning strategies and prosocial behavior has long been a hot topic of research. Bielak and Mystkowska-Wiertelak (2023) describe emotion regulation as a key factor in language learning, suggesting that emotion regulation may play a role in motivating prosocial behavior through language strategies. Teng's (2024) study emphasizes the impact of self-regulation on English learning motivation, self-efficacy, willingness to communicate, and other aspects, further highlighting the importance of self-regulation in language learning. Additionally, Galef (2021) discusses criticisms of effective altruism motivation reasoning, emphasizing the importance of understanding the underlying motivations behind prosocial behavior. In Larsen and Witoszek (2023) comparatively studied intrinsic motivation and found to play an important role in prosocial behavior, suggesting that individuals may engage in prosocial behavior based on intrinsic motivations related to language strategies. Furthermore, Salem et al. (2022) found a relationship between cooperation and prosocial behavior among gifted adolescents, suggesting that strategic giving may be driven by altruism.

Table 5

Relationship Between Language Motivated Strategies and Blended Learning Environment

Self-Efficacy	r-value	p-value	Interpretation
Pedagogical Design	.258**	0.000	Highly Significant
Social Design	.258**	0.000	Highly Significant
Technical Design	.366**	0.000	Highly Significant
Test Anxiety			
Pedagogical Design	.301**	0.000	Highly Significant
Social Design	.270**	0.000	Highly Significant
Technical Design	.408**	0.000	Highly Significant
Time and Study Management			
Pedagogical Design	.273**	0.000	Highly Significant
Social Design	.238**	0.000	Highly Significant
Technical Design	.360**	0.000	Highly Significant

Legend: Significant at p-value < 0.05

Empathy is considered a fundamental element of altruistic behavior, indicating that individuals may be motivated to do good deeds through their ability to understand and connect with others. Altruistic behavior is also associated with cognitive enhancement resulting from language use, further suggesting the role of language motivation strategies in promoting altruistic behavior. Comprehensive literature shows that language motivation strategies may influence altruistic behavior through various mechanisms, including emotional regulation, intrinsic motivation, empathy, and cognitive enhancement. This understanding is of significant value in uncovering the underlying motives behind prosocial behavior. Further exploring the relationship between self-efficacy, test anxiety, and time and study management in the survey, if the learners believe they can master language skills, they are more likely to adopt positive learning strategies, reduce anxiety, and improve learning efficiency. Good time management can reduce study stress, enhance learning efficiency, and strengthen self-efficacy. Effective study management can also reduce test anxiety, as students will feel adequately prepared and capable of performing well in exams. Overall, there is a close relationship between self-efficacy, test anxiety, and time and study management. Students with high self-efficacy often can better manage their time and studies, thus reducing test anxiety and achieving better academic results.

Table 5 illustrates the relationship between language motivation strategies and the blended learning environment. The computed r-values indicate a moderate direct correlation and the resulting p-values were less than the alpha level. This means that a significant relationship exists and implies that the better is the language motivated strategies, the better is the blended learning environment. In terms of the dimension of self-efficacy as a language motivated strategy, significant positive correlations with various design factors were observed in the blended learning environment. Specifically, the correlation coefficients for pedagogical design, social design, and technical design range from 0.258 to 0.366, all with p-values of 0.000, indicating highly significant correlations. This suggests that students perceive significant self-efficacy across different aspects of the blended learning environment. This may imply that if students are satisfied with the course design and perceive it as beneficial to their learning, they may be more confident in successfully completing tasks.

Regarding the dimensions of test anxiety and time and study management strategies, significant positive correlations with various design factors were also observed in the blended learning environment. The correlation coefficients between test anxiety and various design factors are relatively high, ranging from 0.270 to 0.408. This indicates that different aspects of the blended learning environment may affect students' levels of test anxiety. If students perceive the blended learning environment as beneficial to their learning, they may feel less anxious, and vice versa. On the other hand, the correlation coefficients between time and study management and various design factors are slightly lower, ranging from 0.238 to 0.360. This suggests a connection between students' perception of the blended learning environment and their time and study management abilities. If students believe that the blended learning environment aids their learning, they are more likely to effectively manage time and study. However, all these correlations are supported by results with a p-value of 0.000, indicating they are highly significant.

In summary, Table 19 provides insights into the relationship between language motivated strategies (such as self-efficacy, test anxiety, time and study management) and various design factors (such as pedagogical design, social design, and technical design) in blended learning environments. These findings can offer crucial guidance for the design and implementation of blended learning environments to enhance learners' learning experiences and outcomes.

Table 6

Relationship Between Altruistic Behavior and Blended Learning Environment

Sharing	r-value	p-value	Interpretation
Pedagogical Design	.288**	0.000	Highly Significant
Social Design	.301**	0.000	Highly Significant
Technical Design	.233**	0.000	Highly Significant
Helping			
Pedagogical Design	.237**	0.000	Highly Significant
Social Design	.207**	0.000	Highly Significant
Technical Design	.203**	0.000	Highly Significant
Cooperating			
Pedagogical Design	.306**	0.000	Highly Significant
Social Design	.313**	0.000	Highly Significant
Technical Design	.346**	0.000	Highly Significant
Comforting			
Pedagogical Design	.398**	0.000	Highly Significant
Social Design	.330**	0.000	Highly Significant
Technical Design	.307**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Some studies have explored the use of blended learning environments in language education to enhance motivation and learning outcomes. Liu (2022) emphasizes the importance of cooperative learning in English teaching and proposes a model of collaborative learning in a blended environment. Abakumova et al.(2019) focus on designing effective grammar modules for the online components of foreign language courses to enhance language proficiency. Anis & Anwar (2020) discuss the use of Self-Organized Learning Environments (SOLE) in English Language Teaching (ELT) to enhance motivation and innovation in education. Alhasov et al. (2020)

experimentally studied the willingness of adult learners to learn English through extracurricular activities, highlighting the importance of collaborative teaching strategies in enhancing motivation. Lu (2021) investigated the relationship between Assessment for Learning (AFL) and English learning motivation in blended learning environments, while Qi and Zhao (2021) examined the correlation between pilot students' motivation and learning strategies in the context of English language learning. Peng and Fu (2021) investigated the influence of learning motivation on academic outcomes among Chinese English learners in a blended learning environment, emphasizing the importance of student motivation for academic success. Benhadj (2021) conducted a quasi-experimental study on the impact of blended learning on English learners' language proficiency, highlighting the potential benefits of blended learning in enhancing language skills. These studies collectively indicate that innovative teaching strategies and technologies can effectively enhance language motivation and proficiency in a blended learning environment.

Table 6 shows the correlation between Altruistic Behavior and the Blended Learning Environment. The calculated r-values demonstrate a moderate positive correlation, with p-values falling below the alpha threshold. This indicates a significant relationship, suggesting that enhanced altruistic behavior is associated with an improved blended learning environment. This table displays the correlations between different design dimensions of pedagogical design, social design, and technical design, and various altruistic behaviors (sharing, helping, cooperating, comforting) in the blended learning environment. Regarding the dimension of altruistic behavior sharing, significant positive correlations with various design factors in the blended learning environment were observed. Specifically, the correlation coefficients with pedagogical design, social design, and technical design are 0.288, 0.301, and 0.233 respectively, with all p-values being 0.000. This indicates that there is a significant correlation between sharing behavior and all three design dimensions, suggesting that the more optimized these design dimensions are, the more students engage in sharing behavior.

Regarding the dimension of facilitating altruistic behavior, a significant positive correlation with various design factors in the blended learning environment was observed. Specifically, the correlation coefficients with pedagogical design, social design, and technical design are 0.237, 0.207, and 0.203, respectively, with all p-values being 0.000. This implies that all types of design are positively and highly significantly correlated with helping behavior, although slightly weaker than sharing behavior. This indicates that while these design factors can promote helping behavior, their influence is slightly lower. All types of designs (pedagogical, social, and technical) exhibit significant positive correlations with four types of altruistic behaviors (sharing, helping, cooperating, comforting). This suggests that optimizing these design factors can effectively foster altruistic behaviors among students in blended learning environments. Pedagogical design has the greatest impact on comforting behavior, while technical design has the greatest impact on cooperating behavior. Overall, all design factors significantly facilitate positive interactions among students. Blended learning environments are becoming increasingly popular in education, with instructional designers and teachers adjusting traditional learning settings to incorporate elements of technology-mediated media (Diep et al., 2019). These environments aim to support the integration of social, interactive, and experiential learning experiences to meet students' educational and social needs (John, 2016). The pedagogical design of these environments plays a crucial role in fostering learners' prosocial behaviors, as evidenced by research on online and blended learning technologies (Yu, 2021).

In the context of professional nursing education, creating an environment that supports constructive sharing of diverse viewpoints is crucial for nurturing students' abilities. This emphasis on sharing and collaboration aligns with the concept of altruistic behavior, where individuals engage in activities such as sharing, assisting, collaborating, and comforting. The design of educational spaces, whether physical or virtual, can influence the prevalence of such behaviors among learners (John, 2016). Furthermore, integrating principles of biomimicry into education also contributes to the development of altruistic behavior in students. By drawing inspiration from nature, emphasizing creative problem-solving and systemic thinking, educators can create a learning environment that encourages collaborative efforts and mutual support among students. This approach highlights the interconnectedness of pedagogical design, social design, and technical design in fostering altruistic behavior within educational settings. Overall, research indicates that the design of learning environments plays a crucial role in

fostering learners' altruistic behavior. Whether through the use of technology, principles of biomimicry, or emphasis on collaboration and sharing, educators can create spaces that encourage students to engage in benevolence and support for their peers. By considering the interplay between pedagogical, social, and technical design elements, educational stakeholders can cultivate a culture of altruism and empathy in the classroom (Yu, 2021).

Based on the provided correlation coefficients (r-values) and significance levels (p-values), there is a high degree of significant correlation among the various dimensions of language motivated strategies and altruistic behavior, language motivated strategies and blended learning environments, and altruistic behavior and blended learning environments. Self-efficacy, test anxiety, and time and study management significantly influence altruistic behavior, indicating that the more effective students' language motivated strategies are, the more positively they engage in sharing, helping, cooperating, and comforting. Self-efficacy and test anxiety are most closely related to technical design in blended learning environments, suggesting that technical design plays a crucial role in boosting students' confidence and alleviating test anxiety. There is also a high degree of significant correlation between the dimensions of altruistic behavior and the dimensions of blended learning environments, particularly in pedagogical and social design, demonstrating how supportive and interactive learning environments foster altruistic behavior.

4. Conclusions and recommendations

Students generally agreed a positive sense of self-efficacy towards language motivated strategies but commonly experienced test anxiety, impacting their performance and learning experience. They also exhibited positive attitudes towards time and study management. Respondents displayed a high level of altruistic behavior, showing a willingness to share resources and support classmates. However, they were hesitant to allow others to assume leadership roles. Female students were particularly noted for their comforting and cooperative behaviors. Students positively perceived the blended learning environment, recognizing its strengths in promoting interaction and collaboration, as well as its technical support. The environment was acknowledged to some extent in terms of pedagogical design. Significant relationships were found among the three variables. Effective language motivated strategies correlated with positive engagement in altruistic behavior; an optimized blended learning environment enhanced the use of language motivated strategies and altruistic behavior. A comprehensive program was proposed to improve English learning among Chinese EFL university students by enhancing language motivation strategies, promoting altruistic behavior, and optimizing blended learning environments.

Language instructors may create a supportive environment by encouraging collaboration, establishing mentorship programs, providing psychological support, and forming study groups. Focus on offering additional support to students who feel anxious or stressed. School administrators may support policies and resource allocation that enable teachers to create collaborative and supportive environments, and provide additional support for students experiencing anxiety or stress. Students may actively participate in study groups and mentorship programs, collaborate with peers, and seek psychological support when needed. Language instructors may employ diverse teaching methods, including group discussions, project work, hands-on activities, and multimedia tools. This variety caters to different learning styles and enhances student motivation. School administrators may support and encourage teachers to adopt diverse teaching methods by providing necessary resources and professional development opportunities. Students may engage with different types of learning activities to find the methods that work best for you and enhance your learning experience.

Psychological support team may emphasize emotional support and positive feedback by offering encouragement, acknowledging efforts, providing constructive feedback, and using role models. This can boost students' confidence and engagement in learning and altruistic behavior. School administrators may implement school-wide policies that promote emotional support and positive feedback, encouraging teachers to recognize and reinforce students' efforts. Technology specialists may integrate advanced technology and abundant resources to optimize the blended learning environment. Regularly assess and update these technologies and resources to ensure they meet teaching objectives and student needs. School administrators may invest in and regularly update

advanced technological tools and resources to support a blended learning environment. Language instructors and school administrators may cultivate students' leadership and collaboration skills through classroom activities, project management, and extracurricular activities. This helps them better collaborate and communicate in their academic and professional careers. Students may participate in various classroom and extracurricular activities to develop leadership and collaboration skills, preparing for future academic and professional endeavors.

5.   References

Abakumova, M. V., Ivanova, E. A., & Polyakova, M. V. (2019). Generating Foreign Language Grammatical Competence on the Basis of Blended Learning. *the Proceedings of the European Proceedings of Social & Behavioural Sciences (EpSBS)*, *73*, 244-255.

Alhasov, Y., Verbytska, A., & Kolenichenko, T. (2020). Teaching English to adult learners within extracurricular activities at university: Barriers and motivation factors. *Advanced Education*, 12-19.

Armellini, A., & Rodriguez, B. C. P. (2021). Active blended learning: Definition, literature review, and a framework for implementation. *Cases on active blended learning in higher education*, 1-22.

Bandura, A. (2019). *Self-efficacy in changing societies*. Cambridge University Press.

Batson, C. D. (2010). The naked emperor: Seeking a more plausible genetic basis for psychological altruism. *Economics and Philosophy*, 26(2), 149-164.

Batson, C. D., Ahmed, N., & Lishner, D. A. (2009). Empathy and altruism. In S. J. Lopez & C. R. Snyder (Eds.), *Oxford handbook of positive psychology* (pp. 417-426). Oxford University Press.

Benhadj, Y. (2021). A quasi-experimental study on the impact of blended learning on EFL students' language proficiency. *International Journal of Language and Literary Studies*, 3(3), 146-155.

Bielak, J., & Mystkowska-Wiertelak, A. (2023). A retrodictive qualitative modeling study of complex and dynamic language learning motivation viewed as control, value and truth effectiveness. *Language Teaching Research*.

Bykov, A. (2017). Altruism: New perspectives of research on a classical theme in sociology of morality. *Current Sociology, 65*(6), 797-813.

Chen, J. (2015). Admiration and foreign language teaching in big data era: Challenges and opportunities. *Foreign Language Telegraph Teaching*.

Cheng, L., Klinger, D., Fox, J., Doe, C., Jin, Y., & Wu, J. (2014). Motivation and test anxiety in test performance across three testing contexts: The CAEL, CET, and GEPT. *Tesol Quarterly*, 48(2), 300-330.

Chen, J., & Ma, M. (2019). Research on reconstruction of foreign language teaching paradigm in information era: Motivation and objective. *Telegraphic Teaching of Foreign Languages*.

Derlega, V. J., & Grzelak, J. (Eds.). (2013). *Cooperation and helping behavior: Theories and research*. Academic press.

Diep, A. N., Zhu, C., Cocquyt, C., De Greef, M., Vo, M. H., & Vanwing, T. (2019). Adult learners' needs in online and blended learning. *Australian Journal of Adult Learning*, 59(2), 223-253.

Dörnyei, Z. (2010). *Motivational strategies in the language classroom*. Cambridge University Press.

Dreamson, N. (2020). Online design education: meta-connective pedagogy. *International Journal of Art & Design Education*, *39*(3), 483-497.

Fauzi, M. A., Tan, C. N. L., & Ramayah, T. (2018). Knowledge Sharing Intention at Malaysian Higher Learning Institutions: The Academics' Viewpoint. *Knowledge Management & E-Learning*, *10*(2), 163-176.

Fehr, E., & Fischbacher, U. (2003). The nature of human altruism. *Nature*, 425(6960), 785-791.

Feng, X., Wang, R., & Wu, Y. (2018). A review of the current state of blended learning research at home and abroad: An analysis framework of blended learning. **Journal of Distance Education**, 36(03), 13-24.

Fleischmann, K. (2020). The online pandemic in design courses: Design higher education in digital isolation. In *Impact of COVID-19 on the International Education System*. Griffith University, Queensland College of Art, Australia.

Graham, C. R., Borup, J., Pulham, E., & Larsen, R. (2019). K–12 blended teaching readiness: Model and instrument development. *Journal of Research on Technology in Education*, *51*(3), 239-258.

Hu, J., & Jin, Y. (2015). Theoretical and Practical Research on the Integration of Educational Technology and Foreign Language Courses. *China Educational Technology*, (4).

Islam, T., Zahra, I., Rehman, S. U., & Jamil, S. (2024). How knowledge sharing encourages innovative work behavior through occupational self-efficacy? The moderating role of entrepreneurial leadership. *Global Knowledge, Memory and Communication*, *73*(1/2), 67-83.

John, G. (2016). Designing Libraries in 21st Century. *London: British Council*.

Larsen, M., & Witoszek, N. (2023). Strategies of prosociality: Comparing Nordic and Slavonic altruism toward Ukrainian refugees. *Frontiers in Psychology*, *14*, 1065889.

Lavrentieva, O. O., Kuchma, O. I., & Skripnik, L. M. (2020). Designing the content of the educational institution information and consulting environment. *Educational Dimension*, 2, 148-164.

Leontopoulou, S. (2010). An exploratory study of altruism in Greek children: Relations with empathy, resilience and classroom climate. *Psychology*, *1*(05), 377.

Lee, W., Rhoads, J. F., Berger, E. J., & Deboer, J. (2020, June). WIP: Validating a Motivated Strategy for Learning Questionnaire (MSLQ) in an Active, Blended, and Collaborative (ABC) Dynamics Learning Environment. In *2020 ASEE Virtual Annual Conference Content Access*.

Miyazono, K., & Inarimori, K. (2021). Empathy, altruism, and group identification. *Frontiers in Psychology*, 12, 749315.

Müller, C., & Mildenberger, T. (2021). Facilitating flexible learning by replacing classroom time with an online learning environment: A systematic review of blended learning in higher education. *Educational Research Review, 34*, 100394.

Murphey, T. (2014). Singing well-becoming: Student musical therapy case studies. *Studies in Second Language Learning and Teaching*, 4(2), 205-235.

Neli, U. S., & Sukmawati, I. (2019). Altruistic behavior of students in SMA N 1 Kampung Dalam Padang Pariaman Regency and the implication in guidance and counseling. *Jurnal Neo Konseling*, 1(4).

Nelson Laird, T. F., Seifert, T. A., Pascarella, E. T., Mayhew, M. J., & Blaich, C. F. (2014). Deeply affecting first-year students' thinking: Deep approaches to learning and three dimensions of cognitive development. *The journal of higher education*, *85*(3), 402-432.

Park, S., & Yun, H. (2018). The influence of motivational regulation strategies on online students' behavioral, emotional, and cognitive engagement. *American Journal of Distance Education*, *32*(1), 43-56.

Porter, W. W., Graham, C. R., Spring, K. A., & Welch, K. R. (2014). Blended learning in higher education: Institutional adoption and implementation. *Computers & Education*, *75*, 185-195.

Qi, S., & Zhao, X. (2021). A correlation study of English learning motivation and learning strategies of student pilots. *International Journal of New Developments in Education*, 3(5), 1-7.

Qian, S., Wang, J., & Shi, W. (2020). When helping can turn into unethical behavior: Depending on helping is proactive or reactive. *Current Psychology*.

Rocael, M., Rizzardini, R., & Medina, J. (2015). MOOC using cloud-based tools: A study of motivation and learning strategies in Latin America. *International Journal of Engineering Education*, *31(4),* 901-911

Salem, A. A. M., Abdelsattar, M., Abu Al-Diyar, M., Al-Hwailah, A. H., Derar, E., Al-Hamdan, N. A., & Tilwani, S. A. (2022). Altruistic behaviors and cooperation among gifted adolescents. *Frontiers in Psychology*, 13, 945766.

Stolk, J. D., & Martello, R. (2015). Can disciplinary integration promote students' lifelong learning attitudes and skills in project-based engineering courses. International *Journal of Engineering Education, 31(1),* 434-449.

Trenshaw, K. F., Herman, G. L., Green, K. A., & Goldberg, D. E. (2014). Fostering motivation as a class objective in a large engineering class for second-year students: A narrative approach. *International Journal of Engineering Education*, *30(4)*, 837-847.

Yu, Z. (2021). The effects of gender, educational level, and personality on online learning outcomes during the COVID-19 pandemic. *International Journal of Educational Technology in Higher Education*, 18(1), 14.

Zhang, H., Zhang, W., & Yang, F. (2019). Research on the Impact of MOOC-Based Blended Teaching Model on English Learning Strategies: A Case Study of the "Basic English Listening and Speaking" Course. *Foreign Language*

Education and Technology, (5).

Zhang, H., Yu, L., Ji, M., Cui, Y., Liu, D., Li, Y. & Wang, Y. (2020). Investigating high school students' perceptions and presences under VR learning environment. *Interactive Learning Environments*, 28(5), 635-655.

Zheng, Y. (2019). Research on the Learning-Promoting Effect of SPOC Blended Teaching in English Academic Writing Class. *Foreign Language Education and Technology*, (5).

Zheng, X., & Su, Q. (2020). Exploration of Blended Teaching Strategies and Beliefs of College English Teachers in the Post-MOOC Era. *Foreign Language Education and Technology*, (2).