Longitudinal Examination of Foreign Language Enjoyment and Academic Self-efficacy: Latent Growth Modeling

Yutong Xuan

Dalian University of Foreign Languages, Dalian, Liaoning, China

Abstract: *This study examines the developmental trajectories of foreign language enjoyment (FLE) and academic self-efficacy (ASE), and their interaction across four times points among 78 foreign language learners. The results indicate that: FLE and ASE significantly increased over time. Higher initial level of FLE was associated with a slower rate of increase, both showing significant individual variations. The later development of ASE was not affected by its changing rate, but both manifested significant individual variations. FLE and ASE positively predicated each other in the initial two stages, but this effect did not persist into the later stage. The findings contribute to promote a dynamic turn in emotion and efficacy research and offer insights for foreign language teaching.*

Keywords: Foreign Language Enjoyment, Academic Self-Efficacy, Latent Growth Modeling.

1. Introduction

The role of emotion and cognition in the field of second language acquisition has been the subject of extensive research. In a seminal contribution to the field, Oxford (2016) advanced the proposition that the well-being of foreign language learners is a multidimensional construct, constituted by a complex interplay of personal and environmental factors. In the EMPATHICS model of the well-being theory, self-efficacy and positive emotion are two key dimensions that are dynamically interconnected and play a crucial role in elucidating the psychological processes of foreign language learners (Xu, 2023). The application of Complex Dynamic Systems Theory (CDST) offers a novel framework for investigating the evolution and interaction of affective and cognitive processes in foreign language learners. As emphasized by Larsen-Freeman (2016), longitudinal studies represent an invaluable method for exploring such complex systems. Furthermore, longitudinal approaches allow for a more comprehensive investigation of the intertwined interactions between different factors. In recent times, an increasing number of studies have adopted a dynamic perspective to explore asynchronous changes in individual differences in foreign language learners (Gregersen et al., 2014; Peura et al., 2021; Dewaele et al., 2022). Nevertheless, longitudinal studies on emerging topics such as foreign language learning enjoyment and academic self-efficacy, and their dynamic interactions, remain scarce.

Accordingly, the present study sought to examine the developmental trajectories of students' foreign language enjoyment and academic self-efficacy as a complex system. Furthermore, the interaction between the two variables will be explored using an innovative statistical method in the field of linguistics, namely latent growth modelling (LGM) and cross-lagged path modeling (CLP). This study aims to make a valuable contribution to the empirical research in this field, while also providing insights into the optimal timing and strategies for the instruction.

2. Literature Review

2.1 Foreign Language Enjoyment

Foreign language enjoyment is a pervasive and positive emotion that plays a pivotal role in foreign language teaching and learning contexts. As posited by Dewaele and MacIntyre (2014), FLE serves to stimulate learners' potential, fostering motivation to enhance their attention and critical thinking. With the advent of the "dynamic turn" in the field of second language acquisition, there has been a shift in focus towards the description of ongoing systematic change and the interactions between variables in the context of FLE.

A substantial body of research has demonstrated that FLE is a complex, dynamic, and multifaceted phenomenon. Among these studies, those designated as "long window" studies are characterized by their longitudinal approach, encompassing an extended time span. Shirvan et al. (2021) identified a notable increase and fluctuation in students' FLE levels over the course of a semester. Pan & Zhang (2021) investigated the fluctuations of FLE in during a 14-week period. The findings revealed that FLE is a dynamic construct influenced by a range of factors, including motivational factors (e.g., ideal L2 self, ought-to self) and personality traits (e.g., extraversion).

In contrast, "short-window" studies refer to follow-up studies that cover a relatively short period of time, such as a session or a task. Shirvan & Talebzadeh (2018) employed an idiodynamic method to examine the fluctuations in FLE during students' conversations, demonstrating the impact of intra- and inter-individual differences on the intensity of this emotion. Finally, "quasi-tracing" studies primarily refers to cross-sectional studies that infer trajectories of emotional development based on data from groups at different levels. From a nomothetic perspective, Dewaele & Dewaele (2017) compared the FLE of of a total of 189 foreign language learners in three different age groups, and predicted the developmental trend of FLE with age.

2.2 Academic Self-efficacy

Academic self-efficacy represents a pivotal psychological concept in the context of foreign language teaching. It exerts a

profound influence on learners' task achievement, cognitive process, and inner experience (Honicke & Broadbent, 2016; Truong & Wang, 2019; Jia et al., 2021).

In the context of foreign language learning, some scholars have put forth the argument that ASE reflects learners' self-assessment of their ability to utilise the skills they have acquired to complete English learning tasks. In essence, ASE is a subjective assessment of an individual's ability to regulate their own English learning behaviours (Galla et al., 2014; Schnell et al., 2015). Mercer (2011) highlights that, specifically in the field of second language acquisition, ASE reflects an individual's beliefs about self-description and feelings about their abilities as second language learners, which optimises their performance. Therefore, ASE is of great consequence to FL learners in terms of task accomplishment, cognitive methodology, and subjective experience. Further investigation by researchers is merited (Multon, et al.,1991; Talsma et al., 2018).

Some researchers have postulated that domain-specific self-efficacy is more susceptible to change over time than general self-efficacy. Marsh et al. (2019) thus underscored the necessity for longitudinal studies to elucidate the trajectory of academic self-efficacy. Peura et al. (2021) employed a longitudinal design and a growth mixture model to analyze students' reading self-efficacy over an 11-month period, examining trajectories of change and group heterogeneity characteristics. They discovered interactions between changes in reading self-efficacy and four sources of efficacy over time. Drawing on complex dynamic systems theory and sociocultural perspectives, Calafato (2023) explored the trajectories of change in motivation, academic self-efficacy, language learning strategies, as well as their relationship with multilingual competence and examination results. The findings indicated that motivation and academic self-efficacy were predictive of students' test scores, while learning strategies did not significantly impact performance.

2.3 Associations between Foreign Language Enjoyment and Academic Self-efficacy

In recent years, scholars at home and abroad have initiated investigations into the relationship between academic self-efficacy and foreign language enjoyment. In a questionnaire survey and latent profile analysis conducted by Wang et al. (2021) on 300 non-English major college students, it was revealed that academic self-efficacy positively predicted foreign language enjoyment. Cui & Meng (2023) conducted an investigation into the overall status of self-efficacy and enjoyment in foreign language learning, as well as their relationship with English proficiency, utilizing questionnaires and interviews. The findings revealed that learners' self-efficacy had a significant impact on their foreign language enjoyment, which in turn affected their English proficiency through the mediating effect of enjoyment.

Furthermore, foreign language enjoyment has been identified as a significant predictor of academic self-efficacy (Li, 2021). Xiao (2017) examined the relationship between English learning emotions, learning motivation, and self-efficacy among vocational college students and found that enjoyment positively predicts self-efficacy in English learning.

Derakhshan & Fathi (2023) conducted a study with 578 Iranian English learners and found that foreign language enjoyment has a substantial positive impact on online self-efficacy within an online English learning environment.

In conclusion, emotion and self-efficacy are pivotal indicators of student learning (Pajares, 1996; Schunk & Meece, 2005; Richardson et al., 2011). The significance of psychological and affective factors in foreign language learning has been increasingly acknowledged by academics. Nevertheless, only a limited number of studies have been undertaken to investigate the dynamic relationship between self-efficacy and enjoyment in the context of foreign language learning. The majority of previous studies have employed static cross-sectional designs, and there is a paucity of longitudinal studies that could elucidate the causal relationship between these two variables. Accordingly, the present study sought to elucidate the temporal developmental patterns of learners' foreign language enjoyment and academic self-efficacy, as well as the dynamic interactions between them.

3. Methods

3.1 Research Questions

With the aim of investigating the changes in foreign language enjoyment and academic self-efficacy and further probing into the reciprocal relationship between them among foreign language learners, this study intends to address the following three research questions:

1) In what direction and to what extent do foreign language learners' FLE and ASE change throughout the semester?
2) Do the initial levels of FLE and ASE predict their rates of change?
3) Is there a reciprocal relationship between FLE and ASE? If so, what is the relationship?

3.2 Participants

Simple random cluster sampling method was used in this study. The participants were a total of 78 second-year students, comprising 9 males and 69 females from three classes of a foreign language university in China. They are all the native Chinese speakers with at least a decade's experience of learning English. The participants' English proficiency level, as determined by the Oxford Placement Test ranged between a lower-intermediate level and an upper-intermediate level. Meanwhile, the data were collected in multiple temporal phases from the course of the selected institutes during spring semester 2024. There was no subject attrition during the study.

3.3 Research Instruments

3.3.1 Foreign Language Enjoyment Scale (FLES)

To measure learners' FLE, the researcher used the Chinese version of the original 11-item Foreign Language Enjoyment Scale (Li et al., 2018), which has high reliability and validity. As its composition, the scale tapped into the FLE-private by means of 8 items, the FLE-teacher through 4 items and the FLE-atmosphere of 4 items.

The items were all positively worded and they were rated on a 5-point Likert scale ranging from 1(strongly disagree) to 5(strongly agree). The Cronbach's Alpha of the FLES was 0.93, which indicated the questionnaire achieved high reliability. Besides, the KMO was 0.88, suggesting the structural validity was deemed to be robust.

3.3.2 Academic Self-Efficacy Scale (ASES)

Learners' ASE was measured using the Liang' s (2000) questionnaire, which was based on the relevant dimensions of Pintrich & DeGroot' s (1990) scale. To match the teaching context properly, the original scale was adapted according to the curriculum characteristics and pedagogical objectives. The scale consisted of 18 self-report statements which assess two aspects of Academic Competence Self-Efficacy (ACSE) and Academic Behavior Self-Efficacy (ABSE).

The questionnaire takes the form of 5-point Likert Scale, in which responses can be graded from "1=strongly disagree" to "5=strongly agree" for the description of the items. The Cronbach's Alpha for the ASES was 0.95, and the KMO was 0.92. These values indicated that the scale exhibited high reliability and validity.

3.4 Data Collection

The study aimed to capture the development of foreign language enjoyment and academic self-efficacy over a long period of time (one semester). Questionnaires were distributed every three weeks for a total of four measurements. The procedure for tracking the measurements was consistent, with an average duration of 15 minutes. Given the duration of the EFL course, it was deemed appropriate to adopt a three-week interval, which would be reflective of the potential causal lags between the two variables in the language learning process.

With the permission of the teacher, questionnaires were carried out collectively in the classroom setting. It's pertinent to highlight that students were informed of the voluntarism of their participation, assuring the confidentiality and anonymity of their responses. All participants received specific instructions in advance. Given that the same scale may induce a practice effect, the order of the items and the manner of responding (e.g., changing the choice mode) were adjusted in each round to minimize this effect.

3.5 Data Analysis

After the data entry and verification, the researcher tested the reliability and structural validity of the scales with the help of SPSS 26.0 and Mplus 8.3 software, and then conducted descriptive statistics and correlation analysis of all variables to investigate the overall situation and correlation between FLE and ASE.

The study employed Mplus to construct a latent growth model (LGM) and a cross-lagged panel analysis. LGM was used to analyse the proposed hypothetical model of covariance between initial and growth levels of FLE and ASE by applying multi-wave data (Byrne, 2016). The intercept was

employed to represent the initial level, while the slope was utilized to represent the rate of change, with the objective of exploring the developmental trajectories of FLE and ASE, and the inter-individual fluctuations in both variables during the four measurements. Additionally, cross-lagged panel analysis were performed with the intention of further confirming the temporal order and overall causal direction between participants' FLE and ASE.

To test the hypothetical model, the path from the intercept factors to the observed variables of FLE and ASE w ere set as 1, that is, the intercept values were constant across all four measurement occasions. Besides, the paths from the slope factors to the observed variables were constrained to 0, 1, 2, 3. This means that 1, 2, 3 reflected the same time intervals (weeks 4, 7, and 10), where 0 represented week 1 as the starting point of growth for both variables.

Additionally, cross-lagged panel analysis was employed to explore the reciprocal relationship between FLE and ASE. This method of analysis has the advantage over cross-sectional studies of enabling the path of influence between two variables to be traced over time (van Lier et al., 2012). The study employed four possible models to detect the contribution values of disparate paths between variables: (1) Stability model: M1 is consisted of the autoregressive effects over time for each latent construct (FLE 1 → FLE 2; ASE 1 → ASE 2), correlations between constructs assessed at the same temporal point. (2) Casual model: M2 is constructed on the basis of M1, in addition to incorporate the cross-lagged paths (FLE 1→ ASE 2). (3) Reverse-casual model: M3 includes the same as the stability model in conjunction with reversed cross-lagged effects (ASE 1→ FLE 2). (4) Reciprocal model: M4 contains the M1, M2 and M3 for all cross-lagged paths, representing reciprocal effects (FLE 1→ ASE 2; ASE 1→ FLE 2). Subsequently, the optimal model was identified through a comparison of the fit indices and chi-square variability. An adequate model fit was indicated by CFI ≥0.90, TLI ≥ 0.90, RMSEA ≤ 0.08, and SRMR ≤ 0.08 (Hu & Bentler, 1999; Kline, 2012).

4. Results and Discussion

4.1 Primary Analysis

The results of the skewness and kurtosis tests indicated that the data exhibited a normal distribution (Gravetter et al., 2020). By the one-way Harman test, the cumulative variance explained by the first extracted common factor across four measurements fell below the critical threshold of 40%, which demonstrated that this research was not significantly influenced by common method bias.

Latent growth model represents an effective approach for capturing complex dynamics when changes manifest themselves in non-linear trajectories. In order to guarantee the dependability and accuracy of the LGM, an initial investigation was conducted into the longitudinal correlation between repeated measurements (see Tables 1 and Table 2). As can be seen from the tables, the matrix of correlation coefficients indicated a strong positive correlation between variables at different time points. Furthermore, the correlation coefficients between neighbouring time points (t and t+1)

were found to be higher than those between non-neighbouring time points (FLE rs ranged from 0.40 to 0.72; ASE rs ranged from 0.41 to 0.77). In addition, the non-diagonal correlations of the same repeated measurements over time demonstrated notable discrepancies from one another. The aforementioned correlation results indicated the potential for significant slope changes in each variable's trajectory.

Table 1: Correlation matrix of FLE in the four measurements

	1	2	3	4
FLE 1	-			
FLE 2	.721**	-		
FLE 3	. 618**	.651**	-	
FLE 4	.402**	.532**	.680**	-

Table 2: Correlation matrix of ASE in the four measurements

	1	2	3	4
ASE 1	-			
ASE 2	.766**	-		
ASE 3	. 549**	.712**	-	
ASE 4	.410**	.497**	.689**	-

4.2 Main Analysis

In order to examine the developmental trajectory of students' foreign language enjoyment and academic self-efficacy, the researcher constructed a latent growth model (see Figure 1 and 2). The initial level of participants' FLE and ASE is represented by the mean of the intercept M(I), and the developmental trend is represented by the mean of the slope M(s). A positive M(s) indicates an overall upward trend, whereas a negative M(s) indicates an overall downward trend. Individual differences in both initial levels and developmental trends are captured by variance for intercept Var(I) and for slope Var(S), respectively. Significant variance indicates the existence of significant inter-individual differences. Furthermore, the covariance (V) between the intercept and slope demonstrates the extent to which the initial level predicts the rate of development (Wang & Bi, 2018).

Direction and Extent of Change in FLE and ASE

As illustrated in Figure 1 and Figure 2, in terms of the changing rate of learners' FLE and ASE, the results of this research indicated that students experienced statistically significant upward trend in FLE and ASE throughout the tracking period, with M(S) for FLE = 0.34 (p<0.05) and M(S) for ASE = 0.23 (p<0.05). The above findings indicated that the alterations in learners' FLE and ASE demonstrated a favourable growth trajectory over time. The learners exhibited increased positive emotion and confidence in their academic abilities over the course of the semester.

The above results demonstrated that both FLE and ASE exhibited a similar pattern of growth throughout the course. This phenomenon may be associated with the influence of teacher support and classroom environment on student growth. In line with the findings of Demir (2021), it was established that the features of a positive classroom environment, including the teacher's warmth, care, positive feedback, friendly peer relationships and a relaxed atmosphere, can enhance learners' beliefs about learning. This, in turn, can lead to increased effort and enjoyment in the classroom, as well as improved the learners' classroom performance.
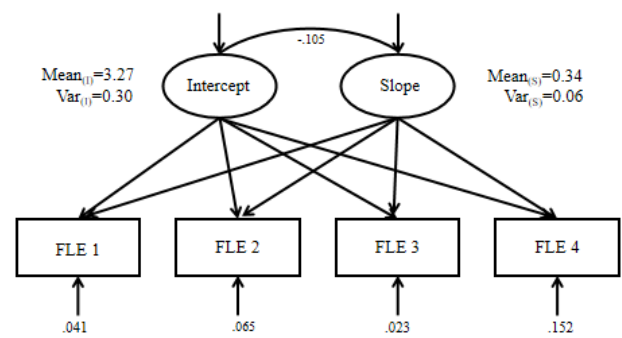

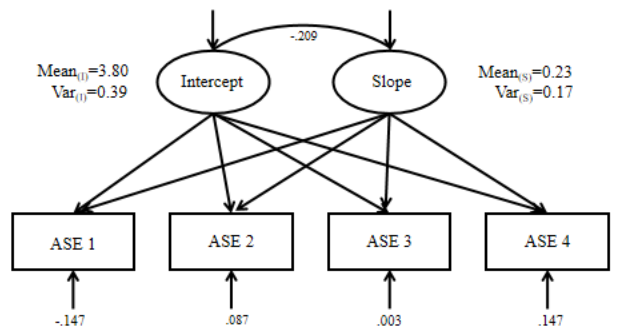**Figure 1:** Latent growth model of FLE

Figure 2: Latent growth model of ASE

Heterogeneity in Learners' FLE and ASE

With regard to the intercept variance of the two variables, the results indicated that the Var(I) for FLE was 0.30 (p<0.001), and Var(I) for ASE was 0.39 (p<0.001). It can thus be concluded that there were significant heterogeneity between individuals in terms of their FLE and ASE at the outset of the study, that is to say, at the time of the initial data collection. Furthermore, an examination of the significance of the slope variance permitted an investigation of the developmental pattern of FLE and ASE among different students. The results were also found to be statistically significant for both FLE (Var(S)=0.06, p<0.05) and ASE (Var(S)=0.17, p<0.05), indicating the presence of individual variations in the developmental trajectories of FLE and ASE throughout the semester.

The statistical significance of the intercept variance indicated that some learners exhibited higher initial levels of FLE and ASE, while others demonstrated lower initial levels, and a third group exhibited initial levels that were approximately aligned with the mean value. Similarly, the statistically significant slope variance indicated that certain learners demonstrated higher rates of change in FLE and ASE over time than others, while some maintained consistent levels.

The aforementioned findings lent support to the self-characterisation of FLE and ASE (Leeming et al., 2017; Bielak, 2022). It is noteworthy that the present study was conducted with participants' foreign language learning level, age, and other factors held constant. The reasons for inter-individual differences in FLE and ASE are complex and include a number of additional individual difference factors, such as motivation, personality, and learning style (Verspoor et al., 2008; Dörnyei et al., 2015). In regard to course management, teachers may consider incorporating a variety of pedagogical strategies with the aim of fostering positive emotional experiences among learners and providing timely

encouragement, thereby assisting in the formation of positive beliefs that would have a beneficial effect on subsequent teaching and learning. This approach has the potential to contribute to the maintenance of learners' positive learning psychology and performance (Frenzel et al., 2018).

Predictive Power of the Initial States of FLE and ASE

The negative covariance between the intercept and the slope of FLE (V=-0.105, p<0.05) indicated that individuals with higher initial levels of FLE exhibited a slower increase. Conversely, a lower initial level of FLE was associated with a steeper increase. This signified that the initial state of FLE (high or low) did not necessarily result in the maintenance of similar levels of emotion over time. Additionally, a negative covariance was identified between the ASE's intercept and slope (V=-0.209, p>0.05), indicating that the subsequent development of an individual's ASE was not contingent upon their initial level. In other words, students who commenced the study at higher levels of ASE may also demonstrate a greater improvement over time, whereas those who commence at lower levels may continue to exhibit gradual increases during the semester.

The present study revealed that FLE and ASE exhibited disparate characteristics in the relationship between initial level and changing rate. Specifically, FLE demonstrated a negative correlation between initial level and changing rate, whereas no significant relationship was observed for ASE. This finding aligned with that of Kruk et al. (2022), but contrasts with the conclusions of Elahi Shirvan & Taherian (2021) and Elahi Shirvan et al. (2021) who asserted that there was no covariance between the initial level of FLE and its growth over the semester. It is therefore hypothesised that learners with lower initial FLE would demonstrate high growth over the course of the semester, which may be related to the external environmental factors such as teacher and peer support, as postulated by previous studies. The provision of teachers' emotional support and peers' mutual assistance was found to contribute to learners' positive emotions as the course progressed (De Ruiter et al., 2019; Li, 2020; Elahi Shirvan & Taherian, 2021; Elahi Shirvan et al., 2021). In contrast to FLE, the initial level of ASE was not predictive of its subsequent growth over the course of the semester. This was largely attributable to a complex interplay between internal and external learner factors. Internal learner factors are primarily comprised of the level of content mastery and attitudes towards English learning. In comparison to external factors, these internal factors are more stable and less susceptible to change (Roick et al., 2017; Calafato, 2023). Consequently, the progression of ASE is more uncertain and its growth trajectory is no longer contingent on its initial level.

Reciprocal relationship between FLE and ASE

Firstly, a baseline model was established, with the exception of the interaction path. These were: a) the error variances of FLE and ASE were correlated; and b) the autoregressive effects of both FLE and ASE were estimated.

Table 3 displayed the fit indices of the tested models in cross-lagged analysis. The resulting model (Model 1: Autoregressive Predictive Model) was found to be an inadequate fit for the observed data, with $\chi^2(10)$ =32.108, p<0.05, CFI=0.802, TLI=0.687, RMSEA=0.115, and SRMR=0.191. Compared to the stability baseline model, the causal model (M2), containing cross-lagged impacts from FLE assess at Time 1 to ASE assessed at Time 2, demonstrated a satisfactory degree of fit, as indicated by the moderate fit indices ($\Delta\chi^2$ = 12.74, Δdf = 2, p<0.05). In addition, in comparison with the stability model, the reverse-causal model (M3), assuming cross-lagged impacts from ASE assessed at Time 1 to FLE assessed at Time 2, showed a unsatisfactory fit to the data ($\Delta\chi^2$ = 8.29, Δdf = 2, p>0.05). However, the reciprocal model (M4), combining the causal and reverse-causal models, appeared to have better fit indices in comparison with the stability model ($\Delta\chi^2$ = 15.94, Δdf = 2, p<0.05), causal model ($\Delta\chi2$ = 3.20, Δdf = 2, p<0.05) and reverse-causal model ($\Delta\chi2$= 7.66, Δdf = 0, p<0.05). In conclusion, Model 4 is more effective in capturing the interactive predictive relationship between FLE and ASE. Figure 3 demonstrated the final cross-lagged model for FLE and ASE, which was proved to have the best fit indices.

Table 3: Fit indices of the tested models

Model	χ^2	df	CFI	TLI	RMSEA	SRMR
Model 1	32.108	10	0.802	0.687	0.115	0.191
Model 2	19.371	8	0.913	0.927	0.077	0084
Model 3	23.822	12	0.794	0.813	0.086	0.125
Model 4	16.170	12	0.988	0.974	0.067	0.037

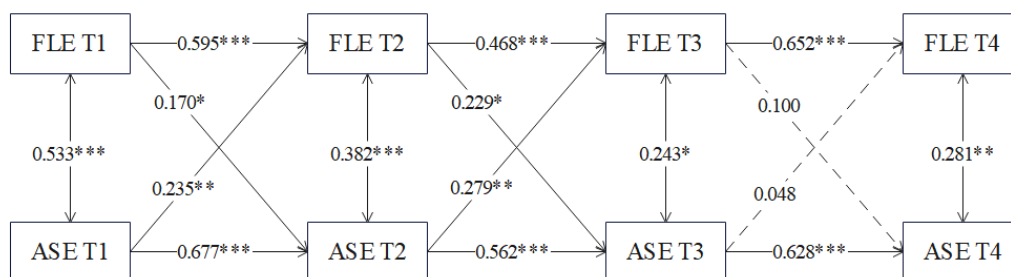Notes: The Model in bold is preferred.

Figure 3: Final reciprocal model (Model 4)

Within the same temporal measurement time dimension, the cross-sectional analyses revealed that the intra-wave correlations between FLE and ASE were markedly positive (r = 0.533, p<0.05) at Time 1. Furthermore, significant positive correlations between FLE and ASE were identified at the subsequent three time points (T2, T3 and T4), with correlation coefficients of 0.383, 0.243 and 0.281, respectively (p<0.05).

It is, however, noteworthy that the strength of this correlation between the two variables exhibited a gradual decrease over time.

As demonstrated in the findings of the study, there is a positive correlation between learners' FLE and ASE at the outset of the investigation. Furthermore, a correlation was

identified between the growth of the two variables over the course of the semester. This finding can be explained by the conclusions of previous studies on the subject. On the one hand, foreign language enjoyment, as a positive academic emotion, has been demonstrated to enhance and shape self-efficacy, an important indicator in the social cognitive domain (Richardson et al., 2011; Wang et al., 2021). Conversely, self-efficacy in learning-related skills is a significant factor in foreign language learning, enabling students to sustain positive emotions (e.g., enjoyment) and enhance academic performance. Students who are confident in their ability to learn independently and direct their own learning are more likely to experience more enjoyable learning experiences (Pekrun et al., 2004; Putwain et al., 2013; Khajavy et al., 2018).

Pertaining to the cross-temporal dynamics, the autoregressive effects (autocorrelation) of foreign language enjoyment and academic self-efficacy over time indicated that both ASE (β= 0.562~0.677, p<0.05) and FLE (β= 0.468~0.652, p<0.05) exhibited stability across time periods. Nevertheless, in comparison, ASE appears to demonstrate greater longitudinal stability than FLE.

More importantly, this study examined the cross-lagged effect between FLE and ASE. The results demonstrated that FLE at time 1 was a significant positive predictor of ASE at time 2 (β= 0.235, p<0.05), while conversely indicating that FLE at Time 1 could also significantly predict ASE at Time 2 (β= 0.170, p<0.05). A significant interaction was observed between FLE at time 2 and ASE at time 3 (β= 0.229, p<0.05), as well as between ASE at time 2 and FLE at time 3 (β= 0.279, p<0.05). However, this interactive predictive relationship between the two variables was not sustained into the subsequent period, i.e., it was not observed in the time period between Time 3 and Time 4. Specifically, a non-significant path was observed between FLE at time 3 and ASE at time 4 (β= 0.100, p>0.05), as well as from ASE at time 3 to FLE at time 4 (β= 0.04, p>0.05).

The results of the cross-lagged analysis indicated the presence of a longitudinal predictive relationship between FLE and ASE over time. In accordance with the control-value theory (Pekrun & Perry, 2014), enjoyment is a positive and high-arousal emotion that serves to enhance an individual's capacity for attention and cognitive processing, the expansion of behavioral tendencies, and the access and utilization of pre-existing resources within a given context (Fredrickson, 2001; MacIntyre et al., 2012). Dewaele & MacIntyre (2014) also upheld a similar view that FLE could help individuals to expand and construct their language skills and social relationships. The views of the above scholars also provide explanations for the observed relationship between FLE and ASE in this study. However, the delayed effect of the predictive power between FLE and ASE was not observed, that is to say, the predictive power was not always significant and stable. This may be attributed to the fact that as learners' foreign language learning experience becomes increasingly diverse, their attitudes and motivations towards the subject also become more varied. These factors may exert varying degrees of influence on learners' FLE and ASE, which is a topic worthy of further investigation in the future.

Adopting a longitudinal perspective, this study not only explored the trajectories of FLE and ASE over the course of the semester but also provided validation for the previously observed cross-sectional correlations between the two variables, as well as for the reciprocal predictive relationships.

5. Conclusion and Implication

This study employed an innovative approach, utilizing LGM and CLP modelling, to investigate the developmental trajectories of learners' FLE and ASE across the four measurements, as well as their reciprocal predictive relationships. The findings indicated a general upward trend in both FLE and ASE over the course of one semester. With regard to FLE, individual differences were observed in both the initial levels and rates of change among students; specifically, students' initial enjoyment levels influenced the steepness or gradual nature of subsequent emotional fluctuations. In terms of ASE, while variations existed between individuals concerning initial levels and rates of change, it was found that growth in ASE could not be predicted by its initial state. Furthermore, a significant positive correlation emerged between the growth trajectories of FLE and ASE over time, with increases in FLE corresponding to rises in ASE. A bidirectional prediction relationship was also identified between these two constructs across time points; notably, the predictive effect of ASE on FLE proved stronger than vice versa. However, by mid-semester through to its conclusion, this mutual predictability diminished significantly.

From a pedagogical perspective, this research elucidated vertical dynamic changes within FLE and ASE which could enhance teachers' comprehension of English learners' psychological development processes to some extent, thereby motivating teachers to implement timely and strategic interventions during the instruction. It is imperative for teachers to consider learners' baseline enjoyment levels and beliefs about learning as benchmarks for assessing these mental variables throughout English language curricula. By fostering an understanding regarding how factors such as FLE and ASE influence teaching practices alongside student outcomes, teachers could better guide students toward achieving long-term language acquisition goals. Additionally, given the reciprocal relationship between FLE and ASE, encouraging learners to sustain interest and enjoyment may bolster their confidence throughout the language learning process.

Future research could adopt a mixed-method approach, integrating qualitative methods to provide more nuanced explanations for the findings of the quantitative analysis. Subsequent studies might also test and extend the LGM model utilized herein by examining predictors such as learners' motivation or engagement at the initial stage, and investigating the extent to which these variables can explain the differences in growth and the dynamic relationship between FLE and ASE. Scholars have suggested adopting diverse methodologies, including Q methodology, potential growth model and idiodynamic method to explore complexities inherent within various psychological constructs (MacIntyre et al., 2015). Moreover, replicating this investigation with a larger participant sample may enhance

the generalizability of our findings.

References

[1] Bandura, A. Perceived self-efficacy in cognitive development and functioning[J]. Educational Psychologist, 1993(2):117–148.

[2] Boudreau, C., MacIntyre, P. D. & J. -M Dewaele. Enjoyment and anxiety in second language communication: An idiodynamic approach[J]. Studies in Second Language Learning and Teaching, 2018(1): 149-170.

[3] Calafato, R. Charting the motivation, self-efficacy beliefs, language learning strategies, and achievement of multilingual university students learning Arabic as a foreign language. Asian[J]. Second. Foreign. Lang. Educ, 2023(4):8-20.

[4] Chen, X., He, J. & X. Fan. Relationships between openness to experience, cognitive flexibility, self-esteem, and creativity among bilingual college students in the U.S[J]. International Journal of Bilingual Education and Bilingualism, 2019.

[5] Dewaele, J.- M. & C. Li. Emotions in second language acquisition: A critical review and research agenda[J]. Foreign Language World, 2020(1):34-49.

[6] Dewaele, J.-M. & L. Dewaele. The dynamic interactions in foreign language classroom anxiety and foreign language enjoyment of pupils aged 12 to 18. A pseudo-longitudinal investigation[J]. Journal of the European Second Language Association, 2017(1):12-22.

[7] Derakhshan, A. & Fathi, J. Grit and Foreign Language Enjoyment as Predictors of EFL Learners' Online Engagement: The Mediating Role of Online Learning Self-efficacy[J]. Asia-Pacific Education Researcher, 2023.

[8] Elahi Shirvan M, Taherian T, Shahnama M & Yazdanmehr E. A Longitudinal Study of Foreign Language Enjoyment and L2 Grit: A Latent Growth Curve Modeling[J]. Front. Psychology, 2021:7.

[9] Elahi Shirvan, M. & N. Talebzadeh. Exploring the fluctuations of foreign language enjoyment in conversation: An idiodynamic perspective[J]. Journal of Intercultural Communication Research, 2018(1): 21-37.

[10] Jia, Y. E., P. Gesing, J. Tornwall et al. Exploring the impacts of learning modality changes Validation of the learning modality change community of inquiry and self-efficacy scales[J]. Education and Information Technologies, 2023:28.

[11] Jiang, Y. & J. M. Dewaele. How unique is the foreign language classroom enjoyment and anxiety of Chinese EFL learners? [J]. System, 2019(59): 13-25.

[12] Jin, Y. & L. J. Zhang. The dimensions of foreign language classroom enjoyment and their effect on foreign language achievement[J]. International Journal of Bilingual Education and Bilingualism, 2019(7):1-15.

[13] Larsen-Freeman, D. On the complementarity of chaos/complexity theory and dynamic systems theory in understanding the second language acquisition process[J]. Bilingualism: Language and Cognition, 2007(1):35-37.

[14] Li, C. A positive psychology perspective on Chinese EFL students' trait emotional intelligence, foreign language enjoyment and EFL learning achievement[J].

Journal of Multilingual and Multicultural Development, 2020(3):246-263.

[15] Li, C., G. Jiang & J.-M. Dewaele. Understanding Chinese high school students' foreign language enjoyment: Validation of the Chinese version of the Foreign Language Enjoyment Scale[J]. System, 2018(76): 183-196

[16] MacIntyre, P. D. & S. Mercer. Introducing positive psychology to SLA[J]. Studies in Second Language Learning and Teaching, 2014(2):153-172.

[17] Mercer, S., P. D. MacIntyre, T. Gregersen & K. Talbot. Positive language education: Combining positive education and language education[J]. Theory and Practice of Second Language Acquisition, 2018(2): 11-31.

[18] Oxford, R. L. Powerfully positive: Searching for a model of language learner well-being [A]. In D. Gabrys'-Barker & G. D. Gajda(eds.). Positive Psychology Perspectives on Foreign Language Learning and Teaching [C]. Switzerland: Springer International Publishing, 2016:21-37.

[19] Peura, P., Aro, T., Räikkönen, E., et al. Trajectories of change in reading self-efficacy: a longitudinal analysis of self-efficacy and its sources[J]. Contemporary Educational Psychology, 2021.

[20] Putwain, D., Sander, P., & Larkin, D. Academic self-efficacy in study-related skills and behaviours: Relations with learning-related emotions and academic success[J]. British Journal of Educational Psychology, 2013(4):633–650.

[21] Roick, J., & Ringeisen, T. Self-efficacy, test anxiety, and academic success: a longitudinal validation[J]. International Journal of Educational Research, 2017(83): 84-93.

[22] Saito, K., Dewaele, J. -M., Abe, M. & Y. In'nami. Motivation, emotion, learning experience, and second language comprehensibility development in classroom settings: A Cross-Sectional and longitudinal study[J]. Language Learning, 2018(3):709-743.

[23] Shirvan, M. E., & Taherian, T. Longitudinal examination of university students' Foreign Language enjoyment and Foreign Language classroom anxiety in the course of general English: Latent growth curve modeling[J]. International Journal of Bilingual Education and Bilingualism, 2018(1):31–49.

[24] Wang, Y., Shen, B., & Yu, X. A latent profile analysis of EFL learners' self-efficacy: Associations with academic emotions and language proficiency[J]. System, 2021.

[25] Zhen, R., Liu, R.D., Ding, Y., Wang, J., Liu, Y., & Xu, L. The mediating roles of academic self-efficacy and academic emotions in the relation between basic psychological needs satisfaction and learning engagement among Chinese adolescent students[J]. Learning & Individual Differences, 2017(54):210-216

[26] Zheng, Y., Zhong, Q., & Yu. S. Examining students' responses to teacher translation feedback: Insights from the perspective of student engagement[J]. Sage, 2020(2): 1-10.

[27] Cui Yu, Meng Yaru. The relationship between self-efficacy, foreign language enjoyment and English proficiency from the perspective of positive psychology[J]. Foreign Languages Research, 2023(01): 75-80.

[28] Dong Hang, Zhang Wenzhong. A study on the relationship of EFL learners' self-efficacy, classroom anxiety and subjective engagement: Based in path model [J]. Foreign Languages in China, 2023(02):60-69.

[29] Jiang Guiying, Li Chengchen. SLA research in the positive psychology perspective: review and prospects [J]. Foreign Language World, 2017(05):32-39.

[30] Li Banban, Xu Jinfen. Achievement goals orientation and autonomous English learning ability: The mediating role of self-efficacy[J]. Foreign Languages in China, 2014(03):59-68.

[31] Li Chengchen. Emotional intelligence and English achievement: The mediating effects of enjoyment, anxiety and burnout[J]. Foreign Language World, 2020(01):69-78.

[32] Li Hang. The effect of English writing self-efficacy on non-English majors' writing performance[J]. Foreign Language Learning Theory and Practice, 2017(03): 57-63+79.

[33] Liang Yuhong. Study on achievement goals, attribution styles and academic self-efficacy of collage students[D]. Central China Normal University, 2000.

[34] Liu Xiaohong, Guo Jidong. Teacher support, interaction engagement and learining enjoymeny in online EFL teaching[J]. Foreign Languages Bimonthly. 2021(05): 34-42+160.

[35] Wang Yabing, Huang Yunting. A meta-analysis of the relation between L2 self-efficacy and language proficiency[J]. Foreign Language World, 2022(03): 89-96.

[36] Xia Yang, Shen Yanjiao. Exploring the dynamic changes of English majors' academic emotions in CLI classroom context[J]. Foreign Languages in China, 2021(01):72-80.

[37] Yu Hanjing, Peng Hongying, Huang Ting, Zheng Yongyan. A longitudinal study on the development of foreign language enjoyment and engagement[J]. Modern Foreign Languages, 2024(01):101-113.