

# Cross-lagged Relations between Motivation and Proficiency in English as a Foreign Language among Chinese University Students

Xinmiao Liu

School of English for Specific Purposes, Beijing Foreign Studies University  
2 Xisanhuan North Road, Beijing 100089, China  
E-mail: liuxinmiao929@hotmail.com

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## Abstract

The relationship between motivation and EFL proficiency is an issue of great concern in previous research on foreign language learning. However, work in this area offers inconclusive evidence with regard to the directionality of their relations. Using cross-lagged structural equation modeling, this study investigated the directionality of the relations between motivation and EFL proficiency among a sample of 262 Chinese university students (147 female, 115 male). The author adopted a three-wave, longitudinal, cross-lagged panel design and found that changes in instrumental orientation resulted in changes in EFL proficiency throughout the first school year. Changes in integrative orientation were not causally associated with changes in proficiency during the first semester, but the latter predicted the former during the second semester. Changes in motivational intensity predicted changes in proficiency during the first semester, but the relationship became insignificant during the second semester. Theoretical and applied implications were discussed.

**Keywords:** Cross-lagged relation; Motivation; EFL proficiency; Chinese university students

## 1. Introduction

Motivation provides the fundamental driving force to initiate foreign language learning and to sustain the usually tedious learning process (Dörnyei, 2005). Without sufficient motivation, even learners with high language aptitude can seldom achieve language learning success (Dörnyei, 2009). Consequently, motivation has been regarded as an important contributor to foreign language proficiency (Skehan, 1989, Crookes & Schmidt, 1991). Ever since 1960s, the construct of motivation and its correlates with foreign language proficiency have attracted much research attention (Spolsky, 1969, Lukmani, 1972, Gardner, Tremblay & Masgoret, 1997). Existing literature has documented that a high level of motivation is generally associated with high levels of EFL academic achievement (Gardner, Smyth, Clement & Glikman, 1977, Vandergrift, 2005, Zhang & Xiao, 2006, Ghanaea, Pishah & Ghanaea, 2011, Yang, 2011, Toni & Rostami, 2012, Damavand, 2012).

A large body of research has examined the relationships between motivation and EFL proficiency (e.g. Gardner, Smyth, Clement & Glikman, 1977, Gardner, 1985, Crookes & Schmidt, 1991), but the directionality of the causal relationship between the two variables were relatively underresearched. Findings of the previous studies turned out to be rather inconsistent in terms of the directionality of the relationships between motivation and EFL proficiency (Kelly, 2001). Some studies demonstrate that motivation is the cause of EFL proficiency, but not the effect. In Gardner (2000)'s socio-education model of second language acquisition, there is a unidirectional causal relationship running from integrative motivation to language achievement, which has been supported with much empirical evidence (Gardner, Lalonde, Moorcroft, & Evers, 1987, Gardner, Moorcroft, & Metford, 1989). Gardner and MacIntyre (1991) performed an empirical study and found that both instrumental motivation and integrative motivation influenced the rate of foreign language learning. Yamashiro and McLaughlin (2001) replicated the study in Japanese EFL contexts and concluded similarly that motivation had significant influence on proficiency. Ababneh (2013) found this finding could be generalized to Iranian EFL setting as well.

However, some scholars pointed out the existence of the possibility that the relationship runs from EFL proficiency to motivation, which means that it is prior proficiency that predicts subsequent motivation (Strong, 1984). Ogane and Sakamoto (1997) examined the possible factors contributing to motivation in EFL learning among 110 Japanese university students and established a motivation model which posited that there was a one-way relationship going from EFL proficiency as measured by Comprehensive English Language Test (CELT) to motivation. Gao et al. (2007) investigated motivational types among 2,278 Chinese undergraduates from 30 universities in 29 regions and concluded that EFL proficiency influenced both motivation and self-identify changes. Based on a survey among 500 Chinese university students, Qin and Wen (2002) established a sophisticated motivation model which advocated a direct one-way relationship going from prior EFL proficiency to motivation. As MacIntyre and Gardner (1991) pointed out, language achievement leads to enhanced

motivation and favorable attitudes. Improvement in academic proficiency can induce a sense of achievement and satisfaction, which will provide a strong impetus for learners to learn the foreign language. Pintrich and Schrauben (1992) also stated that the value of an academic outcome can affect learners' motivation; in other words, helping learners achieve a better learning outcome enhances their motivation and lead to more progress. There seems to be abundant evidence to show that motivation is resultative and not causative.

Some studies also demonstrated that motivation and proficiency are reciprocally connected. In other words, motivation is both the cause and effect of EFL proficiency. Gardner, Masgoret, Tennant and Mihic(2004)'s study revealed that achievement and motivational variables influence each other. Many researchers argued that foreign or second language learning should be considered a cyclic process, with strong motivation, self-efficacy and effective learning efforts leading to increased academic improvements and feelings of progress, which may in turn enhance motivation and facilitate further effort(e.g. Gardner, 1985; McDonough, 1986; Skehan, 1989; Ellis, 1994). However, the possibility of bidirectional causation between motivation and proficiency has not been tested empirically.

Review of literature shows that previous studies are rather divided with regard to the directionality of the causal relations between EFL motivation and proficiency. Although it is generally assumed that motivation and proficiency are correlated with each other (Vandergrift, 2005, Yang, 2011, Ghanea, Pisheh & Ghanea, 2011), the direction of their causal relationships is rather unclear. Most prior studies were based on correlational methods (Gardner, 2000), regardless of what analytical procedures were adopted (i.e. causal modeling, factor analysis or multiple regression analysis). The fact is ignored that predictors need to be temporally precedent of outcome variables in order for causal relationships to be established. Few cross-lagged longitudinal studies are performed in this regard. Pedagogical interventions designed based on the wrong assumption of causation could turn out to be ineffective. For instance, if motivation is not the cause but the effect of EFL academic performance, efforts to enhance motivation could fail to benefit performance. Therefore, it is unreasonable to assume that motivation causes proficiency and ignore other possibilities.

The current study intends to contribute to the understanding of motivation-proficiency relationships in the following way. First, the present study is to test the directionality of the causal relationships between EFL motivation and proficiency. To address the issue, a cross-lagged regression modeling was adopted to analyze data. Directionality of motivation-proficiency relationships will be analyzed with the use of longitudinal data to explore whether the variable X at Time 1 can predict another variable Y at Time 2, when the value of Y at Time 1 is controlled. Furthermore, the study examines the relationship in a Chinese context, which is regarded as a typical collectivistic culture (Oyserman, Coon, & Kemmelmeier, 2002). As the majority of previous studies were conducted among individualistic cultures, findings from the study will add useful information to the current literature and facilitate future examination of the phenomenon. Finally, although motivational evolution has been extensively studied (Koizumi & Matsuo, 1993; Tachibana, Matsukawa & Zhong, 1996; Chambers, 1999; Inbar et al., 2001; Williams, Burden & Lanvers, 2002; Gardner, Masgoret, Tennant & Mihic, 2004), little is known about the change of the relationships between motivation and proficiency. Given that motivation is a situation-specific variable (Dörnyei, 2005), variations may be witnessed in both strength and directionality of its causal relations with proficiency. The present study applied a longitudinal design to evaluate the changes of motivation-proficiency relationships over time.

Consequently, the present study made an effort to examine the cross-lagged relationships between motivation and relevant performance, as well as the changes in these relationships in Chinese EFL contexts. These are important research questions because they offer the foundation for developing EFL curriculum as positive learning environments in Chinese universities. Specifically, the present study seeks to answer the following research questions:

1. Does students' motivation to learn English predict their proficiency, or is it the vice versa?
2. Does the causal relationships between motivation and proficiency show stability in terms of strength and directionality?

## 2. Methods

### 2.1 Participants and procedure

A total of 262 students aged 18-20 years ( $M= 19.2$ ,  $SD=3.62$ ) from two universities of different ranks in Beijing participated in this survey. 137 subjects were recruited from Tsinghua University, one of the most prestigious universities in China and 125 subjects from China Institute of Industrial Relations, an undergraduate college known locally in Beijing. The students major in a wide variety of areas such as engineering, computer science, finance, business management, human resource management. Information concerning students' majors is shown in Table 1. The sample was homogeneous in terms of cultural background which is typical for student population in this area of China. Therefore, the sample can be regarded as relatively representative.

In this study, three waves of measurement at four-month intervals were used. Participants were examined at the beginning and end of the first semester and at the end of the second semester. Participants were

assessed at three time points in terms of their EFL proficiency and their motivational factors (e.g. Instrumental Orientation, Integrative Orientation, Motivational Intensity, Attitudes toward Learning Situations). Identification numbers were assigned to the participants to identify them at each time panel.

## 2.2 Measures

### 2.2.1 Motivation

Learners' motivation was assessed at both time points using a five-point Likert Scale which was developed on the basis of Gardner's Attitude/Motivation Test Battery (AMTB). The scale is used to measure the motivational variables supposed to relate to foreign language learning. The items were revised in some cases to make them more appropriate for a sample of Chinese university students. The questionnaire was presented to participants in English. With hindsight, the author supposed it would have been better to have it presented bilingually. The items used are shown in Appendix A. Cronbach's alpha was computed to measure the reliability of the items in each factor. Six motivational factors were selected from previous research: Instrumental Orientation (INS), Integrative Orientation (INT), Motivational Intensity (MI), Desire to Learn English (DLE), Attitudes toward Learning Situations (ALS), Attitudes toward Learning English (ALE). Description of the six subscales to measure motivation is provided in Table 2.

### 2.2.2 English proficiency test

*International English Language Testing System (IELTS)* test was used to assess the participants' proficiency across all four language skills. The IELTS test has been used by over 9000 organizations worldwide including private bodies, universities and government agencies to assess English language skills, and over 2 million IELTS tests were administered last year. IELTS score has been used in numerous studies to evaluate learners' English proficiency (Ellis, 2006; Phakiti, 2008, Damavand, 2012, Samad, Etemadzadeh & Far, 2012) and in the present study, the standardized score of IELTS test was utilized to provide a reliable measurement of English language proficiency.

## 2.3 Data analysis

Data analyses were performed in two steps. First, descriptive statistics were provided to investigate the stability of motivational factors and proficiency and correlation analysis were performed to explore the cross-lagged associations between motivation and proficiency. AMOS 21 software was utilized to perform cross-lagged analysis with the use of maximum likelihood estimation procedure. The hypothesized cross-lagged models will be tested for their goodness of fit. Estimation methods for model testing were selected according to the multivariate normality of the variables. Several indices were selected to assess the model-data fitness including CFI, NFI, RMSEA and TLI. CFI values of more than 0.95 are required for acceptable model fitness (Bentler, 1990) and RMSEA values of 0.05 or less indicate a good fit of the model to the data (Steiger, 1990). TLI values of greater than 0.95 (Tucker & Lewis, 1973) and NFI values ranged from 0.90 to 1 indicate a close fit of the model (Bentler & Bonett, 1980).

## 3. Results

### 3.1. Descriptive statistics

Means and standard deviations for all measures in the current study are presented in Table 3. To test the mean differences cross time, T test was also performed. The results identified significant mean differences between Time 1 and Time 2 for instrumental orientation ( $t=-9.92$ ,  $p<.05$ ), integrative orientation ( $t=-2.93$ ,  $p<.05$ ), motivational intensity ( $t=-11.01$ ,  $p<.05$ ), attitude towards learning English ( $t=11.20$ ,  $p<.05$ ), desire to learn English ( $t=-3.14$ ,  $p<.05$ ) and EFL proficiency ( $t=-8.17$ ,  $p<.05$ ). No significant mean differences were found in attitudes towards learning situations ( $t=-1.94$ ,  $p>.05$ ). Significant mean differences from Time 2 to Time 3 were found for instrumental orientation ( $t=5.46$ ,  $p<.05$ ), attitude toward learning situations ( $t=17.64$ ,  $p<.05$ ) and EFL proficiency ( $t=-4.95$ ,  $p<.05$ ). There is no significant mean difference in other variables cross the research period. The results indicate that significant changes are witnessed in instrumental orientation, integrative orientation, motivational intensity, attitude towards learning English, desire to learn English and proficiency during the first semester and instrumental orientation, attitude toward learning situations and proficiency during the second semester.

### 3.2. Bivariate correlations between motivational factors and EFL proficiency

Bivariate correlations were calculated to examine whether a cross-lagged modeling approach would be needed for further analysis. A cross-lagged modeling approach is only workable and necessary when there is significant cross-lagged correlation between the two variables. The results of correlation analyses were shown in Table 4. First, instrumental orientation at Time 1 is positively associated with proficiency at Time 2 ( $r=.258$ ,  $p<.01$ ) and instrumental orientation at Time 2 is correlated with proficiency at Time 3 ( $r=.160$ ,  $p<.01$ ). Second, no significant relationships were found between integrative orientation and proficiency across the period from Time

1 to Time 2, but integrative orientation at Time 3 was positively correlated with proficiency at Time 2 ( $r=.239$ ,  $p<.01$ ). Third, motivation intensity and proficiency were significantly correlated with each other both synchronically and across the two periods. No significant cross-lagged correlations were found between proficiency and the other three measured variables, namely attitudes towards learning situations, attitudes towards learning English and desire to learn English, so the test of directionality of causality cannot be applied. Consequently, they were not included in further cross-lagged modeling analysis.

### 3.3. Cross-lagged structural modeling

#### 3.3.1. A hypothesized model

The analysis in this section will focus on the cross-lagged causal relationships between three motivational variables (instrumental orientation, integrative orientation, motivational intensity) and EFL proficiency. To test the directional relationship between motivation and proficiency, a cross-lagged model is specified, in which motivation and proficiency at Time 2 were predicted by motivation and proficiency at Time 1 and motivation and proficiency at Time 3 were predicted by motivation and proficiency at Time 2, as demonstrated in Fig. 1. The basic assumption for the theoretical model is that the relationships between motivation and proficiency are reciprocal. The assumption is made given that evidence has been obtained from prior literature that motivation and proficiency mutually predicted each other (e.g. Gardner, 1985; McDonough, 1986; Skehan, 1989; Ellis, 1994).

#### 3.3.2. Cross-lagged relations between motivational intensity and proficiency

Results of cross-lagged modeling were presented in Fig. 2. Two paths were deleted from the hypothesized model as the path coefficients were not significant. Fitness index showed that the model provided an acceptable fit:  $\chi^2=3.57$ ,  $df=2$ ,  $p=.167$ , CFI=.99, RMSEA = .055, NFI = .99 and GFI = .99. Motivational intensity at Time 1 predicted proficiency at Time 2 and motivational intensity at Time 2 predicted proficiency at Time 3. Precedent motivational intensity predicted subsequent proficiency across the entire period from Time 1 to Time 3, which indicated that changes in learners' motivational intensity had significant influence on the changes of their EFL proficiency during the first school year at college. There was a one-way relationship between motivational intensity and proficiency, with the former being the cause of the latter, but not the other way around. The effect of motivational intensity on learning outcome was only moderate, but enough to approach a significant level. Besides, little change was witnessed in the path coefficients from motivational intensity to proficiency across the study period, which demonstrated that both the strength and directionality of the relationships did not undergo much variation.

#### 3.3.3. Cross-lagged relations between integrative orientation and proficiency

The results of model testing are shown in Fig. 3. Two paths were non-significant and thus deleted from the hypothesized model. The final model fitted the data well:  $\chi^2=10.032$ ,  $df=5$ ,  $p=.074$ , CFI=.99, RMSEA = .062, NFI = .99 and GFI = .98. Integrative orientation at Time 1 predicted proficiency at Time 2, which in turn predicted integrative orientation at Time 3. The effect of integrative orientation on proficiency was strong with the path coefficient of 0.34 ( $p<.05$ ), which showed that learners' integrative orientation was a powerful predictor of EFL proficiency in the first semester. However, the direction of the relationship was reversed in the second semester, with proficiency being a strong contributor to integrative orientation. The results suggest that the relationship between integrative orientation and proficiency is reciprocal and circular.

#### 3.3.4. Cross-lagged relations between instrumental orientation and proficiency

The results of model testing are shown in Fig. 4. Four paths in the hypothesized model turned out to be non-significant and were deleted from the model. The final model fitted the data well:  $\chi^2=4.015$ ,  $df=4$ ,  $p=.404$ , CFI=.99, RMSEA = .004, NFI = .99, and GFI = .99. In the final model, only the path from instrumental orientation at Time 1 to proficiency at Time 2 was significant, which indicated that the former predicted the latter. The greater level of intensity students displayed at Time 1, the higher level of proficiency they achieved at Time 2. No significant relationships between the two variables were found from Time 2 to Time 3. The finding showed that although instrumental orientation was a predictor to proficiency in the first semester, its effect was only at a moderate level with a path coefficient of 0.15 and it became non-significant in the second semester. The relationships between instrumental orientation and proficiency were not sustained during the first school year.

## 4. Discussion

The present study examined the directionality of the relationships between motivation and proficiency. The results showed, first, that the relationship between integrative orientation and proficiency was circular, with integrative orientation being the cause of proficiency during the first semester and the effect during the second. Second, there was a temporary and moderate one-way relationship from instrumental orientation to proficiency which would not extend to the second term. Third, there was a stable and moderate one-way relationship from motivational intensity to EFL proficiency which extended over the entire first school year. Besides, proficiency and attitudinal factors or desire to learn English did not seem to have significant antecedent-outcome

relationships.

Motivational intensity was shown to be a stable source of impetus for Chinese university students throughout the study period. The finding indicated that the greater motivational intensity the learners displayed at the initial time point, the higher level of proficiency they achieved at the subsequent time point. Greater efforts devoted to foreign language learning generated better learning outcome, a finding that was consistent with previous studies of the same nature (Wen & Wang, 1996; Liu & Zhang, 2013). The results were also supported by attribution theory which highly emphasized the importance of efforts for learning success. As Schunk (1991) maintained, learners who expend efforts and persist in learning tasks are more inclined to achieve a higher level of excellence compared with those who do not. The present study also showed that proficiency did not have an adverse effect on motivational intensity, which indicates that learners with high level of proficiency at the initial time point will not necessarily devote more effort to learn the language. The result is not surprising as Chinese students' motivational intensity is more related to Chinese cultural contexts in which learners' efforts are considered to be related to their moral or respect for their family (Tao, 2003). Chinese students generally work harder to show their respect to their family, not necessarily because they are good learners.

Results of analyses demonstrate that integrative orientation is related to EFL proficiency in a complicated manner. Integrative orientation at Time 1 predicted proficiency at Time 2, which in turn predicted integrative orientation at Time 3. The changes in integrative orientation have significant influence on the changes in proficiency during the first semester, but the direction of the relationship is reversed during the second semester, resulting in a circular relationship between the two factors. This finding is consistent with many previous studies which discovered either a one-way relationship going from integrative motivation to proficiency (Gardner, Lalonde, Moorcroft, & Evers, 1987, Gardner, Moorcroft, & Metford, 1989) or a relationship of a reversed direction (Strong, 1984). The only difference is that the present study presented a more comprehensive picture which reveals that the relationships between integrative orientation and proficiency differ in directionality at different stages of EFL learning in universities. At the beginning stage of EFL learning in universities, students with stronger integrative orientation are able to achieve better performance. However, their EFL proficiency does not contribute to their integrative orientation, which can be attributed to the fact that they do not have sufficient insights into and knowledge of English culture and society due to their limited proficiency. Consequently, they do not have genuine interests in English culture or a strong desire to integrate into English community and society. During the second semester, as their proficiency enhanced, they started to develop a better understanding of English language and culture and positive attitudes towards the English community were formulated, leading to an enhanced desire to integrate into the community. The findings indicate that priority of EFL instruction should be given to the development and promotion of integrative orientation in the first semester at college as integrative orientation is a more effective contributor to EFL proficiency at this stage of EFL learning. If integrative orientation can be formulated and boosted at this stage, a virtuous circle will naturally ensue. Consequently, it is necessary for teachers and learners to take measures to enhance integrative orientation and foster genuine interests in English language and culture as soon as learners enter universities as freshmen.

The relationships between instrumental orientation and proficiency are rather complex. As the results indicate, instrumental orientation only predicted proficiency during the first semester and the effect became insignificant during the second semester. The finding demonstrates that instrumental orientation is effective to promote EFL proficiency at the beginning stage of students' university life, which is consistent with previous studies which also identified instrumental orientation as a crucial contributing factors to foreign language proficiency in Asian EFL settings (e.g. Lukmani, 1972, Khair, 2008). However, this study also revealed that the effect of instrumental orientation is not sustained. The results suggest that the relationship between instrumental orientation and proficiency is situation specific and context dependent. The second measurement was taken at a time when the students were about to take College English Test Band Four (CET 4), a test with high stake for their future career and education. Consequently, their intention to achieve good performance in the tests got unprecedentedly strong, which turned into an effective driving force to boost their foreign language learning. As there was no such high-stake situation in the second term between Time 2 and Time 3, the relationships became relatively weak. Besides, the findings also showed that changes in proficiency did not predict the changes in instrumental orientation. This finding was easy to understand as instrumental orientation was more relevant to the social and cultural environments that learners were situated in. Typical instrumental orientations for Chinese learners identified in previous literature included passing all types of examinations, obtaining certificates or diploma, bringing honor to the family and securing a decent job, none of which is highly associated with learners' level of proficiency.

With regard to the stability of the relationships, the findings suggest that relationships between integrative orientation and proficiency varied across time in terms of both directionality and strength. Similarly, instrumental orientation and proficiency also exhibited significant changes in these two aspects. However, the way motivational intensity and proficiency interacted with each other were relatively stable. The results demonstrate that the relationships between motivation and proficiency are rather complex and multifaceted. It is

important for teachers to adopt a dynamic view of their relationships and make adjustments in teaching plans, curriculum and course arrangement according to specific instructional contexts and the stages of foreign language learning.

There are a few limitations for the present study. First, participants were recruited from two universities in Mainland China. Generalizability of the findings is rather limited and therefore, further replications with more representative samples are recommended. Second, as participants in this study were only followed for one school year, it was difficult to uncover the long-term changes of motivation and its relationships with learning outcome. Therefore, it is suggested that participants be followed over longer time span to explore the long-term changes. Third, as an exploratory study, only measures of motivation were included to account for differential success in EFL learning. Future studies should examine these relationships with additional explanatory variables such as language aptitude, learning strategy and foreign language anxiety and explore how different variables contribute to language proficiency in a dynamic and concerted way. In this research, only overall scores in English proficiency test were used to measure students' performance, which might be biased. Future studies can explore the cross-lagged relationships between motivation and specific dimensions of English proficiency, such as reading proficiency or speaking proficiency.

In conclusion, this article has examined the cross-lagged relationships between motivation and foreign language learning. The study contributes to our understanding of the interactions of learners' individual determinants and learning outcome from a dynamic and process-oriented perspective. Consequently, this study has made a small step further in relating the research on individual differences to a dynamic EFL learning process.

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Table 1. Description of the major of participants

	Sampling	Number	Percentage
Major	Natural science	79	30.2%
	Social science	94	35.9%
	Humanities	66	25.2%
	Arts & Physical education	23	8.7%

Table 2. Measures of motivational factors

Variable	Description	No. of items	Reliability
Instrumental Orientation	Students scoring high in this measure are more inclined to learn English for practical purposes.	7	.755
Integrative Orientation	This scale assesses the degree to which students learn English to integrate with the target community and culture.	7	.887
Attitudes toward Learning Situations	Higher scores represent more favorable attitudes toward language learning situations.	6	.766
Attitudes toward Learning English	Higher scores reflect more positive attitudes toward English learning.	6	.691
Desire to Learn English	This scale measures the degree to which students want to learn English.	6	.825
Motivational Intensity	Students with higher scores in this scale make more effort to learn English.	7	.865

Note. Reliability was estimated with Cronbach's alpha.

Table 3. Descriptive statistics for motivation and proficiency variables

Variable	Time 1		Time 2		Time 3		T1/T2	T2/T3
	M	SD	M	SD	M	SD	t	t
Instrumental Orientation	2.71	.62	2.93	.55	2.49	.59	-9.92*	5.46*
Integrative Orientation	3.72	.84	3.87	.59	3.81	.57	-2.93*	1.49
Attitudes toward Learning Situations	3.48	.60	3.56	.49	2.98	.46	-1.94	17.64*
Attitudes toward Learning English	3.34	.70	3.33	.67	3.70	.54	11.2*	-.14
Motivational Intensity	3.20	.68	3.43	.78	3.42	.76	-11.01*	.460
Desire to Learn English	3.13	.65	3.19	.67	3.22	.64	-3.14*	-1.65
EFL proficiency	5.26	1.05	5.46	.75	5.59	.80	-8.17*	-4.95*

\*p<.05

Table 4. Bivariate correlations between motivational factors (a) and EFL proficiency (b)

Variable	Time 1-Time 2			Time 2-Time 3		
	r(a <sub>1</sub> b <sub>1</sub> )	r(a <sub>1</sub> b <sub>2</sub> )	r(a <sub>2</sub> b <sub>1</sub> )	r(a <sub>2</sub> b <sub>2</sub> )	r(a <sub>2</sub> b <sub>3</sub> )	r(a <sub>3</sub> b <sub>2</sub> )
Instrumental Orientation	.294**	.258**	.121	.090	.160**	-.053
Integrative Orientation	-.089	-.118	-.113	-.105	-.116	.239***
Attitudes toward Learning Situations	.111	.092	.120	.118	.121	.014
Attitudes toward Learning English	-.039	-.044	.076	.060	.094	-.019
Motivational Intensity	.132*	.158*	.180**	.205**	.166**	.216***
Desire to Learn English	.110	.109	.121	.142*	.120	.081

\*p < .05. \*\* p < .01. \*\*\*p < .001.

Note: r(a<sub>i</sub>b<sub>j</sub>) is the correlation coefficient between motivational factors(a) at time i and proficiency(b) at time j.

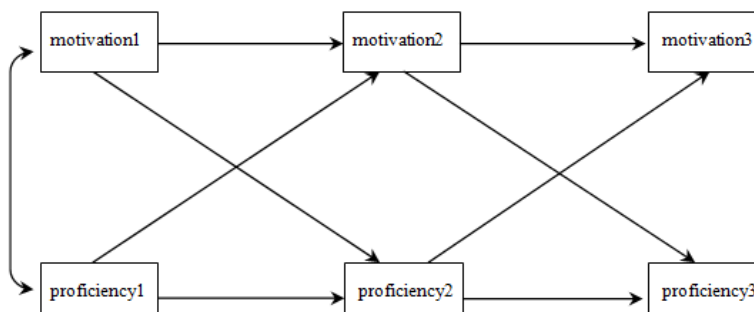


Figure 1. A theoretical model of the relations between motivational factors and EFL proficiency



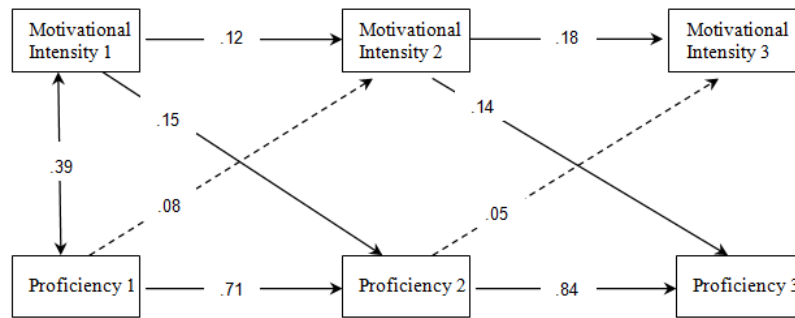


Figure 2. A cross-lagged model of the relationships between motivational intensity and proficiency. Coefficients in the figure are all standardized. Non-significant paths are presented in the form of dotted lines.

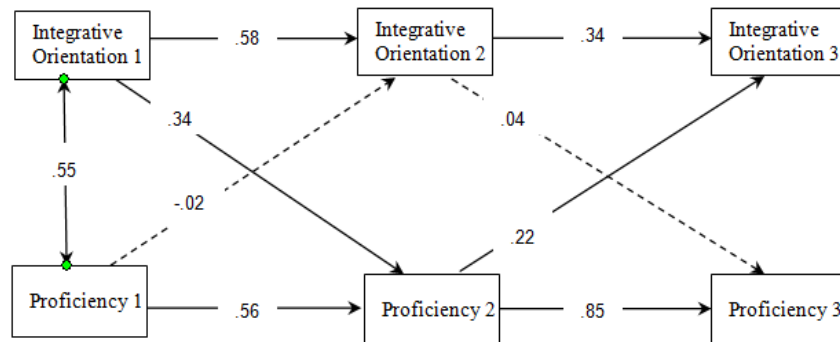


Figure 3. A cross-lagged model of the relationships between integrative orientation and proficiency.

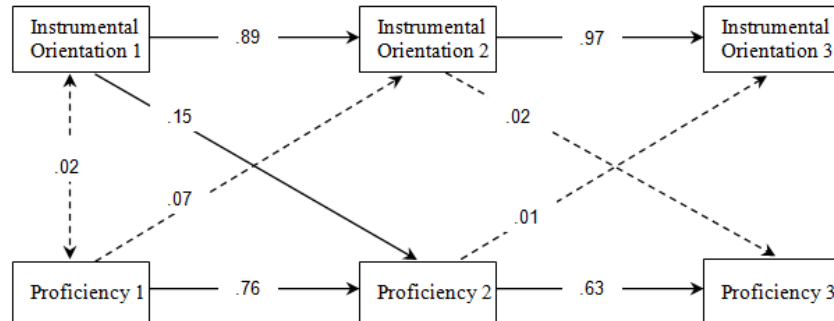


Figure 4. A cross-lagged model of the relationships between instrumental orientation and proficiency.