

## The Effect of Chinese Learners' Modality Converting Competence on Their EFL Output System

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### Abstract

This research introduces modality converting competence into foreign language aptitude composition and makes a diachronic study on the relationship between the internal variables for Chinese learners' EFL written output system and their modality converting competence. Through multiple correlation analysis and multiple regression modeling, it could be concluded that compared with the variables of the same modal, the variables of modality converting competence were more correlated to the variables of EFL written system and the latter could respectively account for 72.2%, 57.8%, 65.9% and 67.0% of the variation of the written system variables W/T, DC/T, S/T and LC/T. As the advantage of aptitude, modal converting competence might produce influence upon learners' syntactic and lexical system complexity in their written output via information processing process. The significance of this research lies in that it might provide more practical approaches for the realization of aptitude treatment interaction (ATI).

**Key words:** Modality converting competence; Output system; Foreign language aptitude

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### INTRODUCTION

Foreign language aptitude is defined as a comparatively stable specific ability tendency when learning a foreign

language (Carroll, 1981) and one of the core issues in the cognitive field of L2 acquisition. The earliest research on aptitude is mainly consisted of four factors: phonetic coding ability, grammatical sensitivity, linguistic inductive ability and memorizing ability. And the research process focused on the interpretation of the predictive ability of aptitude factors via correlation analysis while there was a lack of clear and decisive explanation for the effect of other potential abilities and also the relationship between various factors. It was due to such unicity and limitations in application that little progress used to be made of the researches on aptitude (Grigorenko et al., 2000).

It is not until the recent 20 years that aptitude has begun to attract great attention from scholars of cognitive psychology and L2 acquisition and the focus has been shifted to the extension of aptitude composition and the relationships between aptitude and L2 proficiency and acquisition process. A breakthrough has been made in terms of both width and depth. The early researches represented by Carroll (1981) used to believe that aptitude was innate and seldom changed while the recent researches pointed out that foreign language aptitude could be changed through training (McLaughlin, 1995), and that the composition of aptitude was associated with the previous foreign language learning experience (Grigorenko et al, 2000). Foreign language aptitude was not only the traditional four or five cognitive abilities, but also the complicated concept composed of various elements and proved to be dynamic and developmental (Skehan, 2002; Robinson, 2005).

Based on the above researches, some scholars gradually added the elements which were included in the traditional aptitude model to their researches. For example, Sparks' (1995) L1 ability, Robinson's (1997) attention ability and the creative and cognitive ability in foreign language acquisition proposed by Grigorenko et al. (2000), which all touched upon the topic. In addition, they combined aptitude elements with L2 acquisition

proficiency and learners' internal acquisition process (DeKeyser, 2000), divided L2 acquisition into different information processing procedures from the perspectives of information processing theory, studied the role of aptitude elements in the corresponding information processing stages (Dornyei & Skehan, 2003) and specified the aptitude research as the effect of aptitude in the specific linguistic structure acquisition (Chan et al., 2011). Relevant researches within China started comparatively late and there have been few ones with regard to the above issues.

The previous scholars' researches were conducted under the traditional teaching environments or simply in the labs. And in the measurement and analysis of aptitude elements, the developmental factors of aptitude composition have been seldom touched upon. For the past half a century since the aptitude theory was born, great changes have taken place for L2 teaching environments and resources construction and L2 learners' learning approaches and acquisition process have been also fundamentally changed. Based on this, it seems to be necessary to reevaluate the composition of aptitude and their functions in L2 acquisition.

Firstly, there is the introduction of aptitude elements that are related to multimodality learning process. The learning approaches through multimedia and multimodality have led to the changes for both learning contents and forms in terms of quality and quantity. Compared with the traditional teaching, the absorption and command of various modality corpus is no longer not only the result of learning, but also learners' main input and internalization means and the ability tendency related to them, it will definitely exert long-term influence on learning subjects' L2 linguistic system.

Secondly, there are the development of aptitude elements and its relationship with L2 proficiency. The measurement and analysis of aptitude elements in the above scholars' researches were based on the short-term or lab learning behaviors. They examined the relationship between the aptitude elements and acquisition proficiency through correlation analysis. However, few researches have touched upon the historical analysis of fixed learners' aptitude elements and the long and continuous effect of aptitude elements on the internal variables within L2 system.

Based on the previous relevant researches, this research aims to introduce the modality converting competence into the aptitude structure in the context of EFL learning via multimodality, and make a diachronic study on the relationship between the internal variables and modality converting competence within Chinese college English learners' output system. And through analysis of comparatively large sample, it attempts to answer the following questions: (a) Does modality converting competence affects the internal variables of learners' EFL output or written system? (b) If any, how

does it affect them? (c) How does modality converting competence account for the variation of the variables? (d) In what way does it affect learners' EFL output system?

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## 1. DESIGN OF MEASUREMENT INDEX AND DATA COLLECTION

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### 1.1 Measurement Index and Its Definition

#### 1.1.1 The Definition of Modal Converting Variables

In the researches of DeKeyser (2000) and Skehan (2002), the six stages of information processing respectively conformed with the 14 aptitude elements. And phonetic coding ability, grammar sensibility and linguistic inductive learning ability have been confirmed to be aptitude elements and the rest prove to be potential aptitude elements. In addition, the elements at the two stages in the output process turn out to be all the potential aptitude elements. Hence Dornyei & Skehan (2003) pointed out that the so called aptitude elements were nothing but a conceptual description and that the later researches would need to update and validate these concepts at the level of operation and describe the relationship between them and the variables of acquisition process.

Researches on modality converting abilities were simply an attempt based on the above researches. While studying the input style in L2 learning, Reid (1987) proposed modality preference theory and summarized three categories of input ability, including auditory input, visual input and kinaesthetic input, and pointed out that learners could be roughly divided into three categories, including 30% auditory, 40% visual and 30% kinaesthetic ones. In their research on CANAN-F, Grigorenko et al. (2000) introduced input and output models into the aptitude composition and pointed out that all the five acquisition processes occurred at the four levels would be input and output via two models, namely visual model and oral form. The former consists of reading and writing and the latter is composed of listening and speaking. In the Chinese college English teaching practice, the ultimate goal is the improvement of the four skills. However, there have been few researches which aim at the combination of the four and their promotion as learning abilities for the process and result of L2 teaching. As a matter of fact, "mute English" and "deaf English" are popular in China, indicating the converting difficulty for the four skills of different modals. In the current multimedia and multimodal EFL teaching context, it is of great significance to combine the four skills.

Based on the previous researches, the author of this paper intends to examine the relationship between aptitude, acquisition process and multimodality learning abilities, to redefine the composition of learners' ability and propose the concept of modality converting abilities. In other words, she takes dictation and retelling as the

core measurement index to examine learners' modality converting abilities of converting auditory information into written modality and visual information into phonetic modality. Of the above variables, the load factors for dictation are word and sentence dictation. For word dictation, the researcher calculates the number of correct syllables, such as the word "September" which consists of three syllables, or three calculating units. On hearing the word for dictation, the participants are supposed to write the letter combination which corresponds to each syllable. In this way the form transfer in the modality of converting is examined. Sentence dictation aims to investigate the converting of meaning. Participants are urged to write down the sentences they have heard and represent the complete meaning units as much as possible. Load factors for retelling are reading aloud and retelling. The former is used to investigate the converting of visual information into phonetic form and the latter is employed to examine the converting of the visual information into phonetic meaning.

In addition to the measurement of participants' modality converting abilities in form and meaning, the researcher also used listening comprehension and reading comprehension to measure learners' modality input abilities through auditory and visual input to obtain and understand information so as to compare how the same modality input abilities and the multimodality converting abilities respectively account for the variables that are explained. The load factors for listening comprehension are objective tests of listening comprehension which consists of short and long dialogues while the load factors for reading comprehension are objective tests of fast and deep reading.

### 1.1.2 Representation Variable Design of Written System

There have been many researches which aimed at the target language output system in L2 acquisition field. There are dozen of relatively sophisticated quantitative index which does not have the same representation function and research purpose. There are two characteristics for the variables chosen for the written output system in this research: (a) Individual differences. In other words, there are differences between the individuals for the representation variables of participants' written system; (b) The variables conform with the features at the output stage of the information processing.

Before the variables for the output system of the target language were chosen, this research had an one-way ANOVA of various indexes. For each variable, the researcher randomly chose two groups among the firsthand data for the 90 participants (40 participants for each of the two groups), had significance test for the two samples via one-way ANOVA. Of the results obtained, values for T unit length (W/T), T unit subordinate clauses density (DC/T), T unit S node number (S/T) and T unit

number of lexical chunks LC/T ( $Pr > F$ ) were respectively 0.0194, 0.0185, 0.0337 and 0.0251, which were all much less than confidence coefficients and hence refused the null hypothesis, suggesting that there were significant individual differences between the values for W/T, DC/T, S/T and LC/T.

Of the above variables, W/T and DC/T represent learners' acquisition level of form and syntax or the complexity of syntax (Wolfe et al., 1998). In addition, S/T and LC/T represent learners' acquisition level of meaning or the complexity of lexical system (Crookes, 1990). T unit includes all the subordinate clauses and one main clause of a phrase. T unit length (W/T) and T unit subordinate clause density (DC/T) refer to exactly correct T units means of words and T unit number of means of subordinate clause in participants' writings (Ortega, 2003). S node refers to the restrictive or non-restrictive verbs in any basic linguistic units (Crookes, 1990). Each time as a verb appears, it is marked as S node. The researcher used T unit and S node (S/T) to measure learners' acquisition level of the verb system. LC/T refers to the means of the exactly correct lexical chunks with T unit in participants' writings, including the idioms, set expressions, grammatical collocations (e.g. think that) and phrases (e.g. "noun phrases +of", "antecedent it + verbs or adjectives", "passive verbs + prepositions), etc. (Biber et al., 1999).

Another reason for the choice of the above four variables is that they possess the characteristics at the output stage among the six information processing stages pointed out by Dornyei & Skehan (2003). In other words, learners automate and normalize the structures refined at the previous processing stage and the output with universal rules so that output becomes more natural, lexical chunks can be flexibly combined, formulaic piece of language be achieved, the costs of information processing are greatly decreased and internal computation almost no longer needed (Dornyei & Skehan, 2003). As for the variables chosen in this research, such as W/T, DC/T, S/T and LC/T), although the grammatical errors and rules themselves included in them were explicitly acquired, their control, integration and use in the sentences turn out to be the implicit process that merely the learners themselves can feel. Students will not be taught how long compositions they are to write or how many lexical chunks to use, which is the process of habitual behaviors that learners summarize by themselves and the process can be easily affected by aptitude elements at the stage of adult.

As the above mentioned, this research introduced eight variables, including four explanatory variables and four variables explained. The former is composed of two modalities converting variables (dictation and retelling) and two variables of the same modality input (listening comprehension and reading comprehension) while the latter is made up of W/T, DC/T, S/T and LC/T.

## 1.2 Participants and Procedures

The participants in this research were 90 undergraduates of non-English majors at a provincial university. They had learnt English for at least six years before they went to the university. It took two years or four semesters for the data collection. After participants' several test results were processed and correlation analysis was made, the following data were collected: four groups of means for four objective close-book tests (three close-book tests for each semester, the means were chosen for analysis), scores for the four retelling tests in the sound labs, the four retelling final tests conducted by the teacher (respectively one time each semester), and the mean scores for the four timed writing of each semester (three times timed writing for each semester), and at last 324 effective samples were collected, excluding students who dropped out or suspended their schooling. The lab tests for retelling used the oral test terminal system developed by Shanghai Jiaotong University. The researcher transformed the five-point scale used by the system into the ordinal scores within one hundred marking system and made weighted calculation together with the timed test result at the end of the semester. There were 952 compositions with more than 170,000 words for timed writing. And it took the researcher two years to collect and sort out all of the data.

The experiment process of this research used the natural method of Grigorenko et al. (2000) for reference. In other words, the researcher collected data about participants' learning and test results in the natural classroom teaching environments instead of merely the experiment result. The natural method used by Canal-F respects the natural rules in language learning, proceeds step by step, proves to be dynamic, tests the long and static learning abilities instead of merely the knowledge acquired. Such natural learning process turns out to be biologically more effective (Grigorenko et al., 2000) and does fit the experiment conditions in this research. Part of the test for the modality converting variables used Canal-F item design for reference, and part of data sample used Sparks' (1995) measurement and collection method and redesigned according to the characteristics of China's college English teaching, including both subjective and objective tests.

## 1.3 Instruments

This research used the software MATLAB for nonparametric K-S test and multiple regression model. Whether an ability factor can be regarded as aptitude one depends on two conditions. Firstly, there are differences between individuals; secondly, the ability will exert steady influence on learners' foreign language acquisition (Carroll, 1981).

Based on the above principles and the characteristics of variables and samples, this research firstly used 1-sample K-S test and nonparametric multiple rank sum test of Wilcoxon-Mann-Whitney to validate the differences

between the individuals within the modality converting ability samples that are typified as dictation and retelling. Then based on the different test, multiple regression model was used to confirm how modality converting ability affected learners' output or written system.

Hierarchical regression model is a comparatively new statistical analysis technology. And compared with the traditional regression model, it possesses the following characteristics: Model hypothesis fits better with the actual result and the results are accounted for more reasonably. The transmission mechanism for L2 acquisition is a rather complicated process and the known and unknown variables that may be able to produce effects are various and difficult to be controlled. Through comparing and adding any variation of coefficient to a particular variable before and after modeling, hierarchical regression model can effectively control the impact of other elements in L2 acquisition process so that the empirical results will be more accurate. Scholars at home and broad have not used such method in the field of L2 acquisition research. The author of this paper hopes that there will be a somewhat breakthrough in the empirical methods via this model.

## 2. DATA ANALYSIS AND DISCUSSION

### 2.1 Significance Test

This research used 1-sample K-S test and nonparametric multiple rank sum test of Wilcoxon-Mann-Whitney to validate the individual differences of modality converting abilities. Nonparametric test simply requires the independent observation value for variables and successive simple hypothesis but does not require any hypothesis about the distribution that typical statistics demands. Hence the test is not limited by the total distribution form and fits more with the sample size of this research. The distribution chart of sample probability in this research had the typical characteristics of thick tail so that the typical hypothesis of parametric test might not hold water (e.g. Parametric test requires that sample point conforms with normal distribution and t-distribution, etc.). Accordingly nonparametric K-S test is made since it is a goodness-of-fit tests and analysis of the differences between the two distributions may confirm whether the sources of samples are normal distribution or not.

By means of calculation, the maximum absolute margin of the experience distribution function and theoretical one was  $0.5439 > D_{\alpha=0.1273}$ , refused the null hypothesis test of normal distribution and suggested that the sample distribution probability did not conform with normal distribution and hence could not use the typical parametric test to confirm the differences. Therefore this research used 1-sample K-S test and nonparametric multiple rank sum test of Wilcoxon-Mann-Whitney to validate the individual differences of modality converting abilities. It randomly selected samples of the data

concerning dictation, selected two groups among the 90 participants (40 participants for each of the groups) and tested whether the position parameters of the two groups were the same. Results for Mann-Whiney test in Matlab revealed that the exact two-tail p value was  $0.0129 < \alpha = .05$ , thus refusing the null hypothesis and suggesting that there were significant differences between the 90 participants in their dictation abilities. With the same method, the researcher tested participants' retelling abilities. Results indicated that the exact two tail p value was  $0.0268 < \alpha = .05$ , suggesting that there were significant differences between the samples in terms of retelling abilities.

## 2.2 Data Modeling

Before modeling, multiple correlation analysis was made for the original data. Results showed that participants' written output system internal variables W/T and DC/T were most significantly correlated to W/T and LC/T ( $0.80^{**}$ ,  $0.65^{**}$ ,  $p < .01$ ) and that there were no significant correlation between W/T and S/T, DC/T and S/T.

Between modality variables and internal variables of written system, retelling and DC/T, retelling and LC/T were most significantly correlated to each other ( $0.76^{**}$ ,  $0.69^{**}$ ,  $p < .01$ ), and so were dictation and W/T, dictation and S/T ( $0.66^{**}$ ,  $0.71^{**}$ ,  $p < .01$ ), reading comprehension and DC/T ( $0.61^{**}$ ,  $p < .01$ ). Listening comprehension was not significantly related to LC/T or DC/T and the other variables were not significantly correlated with each other either.

Based on the correlation analysis, the researcher assumed modality input and converting abilities and also the internal index for the written system to be the variables explained and made the following three regression model analysis of each variable explained. Model I: the input abilities of the same modality accounted for the variation of the variables explained; Model II: modality converting abilities accounted for the variation of the variables explained; Model III: modality converting abilities accounted for the variation of the variables explained on the conditions that the input abilities of the same modality were taken as the controlled variables.

**Table 1**  
**Regression Coefficient for the Model Explanatory Variables ( $\beta$  Value)**

Explanatory variables		Variables explained ( $*p < .05$ , $**p < .01$ )			
		W/T	DC/T	S/T	LC/T
Model I	Listening comprehension	0.16	0.30*	0.18	0.36*
	Reading comprehension	0.35*	0.40*	0.26*	0.33*
Model II	Dictation	0.62**	0.39*	0.59**	0.38*
	Retelling	0.37*	0.57**	0.31*	0.71**
	Listening comprehension	0.13	0.18	0.11	0.22*
Model III reading comprehension	0.21	0.20*	0.20*	0.12*	
	Dictation	0.48**	0.27*	0.45**	0.31*
	Retelling	0.23*	0.41**	0.14	0.50**

Table 1 indicated that dictation was the main factor that affected W/T and S/T ( $p < .01$ ), and the minor one that produced effect on DC/T and LC/T ( $p < .05$ ). In addition, retelling was the main factor for Dc/T and LC/T and the minor one for W/T and S/T; reading was the minor factor that affected W/T, DC/T, S/

T and LC/T, and listening was the minor factor for LC/T and DC/T. model III in table one revealed that modality converting variables significantly affected the variables explained when they were taken as explanatory variables together with the modality input variables.

**Table 2**  
**Contrast Between Different Models That Account for the Variation of Variables Explained**

	W/T		DC/T		S/T		LC/T	
	$R^2\Delta$	$F\Delta$	$R^2\Delta$	$F\Delta$	$R^2\Delta$	$F\Delta$	$R^2\Delta$	$F\Delta$
Model II	0.57	116.25	0.48	148.95	0.56	57.79	0.63	154.27
Model III	0.22	39.82	0.35	65.08	0.29	64.92	0.31	28.95

Based on the multiple regression models in table one, this research calculated how different models accounted for the variation of the variables explained according to  $R^2\Delta$ . As for the results, see table two. In the table two was  $R^2\Delta$  obtained by comparing model II with model III. From table two it might be seen that modality converting

variables might account for 72.2% variation of W/T (57% was explained by modality converting and 79% by both modality converting and the input of the same modality); modality converting variables might account for 57.8% of the variation of DC/T (48% was explained by modality converting and 83% by both modality converting and the

input of the same modality); modality converting variables might account for 65.9% of the variation of S/T (56% was explained by modality converting and 85% by both modality converting and the input of the same modality); modality converting variables might account for 67.0% of the variation of LC/T (63% was explained by modality converting and 94% by both modality converting and the input of the same modality). In other words, compared with the input variables of the same modality, modality converting variables had greater explanatory power for the variation of W/T, DC/T, S/T and LC/T and turned out to be the main contributing factor for the variables explained. When modality converting abilities were taken as explanatory variables together with input abilities of the same modality, modality converting abilities might account for more than 50% of the variation of the variables explained, indicating that modality converting variables had significant explanatory power for the variation of the variables explained.

### 2.3 Analysis and Discussion

Results of the empirical research revealed that modality converting abilities might affect the variation of L2 learners' syntactical and lexical complexities of written output system, which could be explained within the framework of information processing theory.

On the one hand, modality converting abilities affected learners' syntactical complexities of L1. McLaughlin's (1995) researches suggested that information processing mainly consisted of automatic processing and restructuring. Learners were firstly controlled elementarily in the processing of a learning task and the effect of acquisition result was limited. And as the learning experience increased and learners' L2 linguistic skills were improved, the processing of learning tasks would become a habitual, normal and automatic process, which would occupy less of learners' brain processing capacity and energy, would automatically recognize auditory information, decoding sentence structures and gradually possessed strong listening memory power (McLaughlin, 1995). Restructuring referred to the process during which learners arranged, incorporated and recombined into a new linguistic unit (Cheng, 1996).

Based on McLaughlin's theories, the researcher examined the modality converting process and found that being able to automatically convert modalities was simply the necessary means through which automatic processing and restructuring were achieved. With the progress of teaching technology, EFL learning is being converted to multimodalities such as sound, image, color, animation, movies and even touching in terms of contents and means, which needs learners' automatic recognition and decoding of information with different modalities, in particular refining and arranging their rules and sentence patterns and convert them into the modalities that conform with the output situation. At the same time, at the stage

of restructuring, the rules and sentence patterns of a certain modality in learners' memory will be certainly incorporated with the rules and sentence patterns of other modalities in the combination of new and old knowledge structures, and form into new modalities according to the output requirement. In the above process, learners with strong modality converting power will become more flexible in the processing and restructuring of the rules and restructuring, achieving multiple internalization and accumulation so as to produce influence on syntactical complexities.

On the other hand, modality converting abilities will produce effect on learners' L1 lexical system complexities. Information processing theory suggested that language acquisition is to a great sense cognitive process of structuring the chunks of language sequence, and the chunk units increase from vocabulary to set expressions and sentences step by step (Ellis, 1996). During the process, stronger L2 modality converting abilities can improve learners' L1 lexical combination and the storage and output efficiency of S nodes argument structure so as to promote the increase of L2 lexical system.

In the process of modality converting, the bigger the language sequence that learners are able to make modality converting, the more efficient their memory and output are. For example, for the phrase "the interior decorator", learners with weaker modality converting abilities might divide "interior decorator" into two meaningful units and process them one by one, while learners with stronger modality converting abilities will process it as one meaning unit. The modality converting process of the latter may bring two advantages. In other words, through increasing the capacity of memory units, it decreases the occupation of the number of memory units, saves memory resources and increases the memory efficiency of the modality converting corpus. At the same time, the increase of the chunk units for modality converting is favorable for the improvement of the searching and output efficiency and quality and the effectiveness of lexical chunks so that the given chunk units are more convenient and accurate for use without restructuring between words, and that the output contents are more accurate and fluent. In addition, for learners with strong modality converting abilities who are able to make modality converting as sentence units, their capacity of memory units will accordingly increase and will consist of more S nodes, comparing with larger language sequence units. Compared with vocabulary with other parts of speech, the argument structures of verbs themselves are relatively rich, have more levels and may compose various complicated meaningful units, and the absorption of S nodes and their argument structures may effectively promote the increase of lexical system.

The above function of modality abilities could be fully indicated in learners' EFL written output system because of the following two reasons.

Firstly, compared with the various means and multimodality of input, L2 learners' output means are still limited, although great progress has been made in teaching technology. For Chinese EFL learners at large, the main output means is still the written one, and the input and output are severely asymmetrical, which determines the fact that the long accumulative increase depends on the modality converting of input corpus and that when processing the corpus, learners with strong converting abilities will break through the similarities of pragmatic environments or the traditional theory and acquisition mechanism of combination of listening and speaking and unity of reading and writing, and tend to convert the input corpus with multiple modality into the most usual output modality forms. For Chinese EFL learners, such effect of modality converting will be clearly revealed in the output form or written output.

Secondly, the internal variables of written output system in this research represented learners' L1 form (syntax and rules) and meaning (examples and lexical chunks), or the acquisition of double model system defined by the cognitive schools. The scholars of cognitive schools point out that different from the order of chunking-syntax-rechunking in the process of L1 acquisition, the nature of L2 acquisition process means the simultaneous development of the double model system. The point is that affected by more situations and learners' own factors, the existing model proved to be extremely complicated and unbalanced. For example, in the output system syntax is usually processed at the cost of meanings and vice versa (Skehan, 1998). Nevertheless, compared with other forms such as speaking, written output was less affected by the situation factors and the relationship between the double model characteristics of learners' written output system and their aptitude mechanism can be more stably revealed.

To sum up, the modality converting abilities as aptitude will affect learners' syntax and lexical complexities in their EFL written output system.

## CONCLUSION

This research introduced the modality converting abilities into aptitude structures, examined the relationship between Chinese college English learners' internal variables in their written output system and modality converting abilities. Via multiple correlation analysis and multiple regression modeling, the following conclusion can be arrived at. Firstly, compared with the input variable of the same modality, modality converting variables are the main factors that affected the internal variables such as W/T, DC/T, S/T and LC/T in learners' EFL written output system. Secondly, the modality converting abilities might account for 72.2%, 57.8, 65.9% and 67.0% of the variation of the above variables explained. Modality converting ability is a long aptitude advantage and will affect EFL

learners' syntactical and lexical system complexities via information processing, which might be fully revealed in EFL learners' written output system.

This research has explained the issues and relationships that have not been explicitly explained in the traditional L2 acquisition researches, confirmed the continuous and stable influence of modality converting abilities as aptitude factors on written output system in L2 acquisition. The significance of this research lies in that it might provide practical suggestions for the realization of Aptitude Treatment Interaction (ATI). With the progress of foreign language aptitude, some scholars pointed out that the design and teaching process of task-based teaching was supposed to be the dynamic process in which specific task and aptitude were combined (Robinson, 2005). This research about modality converting abilities provides the fit for the combination of the aptitude factors and learning tasks in the context of modern education technology with learning subjects and methods so that it offers practical and effective measures and means for further aptitude researches and the realization of ATL.

## REFERENCES

- Biber, D. E., et al. (1999). *Longman grammar of spoken and written English*. Beijing, China: Foreign Language Teaching and Research Press.
- Carroll, J. B. (1981). Twenty-five years of research on foreign language aptitude. In K.C. Diller (Ed.), *Individual differences and universals in language learning aptitude* (pp.83-118). Rowley, MA: Newbury House.
- Chan, E., et al. (2011). Working memory, phonemic coding ability and foreign language aptitude: Potential for construction of specific language aptitude tests-the case of Cantonese. *Ilha Do Desterro: A Journal of English Language Literatures and Cultural Studies*, 60(1), 45-73.
- Cheng, P. W. (1996). Restructuring versus automaticity: Alternative accounts of skill acquisition. *Psychological Review*, 92(3), 214-223.
- Crookes, G. (1990). The utterance and other basic units for second language discourse analysis. *Applied Linguistics*, 11(2), 183-199.
- DeKeyser, R. (2000). The robustness of critical period effects in second language acquisition. *Studies in Second Language Acquisition*, 22(4), 493-533.
- Dornyei, Z., & Skehan, P. (2003). Individual differences in second language learning. In C. J. Doughty & Long, M. H. (Eds.). *The handbook of second language acquisition* (pp.589-630). Oxford: Blackwell.
- Ellis, N. C. (1996). Sequencing in SLA: Phonological memory, chunking and points of order. *Studies in Second Language Acquisition*, 18(1), 91-126.
- Grigerenko, E., et al. (2000). A theory based approach to the measurement of foreign language learning ability: The canal-F theory and test. *Modern Language Journal*, 84(3), 390-405.

- McLaughlin, B. (1995). Aptitude from an information processing perspective. *Language Testing*, 11(3), 370-38.
- Ortega, L. (2003). Syntactic complexity measures and their relationship to L2 proficiency: A research synthesis of college level L2 writing. *Applied Linguistics*, 24(4), 492-518.
- Reid, J. (1987). Learning style preferences of ESL students. *TESOL Quarterly*, 21(1), 87-111.
- Robinson, P. (1997). Individual differences and the similarity of implicit and explicit adult second language learning. *Language Learning*, 47(1), 45-99.
- Robinson, P. (2005). Aptitude and second language learning. *Annual Review of Applied Linguistics*, 25(1), 46-73.
- Skehan, P. (1998). *A cognitive approach to language learning*. Shanghai, China: Shanghai Foreign Language Education Press.
- Skehan, P. (2002). Theorizing and updating aptitude. In P. Robinson (Ed.), *Individual differences and instructed language learning* (pp.69-93). Amsterdam: John Benjamins.
- Sparks, R. L. (1995). Examining the linguistic coding differences hypothesis to explain individual differences in foreign language learning. *Annals of Dyslexia*, 45(1), 187-214.
- Wolfe, Q., et al. (1998). *Second language development in writing: Measures of fluency, accuracy & complexity*. Manoa: University of Hawaii Press.