CORA Cork Open Research Archive
Cartlann Taighde Oscailte Chorcaí

Title	Oral proficiency retention of L2 Chinese learners following study abroad
Authors	Guo, Rongrong;Chen, Junming
Publication date	2026-07-16
Original Citation	Guo, R & Chen, J 2026, 'Oral proficiency retention of L2 Chinese learners following study abroad', Study Abroad Research in Second Language Acquisition and International Education, vol. 11, no. 2, pp. 153-179. https://doi.org/10.1075/sar.25012.guo
Type of publication	Article (peer-reviewed)
Link to publisher's version	https://www.scopus.com/pages/publications/105048658629 - 10.1075/sar.25012.guo
Rights	© 2026, John Benjamins Publishing Company. - unspecified
Download date	2026-11-16 09:56:32
Item downloaded from	https://hdl.handle.net/10468/19180



UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Oral Retention After Study Abroad in the Context of CSL

Abstract:

This study examines L2 Chinese learners' oral retention during the formal instruction at home (AH) context after a period of study abroad (SA). Specifically, it investigates oral developments of L2 Chinese learners in a six-month AH context following their return from ten-month SA. Participants were ten English-speaking undergraduate L2 Chinese learners at an Irish university. Complexity, Accuracy, and Fluency (CAF) measures were employed to assess learners' oral development, with seven metrics providing an in-depth performance evaluation. Data collected at three stages: pre-SA (T1), post-SA (T2), and six months after returning to AH (T3) were analyzed, with a specific focus on the T2–T3 period to examine oral retention of oral gains after study abroad. Results showed lexical diversity and syntactic subordination retention, while erosion was observed in fluency (e.g., increased silent pauses) and lexical sophistication. Such findings suggest that learners in the AH context tend to concentrate on learning vocabulary (diversity) and syntactic complexity at the expense of fluency, accuracy (Juan-Garau & Pérez-Vidal, 2007) and lexical sophistication in this study.

Keywords： Chinese Second Language Learners, study abroad, at home context, oral, retention

1 Introduction

Study Abroad (SA) has become a prominent research area in second language acquisition (SLA) since

Freed's (1995) foundational synthesis, with its growth accelerated by rising global student mobility and SA program proliferation (Yang, 2016). Over the past two decades, large-scale projects such as SALA (Pérez-Vidal, 2014) and LANGSNAP (Mitchell, Tracy-Ventura, & McManus, 2017) have significantly advanced our understanding of how SA influences L2 development. A substantial body of research has examined the immediate effects of SA on various aspects of oral proficiency, particularly fluency, accuracy, and complexity (CAF) (e.g., Borrà & Llanes, 2021; Howard, 2005, 2019, 2022; Mora & Valls-Ferrer, 2012; McManus, Mitchell, & Tracy-Ventura, 2021). Findings generally suggest that SA enhances oral fluency and lexical diversity, whereas accuracy and syntactic complexity show more variable gains (Collentine & Freed, 2004; Leonard & Shea, 2017).

However, while the short-term benefits of SA have been extensively documented, much less attention has been paid to the long-term retention of these gains after learners return to their home institutions (Juan-Garau & Pérez-Vidal, 2007; Huensch *et al*., 2019). This discrepancy in findings—where some studies suggest that fluency improvements may decline without continued formal instruction (Juan-Garau & Pérez-Vidal, 2007), others indicate that proficiency gains can be maintained, especially when learners receive follow-up instruction (Howard, 2009; McManus *et al.*, 2021). This discrepancy highlights a critical gap in SA research: how oral proficiency gains from SA persist over time.

Moreover, existing retention studies have predominantly focused on European languages, particularly Spanish and English (e.g., LANGSNAP studies; Pérez-Vidal & Juan-Garau, 2011; Tracy-Ventura *et al*., 2021). In contrast, research on Chinese as a Second Language (CSL) remains scarce, with only a few studies examining SA effects on L2 Mandarin (e.g., Du, 2013; Kim et al.,

2015; Wright & Zhang, 2014; Wright, 2018, 2020; BLINDED a 2024). Given the unique linguistic and sociocultural challenges of learning Mandarin (e.g., tones, character literacy, and limited naturalistic input opportunities) (BLINDED a 2024; BLINDED b 2024; O'Donnell, 2004), predicting outcomes is complicated by the multifactorial nature of L2 Chinese acquisition, and whether SA-induced oral gains in CSL learners follow similar retention patterns as those observed in European languages remains unclear.

Moreover, longitudinal studies that track the same cohort of learners from a pre-SA baseline, through SA, and then back into the AH context are exceedingly rare (e.g., Wright, 2020). Crucially, to the best of our knowledge, no study has specifically investigated how CAF performance is maintained or attrited after L2 Chinese learners return to formal instruction at home. Therefore, this study aims to fill that gap by investigating how continued exposure to formal instruction at home after studying abroad influences the long-term retention and further development of speaking skills in L2 Chinese learners.

2 Literature Review

2.1 L2 Speaking Development in Mandarin During Study Abroad

Despite the relative scarcity of research, studies on SA for L2 Mandarin have yielded important insights. Contextual factors—particularly study abroad as a learning environment—have received increasing attention by L2 Chinese researchers (e.g., Du, 2013; Wright & Cong, 2014; BLINDED, 2024). Moreover, some studies also investigate the impact of other factors on L2 speaking

performance during study abroad, such as the quality of interaction (e.g., Diao, Donovan, & Malone 2018) and task type (e.g., Wright, 2020). However, limited empirical studies investigate L2 Chinese-speaking development during study abroad (e.g., Du, 2013; Wright & Cong 2014; Wright 2018, 2020). While there is an increasing trend to measure the effect of study abroad on L2 spoken Chinese (e.g., Du, 2013; Kim et al., 2015; Wright, 2020; Wright & Cong, 2014; BLINDED b, 2024). In existing studies, overall proficiency has been revealed to significantly improve (e.g., Wright & Zhang, 2014) alongside particular aspects of learners' linguistic development, such as oral fluency in terms of general fluidity (i.e., greater output, fewer silences) (e.g., Du, 2013). This is also in line with the findings of studies which have examined L2 Chinese fluency development during SA (Du, 2013; Kim et al., 2015). For instance, Kim et al. (2015) analysed 24 L2 Chinese learners' development in regard to fluency (speech rate, frequency of filled and unfilled pauses, and mean pause length), during a 16-week SA programme in China. The students completed three questions based on a modified version of the Simulated Oral Proficiency Interview (SOPI) at the beginning and end of the programme. The study found that during SA, the learners' fluency measures (speech rate, frequency of filled and unfilled pauses, and mean pause length) improved.

Based on a longitudinal study of American students in a Mandarin immersion program in China, Du (2013) found that study abroad significantly enhanced oral fluency development, particularly in speech rate, volume of speech produced within a fixed time, and length of conversational turns. The most notable gains occurred during the first month abroad, likely due to heightened communicative demands and negotiation for meaning in daily life. Crucially, the study emphasized that time on task—i.e., actual time spent using Chinese—was the strongest predictor

of fluency gains, more so than mere physical presence in the target language environment. While adherence to a strict "language pledge" correlated with greater improvement, the key factor was meaningful social interaction in Chinese, whether with native speakers or peers, underscoring the role of linguistic practice and engagement over formal policy compliance.

In generalizing previous findings, it can be concluded that, it has been concluded that overall fluency increases during study abroad when speech becomes more rapid (speed), exhibits fewer and shorter pauses and hesitations (breakdown), and contains fewer self-repairs (repair). studies have showed that SA groups make less progress in fluency development in terms of hesitations and breakdowns (i.e., mean length of utterance, disfluency) (e.g., Wright, 2018, 2020; Wright & Zhang, 2014). Vocabulary/lexical breadth development has been found to improve significantly because of an increased lexical repertoire formed during SA (e.g., Collentine & Freed, 2004; Dewey, 2008; Leonard & Shea, 2017; Kim et al., 2015). In summary, the various components of fluency do not develop simultaneously in a study abroad (SA) context. This suggests that the SA experience impacts different aspects of fluency development, or, in other words, that the development of certain aspects may be less dependent on the immersive SA environment.

2.2 L2 speaking retention after SA

Regarding the retention of SA effects on oral gains, studies concerning fluency and accuracy differ in different times, from 6 months to 3 years of formal instruction after SA. Specifically, learners' oral fluency gains from a 3-month SA period have been suggested to revert to their previous levels after 6 months back home without instruction (e.g., Juan-Garau & Pérez-Vidal, 2007; Pérez-Vidal & Juan-Garau, 2005). However, other longitudinal studies (e.g., Huensch & Tracy-Ventura, 2017; Llanes,

2012; Regan, 2005) have, in general, found that linguistic gains made abroad are maintained over the course of a year when participants continue to receive formal instruction. Therefore, the impact of SA on oral gains has reached inconclusive results. To interpret this situation, Juan-Garau (2014) examined the effects of both at-home and a 3-month SA period on oral accuracy development over 2.5 years. The data was collected from undergraduate advanced-level L3 learners of English taking an oral role-play task at four data collection times. The results showed that most learners benefited from the SA sojourn, while for those who did not, it was assumed that the 3-month period was insufficient to produce desired outcomes. Concerning the retention effects of SA, the data revealed that 15 months after the SA, the accuracy levels maintained their stability, showing that the SA impact was still observable more than a year later.

McManus *et al*. (2021) recently investigated advanced L2 French and L2 Spanish learners' CAF speech development over 21 months (including a 9-month SA). The oral performance on an oral picture-based narrative once before (at the end of year two of a 4-year degree), three times during (third year abroad), and twice after a nine-month stay abroad (within 9 months in AH context) were measured. Results showed that study abroad benefited fluency (speech rate and mean length of run), lexis (D scores), accuracy (percentage of error-free ASUs and percentage of error-free clauses), and syntactic complexity (Clauses/ASU and mean length of ASUs). Those gains made during SA for fluency, lexis and accuracy were generally maintained on return to the AH context. However, small declines in fluency were noted following the return. Lexical diversity during SA decreased marginally before increasing again after the return to the taught context. The results suggested that SA enables advanced learners, in particular, to proceduralize/automatise their

existing linguistic knowledge through meaningful practice opportunities and generate new morphosyntactic knowledge and/or restructure existing morphosyntactic knowledge.

To contribute to SA research in understanding the long-term evolution of foreign language proficiency, Huensch *et al*. (2019) looked at the retention/development of oral fluency and proficiency, discovering that language contact/use and peak proficiency obtained were both critical factors in fluency and proficiency retention three years after formal instruction ceased (four years after SA). Speech samples were elicited in LANGSNAP (Mitchell *et al*., 2017) using picture-based narratives created to be as identical to each other as possible and administered in sequence approximately one year apart. Five fluency variables represent aspects of speed (speech rate), breakdown (the number of filled pauses per 100 words and the number of silent pauses per 100 words), and repair fluency (the number of repetitions per 100 words and the number of corrections per 100 words). The results showed that speed and breakdown fluency indicators (e.g., speech rate, silent pauses) that considerably improved after study abroad were maintained four years later. In contrast, repair fluency indicators (e.g., repetitions, corrections) did not change significantly during study abroad or four years later. The study concluded that language contact/use and proficiency are important variables in the long-term maintenance of overall proficiency. Tracy-Ventura *et al*. (2021) expanded on Huensch *et al*. (2019) by using a corpus-based approach to investigate the long-term evolution of lexical diversity post-SA and post-formal language instruction in two groups of participants, one L2 French and one L2 Spanish. It investigated to what extent lexical diversity (D and Moving Average Type-Token Ratio (MATTR) changed four years after study abroad. The results showed that the group continued improvement post-SA (three years after formal

teaching ceased). The authors concluded that the increases in oral lexical diversity over time are likely due to increased automaticity in lexical access that is improved in online speech production with continued practice/use.

As indicated, SA research on the oral retention of SA effects after L2 language learners return to formal instruction at home context within the same cohort has grown in recent years. Some studies (e.g., Juan-Garau & Pérez-Vidal, 2007; Pérez-Vidal & Juan-Garau, 2005) revealed that learners' oral gains during the SA period decrease after SA over the following year with no formal instruction. However, other studies (e.g., Howard 2009; Huensch *et al*., 2019; McManus *et al*., 2021; Tracy-Ventura *et al*, 2021) have, in general, found that linguistic gains made abroad are maintained over the following year to three years, during which participants continued to receive formal instruction and language contact. The difference among those studies concerning the AH context is very likely attributed to internal factors (e.g., proficiency levels), and external factors (e.g., length of SA period (3 month vs.1-year SA), and availability of formal instruction /language contact (with/ without) at home context after SA. Among those factors, Tracy-Ventura *et al*. (2021) suggested that higher-level proficiency is a strong predictor of language retention after investigating L2 French and L2 Spanish oral gains using longitudinal data, which were collected before, during, and after their year abroad as part of the Languages and Social Networks Abroad Project - LANGSNAP (e.g., Mitchell *et al*., 2017; Huensch *et al*., 2019; McManus *et al*., 2021; Tracy-Ventura *et al*, 2021). In general, the limited SA research to date suggests that in terms of predicting the amount of AH maintenance, proficiency level is more important than the amount of exposure (input and time) (Huensch *et al*., 2019).

2.3 L2 speaking Mandarin retention after SA

The majority of SA retention research has focused on European languages. In particular, English and Spanish have become the two major target languages in this area (Yang, 2016). In the case of L2 Chinese, studies have similarly examined key factors affecting language development, often assessed through CAF measures. Among these, contextual factors—especially study abroad as a learning environment—have received increasing attention by L2 Chinese researchers (e.g., Du, 2013; Wright & Cong, 2014; BLINDED, 2024). Moreover, some studies also investigate the impact of other factors on L2 speaking performance during study abroad, such as the quality of interaction (e.g., Diao, Donovan, & Malone 2018) and task type (e.g., Wright, 2020). However, limited empirical studies investigate L2 Chinese-speaking development during study abroad (e.g., Du, 2013; Wright & Cong 2014; Wright, 2018, 2020). While there is an increasing trend to measure the effect of study abroad on L2 spoken Chinese (e.g., Du, 2013; Kim *et al*., 2015; Wright, 2020; Wright & Cong, 2014), the majority of research which has explored L2 Chinese learners' speaking development have used a cross-sectional design (e.g., Chen, 2012; Zhai & Feng, 2014; Ye, 2015; Ding & Xiao, 2016; Liu, 2017).

However, studies which investigate factors (i.e., the AH context comparisons with SA context for the same cohort group, tracking evolving proficiency levels) over a long-term period on English undergraduates of Chinese are very scarce (e.g., Wright, 2020). Furthermore, to the best knowledge, no study is investigating the effects of returning to AH and how CAF performance in oral development of L2 Chinese learners after study abroad may be maintained. Therefore, this study aims to fill that gap by investigating how continued exposure to formal instruction at home

after studying abroad influences the long-term retention and further development of speaking skills in L2 Chinese learners.

The constructs of complexity, accuracy, and fluency (CAF) are essential in capturing the components of second language (L2) oral performance (Housen & Kuiken, 2009; Kuiken *et al*., 2019). The use of CAF constructs to evaluate L2 learners' oral abilities is a rapidly expanding field. These three dimensions are frequently used together to assess the influence of various factors on L2 performance, including age, instruction, aptitude, learning contexts, and task types (Housen *et al*., 2012). Therefore, the CAF framework is often employed to assess L2 learners' oral performance (Housen *et al*., 2012; Skehan, 2003), and it is employed in this study to evaluate L2 oral Chinese.

The study here reports on data answering two research questions:

1. To what extent do CSL learners maintain their oral proficiency after returning to the AH context?
2. In what area (s) does retention or attrition happen?

Research question 1 aimed to reveal what changes, if any, occurred in the oral development of L2 Chinese learners in the AH context after SA, as measured by complexity, accuracy, and fluency metrics. Research question 2 aimed to analyse if, as was expected, there was a decrease or increase in the oral performance of L2 Chinese learners at the AH context.

3 Study and Methodology

3.1 Setting and Design

This study employed a semi-longitudinal design to analyze the oral production of 10 native English-

speaking learners (6 male, 4 female; aged 18-22) enrolled in a Commerce with Chinese Studies undergraduate degree in Ireland. None had significant prior exposure to Mandarin. Data were collected at three points across two contexts: an at-home (AH) setting and a subsequent 10-month Study Abroad (SA) period in Shanghai (from September to July). The present analysis focuses on data from the post-SA AH context. To ensure participant anonymity, specific collection dates remain confidential.

It is important to note that the AH instruction focused predominantly on traditional grammar teaching and practice, with minimal emphasis on oral communication skills and limited exposure to Chinese outside the classroom. A semi-longitudinal design was employed, with data collected at three times (T1, T2, T3) over a 28-month period in the at-home (AH) context in Ireland (see Table 1). All three sessions were part of the program's formal oral assessments.

Table 1: Three Stages of Data Collection

	Time 1		Time 2	Time 3
Date of oral tests	3-Dec		25-Oct	6-Apr
Year of students	Year2	Year3	Year4	Year4
Semester	1		1	2
Hours of Instruction	360 hours	540 hours	36 hours	108 hours
Context	FI	SA	FI	FI

3.2 Participants and SA context

Prior to the SA period, all participants had received approximately 360 hours of instruction in the AH context. Their onset proficiency, determined by an HSK3 exam taken four months before departure, was HSK2 (n=3) or HSK3 (n=7). The HSK (*Hanyu Shuiping Kaoshi*) is a standardized proficiency test for non-native Chinese speakers, with HSK3 representing an intermediate level of proficiency approximately equivalent to B1 of the CEFR (Liu, 2017).

During the SA year, participants were assigned to proficiency levels at the host institution in Shanghai based on placement tests. Eight participants were placed in Level A in Term 1 and progressed to Level B in Term 2. The remaining two were placed directly into Level B and progressed to Level C.

The study abroad (SA) program spanned a ten-month period, comprising 34 weeks of formal instruction. Participants received approximately 16 hours of weekly Mandarin language classes, culminating in a total of roughly 544 contact hours. This instruction was distributed across core language skills as follows: 6.5 hours per week were dedicated to Reading and Writing, another 6.5 hours to Listening, and 3.5 hours to Conversation (though the latter was contingent on the participant's assigned proficiency level).

In addition to language immersion, the curriculum incorporated supplementary modules on commerce and Chinese society, which were conducted in English. The program also featured organized cultural activities, including tours and exhibitions, to further enrich the participants' experiential learning. It is noted that the host institution did not offer internship opportunities as part

of this program.

3.3 Data collection

Speech samples were elicited through oral tests. The task format was monologic, requiring participants to produce spontaneous, extended responses to unseen questions. One day prior to each test, students were given a large bank of questions related to their formal instruction content for preparation; the specific questions used in the exam were not revealed until the test began. Each participant was tested individually by the same instructor, who was also the researcher. The instructor primarily remained silent to encourage free speech, intervening only with prompting questions if a participant's production was limited. To ensure naturalistic data collection and avoid participation bias, participants were not informed of the research purpose until after all three tests were completed, at which point retrospective informed consent was obtained.

Following common practice in the field (e.g., Du, 2013; Liu, 2017; Zhou, 2016; Wu, 2017; Feng, 2018; Polat & Kim, 2014), interlocutor speech was pruned from the raw corpus of 22,488 Chinese characters (*Hanzi*), resulting in the removal of 9.4% of the data. The final dataset used for analysis comprised 20,336 *Hanzi*, corresponding to 181.8 minutes of speech (see Table 2), all of which were transcribed and coded manually (see details in BLINDEDc, 2022).

Table 2: Data per participant and the total

Participant	**Oral Data**		**Raw Data**
No.	**Duration (minutes)**	**Number of *Hanzi***	**Number of *Hanzi***
1	18.13	2251	3143
2	13.15	1406	2129
3	18.82	1711	1850
4	22.65	3901	3201

5	22.99	2681	3138
6	24.82	1941	2099
7	15.37	1540	1657
8	18.32	1980	2115
9	14.03	1607	1692
10	13.52	1318	1464
Total	**181.8**	**20,336**	**22,488**

3.4 Data Analysis

The data were analyzed within the Complexity, Accuracy, and Fluency (CAF) framework. Oral performance was assessed using a total of seven quantitative measures: four for complexity (two syntactic and two lexical), one for accuracy (lexical accuracy), and two for fluency (speech rate and average length of filled pauses).

Complexity was measured at syntactic and lexical levels: syntactic complexity was analysed by mean length of AS-units (syllables/AS-unit), which identifies unsuccessful beginnings, repetition, and self-repairs in spoken texts (Foster et al., 2000; Chen, 2015); lexical complexity was measured using Guiraud's Index for diversity, to reduce the intervening effects of text length (Bulté & Housen, 2014),and ratios of HSK-level words (beginner: HSK1-2; intermediate: HSK3-4) for sophistication (Hanban, 2012). Accuracy focused on lexical errors, calculated as the error-free lexical items ratio (lexical errors/total words). Fluency included speech rate (syllables/minute, excluding filled pauses), and pause length—the average length of filled pause (ALFP). Measures were selected based on L2 Chinese research validity (Jin & Mak, 2012; Du, 2013), with syllables used for fluency and words for lexical analysis.

Before conducting CAF analyses, the data underwent normality testing using the Kolmogorov-Smirnov test. The results showed that all data was normally distributed. (For details, see Appendix

1). In order to examine the extent of development made by the groups, repeated-measure ANOVAs were conducted. The study presented here is thus based on repeated ANOVAs on the metrics to investigate the relative impact of the treatment. For post hoc pairwise comparisons, a Bonferroni correction was adapted to avoid a familywise error rate. The alpha level for achieving significance was set as 0.05 for statistical procedures.

4 Analysis and results

The following presents an investigation of CSL learners over a 28-month period in the at-home (AH) context in Ireland. The effects of SA (T1 vs. T2) are analysed in BLINDED a (2024). The comparison between T2 and T3 is used here to measure the effects of AH maintenance and potential language attrition over an academic year (with 6-month formal instruction).

Table 3 presents the descriptive statistics for the development of oral proficiency between the post-study abroad phase (T2) and after six months of formal instruction at home (T3). The results reveal a mixed pattern of development across different dimensions, with distinct patterns of growth, stabilization, and regression across the various CAF metrics. For fluency, the group means showed a slight increase in speech rate (SR) from 113.205 to 115.133 syllables per minute, while the average length of filled pauses (ALFP) decreased from 0.557 to 0.492. In terms of accuracy, the error-to-word ratio (E/W) remained highly stable between T2 (.860) and T3 (.861). Conversely, a notable decline was observed in syntactic complexity, with the mean length of AS-units dropping substantially from 34.042 to 24.266. For lexical complexity, the group means indicated a sharp increase in lexical diversity (Guiraud's Index) from 4.723 to 8.115. The use of beginner-level

vocabulary increased from a proportion of .552 to .666, whereas the use of intermediate-level vocabulary decreased from .202 to .130. These findings suggest that after returning to the home environment, learners made significant gains in lexical diversity but experienced a decline in syntactic complexity and a shift in lexical sophistication. (For details for the CAF measures at three times, see Appendix for details.)

Table 3: Descriptive statistics for CAF development across time (group mean)

Time	Fluency		Accuracy	Syntactic complexity	Lexical complexity		
	SR	ALFP	E/W	AS-unit length	Guiraud's Index	beginner	intermediate
T2	113.205	.557	.860	34.042	4.723	.552	.202
T3	115.133	.492	.861	24.266	8.115	.666	.130

Considering the foci of the study, the results of group comparisons (T2 vs. T3) were presented (see Table 4). The repeated-measures ANOVA followed by post hoc tests revealed the specific changes in oral proficiency between the post-study abroad phase (T2) and after six months of formal instruction at home (T3).

Results indicated statistically significant differences over time for seven metrics, revealing distinct trajectories of growth, stabilization, and regression. Significant decreases were observed in syntactic complexity, as measured by syllables per AS-unit (MD = -9.776, SD = 1.715, $p < .001$, $\eta p^2 = 0.176$), and in fluency, the average length of filled pauses (ALFP) also showed a significant increase (MD = -0.065, SD = 0.018, $p = .018$, $\eta p^2 = 0.335$), with a notable effect size. Conversely,

significant increases with very large effect sizes were found in lexical complexity. lexical diversity, measured by Guiraud's Index, rose substantially (MD = 3.392, SD = 0.507, $p < .001$, $\eta p^2 = 0.880$). The proportion of beginner-level words also increased (MD = 0.114, SD = 0.022, $p = .002$, $\eta p^2 = 0.643$), with a notable effect size, while the use of intermediate-level vocabulary showed a significant decrease (MD = -0.072, SD = 0.021, $p = .021$, $\eta p^2 = 0.610$), also with a notable effect size.

However, no significant changes were detected for speech rate (SR, MD = 1.928, SD = 6.258, $p = 1.000$, $\eta p^2 = 0.254$) or lexical accuracy (MD = 0.001, SD = 0.021, $p = 1.000$, $\eta p^2 = 0.088$). (For detailed results, see Table 4). These findings suggest that upon returning to the home environment, learners' oral production underwent a complex restructuring, characterized by gains in lexical diversity at the expense of syntactic complexity and a shift towards less sophisticated vocabulary, while speed and accuracy of lexical use remained stable. (For descriptive statistics for the CAF measures at three times, see Appendix for details.)

Table 4: Results of group comparisons (T2 versus T3) in metrics

	Metrics	Mean Difference	SD	Sig.[a]	95% Confidential Interval		Partial eta squared (ηp2)
		T3-T2			Lower Bound	High Bound	
Syntactic complexity	Syllables per AS–unit	-9.776*	1.715	***<.001***	-14.807	-4.745	0.176
Lexical complexity	Guiraud's Index	3.392*	.507	***<.001***	1.903	4.881	0.880
	Lexical_beginner	.114*	.022	***.002***	.050	.178	0.643
	Lexical_intermediate	-.072*	.021	***.021***	-.133	-.011	0.610
Accuracy	Lexical accuracy	.001	.021	1.000	-.060	.062	0.088
Fluency	SR	1.928	6.258	1.000	-16.428	20.284	0.254
	ALFP	-.065*	.018	***.018***	-.119	-.011	0.335

Notes: Speech rate (SR), the average length of filled pause (ALFP)

5 Discussion

RQ1. Concerning Oral Maintenance

In response to Research Question 1, the findings reveal that the oral gains of CSL learners in SA were largely maintained after returning to the at-home (AH) context, as characterized by strong retention in speed fluency and significant growth in lexical knowledge.

Concerning fluency development, a mixed pattern of retention and slight attrition was observed. Specifically, regarding the maintenance of oral abilities, the most substantial gain made during study abroad, Speech Rate (SR), was successfully maintained at T3, as the difference between T2 and T3 was not statistically significant ($p = 1.000$), indicating strong retention of this fluency gain. This implies that SR, as a reliable predictor of speed fluency (Kormos, 2006), preserves the effects of SA, which are still observable six months after learners have returned to the AH context.

In the domain of lexical knowledge, significant and positive development was the predominant trend, demonstrating clear maintenance and growth. Most notably, Guiraud's Index of lexical diversity demonstrated a massive and significant increase from T2 to T3 ($p < .001$), indicating that learners' vocabulary continued to expand dramatically even after returning home, rather than attriting. Furthermore, analysis of lexical sophistication revealed a significant shift: the use of lexical beginner-level words significantly decreased from T2 to T3 ($p = .002$), while the use of intermediate-level words significantly increased during the same period ($p = .021$). This suggests a clear and significant shift towards employing a more sophisticated lexicon, moving away from basic vocabulary.

A more in-depth analysis of the lexical complexity results, the two sub-domains of lexical complexity saw a contrasting picture at T3. Guiraud's Index for lexical diversity increased significantly at T3 compared to T2 (post-SA). This depicts an increasing trajectory of lexical diversity when the participants were not exposed to the target language environment. This is in line with the finding of previous research (Juan-Garau & Pérez-Vidal, 2007; Segalowitz & Freed, 2004; Pizziconi, 2017; Wu, 2017) that at home seems to benefit vocabulary learning, since as the amount of time spent learning Chinese increases, more and more diverse lexical items are acquired. However, the statistical increase in lexical diversity contradicted the finding of previous research (Chen, 2015a; Ye, 2015; Ding & Xiao, 2016) which claimed that no significant improvement is evident among learners at the beginner and intermediate levels (Chen, 2015a; Ye, 2015; Ding & Xiao, 2016; Ye, 2015). The results of this study revealed that learners' proficiency levels might not always constrain lexical diversity and that other confounding factors (i.e., AH context) triggered its improvement and outperformed the effects of learners' proficiency levels on lexical diversity.

Regarding lexical sophistication at T3, namely six months after the participants returned to the AH context with formal instruction, beginner-level words increased significantly, returning to the same level as pre-SA (T1). Meanwhile, intermediate words decreased significantly. The decrease of the intermediate lexical items in this study was likely associated with learners' retrieval of more varied lexical items during the at-home context. It was constrained by the participants' proficiency levels (Ding & Xiao, 2014), i.e., intermediate level. Referring to the Levelt model (1989), Skehan (2009a) hypothesised that lexical sophistication relates more to the conceptualiser stage and the nature of preverbal message implications for lemma retrieval. In contrast, lexical diversity relates to

the formulator stage, which is concerned with online, moment-by-moment decisions during speaking. For native speakers, the processing of the three stages occurs in parallel and is incremental (De Bot, 2000). For non-native speakers, mental lexicons are not as rich and well-organised as for native speakers, especially when learners are at a lower proficiency level (i.e., intermediate level). Therefore, the conceptualiser-formulator connection is more problematic for lower proficiency learners, who cannot process information in parallel as native speakers. Therefore, it can be inferred that a lower burden in the preverbal message at conceptualiser stage (lower lexical sophistication) allows L2 learners to retrieve more unusual lexical items (higher lexical diversity) at the formulator stage (Skehan, 2009a).

In summary, the period of at-home instruction was characterized by strong retention of speed fluency (SR) and remarkable growth in lexical knowledge. The most remarkable finding was the continued significant growth in lexical knowledge, both in terms of diversity (Guiraud's Index) and sophistication (shift from beginner to intermediate words). Conversely, syntactic complexity experienced significant attrition, and accuracy remained significantly lower than baseline levels.

RQ2. Concerning Oral Attrition

Building upon the mixed outcomes of oral maintenance, this section focuses specifically on areas where retention was not achieved, leading to observable attrition. As noted in the previous section, , not all areas were maintained successfully. Retention was observed in speed fluency (Speech Rate) and lexical diversity (Guiraud's Index), while attrition occurred in syntactic complexity (Syllables per AS-Unit) and pausing fluency (Average Length of Filled Pauses), with

lexical accuracy remaining stable but at a lowered level.

Areas of significant attrition were primarily observed in syntactic complexity and fluency of pausing. Most notably, syntactic complexity experienced significant attrition ($p < .001$),and accuracy, while not changing significantly from T2 to T3 ($p = 1.000$), remained problematic. Specifically, since accuracy had already significantly decreased from T1 to T2, this lack of change signifies that the lower level of accuracy observed post-SA was maintained rather than improved upon, resulting in a net attrition compared to pre-study abroad levels.

This attrition in syntactic complexity is illustrated by the change in AS-unit length, which decreased significantly from T2 to T3 when the learners had returned to the AH context for six months. Considering the SA effects, the complexity length significantly improved from T1 to T2. Then, it returned to the pre-SA level six months after the learners had returned to the AH context at T3. This may be because the AH context is very likely to negatively affect the length of sentences (Juan-Garau & Pérez-Vidal, 2007). Also, this study's findings concerning the increase of syntactic complexity after SA and the decrease in syntactic complexity during the AH context reveal an unstable developmental pattern when learners are at the beginner and intermediate levels. This is consistent with Ye (2015), who concluded that sentence length develops slowly and improves significantly when learners are at an advanced level. In this research, although the AS-unit length peaked at T2 because of the benefit of SA, it returned to the pre-SA level due to being constrained by the students' intermediate proficiency level.

Similarly, fluency in terms of pausing behavior showed clear signs of attrition. For pause measures, Average Length of Filled Pauses (ALFP) showed a significant increase from T2 to T3 ($p = .018$), suggesting a potential regression towards less fluent pausing behavior.

Regarding the observed increase in ALFP, which might superficially suggest a fluency decline, a more nuanced interpretation is necessary. The average length of the filled pause (ALFP) was found to be significantly lower after the learners had returned to the AH context for six months. In contrast to T2, this significant decrease in ALFP after the SA period might not suggest increasing fluency as initially seems to. This is because the learners were very likely to revert to their pre-SA level after six months back home (e.g., Juan-Garau & Pérez-Vidal, 2007), and they did not produce more complex languages with higher fluency as they benefited at T2 after SA. Therefore, filled pauses were not necessary as a successful strategy for holding one's turn during an utterance (cf. Wright, 2020). This regression can be attributed to the nature of the AH environment. In contrast to the SA period, the AH period did not provide learners with sufficient L2 practice to help them become more fluent, and they were also constrained by their proficiency level (intermediate level). Moreover, the decrease in fluency during the AH period can be explained by the participants' lack of opportunities for oral production practice. As mentioned in the methodology (see Section 3.1), during the AH context, participants largely did not receive specific training on oral skills in a conventional classroom setting. Instead, the focus was on traditional grammar teaching and writing skills.

This pattern of mixed retention—where speed fluency is maintained but syntactic complexity and breakdown fluency erode—aligns with the longitudinal findings of Huensch & Tracy-Ventura

(2017). In their study of L2 Spanish learners returning from a 9-month stay abroad, they also observed that speed fluency (e.g., articulation rate) was largely maintained upon re-entry to the home university, whereas breakdown fluency (e.g., pause frequency) was more susceptible to attrition (p. 287). This consistency across studies suggests that not all dimensions of oral proficiency are equally resilient to the shift from a naturalistic to a formal instructional context, with speed fluency being more robust than breakdown or syntactic complexity in the post-study abroad phase.

Crucially, Huensch and Tracy-Ventura (2017) highlighted that instruction during the "post-sojourn" phase—the final year of university after returning from abroad—remains an under-researched yet critical period for understanding long-term fluency development (p. 291). Our study reinforces this call. Despite the presence of formal instruction in the AH context, it was insufficient to prevent attrition in syntactic complexity and pausing fluency. This underscores the need for post-study abroad pedagogy that moves beyond traditional grammar-focused instruction. Targeted interventions, such as task-based oral practice, fluency-strategy training, or sustained meaningful interaction, may be necessary to help learners consolidate and extend the oral gains achieved during study abroad.

In summary of the CAF development during this period, at the end of six months of AH context after a 10-month SA sojourn, a statistically significant decrease was observed in the learners' syntactic complexity (length of AS-units) and lexical sophistication. In contrast, a significant increase was observed in lexical diversity, and there was no statistical difference in speed fluency (SR) and lexical accuracy.

This pattern suggests that learners' oral gains in syntactic complexity and fluency during the

10-month SA reverted to their previous levels six months after their return home. The results contribute to the finding that oral gains are expected to decrease six months after a return to the domestic setting without formal instruction (e.g., Juan-Garau & Pérez-Vidal, 2007). The analysis reveals that even with formal instruction, syntactic l complexity decreased significantly six months after returning to the domestic context. This is most likely due to the learners' lower proficiency level during post-SA (Ding & Xiao, 2014). After their year abroad, lower-level proficiency may not be enough to keep their AH oral gains over the following year with formal instruction (cf. Tracy-Ventura *et al*. 2021). Furthermore, this outcome confirms the findings of Juan-Garau and Pérez-Vidal (2007). It shows that AH learners are likely to concentrate on learning vocabulary at the expense of complexity and accuracy. The AH period does not seem to provide learners with opportunities to practice their oral performance to achieve more gains, similarly to the SA period. This finding supports previous research (Mora & Valls-Ferrer, 2012). This finding likely arose due to multiple factors, including the length of the data collection period (six-month AH period) in this study, which was potentially too short, and the nature of the instruction received, which lacked a specific focus on training students' oral skills Nevertheless, the overall pattern of results points to the impact of SA on low-level learners in certain aspects of language performance, in which syntactic complexity (BLINDED 2) and fluency (Du, 2013) benefited more from the context.

Moreover, the broader context supports the conclusion that learners are prone to achieve limited gains during the AH context (Freed, Segalowitz & Dewey 2004). In contrast, the SA setting is more beneficial than at home context for oral fluency in general fluidity (i.e., greater output, fewer silences) (LIanes & Serrano, 2017; Mora & Valls-Ferrer, 2012). Presumably, the SA context

provides learners with increased opportunities for meaningful L2 interaction compared to the limited access to authentic input and scarce opportunities for learners to engage in authentic conversations in a typical AH context (O'Donnell, 2004). Therefore, it can be concluded that there is an overall developmental pattern - fluency achieves larger gains during SA compared to AH.

6 Conclusion

The purpose of this study was to contribute to the literature on second language oral development by assessing L2 Chinese learners in Study Abroad (SA) and at home (AH), which have rarely been investigated in CSL and in an Irish context. To answer the two research questions, oral data was collected from 10 English-speaking university students majoring in Chinese, each of whom experienced SA and AH contexts across 28 months (including a 10-month SA period). Their oral performance during three oral tests was measured using 7 CAF metrics. The effects of two learning contexts (SA and AH) on oral performance, encompassing pre- and post-SA and AH contexts, were explored by repeated-measure ANOVAs. The main findings of the first research question are summarised below.

Six months after returning to the AH context, complexity measures, the length of complexity, and lexical sophistication exhibited a significant decrease. In contrast, lexical diversity saw significant improvement. However, no statistically significant difference was generally revealed regarding the Formal Instruction at-home effects on speed fluency and accuracy. Learners in this study, during the AH context were prone to focus on learning vocabulary and subordination at the cost of fluency. This finding mirrored that of Juan-Garau & Pérez-Vidal (2007). However, accuracy remained stable when the learners were in the AH period. This is because lexical accuracy does not

necessarily decrease when learners focus on learning vocabulary.

Additionally, the finding expands the assumption that oral gains are expected to decrease six months after returning to a domestic setting without formal instruction (cf. Juan-Garau & Pérez-Vidal, 2007). The analysis showed that learners' oral gains decreased (i.e., speed fluency, lexical sophistication, and overall complexity) except for vocabulary development (i.e., lexical diversity) after six months of returning to the domestic setting with formal instruction. AH gains were much smaller than SA gains, another finding that aligns with previous research (LIanes & Serrano, 2017; Mora & Valls-Ferrer, 2012). In this research, a statistically significant decrease occurred in the length of complexity, lexical sophistication, and fluency six months after returning to the AH context.

7 Limitations and directions for future research

The present study has several limitations related to its research design, participant sample, and measurement approach. First, the generalizability of the findings is constrained by the small sample size, the exclusive use of data collected under exam conditions, and the lack of detailed individual data (e.g., on motivation or language contact), which inhibits explaining individual variations. Second, the CAF measures employed may not have fully captured the unique characteristics of Chinese language development. Finally, the relationship between specific features of oral performance and holistic examiner ratings remains unclear.

In light of these limitations, future research should adopt experimental or mixed-methods designs with larger, controlled samples and incorporate tools like language contact profiles to better understand individual differences. The relationship between objective CAF measures and

subjective proficiency ratings also warrants further investigation. Most importantly, future studies should develop and validate CAF measures that are more sensitive to the specific features of Chinese.

References

References (APA 7th Edition)

BLINDEDa. (2024).

BLINDEDb. (2024).

BLINDEDc. (2022).

Borràs, J., & Llanes, À. (2021). Investigating the impact of a semester-long study abroad program on L2 reading and vocabulary development. *Study Abroad Research in Second Language Acquisition and International Education*, *6*(2), 276–297.

Bulté, B., & Housen, A. (2014). Conceptualizing and measuring short-term changes in L2 writing complexity. *Journal of Second Language Writing*, *26*, 42–65.

Chen, M. (2015). Hanyu zuowei di er yuyan de langdu liuli du he zhunquedu de shiyan yanjiu [An experiment study of reading fluency and accuracy in Chinese as second language acquisition]. *Hanyu yingyong yuyanxue yanjiu / Research on Chinese Applied Linguistics*, *(1)*, 123–138.

Collentine, J. (2004). The effects of learning contexts on morphosyntactic and lexical development. *Studies in Second Language Acquisition*, *26*(2), 227–248. https://doi.org/10.1017/S0272263104262040

De Bot, K. (2000). A bilingual production model: Levelt's "speaking" model adapted. In L. Wei (Ed.), *The bilingualism reader* (pp. 420–442). Routledge.

Diao, W., Donovan, A., & Malone, M. (2018). Oral language development among Mandarin learners in Chinese homestays. *Study Abroad Research in Second Language Acquisition and International Education*, *3*(1), 32–57. https://doi.org/10.1075/sar.17002.dia

Ding, A., & Xiao, X. (2016). Yidali Xuexi zhe chuji Hanyu kouyu cihui nengli fazhan yanjiu [A study on the oral lexical development of elementary Italian learners' Chinese]. *Shijie hanyu jiaoxue / Chinese Teaching in the World*, *30*(2), 239–252.

Du, H. (2013). The development of Chinese fluency during study abroad in China. *The Modern Language Journal*, *97*(1), 131–143. https://doi.org/10.1111/j.1540-4781.2013.01434.x

Foster, P., Tonkyn, A., & Wigglesworth, G., (2000). Measuring spoken language: A unit for all reasons. *Applied Linguistics,* 21, 354-375.

Hanban. (2012). *New Chinese Proficiency Test (HSK) vocabulary (Revised Version)*. http://www.chinesetest.cn/godownload.do (Accessed 2021-04-01).

Housen, A., & Kuiken, F. (2009). Complexity, accuracy and fluency in second language acquisition. *Applied Linguistics*, *30*(4), 461–473. https://doi.org/10.1093/applin/amp048

Housen, A., Kuiken, K., & Vedder, I. (2012). Complexity, accuracy and fluency. In F. Kuiken, I. Vedder, & A. Housen (Eds.), *Dimensions of L2 performance and proficiency: Complexity, accuracy and fluency in SLA* (pp. 1–20). John Benjamins Publishing Company.

Howard, M. (2005). Second language acquisition in a study abroad context: A comparative investigation of the effects of study abroad and foreign language instruction on the L2 learner's grammatical development. In A. Housen & M. Pierrard (Eds.), *Investigations in instructed second language acquisition* (pp. 495–530). Mouton de Gruyter.

Howard, M. (2019). *Study abroad, second language acquisition and interculturality: Contemporary perspectives*. Multilingual Matters.

Howard, M. (2022). Enhancing language and culture learning in a study abroad context. In H. Reinders, C. Lai, & P. Sundqvist (Eds.), *Routledge handbook of language learning and teaching beyond the classroom* (pp. 168–180). Routledge.

Howard, M., & Schwieter, J. (2018). The development of a second language grammar during study abroad. In C. Sanz & A. Morales-Front (Eds.), *The Routledge handbook of study abroad* (pp. 135–148). Routledge.

Huensch, A., & Tracy–Ventura, N. (2017). L2 utterance fluency development before, during, and after residence abroad: A multidimensional investigation. *The Modern Language Journal*, *101*(2), 275–293. https://doi.org/10.1111/modl.12395

Huensch, A., Tracy-Ventura, N., Bridges, J., & Custer, J. (2019). Variables affecting the maintenance of L2 proficiency and fluency four years post-study abroad. *Study Abroad Research in Second Language Acquisition and International Education*, *4*(1), 96–125. https://doi.org/10.1075/sar.17015.hue

Juan-Garau, M. (2014). Oral accuracy growth after formal instruction and study abroad. In C. Pérez-Vidal, M. Juan-Garau, & A. L. V. Al (Eds.), *Language acquisition in study abroad and formal instruction contexts* (pp. 87–111). John Benjamins Publishing Company.

Juan-Garau, M., & Pérez-Vidal, C. (2007). The effect of context and contact on oral performance in students who go on a stay abroad. *Vigo International Journal of Applied Linguistics*, *(4)*, 117–134.

Kim, J., Dewey, D. P., Baker-Smemoe, W., Ring, S., Westover, A., & Eggett, D. L. (2015). L2 development during study abroad in China. *System*, *55*, 123–133. https://doi.org/10.1016/j.system.2015.10.005

Kormos, J. (2006). *Speech production and second language acquisition*. Lawrence Erlbaum Associates. https://doi.org/10.4324/9780203763964

Kuiken, F., Vedder, I., Housen, A., & De Clercq, B. (2019). Variation in syntactic complexity: Introduction. *International Journal of Applied Linguistics*, *29*(2), 161–170. https://doi.org/10.1111/ijal.12255

Levelt, W. J. (1989). *Speaking: From intention to articulation*. MIT Press. https://doi.org/10.7551/mitpress/6393.001.0001

Liu, Y. (2017). Renwu Leixing dui Hanyu eryu Kouyu Chanchu zhong Cihui Fuza du de Yingxiang [Effect of task types on lexical complexity in L2 Chinese speaking performance]. *Shijie hanyu jiaoxue / Chinese Teaching in the World*, *31*(2), 253–269.

Llanes, À. (2012). The short-and long-term effects of a short study abroad experience: The case of children. *System*, *40*(2), 179–190. https://doi.org/10.1016/j.system.2012.05.003

Llanes, Á., & Serrano, R. (2017). The effectiveness of classroom instruction 'at home' versus study

abroad for learners of English as a foreign language attending primary school, secondary school and university. *The Language Learning Journal*, *45*(4), 434–446. https://doi.org/10.1080/09571736.2014.923033

McManus, K., Mitchell, R., & Tracy-Ventura, N. (2021). A longitudinal study of advanced learners' linguistic development before, during, and after study abroad. *Applied Linguistics*, *42*(1), 136–163. https://doi.org/10.1093/applin/amaa003

Mitchell, R., Tracy-Ventura, N., & McManus, K. (2017). *Anglophone students abroad: Identity, social relationships and language learning*. Routledge. https://doi.org/10.4324/9781315194851

Mora, J. C., & Valls-Ferrer, M. (2012). Oral fluency, accuracy, and complexity in formal instruction and study abroad learning contexts. *TESOL Quarterly*, *46*(4), 610–641. https://doi.org/10.1002/tesq.34

O'Donnell, K. (2004). *Student perceptions of language learning in two contexts: At home and study abroad* [Unpublished doctoral dissertation]. University of Pittsburgh.

Pérez-Vidal, C. (2014). Study abroad and formal instruction contrasted: The SALA project. In C. Pérez-Vidal, M. Juan-Garau, & A. L. V. Al (Eds.), *Language acquisition in study abroad and formal instruction contexts* (pp. 17–58). John Benjamins. https://doi.org/10.1075/aals.13.03ch2

Pérez-Vidal, C. (2015). Practice makes best: Contrasting learning contexts, comparing learner progress. *International Journal of Multilingualism*, *12*(4), 453–470. https://doi.org/10.1080/14790718.2015.1071019

Pizziconi, B. (2017). Japanese vocabulary development in and beyond study abroad: The timing of the year abroad in a language degree curriculum. *The Language Learning Journal*, *45*(2), 133–152. https://doi.org/10.1080/09571736.2013.786119

Segalowitz, N., & Freed, B. F. (2004). Context, contact, and cognition in oral fluency acquisition: Learning Spanish in at home and study abroad contexts. *Studies in Second Language Acquisition*, *26*(2), 173–199. https://doi.org/10.1017/S0272263104262027

Skehan, P. (2003). Task-based instruction. *Language Teaching*, *36*(1), 1–14.

https://doi.org/10.1017/S026144480200188X

Skehan, P. (2009a). Lexical performance by native and non-native speakers on language-learning tasks. In H. Meara (Ed.), *Vocabulary studies in first and second language acquisition* (pp. 107–124). Palgrave Macmillan.

Tracy-Ventura, N., Huensch, A., & Mitchell, R. (2021). Understanding the long-term evolution of L2 lexical diversity: The contribution of a longitudinal learner corpus. In B. Le Bruyn & M. Paquot (Eds.), *Learner corpus research meets second language acquisition* (pp. 148–171). Cambridge University Press.

Wright, C. (2018). Effects of time and task on L2 Mandarin Chinese language development during study abroad. In C. Sanz & A. Morales-Front (Eds.), *The Routledge handbook of study abroad research and practice* (pp. 166–180). Routledge.

Wright, C. (2020). Effects of task type on L2 Mandarin fluency development. *Journal of Second Language Studies*, *3*(2), 157–179. https://doi.org/10.1075/jsls.00010.wri

Wright, C., & Zhang, C. (2014). Examining the effects of study abroad on L2 Chinese development among UK university learners. *Newcastle and Northumbria Working Papers in Linguistics*, *20*, 67–83.

Wu, X. (2017). *Hanyu eryu xuexizhe kouyu nengli fazhan gean yanjiu* [A case study on the development of Chinese proficiency of a second-language learner] [Master's thesis, Jinan University]. Yang, J.-S. (2016). The effectiveness of study-abroad on second language learning: A meta-analysis. *Canadian Modern Language Review*, *72*(1), 66–94. https://doi.org/10.3138/cmlr.2344

Ye, W. (2015). Yingyu muyuzhe hanyu kouyu shuiping fazhan yanjiu [The oral Chinese language development of native English speakers]. *Nanjing Shifan Daxue Wenxueyuan Xuebao / Journal of School of Chinese Language and Culture Nanjing Normal University*, *4*, 170–174.

Zhai, Y., & Feng, H. (2014). Jiyu "kantu shuohua" renwu de Hanyu xuexizhe kouyu liulixing fazhan yanjiu [Study of Chinese learners' speaking fluency development with picture description

activity]. *Huawen Jiaoxue yu Yanjiu / TCSOL Studies*, *56*(4), 1–7.

Supporting material

Appendix S1.