



# The Study of Pauses in Oral Production from the Perspective of Language Proficiency

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## Abstract

*This study analyzed the pauses of 20 EFL learners' monologue recordings. Results indicate the group average of pause frequency is higher in the low-level group, which is manifested by the pause frequency at syntactic boundary. The group average proportion of silent pause duration between sentences is higher in the high-level group. The oral output of low-level group features smaller language units, more frequent times of pauses (mostly at non-syntactic boundaries), while the high-level group has longer language units, less frequent times of pauses and more silent pauses between sentences. The group average of pause frequency at non-syntactic boundaries of students' oral production is negatively correlated with foreign language proficiency, and the average proportion of silent pause duration between sentences is positively correlated with proficiency.*

## I. INTRODUCTION

Oral expression is an important content in the process of second language teaching and learning, and plays an important role in all aspects of students' development (Yan et al, 2020; 2023). Pauses are of great significance in the study of spoken language. For second language learners, pauses are important criteria to measure the fluency of spoken language. It has the functions of stopping for breathing, marking syntactic boundaries, attracting attention, and maintaining turn-takings. Therefore, pauses play an important role in speech production, verbal communication, and second language acquisition.

However, the specific correlation between students' language proficiency and pauses in their oral performance still remains to be further explored.

## II. RESEARCH BACKGROUND

As a basic phenomenon in spoken language output, pauses can reflect the speaker's spoken language level to a large extent. Pauses are also one of the explicit features of speech planning inherent in speech production (Goldman-Eisler, 1968). Therefore, pauses play an important role in speech production, verbal communication, verbal application and second language

acquisition. Existing studies of pauses mainly come from a single language, and the results show that spoken pauses are regular (De Jong et al., 2015; Nick, 1995). In terms of the pause frequency, about 40% of spontaneous speech in English is pauses (Yang, 2004), while about 50% of conversational communication is pauses (Goldman-Eisler, 1968). At present, second language researchers mostly follow the 300 milliseconds adopted by Raupach (1980) to define pauses.

The few foreign researches on pauses mainly focus on the relationship between second language pauses and fluency, and between second language pauses and level. Ellis (1995) also divided the measurement dimension of oral fluency into two aspects, one of which is time argument, namely pauses, including speech speed, pause frequency, duration of pauses, and flow pause duration. The 12 fluency evaluation indicators designed by Hughes (2003) also include the interlocutory pause indicator. At the same time, many studies have shown a negative correlation between pauses and fluency. For example, Lennon (1990) found a significant negative correlation between filled pauses and fluency.

Domestic research on pauses is based on different experimental subjects, and some conclusions related to pauses location and duration are also drawn. Ma's (2014) experiment was based on English majors and native English students, and found that for the students majoring in English, the silent pauses and the pauses and the duration at non-syntactic boundaries, have a significant negative correlation with the oral performance of them.

Gao & Fan (2011) compared the differences between Chinese and American college students in oral expression by analyzing the pausing phenomenon in narrative and found that American college students are good at using pausing strategies which Chinese college students rarely use. Miu (2009) proposed that with the improvement of learners' language level, the difficulty of vocabulary extraction increases.

There is no unified classification system for pauses in the research community. Many studies distinguish between filled pauses (usually referred to as non-lexical filler sounds like uh, um, etc.) and non-filled pauses (also called silent pauses) (e.g., Raupach, 1980; Lennon, 1990). The classification method proposed by Ma (2014) cleverly avoids the classification from functional level. Firstly, pauses are divided into silent pauses and filled pauses from the perspective of form, and then these two pauses are divided into 4 types respectively according to the distribution of pauses, with a total of 8 types: silent pauses within words, silent pauses within phrases, silent pauses between phrases, silent pauses between sentences, filled pauses within words, filled pauses within phrases, filled pauses between phrases, filled pauses between sentences. The silent pauses in words, silent pauses in phrases, filled pauses in words and filled pauses in phrases belong to non-syntactic boundary pauses, while the silent pauses between phrases, silent pauses between sentences, filled pauses between phrases and filled pauses between sentences belong to syntactic boundary pauses. This study follows the classification of pauses by Ma (2014).

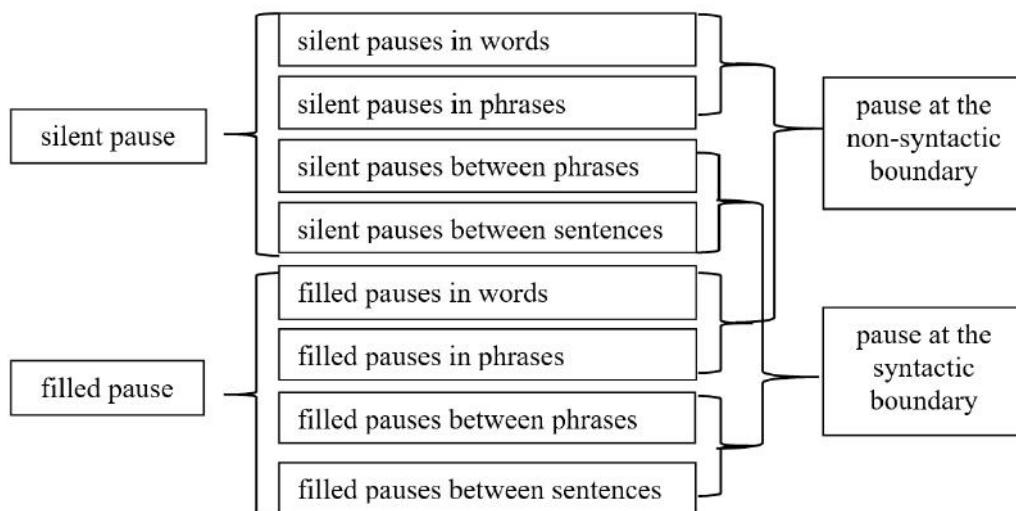


Fig.1 Classification of pauses

At present, the research on pauses at home and abroad has developed rapidly, but there are still some inadequacies: 1) The study of pauses in first language is relatively mature, while pauses in second language are seriously lacking specialized studies; 2) Research results on the relationship between pauses and fluency, pauses and second language level are inconsistent. In view of this, it is necessary to conduct in-depth and special research on spoken second language pauses in order to further reveal the characteristics of spoken second language output. Based on this situation, this study hopes to supplement and improve this aspect. This study focuses on the main characteristics of the average of pause frequency and the average proportion of pause duration of Chinese English learners and focuses on exploring the correlation between pauses and their language level. It is hoped that the dimensions of oral evaluation are broadened and the pedagogical significance of this research expanded.

### III. METHODOLOGY

#### 3.1 Participants

Twenty non-English majors aged between 21 and 22 were chosen as participants for this study who had all

participated in the test of CET-6. CET-6 is a national test presided over and implemented by the Ministry of Education of China to assess the English ability of college students. This test can objectively show the students' English level. Among them, 10 passed the exam successfully while the rest of them failed to pass the exam. As is shown in Table 1, for the high-level participants, the highest CET-6 grade is 548 and the lowest is 426 with a mean of 509.9, and a standard deviation of 36.57. For the low-level participants, the highest CET-6 grade is 358 and the lowest grade is 315 with a mean of 336.1, and a standard deviation of 14.43. Besides, the result of Mann-Whitney test is 0.000, which indicates a significant difference between the groups in their language proficiency. As to their sexes, there are 7 males and 13 females.

None of these participants knew beforehand what the test would be, so they didn't make preparations for this test. Besides, considering the development of language level is a dynamic process, these students' grades are collected from the same exam of CET-6 in order to avoid the situation that some students' English levels change too much after the exam.

Table 1 Participants' CET 6 grades

Grades of CET-6	Number	Max	Min	Mean	Standard Deviation	Sig. (Mann-Whitney)
Group H	10	548	426	509.9	36.57	0.000*
Group L	10	358	315	336.1	14.43	

\* Significant at the 0.01 level.

#### 3.2 Instruments

In order to investigate the relationship between pause frequency and foreign language proficiency, four instruments are employed, including one oral test and three types of software, namely Adobe Premiere 2019, which was used to separate videos and audios; Praat, which was used to make annotations on the sound track and to calculate the number of pauses in audio files; SPSS 23.0, which was used to analyze the grades of CET-6 of the participants; EXCEL, which was to find out the characteristics of the group average of pause frequency of all types of pauses and the group average proportion of pause duration of all types of pause pauses between Group H and Group L, and to investigate the correlation between

the group average of pause frequency and foreign language proficiency, and the correlation between the group average proportion of pause duration and foreign language proficiency through the data.

#### 3.3 Hypothesis

Some researchers suggest that learners' pause frequency significantly decreases and average pause duration is significantly shortened as he or she learning deeper (Anderson-Hsieh & Venkatagirl, 1994; Zhang & Wu, 2001; Yan et al, 2019). Besides, studies have found that pause frequency was negatively correlated with foreign language proficiency (Riggenbach, 1991; Zhang, 2002; Yan et al, 2018). According to this, following hypotheses are proposed before the experiment:

3) There might be major differences in pauses (group average pause frequency and group average proportion of pause duration) between groups in the performances of participants at different proficiency levels.

4) There might be a negative correlation between pauses (group average pause frequency and group average proportion of pause duration) and foreign language proficiency.

### 3.4 The speaking task

Students were asked to make a monologue in 2

minutes. “Would you like to live in the city or the countryside after graduation?” is chosen as the topic of the speaking task. The reason is that it is a common question in CET-6 tests, and it is closely related to student’s daily life, so that most of the students can be encouraged to express more oral output, which can not only show students’ level of oral output, but also can guarantee the smooth progress of the experiment.

## IV. RESULTS AND DISCUSSION

### 4.1 Differences in group average of pause frequency and in group average proportion of pause duration

Table 2 Differences in group average of pause frequency

Type	Average		Group Difference
	Group L	Group H	
silent pauses in words	3.59	3.43	0.16
silent pauses in phrases	4.70	4.01	0.69
silent pauses between phrases	10.04	10.19	-0.16
silent pauses between sentences	4.29	4.75	-0.47
filled pauses in words	0.59	0.45	0.14
filled pauses in phrases	1.32	0.42	0.89
filled pauses between phrases	2.85	2.77	0.08
filled pauses between sentences	1.44	1.02	0.41

Notes:

Each participant’s pause frequency = each participant’s number of pauses / total number of syllables\*100

Group average of pause frequency = the total of each participant’s pause frequency / number of participants

As is shown in Table 2, among the 8 types of pauses (including silent pauses in words, silent pauses in phrases, silent pauses between phrases, silent pauses between sentences, filled pauses in words, filled pauses in phrases, filled pauses between phrases, filled pauses between sentences), the group average of frequency of silent pauses between phrases was the highest in both Group H and Group L, which are respectively 10.19 per 100 syllables and 10.04 per 100 syllables. The group average of frequency of filled pauses in phrases in Group H was 0.42 per 100 syllables and was the lowest in the 8 types of pauses of Group H. The group average of frequency of filled pauses in words is 0.59 per 100 syllables and is the lowest in the 8 types of pauses of Group L. The difference

in the group average of pause frequency at non-syntactic boundary (including silent pauses in words, silent pauses in phrases, filled pauses in words and filled pauses in phrases), is specifically manifested by silent pauses in phrases and filled pauses in phrases with a relatively larger group difference (0.69; 0.89). Besides, most of the group difference are positive.

The above results show that the difference in the group average of pause frequency between Group H and Group L is mainly manifested in non-syntactic boundary pauses (including silent pauses in words, silent pauses in phrases, filled pauses in words, and filled pauses in phrases).

*Table 3 Differences in group average proportion of pause duration*

Type	Average Proportion		Group Difference
	Group L	Group H	
silent pauses in words	4.01%	5.07%	1.06%
silent pauses in phrases	5.16%	9.79%	4.63%
silent pauses between phrases	18.19%	23.02%	4.84%
silent pauses between sentences	12.17%	10.50%	-1.67%
filled pauses in words	0.44%	0.55%	0.11%
filled pauses in phrases	0.34%	1.42%	1.08%
filled pauses between phrases	2.01%	2.77%	0.76%
filled pauses between sentences	0.88%	1.38%	0.50%

Notes:

Proportion of each participant’s pause duration = his or her pause duration/ his or her total pause duration of speech

Group average proportion of pause duration = the total of each participant’s pause duration/number of participants

Among the 8 types of pauses (including silent pauses in words, silent pauses in phrases, silent pauses between phrases, silent pauses between sentences, filled pauses in words, filled pauses in phrases, filled pauses between phrases, filled pauses between sentences), the group average proportions of silent pause duration between sentences of both Group H and Group L are the highest (12.17%; 10.50%), but the group average proportion of silent pause duration between sentences in Group H is 12.17%, higher than that in Group L (10.50%), and the absolute value of group difference of group average proportion of silent pauses duration between sentences between the two groups is the largest (-1.67%) among the 8 types of pauses, and -1.67% is the only negative number in this table. The group average proportion of silent pauses duration in words and filled pauses in words of Group H are lower than those of Group L (group difference = 1.06%; 0.11%). The group average proportion of pause duration of silent pauses in phrases and silent pauses between phrases of Group H are lower than those of Group L (group difference = 4.63%; 4.84%). Besides, most of the group difference are positive.

The above results show that the difference between Group H and Group L in the group average proportion of pause duration is mainly manifested in silent pauses between sentences. In the silent pauses between sentences, the group average proportion of pause duration of it of Group H is higher than that of Group L.

#### 4.2 Correlation between pauses and foreign language proficiency

The first is the correlation between group average of pause frequency and foreign language proficiency. Group average of pause frequency at non-syntactic boundary of low-level participants (including silent pauses in words, silent pauses in phrases, filled pauses in words, and filled pauses in phrases) is higher than that of high-level participants, indicating the conclusion that the lower the level of foreign language proficiency, the higher the group average of pause frequency at non-syntactic boundary in their oral output. The difference of the group average of pause frequency at non-syntactic boundary, is specifically manifested by the higher group average of frequency of silent pauses in phrases and filled pauses in phrases with larger group difference. This result is consistent with most previous studies. Pauses at non-syntactic boundary are a kind of hesitance and belongs to cognitive pauses that reflect speech planning problems in the course of speech production (Levelt, 1983) and indicate uncertainty about vocabulary or morphology (Chambers, 1997). These results indicate that, compared with high-level students, students at low proficiency level obviously encounter more problems of speech planning in the process of oral production, especially the vocabulary and form problems. The reasons for this situation have been widely discussed in the second language research community, involving a variety of interrelated theories, including: insufficient resources of second language and time which brings

pressure (Dornyei & Scott, 1997), low degree of second language programming or spoken automation (Raupach, 1980), insufficient allocation of attention (Kormos, 2006), working memory load exceeds working memory capacity (Temple, 1997).

Here is one example of the first 60 seconds of the audio from the performance of a low-level participant to show how they made more non-syntactic boundary pauses (problems are mainly in words, phrases, and grammar), and one example of the first 60 seconds of the audio from the performance of a high-level participant to show how they made less non-syntactic boundary pauses.

The example from a low-level participant:

“Hello, everyone! ... I’ll introduce my challenge of living in a big ...[2]... city. ... There are some ...[1]... is emm...[3]... ...[1]... a dicti a ...[1]... di ...[1]... difficulty ...[2]... as ...[2]... emm... of my ...[2]... emm...[4] ...[2]... living in big cities. emm... Firstly, ... emm... making friends ... making friends ... making friends is ...[2]... very important ...[2]... emm...[4]... ...[2]... to my life. ... But ... a friend is ... not ...[2]... emm...[4]... ...[2]... emm...[4]... is not for me ... emm... ... suggest ...[2] emm...[4] ...[2]... emm...[4]... Second, ... learning ...[2]... is ...[2] another ...[1]... emm...[3]... ...[1]... difficulty.”(Notes: [1] = a silent pauses in words, [2] = silent pauses in phrases, [3] = filled pauses in words, [4] = filled pauses in phrases)

In “living in a big ...[2]... city”, the silent pause in the phrase occurred before the noun “city”. In the process of thinking of the pronunciation of the word “city”, a silent pause in phrases happened.

In “There are some ...[1]... is”, the silent pause in the word occurred because the speaker was confused about the third person singular. The speaker used “are” at first, but after realizing that the following object is a singular word “difficulty”, so the predicate verb should be in the third person singular. In the process of examining the grammar, he decided to gain time and extract grammatical knowledge to synthesize the expression form by pauses, so he changed “are some” into “is”, thus producing a silent pause in the word.

In “emm... ...[3]... ...[1]... a dicti a ...[1]... di ...[1]... difficulty ...[2]...”, the silent pause and the filled pause successively happened twice in the word “difficulty”,

because he firstly pronounced “dict”. It was a common situation of successive occurrence of a silent pause and a filled pause. This is usually because the speaker owns a habit of monitoring the accuracy of his output content in the process of oral production. When the speaker finds mistakes or doubts about his expression, he needs more time to re-examine the output content and judges whether the oral expression content needs to be corrected. Therefore, a silent pause and a filled pause occur continuously. Together, the two pauses are used to extend speech processing time and maintain conversation turns. Therefore, the process of thinking produced a filled pause of “emm” and the final silent pause in the word “difficulty”. Thus, it was in the process of thinking about the word “difficulty” that the speaker produced a filled pause in a word and a silent pause in a word.

In “suggest ...[2]... emm...[4]... ...[2]... emm... ...[4]...”, the two silent pauses and filled pauses happened after the word “suggest”, which was a mistake in the meaning of the sentence and grammar. On the one hand, “suggest” is a verb, which cannot happened after the predicated verb “is” directly; on the other hand, the speaker hasn’t organize well of the following content. After the 4 pauses, he started another sentence. Obviously, the speaker monitored his output process and found that he had made a mistake, but he chose to continue speaking because he wanted to ensure the fluency of the language or does not think of a suitable content to finish his last sentence, thus producing a silent pause in the phrase. There are three possible intentions of the sileng pauses and filled pauses in the phrase: to relieve the tension and embarrassment caused by the mistake, to try to find a remedy, and to have the concept formation mechanism working at the same time to prepare for the next output. However, he finally found that the problem was not solved after the pause, so he had no choice but to jump over the obstacle and continue to express other content.

The second is the correlation between group average proportion of pause duration and foreign language proficiency. The result that the group average proportion of silent pause duration between sentences of high-level participants is higher than that of low-level participants, showing that the higher the level of foreign language proficiency, the lower the group average proportion of



silent pause duration between sentences in their oral output. From the perspective of language units, the results indicate that students at high proficiency level make full use of silent pauses between sentences to plan the content and expression of the next sentence. Silent pauses between sentences of low-level participants are shorter, which on the one hand may indicate that their speech planning at this time does not arrange at the level of a sentence, but is carried out in smaller language units and requires less time. On the other hand, it means that low-level participants have not yet developed the ability to make full use of acceptable average duration of pauses between sentences to plan the output of the next sentence, but just rush into the output. This leads to more pauses or other forms of disfluency in the next sentence as the output plan is not completed. In addition, the results of this study also show that the problem of proportion of average pause duration is more complex than most researchers expected. If pauses mostly happen between sentences, the semantic group will be complete and proper pauses like these will not influence the oral fluency; if not, pauses at other positions may lead to poor speech.

Here is one example of the first 60 seconds of the audio from the performance of a high-level participant to show how they made longer silent pauses between sentences (problems are mainly in words, phrases, and grammar), and one example of the first 60 seconds of the audio from the performance of a low-level participant to show how they made shorter silent pauses between sentences.

In the following part, in order to show the classification of concisely, the silent pause between sentences is numbered as [5], and the number after that is the duration of this pause.

1) The example from a high-level participant:

“With the development of economy, ... emm... there are ... emm... ... the numbers of big cities is constantly increasing. ...[5]/0.55s... But at the same time, there are many problems of living in a big city. ...[5]/0.54s... emm... For one thing, ... The traffic ... problem... is heavy. ...[5]/0.60s... For example, ... there are many cars in big cities. ...[5]/0.46s... So it's difficult for ... us go to work. ...[5]/3.19s... emm... And ...[5]/0.40s... And the... thing An And the things in ... big cities ... are very

inexpensive. ...[5]/0.83s... emm... ...[5]/5.94s... Second,”  
(Notes: [5] = silent pauses between sentences)

In the following part: “increasing. ... [5]/0.55s... But at the same time,” “there are many problems of living in a big city. ...[5]/0.54s...”, “us go to work. ...[5]/3.19s...” and “are very inexpensive. ...[5]/0.83s...”, the silent pause between sentences all happened between two complete sentences. They were both common and acceptable pauses between sentences to adjust the speaker’s breath, organize the content of the next sentence, and keep the talk turns.

In “is heavy. ...[5]/0.60s... For example”, the silent pause between sentences was after the prepositional collocation “For example”, which was used by the speaker to demonstrate the “problems” in the previous sentence, and to gain time to better complete the content of the speech plan in the next sentence. It didn’t influence any other sense groups and is within the reasonable range. Besides, there were complete meaning groups before and after the word “For example”, so the speaker here was trying to gain time to organize the expression of the next sentence.

In “...[5]/0.46s... So it's difficult for”, the fourth silent pause occurred before the connective word “So”. Obviously, the speaker was trying to find the right reason for the next sentence in order to form a reasonable causal relationship with the previous sentence, so more time was needed to plan the speech content, extract the vocabulary, and synthesize the expression form. The same is true like “as, because, as a result of” and so on.

In “And ...[5]/0.40s... And the... thing”, the silent pause between sentences occurred after the connective word “And” at the beginning of the sentence. This is a common way to start a sentence (e.g. “But”, “however”, “I think”, “Also”) with a conjunctive word. However, after the conjunctive word was said, the speaker found that she has not bought enough time to put together the expression in their mind, so she continued to strive for time by using silent pauses between sentences.

In “...[5]/5.94s... Second”, the silent pause was after the ordinal word “Second”. Ordinals are used to enhance the order of the text and are also related elements. Since this kind of word followed by a sentence with opinions has become a habitual expression of most people, this kind of pause gradually becomes an important word to help

speakers clear their thoughts, so the sentence immediately after the ordinal word will be paid extra attention to by listeners, and the speaker therefore needs more time to be more careful to synthesize the expression form after the ordinal word, thus a pause occurs. This kind of pauses between sentences is within the reasonable range, which can not only let the speaker relieve the tension, but also within the reasonable range of pause without interrupting the flow of the language, enhancing the sense of rhythm, and making the listener feel comfortable.

There is also another kind of common silent pause between sentences which didn't appear in this paragraph. That is the silent pause which was located at the division between the main clause and the subordinate clause, which was to gain more thinking time for the speaker to better organize the content of the speech. The main purpose of this kind of silent pauses between sentences is to think about the tense of the next sentence, so as to ensure the accuracy of grammar. As it occurs after a complete group of sense, it isn't cause too much uncomfortable feelings to the listeners. For example, in another sample of high-level participants, in the sentence "...Even if they have work in big city, ...(a silent pause between sentences) it is hard for them to buy a house."

2) The example from a low-level participant:

"There are too many people to ... compete with you ... to get their idea job ... which may...which brings great pressure ... in developing characteristic ... to ... get their idea job from ... lots a lots of people. ...[5]/0.90s... emm... Also, ... living in the big... a big city, ... the limited living ... earth results ... make it difficult ... to afford the house. ... Most people may have to choose ... live ... to live in ... to live ... emm... in live in the...live far away from the centre of the city ... emm... ... at the cost of spending ... long time in transporting everyday. emm... Also, living in the ... bit city ... often ... means live far away from..." (Notes: [5] = silent pauses between sentences)

In this paragraph, there is one silent pauses between sentences, and the analysis of its cause is as follows:

In "...[5]/0.90s... emm... Also", the only silent pause between sentences happened before the connective word "Also" at the beginning of the sentence. As in the above-mentioned, this is a common way to start a sentence (e.g. "But", "however", "I think", "Also") with a

conjunctive word. The speaker found that she has not bought enough time to put together the expression in their mind, so she continued to strive for time by using silent pauses between sentences before the conjunctive word was said.

In conclusion, in the 60 seconds of both group, 8 times of silent pauses between sentences with a total duration of 12.51 seconds happened in the participant of high-level group; while one silent pause between sentences with a total duration of 0.90 seconds happened in the participant of low-level group. Therefore, the group average proportion of silent pause duration between sentences is positively correlated with foreign language proficiency.

## V. CONCLUSION

Through the data analyzed, there are major differences in pauses (group average pause frequency and group average proportion of pause duration) between groups in the performances of participants at different proficiency levels. The group average pause frequency of pauses at non-syntactic boundaries of low-level participants is higher than that of high-level participants, and the group average proportion of pause duration of silent pauses between sentences of high-level participants is higher than that of low-level participants. Most differences of group average pause frequency are positive, and most differences of group average proportion of pause duration are also positive. Besides, there is a negative correlation between group average pause frequency of pauses at non-syntactic boundary and foreign language proficiency, and the group average proportion of silent pause duration between sentences is positively correlated with foreign language proficiency.

The oral output of low-level participants has smaller language units, more frequent times of pauses and pauses mostly distributed at non-syntactic boundary (including silent pauses in words, silent pauses in phrases, filled pauses in words and filled pauses in phrases), while those of high-level participants has longer language units, less frequent times of pauses and more silent pauses between sentences.



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### CREDIT AUTHOR STATEMENT

Ding Cheng: Conceptualization, Methodology, Investigation, Data curation, Writing-original draft, Writing - review & editing.

Yan Jing: Conceptualization, Methodology, Supervision, Writing – review & editing.

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