LONG PAUSES IN CHINESE EFL LEARNERS' SPEECH PRODUCTION

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Abstract: *This paper reports a longitudinal study conducted among 11 Chinese EFL learners. The study was aimed at describing the development of Chinese EFL learners' speaking proficiency, fluency in particular, by looking at the pauses in their spontaneous speech production. Tests at three different points of time with an interval of 24 weeks reveal that as learners' learning progresses and practice increases, their pauses are significantly shorter and less frequent. However, this improvement slows down after the first academic year. In contrast with the significant decrease in pause length and frequency in the second test, the ratio of hesitation pauses has not been found to drop significantly. However, in the third test the ratio of hesitation pauses were found to drop significantly.*

Keywords: long pauses, EFL learner, speech.

Resumen: *El siguiente artículo presenta un estudio longitudinal llevado a cabo con 11 aprendices chinos de inglés como lengua extranjera. El objetivo del estudio es describir en particular la evolución de la competencia y la fluidez de aprendices chinos de inglés como lengua extranjera (ILE) fijándonos en las pausas que realizaban al hablar de forma espontánea. Los tests realizados en tres diferentes periodos de tiempo con un intervalo de 24 semanas, revelan que a medida que el progreso en el aprendizaje del individuo y su práctica aumenta, sus pausas son significativamente más cortas y menos frecuentes. Sin embargo, esta mejora se reduce después del primer año académico. A diferencia de la significativa disminución de la duración y la frecuencia de las pausas en el segundo test, la proporción de pausas de duda no ha disminuido de forma significativa. No obstante, en el tercer test, la proporción de las pausas de duda disminuyeron de forma considerable.*

Palabras clave: Largas pausas, aprendices de inglés como lengua extranjera (ILE), habla.

1. Introduction

Speech production in a second language has long been a key area of interest because it is an important aspect in evaluating second language learners' progress. The discussion on elements constituting second language oral proficiency and factors influencing the development of such proficiency has never come to a stop. Among all the studies on the speech production of foreign or second language learners, the study of oral fluency and temporal variables determining it attract the most attention. This is because fluency is a perceptual concept, a judgment on the part of a native or qualified listener of somebody's speech. This judgment may then depend on a number of articulatory or syntactic properties of the input speech. Of the various properties, temporal variables are the most easily perceived elements influencing a listener's judgment on a speaker's speech. By studying the temporal variables, how learners

vary from each other in their speech pattern and how each learner develops through practice and exposure to the target language can also be made clear to learners and teachers of a foreign language. Besides, the psychological mechanisms that determine a learner's way of speaking a foreign language have long been under research to help find out what internal factors, other than external factors, decide learners' fluency in speech.

Let us first define what we mean by fluency. C. Fillmore (1979:93) proposed that <<fluency is simply the ability to talk at length with few pauses, the ability to fill time with talk... a person who is fluent in this way does not have to stop many times to think of what to say next or how to phrase it>>. D. Mohle (1984), by comparing the second language production of speakers with different native backgrounds, has found that in the temporal domain, it is the frequency and distribution of pauses rather than the presence or absence that makes the speech of a foreign language learner distinguishable from native speakers. P. Lennon (1990:390) emphasized that the goal of achieving native-like fluency is to <<produce speech at the tempo of native speakers, unimpeded by silent pauses and hesitations>>. He pointed out that <<there are two key areas of performance that seem to be important for fluency: (1) speech-pause relationships in performance and (2) frequency of occurrence of dysfluency markers>> (1990:388). He has also concluded that the variations in speakers' speech rate actually reflect differences in pause time rather than their speed of articulation. F. Chambers (1997:540), in response to P. Lennon's (1990) suggestion to identify some core fluency variables, proposed that <<focusing on pauses could provide this core provided both quantitative (frequency and length of pauses) and qualitative (position in the utterance, filled or unfilled) analyses were carried out>>. His key idea is that being fluent does not just mean speaking faster. Rather, it means <<pausing less often and pausing at the appropriate junctures in an utterance>>. N. Wen (1998:13), in his study of the oral discourse of native and non-native speakers of English, concluded that <<pauses are indicators of the degree in which linguistic knowledge has been proceduralised and proceduralisation of linguistic knowledge indicates increased fluency>>. A. Raddaoui (2004) stressed that a misplaced pause can be indicative of a speaker's searching for lexical items or grammatical rules, and the distribution of pause can also be an essential marker of fluency or dysfluency. B. Freed et al (2004:297), by comparing the acquisition of various dimensions of fluency by students of French in different learning contexts, confirmed that the concept of fluency was <<associated with rate, quantity and smoothness of speech—that is, speech devoid of dysfluent and awkward silent and filled pauses and intrusive repetitions>>.

The studies related to speaking fluency reveal that the most widely agreed variables determining a listener's judgment on the fluency of a certain speech are speech rate, articulation rate, frequency and length of pause, distribution of pause and mean length of run. Pauses, especially those frequent pauses that are longer than what normal breath needs and those that appear in inappropriate places, seem to be a very clear indicator of dysfluency. And A. Raddaoui (2004) also emphasized that pauses in the case of a foreign language learner often indicate groping for words or grammatical rules. Admittedly, pausing is natural and necessary in speech for breathing needs, for dramatic effect at certain point of speech and for pragmatic use. However, it does indicate the degree of fluency in speakers of a foreign language depending on the frequency and lengths as well as the distribution of it in speech flow.

Studies in patterns of pauses, both short articulatory pauses and long or hesitation pauses,

have been drawing the attention of numerous researchers with Goldman-Eisler being regarded as the pioneer in this field. Research along this line has never come to a stop since then. However, in most of the studies the speakers involved are either native speakers or ESL speakers with European backgrounds. For many of these speakers learning English generally incorporates both classroom learning and natural contact with native speakers readily available around. Besides, the speech samples collected in those studies are mostly interviews, discussions or read speech. Only small portions of them are spontaneous ones. Even in the case of spontaneous speech studied, few are about learners of English whose native language is Chinese. Considering the huge EFL learning population who value the development of their fluency in English very much, a study of long pauses that are often viewed as a dysfluent marker is of special interest to us as it may provide insight into the way Chinese learners produce a speech in English and what can be done in their process of learning to help them improve.

2. Method

Longitudinal approach was adopted in the present study for two reasons, the first one being that it could <<provide data from different points of time and therefore enable a reliable profile of the SLA of individual learners to be constructed>> (R. Ellis 1985:58). The other reason is that the data collected through this approach could <<represent the speech of the learner actually developing over some period of time>> (P. Lennon 1990:401). Therefore the study was conducted across three academic semesters, with the first test being carried out in the fifth week of the subjects' university study and a 24-week interval between tests.

2.1 subjects

The subjects were eleven students of English, aged between 17 and 20, in the English department of Wuhan University, one of China's representative comprehensive universities with its students coming from different parts of China. This research site helps ensure the generalisability of the research result because it represents a typical learning environment in China where classroom is the main context and students also have access to facilities for listening and reading practice. Students enrolled in this university can also represent most university-level students in that they all have to pass the national matriculation examinations. Their motivation for learning English is high and that is the most important reason for them to choose English as their major in a four-year program.

The subjects were selected based on willingness to participate and cooperate from one of the four parallel classes. I explained the intention of conducting this study and the subjects were ensured that their performance in the tests had nothing to do with their grades in final exams. This was done to ease the possible anxiety that might be created and which might influence the performance of the subjects. The first language of the subjects is Mandarin and by the time this study was carried out they all had already studied English in their secondary schools. Their learning experience in secondary schools was almost the same as the curriculum issued by the State Education Ministry of China was adopted in all the secondary schools throughout the country and they all had done similar practice in secondary schools as required by the national matriculation exams.

2.2 Speech sample collection

The speech sample was collected through recordings of the subjects at three different points of time with an interval of 24 weeks. The material used to elicit speech production was a picture sequence telling a complete story that was likely to happen in the subjects' campus life. The picture story was adopted as the means to elicit the speech production from the subjects because this form was considered to be appropriate for studying the development of learners' speaking proficiency. As P. Lennon (1990:401-402) identified, there are a number of reasons for choosing a picture story as the material: (1) for studying fluency development, monologue is much preferred than dialogue or multilogue because in a dialogue or multilogue <<the role adopted by the researcher might be influencing fluency differentially from subject to subject and that subjects might have behaved differently with a different interlocutor>>; (2) story sequences has long been used to elicit narrative in studying both L1 and L2. This can be seen from many studies (C. Fillmore 1979; H. Dechert & M. Raupach 1980; P. Foster& P. Skehan 1996).

The cultural background of the story was familiar to the Chinese students so as not to create much difficulty for them to tell the story. Several cues were also given to them for the preparation of the story telling. These were the names of the characters in the picture sequence, a key word together with its Chinese equivalent which I considered to be unfamiliar to the subjects. To ensure that task difficulty would not interfere with the subjects' speech production (P. Skehan & P. Foster 1999) in the present study, a pilot test was done among students from other parallel classes. It was found that none of the students had difficulty understanding it and the stories they told were virtually the same except that they told it in different ways and some details of the story varied slightly.

The recordings were made in a recording room of the university radio station. Both the quiet environment and the good quality of the recorder helped ensure the quality of the recording and make the later transcription of the recording relatively easy. Two minutes were given to the subjects to browse through the pictures before the recording began. The subjects were recorded one by one and they were told not to talk to each other after each recording. The same picture sequence was used for the three tests to avoid the effect that task difficulties have on the performance of speakers. The subjects had no access to the picture sequence during each intervening 24 weeks and it was found out that none of them expected that they would be shown the same picture sequence again in the next test. Besides, it was reported by the subjects that they all had a rough memory of the pictures, but they could not remember how they told the story the previous time. Thus, the practice effect was minimized.

2.3 Pause extraction

In order for pauses to be identified and located accurately, the recordings were then transferred to a computer hard disk. With Praat sound waves were displayed and sound and silence in the speech flow were identified. The duration of silences were measured. Both filled and unfilled pauses were identified. Filled pauses include all those "–um"s, "-er"s in the speech flow. However, these filled pauses will not be discussed in the present paper.

The choice of a cut-off point for pause measurement was especially important in the present study. Opinions concerning the threshold value of a pause vary in this respect, ranging
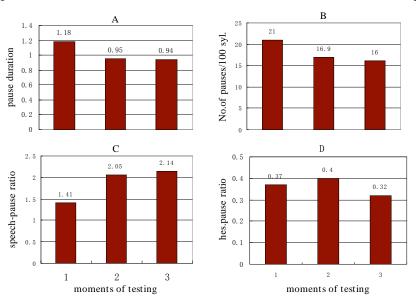
in a minimum cut-off criterion from 0.25 second to 1 second. However, all agree that the articulation break should be no more than 0.25 second and <<articulatory pauses serve no cognitive function in speech>> (A. Hieke et al 1983:204). Considering the speech sample in the present study was a non-native spontaneous one, the choice of a cut-off point was made in the present study following H. Riggenbach (1991:426), who has found that pauses of less than 0.4 second occur frequently even in native speaker speech and therefore they do not indicate <<a lack of fluency or of breakdown in speech but rather are within the range of normal or fluent speech>>. As H. Riggenbach categorized pauses less than 0.4 second as short pauses, I would categorize all the pauses over 0.4 second studied in the present study as long pauses.

All silences of 0.4 second or above were extracted and identified as a pause. These pauses were marked in the transcription and the number of syllables between each pause was counted and displayed in the transcription. The durations of speech runs between pauses were also extracted and indicated in the transcription. Silent pauses were further categorized into hesitation and juncture ones, the former referring to all that were located within phrase or clause boundaries and the latter referring to those located at the phrase or clause boundaries.

Four quantitative indices were then calculated, namely, mean length of pauses (MLP), relative frequency of pauses per 100 syllables (FP), speech-pause time ratio (SPR) and ratio of hesitation pauses (RHP). Mean length of pauses (MLP) was calculated by dividing the total pausing time by the total number of pauses. Relative frequency of pauses (FP) was calculated by dividing the total number of pauses by total number of syllables and multiplying this resulting figure by 100, indicating the average number of pauses per 100 syllables. Speech-pause ratio (SPR) was calculated by dividing the total articulation time by the pausing time. Ratio hesitation pauses (RHP) was calculated by dividing the total number of hesitation pauses by the total number of pauses.

3. Results

The differences in the length and frequency of pauses as well as the speech-pause ratio and hesitation pause ratio between the first and second and third tests are shown in figure 1.

A: Mean pause duration at three tests B: Frequency of pauses at three tests

Figure 1: C: Speech-pause ratio at three tests   D: Hesitation pause ratio at three tests

It can be seen that the differences in length and frequency as well as speech-pause ratio between tests one and two are obvious, and these differences are highly significant as revealed by the *t*-test results shown in table 1. This trend, however, is not observed between the second and third tests, indicating that the pace of improvement dropped down among the subjects after a certain period of training in the target language. It should also be noted that the ratio of hesitation pauses does not drop as expected in the second test. On the contrary it has slightly increased. However, this slight increase did not reach significant level, and in the third test, the ratio dropped greatly and the difference between the second and third tests is highly significant.

The overall trend is towards shorter pause length and lower pause frequency across time. Speech pause ratio is increasing steadily. And the ratio of hesitation pauses also drops, although the pace seems to be very slow as compared with the improvement in other variables.

	Variables	mean difference	*t*	Sig.(2-tailed)
A	t1-t2	.2309	5.406	.000
	t2-t3	5.416E-03	.125	.903
B	t1-t2	4.825	3.592	.005
	t2-t3	.9242	.774	.457
C	t1-t2	-.7270	-7.687	.000
	t2-t3	9.040E-02	.472	.647
D	t1-t2	-3.42E-02	-1.034	.326
	t2-t3	8.099E-02	3.372	.007

Table 1: t-test results comparing the means of the three tests

4. Discussion and conclusion

The above results of the present study clearly demonstrate the development pattern of the Chinese EFL learners in their speech production. First, the subjects appear to be more efficient in speech planning and processing as learning progresses. This is shown in the significantly shorter mean length of pauses and less frequent pause occurrence. Second, the subjects become increasingly more skillful in controlling the temporal structures of their speech as learning progresses. This is reflected in their better allocation of time in articulation and pausing, which is revealed by a significantly higher speech-pause ratio (SPR). Third, the subjects improve fast at the beginning stage of their university study. However, as learning continues, the rate of improvement slows down.

To interpret the results, it is essential to first have a brief review of how speech is produced. As illustrated by W. Levelt's (1989) speech production model, speech production starts from planning in the conceptualizer where the message to be conveyed is generated. This preverbal message is then formulated in the formulator where grammatical encoding and lexical selection as well as phonological encoding are carried out. The output of the formulator is internal speech which then goes to the articulator where overt speech is produced and uttered.

Sentence or clause is the primary planning domain in the formulator of the speech production mechanisms and pauses are directly related to the assignment of processing capacity of planning (F. Wijnen 1990). According to B. Butterworth (1980:159), there should be a <<relationship between the amount of planning and the amount of pausing>>. Therefore, the more planning speakers make, the longer pauses are.

It should be made clear that <<speaking is a complex task that requires processing at many different levels more or less simultaneously>> (R. Schmidt 1992:376). This places demands on speakers that their attentional resources be allocated properly to ensure a flow of speech. However, the ability to allocate attention by individual speakers varies from person to person and it develops over time. This development is largely a process of transforming the declarative knowledge stored in memory to procedural knowledge which demands fewer attentional resources while being retrieved. When any new knowledge is learned, it is first represented in memory in declarative form and as learning develops, this declarative knowledge gradually develops into procedural knowledge. The transition from declarative knowledge to procedural knowledge requires repeated practice. As W. Levelt (1989) puts it, smooth speech production requires procedural knowledge. This explains why the subjects as a whole pause much less frequently and shorter as their foreign language learning proceeds. Although long pauses are still needed for speech planning, the subjects appear to have improved their planning efficiency as they need such long pauses less frequently in the second and third tests.

The concept of transition from declarative knowledge to procedural knowledge is parallel to the concept of transition from controlled processing to automatic processing in skill development. At the beginning of any learning, the processing of the skill is always a controlled one where a lot of attention is needed, and its characteristics are slow speed and inefficiency. As learning progresses, this processing gradually becomes automatic and more attentional resources will be freed and the speed of processing will increase. This automatization is crucial to the development of fluency in a foreign language. It is believed that <<speech is possible at a normal rate only when most of the procedures involved have been automatized>> (R. Schmidt 1992:362). When more processes become automatized, more attentional resources for the choice of linguistic items are freed and they also help reduce the cognitive demand on the conceptualizer where the message is generated. Thus the subjects can accelerate the whole speech processing and increase the speed of delivery.

Therefore it is easy to account for the subjects' significantly better performance in the second and third tests as compared with the first one. As their learning continues, the large amounts of in-class and out-of-class speaking practice have automated some aspects in their language usage, such as collocation of words and familiarity with the phonetic forms of words. More and more of their knowledge becomes proceduralized and more language processing becomes automatized, which in turn greatly reduces the time for planning speech. As X. Huang & M. Naerssen (1987) have found, especially in the early stages of foreign language learning, learners start with memorizing chunks of language and these memorized chunks of language, phrases, or expressions may serve to get conversion from a controlled process to an automatic process going and to build up confidence in speaking. And X. Wu (1994) has also illustrated that without frequent oral practice it is impossible for the subjects to automatize the processes of retrieving appropriate linguistic features during real time oral production. The familiarity with

grammatical patterns and syntactical organizations improves accordingly, which also contributes to more efficient planning in speech production. This reduction of planning time directly leads to less frequent pause occurrence and significantly shorter duration of pauses. The results of the present study do indicate this effect. Also, the higher speech-pause ratio in the second and third tests also indicates that the subjects spend relatively more time speaking and less time pausing.

Although all the subjects make great improvement in the second test, some of them appear to make little progress in the third test. Two of them show longer mean duration of pauses and two of them appear to pause more frequently in the third test as compared with the second one. This can be attributed to different allocation of time spent on practising the language. Between the first and second tests, that is, in the first semester of the subjects' university study, nearly all of them spend most of their time learning English only and they practise much on speaking and listening. However, as time passes by, those subjects begin to form different learning habits. All of them begin to spend relatively more time on other subjects than they do in the first semester as they are familiar with university life and have more access to other courses that interest them. My own observation on them reveals that some begin to show greater autonomy in deciding what to learn and how to make their own plans about what to do. At the same time, they have more elective non-English courses which they can not take in the first semester in the second and third semesters. This in turn reduces the amount of time they spend on English learning. It is not surprising that some appear to perform not as well in the third test as they do in the second one.

The slowing down or even standstill of speech fluency development can be accounted for by the general rule of learning. As predicted by the power law of practice proposed by N. Ellis (2001) which describes the rate of acquisition of most skills, performance always improves with practice. However, this law also points out that "the amount of improvement decreases as a function of increasing practice or frequency" (N. Ellis 2001:39). Any learning of a new skill or knowledge, including language learning, always progresses fast at the beginning stage when what is learned is comparatively easy. As learning proceeds, what is to be learned becomes more demanding and the pace at which a learner improves slows down. This is confirmed by the present study. On the other hand, this slowing down is also a sign of improved proficiency in speaking the foreign language. A closer examination of the content of their production reveal the accuracy of the speech and the complexity of the lexical items (they are not to be discussed in detail in this paper) have improved in the third semester. The subjects seem to become proficient enough at the second test and they pay increasing attention to the content of their speech and more effort is made to select more accurate means of expression. This strive for accuracy was made, to a certain extent, at the expense of fluency, which in turn led to more and longer pauses occasionally. And that is also the possible reason for there not being much variation at all in the ratio of hesitation pauses. The subjects still hesitate frequently, not for finding what to say, but for seeking better lexical items and grammatical structures.

The psychological factor is another possible reason leading to this slowing down or standstill phenomenon. According to R. Feldman (1993), the role of consciousness is an essential element in performing a task. And consciousness is often stimulated by combined factors of interest, change, expectation and novelty. This could help explain partly why the

subjects generally do not show marked progress in the third test, since when they were asked to retell the story using the same pictures for the third time their interest dropped as compared with the previous two tests. The interview afterwards also confirms this. Nine subjects claimed that they did not treat this task as seriously as they had done in the previous ones. The drop of interest led to less consciousness and attention in performing the task, which in turn prevented the subjects from performing as satisfactorily as expected.

It must be noted that it takes the subjects longer to learn to pause appropriately than simply reducing the pause length and frequency. While it seems easier for them to talk more continuously and fill time with talk, the ability to pause at appropriate junctures takes more time for the subjects to develop. One possible factor leading to this less satisfactory performance might also be the L1 pause pattern transfer to the target language. However, in the present study experiment in the subjects' native language speech performance was not included so that no comparison could be made at present. If the concept of fluency is restricted to being able to talk at native-like rapidity unimpeded by hesitations and silent pauses as P. Lennon (1990) suggested, these subjects should appear to have achieved great progress within a relatively short period of intensive training. However, taking into consideration the distribution of pauses which is viewed as an essential marker of fluency (A. Raddaoui 2004), we may say that this process takes longer than what has appeared to. The great improvement between the second and third tests with regard to hesitation pause ratio might also help account for the slowdown of progress in pause duration and frequency between the second and third tests. While the subjects improve in some aspects, their attention may be distracted so that their performance in other aspects becomes relatively dissatisfactory.

To sum up, as one of the indicators of speech fluency, the observation of long pauses in the speech of the Chinese EFL learners does provide a clue to their fluency development. At the same time, they also provide much insight into the psychological mechanisms involved in speech production. If fluency in a foreign language means pausing less often and at appropriate junctures, as suggested by F. Chambers (1997), this has indeed been observed in these Chinese EFL learners. It should also be concluded that fluency development is a long and complex process during which large amounts of practice is involved and this process is basically a process of transition from a controlled processing to an automatic processing of language. And in this long process, some elements determining fluency may develop relatively fast while progress in other aspects influencing the degree of fluency may be very slow and only long-term observation can reveal the advancement.

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