Proceedings of ICLLCD 2026 Symposium: Literary and Linguistic Perspectives on Cultural Narratives
DOI: 10.54254/2753-7064/2026.NS33248

A Review of Utterance Fluency Measurement in Second Language Dialogues

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Abstract. As a key concept of the measurement of L2 oral fluency, utterance fluency has gain more attention gradually. However, the current studies generally put emphasis on monologue fluency,few focused on Theoretical framework and empirical facts of dialogue fluency. Dialogue is a basic framework of speech production and has a frequent turn-taking, which holds a significant place in L2 learning. On this basis, this paper makes a critical review upon the present research of L2 dialogue fluency. Above all, this paper summaries present indicators of within-turn fluency and between-turn fluency in dialogue. Moreover, it pays attention to other languages except English (especially Chinese), since previous investigations always prioritized the importance of utterance fluency when L2 is English. Last but not least, it indicates the research gaps and propose some valuable directions of future studies, in the hope of prompting the theoretical construction of L2 utterance fluency, making it possible for the research of utterance fluency to adapt the multilingual world.

Keywords: utterance fluency, L2 dialogue, turn, temporal.

1. Introduction

In the field of L2(second language) learning, fluency is an important dimension of language proficiency. According to Fillmore, L1(first language) fluency refers to speaker's ability to speak at length, with coherent and semantically dense sentences while maintaining smooth delivery and few pauses [1]. Fluency can be classified into three categories: cognitive fluency, utterance fluency, and perceived fluency [2]. Cognitive fluency refers to the efficiency of the cognitive process that supports speech production; utterance fluency refers to utterance characteristics, which can be measured through temporal variables; perceived fluency is the inference made by the listener based on their perception of the speaker's utterance fluency, regarding the cognitive fluency of the speaker. Among the three dimensions, utterance fluency is the direct manifestation of cognitive fluency and the direct material for the listener to perceive the speaker's fluency, playing a connecting and bridging role between cognitive and perceived fluency. Therefore, the study of utterance fluency is indispensable. Skehan proposed three more specific quantitative indicators of fluency: speed, breakdown, and repair [3]. Focusing on utterance fluency, academic research has made certain progress. Researchers recognize that not only should utterance fluency be studied in monologues, but also in dialogues and interactions, because most discourse in real scenarios is presented in the form of dialogues.

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However, the existing research also has certain limitations. For instance, there is insufficient attention and application of mixed methods. Moreover, the research subjects are mostly focused on monologue, and there is relatively less research on the fluency of dialogues. The type of L2 is also mostly English, with a lack of attention to the fluency of other language learners.

This paper reviews the quantitative indicators of within-turn and between-turn fluency in L2 conversations, then explore the manifestations and characteristics of utterance fluency of L2 learners other than English, and also discuss the limitations and deficiencies of the existing research and future research directions.

2. Within-turn fluency

The difference between dialogue and monologue lies in that dialogue has between-turn pauses, interruptions by another speaker, and simultaneous talk. Peltonen classified fluency in the context of dialogue into between-turn fluency and within-turn fluency [4]. This article follows this classification. Within-turn fluency mainly focuses on the speaker's fluency performance when the turn has not changed, which consists of three dimensions: speed, breakdown, and repair.

2.1. Speed

Speed fluency is mainly used to measure the speed of a speaker's verbal output, consisting of two sub-concepts: articulation rate and speech rate [5]. The calculation methods for both are by dividing the number of syllables spoken per minute. However, articulation rate does not include pauses, while the speech rate does. Therefore, some studies suggest that the former is a pure time variable, while the latter is a composite indicator. Both are widely applied in the evaluation of discourse fluency, such as the differences in fluency levels among different learners [6], and the differences in fluency between native speakers and L2 speakers [7].

2.2. Breakdown

Breakdown is usually understood as a pause. From the perspective of filling type, it can be divided into two types: silent and filled pause [4]. Silent pause refers to a pause during speech where there is complete silence. Filled pause refers to a pause used by the speaker in order to maintain the speech fluency, such as "uh", "um"(unlexicalized filled pause), and some meaningless words such as "you know"(lexicalized filled pause). As for these two pause types, some studies treat filled pauses as equal to silent pauses [3], while others propose that they are not comparable [8,9]. For example, silent pauses are closely linked to disfluency, while filled pauses do not exhibit a strong relationship with disfluency. Furthermore, filled pauses can, to some extent, be seen as a delaying mechanism used by speakers to avoid long silences and maintain fluency of the dialogue.

From the perspective of syntactic distribution, pauses can be divided into within-clause pauses and between-clause pauses. Within-clause pauses occur within the internal structure of a sentence, for example between the subject and predicate or between the predicate and the object. Such pauses help speakers retrieve words, organize grammar, and monitor their own production. Between-clause pauses, on the other hand, occur at sentence or clause boundaries. Serving as a turn-taking signal, they help both interlocutors move the conversation forward.

Specifically, the measuring indicators of pauses mainly include the mean length of pauses, within-clause pauses, and between-clause pauses. The mean length of pauses is calculated by dividing the total duration of pauses by the number of pauses. Within-clause pauses mainly count

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the number of pauses within each clause in a one-minute dialogue. While between-clause pauses count the number of pauses at the boundaries of each sentence. Relevant researchers have shown that the mean length of pauses is significantly shorter in dialogues, while within-clause pauses and between-clause pauses show no remarkable difference between dialogue and monologue [5].

2.3. Repair

Currently, research on the repair dimension of oral fluency remains relatively limited. One reason is that repair phenomena occur infrequently in discourse [10]. In addition, there is still disagreement over how to classify repairs, and no consensus has been reached. As an independent sub-dimension of fluency, repair mainly includes false starts, repetitions, replacements, and reformulations [3]. Tavakoli summarized several measures of repair, including the frequency of partial or complete repetitions, hesitations, false starts, and reformulations [5]. It is also worth noting that Tavakoli included the frequency of filled pauses as a measure of repair.

2.4. Differences between within-turn fluency and monologue fluency

The difference between within-turn fluency and monologic fluency is sometimes easily overlooked. Within-turn fluency must occur in a conversational context. It cannot take place in isolation and is largely influenced by the interlocutor [4]. To keep the conversation going smoothly, speakers have to use multiple linguistic and non-linguistic means to ensure that their utterances can be understood by the other person. In terms of measurement, temporal features can be used to assess within-turn fluency. When conducting research, researchers should segment speakers' speech based on turn structure.

3. Between-turn fluency

Between-turn fluency refers to the degree of fluency achieved between the two parties of a conversation through various means of coordination and collaboration during a dialogue. It is jointly constructed by both parties in the conversation. Peltonen explored the influencing factors and measurement of between-turn fluency, opening up a new perspective for dialogue fluency. In response to the current situation where the assessment standards for monologue fluency and dialogue fluency in the academic community are highly homogeneous, Peltonen advocated starting from the dimensions of temporal fluency and cohesive devices to assess the between-turn fluency of L2 learners [4].

3.1. Temporal fluency

Temporal indicators in the between-turn fluency need to take into account the turn transitions. It mainly consists of two indicators: the frequency of turn pauses and the mean length of turn pauses. These two indicators are used to measure the standardized number and mean duration of pauses between turns. From the listener's perspective, the smoother the transition of turn boundaries between speakers, the higher the between-turn fluency is, which is the proficient conversational level of "no-gap-no-overlap" [11].

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3.2. Cohesive devices

Cohesive devices refer to the coordinated efforts of all parties in a conversation, using various linguistic means to ensure that the dialogue is as coherent and smooth as possible, avoiding any discontinuities. These means mainly include other repetitions: one party repeats what the other has said; collaborative completions: One party helps the other complete unfinished sentences. Both of these require the cooperation and coordination of the two parties to be achieved, and they also collectively demonstrate that the dialogue is based on mutual dependence and joint construction of the speaking parties. Empirical studies have shown that other repetitions have a positive correlation with the language proficiency of both parties [12]. Collaborative completions represent specific manifestations of higher language proficiency.

4. Studies in the Chinese L2 context

As an isolating language, Chinese has a distinct difference with other agglutinative or fusional language. From this perspective, surveys on oral fluency in L2 Chinese play a vital role in L2 learning in Chinese and multilingual development.

In the field of L2 Chinese utterance fluency, relevant themes are divers. Some researchers analyzed the classification of disfluency, the types of filled pauses and the dynamic fluency improvement of L2 Chinese learners [13-15]. Others drew a clear distinction of learners' first languages and language levels, in order to uncover the multiple features of their oral fluency, revealing that not all the temporal measurements align with learners' language abilities, since individual habits also work in such process [16]. There were also some studies discussing the dynamic changes and influencing factors of temporal features from a developmental perspectives [17]. Additionally, based on Levelt's speech production model [18] and the characteristics of Chinese, some surveys categorizes disfluency in oral production into implicit and explicit monitoring behaviors, offering new perspectives for investigating utterance fluency and disfluency from the features of Chinese [19].

The radical distinctions between Chinese and English may inevitably give rise to the appearance of utterance fluency. When examining the disfluency of L2 Chinese learners, Shi excluded filled pauses from "pauses" and then classified as a separate major category termed "additions" [20]. Since from a literal standpoint, a "pause" refers to complete silence or an interruption in the speech stream, whereas a filled pause contradicts the literal meaning of "filling".

Among disfluency phenomena such as repetition, the status of syllable stretching is relatively independent, which is also a result of the inherent differences between English and Chinese. As a phonetic writing system, English takes the word as the basic unit of speech production; therefore, syllable stretching predominantly occurs at the end of a word; instead, it may adversely affect the overall fluency of the speech stream. However, Chinese, as a morpheme-syllable script, takes the character as the basic unit of speech production, allowing syllable stretching to occur in more flexible and varied positions.

Comparing with English, as a kind of an isolating language, Chinese lacks morphological changes and markers, making word order and function words become considerably more significant when making sentences. Although both of them are SVO languages, Chinese is not limited of inflectional transformations and have a more flexible and diverse form. Thus, reformulation repairs are commonly observed in disfluency phenomena.

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5. Research gaps and future directions

Present researches about L2 utterance fluency has achieved fruitful results, but certain research gaps still exist. For example, existing studies paid more attention on fluency in monologue than in dialogue.Furthermore, the assessment of L2 learners' dialogue fluency has mostly relied on measures originally developed for monologue fluency, without the establishment of a dedicated measurement framework or research system. Future researches should continue to focus on how interlocutors influence an individual's fluency appearance when communicating and take dialogic interaction into consideration, in order to build an independent model for measuring dialogue fluency of L2 learners. In researches of dialogue fluency, inconsistencies in measurement methods can yield significantly different outcomes—such as how between-turn pauses are attributed and how overlapping speech is handled [5]. Moreover, traditional studies have tended to view interruptions and repairs as disfluencies, neglecting their constructive role as fluency resources. Existing research indicates that the relationship between fluency resources and conversational fluency is complex [4], and is neither simply positive nor negative. However, the specific characteristics of such relationship are still remained to be explored.

In the field of language diversity, current study predominantly focuses on L2 English. It is recommended for further research to broaden the variety of languages and carry out researches based on the distinctive features of different language. Taking Chinese as an example, the uniqueness of L2 Chinese oral fluency can be explored by examining aspects such as the role of tones in distinguishing meaning and the grammatical differences between Chinese and Indo-European languages.

In terms of methodology, current approaches are still rather narrow, being mainly limited to quantitative and qualitative analyses—especially those based on empirical findings—which results in relatively fewer studies on theory and model construction [21]. Studies involving large samples tend to overlook individual learners' differences, while the results of some case analyses are not always generalizable to broader L2 learners. Only a few of studies integrated quantitative and qualitative analyses successfully, achieving specificity and generalizability in empirical research.

6. Conclusions

To conclude, this article sets out to systematically integrate the existing literature on L2 conversational fluency. It also aims to bring together current measurements for both within-turn and between-turn fluency, summarize what is known about L2 Chinese utterance fluency, and point out research gaps as well as valuable directions for future investigation. The finding indicates that current measurements of L2 utterance fluency are multidimensional and extensive, which have begun to develop an initial framework.

However, there are still some manifest research gaps, including the dependence of dialogic fluency measurement on monologic fluency, and inconsistencies in results due to a lack of consensus on measuring standards. In terms of the variety of L2, existing research has focused largely on L2 English, while other languages remain significantly understudied. Additionally, most research methods and tools simply follow the systems designed for L2 English utterance fluency, which has led to a certain lag. To address the above issues, this paper proposes that future studies should conduct L2 fluency research from four aspects: systematically developing a framework for dialogic fluency, embracing language diversity, innovating research methods, and strengthening the integration of research findings with L2 teaching practice.

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Nevertheless, this paper still has certain limitations. For example, as a research review, it mainly based on existing references without any empirical investigation. Moreover, since present literature pays insufficient attention to various languages, this paper covers only a limited range of L2 fluency research on languages other than English. Specifically, it only addresses Chinese, leaving other languages undiscussed. Therefore, further studies are needed to extend and enrich research in this area.

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