Language Fluency and Its Evaluation:
A Review of the Existing Literature

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Abstract

This paper presents a review on language fluency. The concept of language fluency needs to be explored extensively in English language studies. The present review discusses the concept of language fluency and aspects related to testing of language fluency. It describes the fundamental definitions and explanations of fluency and presents detailed discussion on oral and written fluency. A detail review on testing spoken, written English fluency and available criteria for the analysis of fluency has presented in the paper. The existing testing criteria can be used for qualitative and quantitative assessment of language fluency for further studies.

Keywords: fluency, proficiency, assessment, evaluation, testing, criterion, spoken fluency, written fluency, discourse markers, speech rate, criteria and measures.

Introduction

There are multiple meanings associated with the term second language 'fluency'. Lennon (1990) distinguished between a broad sense and a narrow sense of fluency. According to the broad sense, fluency is a cover term for oral proficiency, representing the highest point on a scale that measures spoken command of a foreign language. The narrow sense, on the other hand, "pertains to one, isolatable component of oral proficiency describing learners who are fluent but grammatically inaccurate or fluent but varied vocabulary" (as cited in Jong de. N & Perfetti. A.C, 2011, p. 534).

Kaponess and Riggenbach (2000) discuss some of the historical origins of the word 'fluency' in English and its equivalents in other languages. For example, they report that for the English word *fluently*, Germans tend to use *fliessent* and *flussig* (runningly and flowingly, respectively), Russians use *beglo* (runningly), and Finnish speakers use *sujuvasti* (in a flowing or liquid manner). Kaponess and Riggenbach points out that in these and other languages, including English, there is a conceptual metaphor underlying the meaning of fluency, namely that "language is motion" (as cited in John de, J & Perfetti, 2011). Crystal (1987) defined fluency as "smooth, rapid, effortless use of language" (p.421) in *Encyclopaedia of Language*; it is no different from that found in the *Concise Oxford Dictionary*. The non-technical use of the word 'fluency' is often synonymous with overall linguistic proficiency rather than with strictly restricted aspects of delivery in oral production.

In the context of communicative language teaching (CLT) language is accepted as a meaning-making system. Hence, there is a strong emphasis on fluency rather than accuracy. The concept of

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fluency has been used with a distinctive meaning clearly opposed to overall proficiency or to an end state close to native performance. Fluency in CLT is about effectiveness of language use within the constraints of limited linguistic knowledge. Brumfit (1984) defined fluency as "the maximally effective operation of the language system so far acquired by the students". According to him, it could be regarded as "natural language use whether or not it results in native speaker like language comprehension or production" (Brumfit, 1984, p.56). This definition is different from the traditional view of fluency as broadly synonymous with language mastery and native like performance.

Swain and Michael's (1980) communicative competence model explains factors beyond linguistic knowledge and the ability to construct grammatical sentences by introducing role of strategic competence. Through the use of the strategic competence, learners make the best use of their linguistic knowledge to respond to the specific demands of a situation. There is therefore a direct link between strategic competence and fluency which means that fluency in speech production is influenced by factors well beyond grammatical knowledge. In CLT, the notion of fluency is used to assess how well learners use their knowledge to achieve their linguistic and communicative purpose.

According to Fillmore (1979) there are four parameters that people may be thinking about when making judgments about fluency. They are:

a) The ability to talk at length with minimum pauses;
b) The ability to package the message easily into "semantically dense" sentences without recourse to lots of fillers (for example, "you know", "the thing is that", etc.);
c) The ability to speak appropriately in different kinds of social contexts and situations, meeting the special communicative demands each may have;
d) The ability to use the language creatively and imaginatively by expressing ideas in new ways, to use humour, puns, metaphors, and so on.

(Fillmore, 1979 as cited in Brown D.J, 2003)

H. D. Brown does refer to fluency activities as "saying or writing a steady flow of language for a short period of time without any self or other correction at all" (Brown.H.D, 1994, p. 113 as cited in Fellner & Apple, 2006).

Oral Fluency

Oral fluency is one of the most salient markers of proficiency in a second language. According to Kormos (2006) there are ten (10) measures of oral fluency that have been proposed in the literature. Kormos' list reveals that there are many different ways of conceptualizing what exactly fluency means. Kormos says that fluency is fluidity construct, fluidity it would seem, is itself a multidimensional construct and so pinning down precisely what fluency means is clearly going to be a challenge!

According to Kormos (2006) there are a number of measures of oral fluency. They are:
1) articulation rate (syllable/minute)
2) phonation time ratio (percentage ratio)

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3) mean length of runs (number of syllables)
4) silent pauses per minute (number of silent pauses/minute)
5) mean length of pauses (seconds)
6) filled pauses per minute (filled pauses/minute)
7) dysfluencies per minute (dysfluencies/minute)
8) pace (stressed words/minute)
9) space (ratio of stressed words/total words)

(Kormos, 2006, as cited in Segalowitz, 2010, p.163).

In most recent works, speech production is analysed by means of four temporal variables, i.e., speaking rate, phonation/time ratio, articulation rate, and mean length of runs.

1. **Speaking Rate (SR)** *is* calculated by dividing the total number of syllables produced in a given speech sample by the amount of total time (including pause time), expressed in seconds, required to produce the speech sample. The resulting figure is normally then multiplied by sixty to give a figure expressed as syllables per minute.
2. **Phonation/time ratio (PTR)** gives the percentage of time spent speaking as a percentage proportion of the time taken to produce the speech sample
3. **Articulation rate (AR)** is calculated by dividing the total number of syllables produced by the amount of time taken to produce them, excluding pause time. It is expressed as the mean number of syllables produced per second over the total amount of time spent speaking during the speech sample
4. **Mean length of runs (MLR)** is calculated as the mean number of syllables produced in utterances between pauses of 28 seconds and above.   (Wolf, 2008, p. 288)

Testing Oral Fluency

As we have seen, one important aspect of fluency is related to temporal aspects of speech like speaking rate, speech-pause relationships, and frequency of dysfluency markers such as hesitation, repetition and self-corrections. These can be evaluated by machine and by human impression. Lennon (1990) and Freed (1995) argued that when speakers become more fluent their speech rate increases and speech flow contains fewer pauses and hesitations (as cited in Luoma, 2004).

There are fluency scales to test the fluency of the learner. One of them is Weir's (1993) The Test of English for Educational Purposes Fluency Scale. It has descriptors in four grids (from low=0 to high=3), the second fluency scale was by Hasselgren (1996) a data-based fluency scale, which has descriptors with five grids (from low=1 to high=5) (as cited in Luoma, 2004, p.87).

The study of Cucchiarini, Strik & Boves (2000) on Dutch speakers' fluency is remarkable. The result of their investigation shows the following -- first, expert listeners are able to evaluate fluency with a high degree of reliability. Second, expert fluency ratings of real speech are mainly influenced by two factors: speed of articulation and frequency of pauses. Third, expert fluency ratings can be accurately predicted on the basis of automatically calculated measures such as rate of speech,

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articulation rate, phonation–time ratio, number and total duration of pauses, and mean length of runs. Fourth, native speakers are more fluent than non-natives and the temporal measures are significantly different for the two groups.

These findings indicate that temporal measures of fluency may be employed to develop objective testing instruments of fluency in read speech. In turn, the fact that these measures can be automatically calculated by means of automatic speech recognition techniques suggests that this approach may contribute to developing automatic tests of fluency, at least for read speech. This approach is likely to have important consequences for the future of fluency assessment in any language.

According to Cucchiarini, et al. (2000) the term ''temporal'' does not refer exclusively to timing-related variables such as speaking rate, utterance duration, and pausing, but it also covers hesitation phenomena such as filled pauses, repetitions, and restarts.

Kormos & De´nes (2004) investigated speech samples collected from 16 Hungarian L2 learners at two distinct levels of proficiency with the help of computer technology. The two groups of students were compared, and their temporal and linguistic measures were correlated with the fluency scores they received from three experienced native and three non-native speaker teacher judges. The teachers' written comments concerning the students' performance were also taken into consideration. For all the native and non-native teachers, speech rate, the mean length of utterance, phonation time ratio and the number of stressed words produced per minute were the best predictors of fluency scores. This study investigated differences between fluent and non-fluent L2 learners as well as the relationship of native and non-native teachers' perceptions of fluency and temporal and linguistic variables. The results indicate that fluency is best conceived of as fast, smooth and accurate performance. The mean length of runs and speech rate were also found to be good indicators, but they also recommended the use of pace for measuring temporal fluency as it also includes one specific feature of intonation, namely stress, and they reported that it is easy to calculate. Phonation time ratio and the mean length of pauses were also related to fluency scores, but this relationship was weaker than in the case of the mean length of runs and the speech rate. The number of filled and unfilled pauses and other dysfluency phenomena were not found to influence perceptions of fluency. This research also indicates that the accuracy of output plays an important role in fluency judgments and that accuracy and speed of delivery are positively related. Yingjie (2014) explored 4/3/2 activity for developing learners speaking fluency, which fills a gap between developing speaking skills and speaking fluency. The discussion of the importance of fluency, the procedure of running the 4/3/2 activity and the practice of speaking fluency in the long term, are all included and discussed in the work.

On the whole, there are four different approaches to describe the measures of fluency in the investigation of L2 learner's speech. The first trend of research is concerned with the temporal aspects of speech production, the second combines these variables with the investigation of interactive features (e.g. Lennon 1990; Mohle, 1984; Riggenbach, 1991 as cited in Cucchiarini et al., 2000) and the third approach explores the phonological aspects of fluency as well. Finally, recent studies have included the analysis of formulaic speech in studying fluency in second language speech (e.g. Hieke, 1984;

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Wennerstrom, 2000; Ejzenberg, 2000 as cited in Kormos, & De´nes, 2004; Towell et al., 1996). Based on above mentioned review Maisa (2018) evaluated undergraduate learners' spoken English fluency and presented evaluation scale of learners' spoken English fluency in his study (p. 241). Proefschrift (2014) studied the perceived fluency differences between native and non-native speech. It is noticed that non-native speech was rated to be less fluent than native speech. It is also observed that pauses in native speech occur in different positions in the sentence as compared to those non-native speakers.

Fluency Tests and Formulaic Expressions

Given below are some fluency tests which considered the use of formulaic expressions as the primary criteria.

Towell, et al's (1996) study on fluency focused on the use of formulaic language and increase in fluency after participants spent a year in the target language environment. They found that the two selected students improved in how they employed different types of formulae after their stay abroad. Ejzenberg (2000) compared how fluent and non-fluent speakers employ formulaic language. Her results also showed that fluent students were able to make use of prefabricated chunks more efficiently, whereas non-fluent learners frequently used formulae inappropriately (Ejzenberg, 2000 as cited in Kormos & De´nes, 2004).

Wood's (2006) study was undertaken to identify the role of formulaic sequences in L2 acquisition, particularly in the development of speech fluency. The spontaneous spoken narrative retells of a group of English L2 learners were analyzed for ways in which increasing, and more effective use of formulaic sequences may have facilitated fluency growth over a period. Fluency-enhancing uses of formulaic sequences were marked in the data and then categorized. The categories that emerged were varied and showed that speech fluency may be enhanced by use of formulaic sequences in particular functions in discourse, or by strategic use by speakers. Here, under formulaic sequence, idioms as one category were taken under semantic irregularity aspect of the study.

Writing Fluency

Writing fluency suggests a steady flow of language for a short period of time without any self or other correction at all. It has been defined by the researchers in different ways.

The definitions are as follows:
1) According to Faigley (1980) writing fluency means "facility and ease of producing sentences" (Faigley, 1980, as cited in Latif, 2009, p.533).
2) According to Bruton (1986) writing fluency is defined as "a complex construct affected by the dimensions of the writer such as cognition, language production ability and intuition or imagination, by dimensions of the rhetorical and situational contexts, and reflected in the written text" (Bruton, 1986, p.17 as cited in Latif, 2009, p.533).
3) According to Bruton and Kirby (1987) there are "two views on writing fluency; the difference between two views of written fluency is : (a) the initial or traditional view of written fluency, characterized by the emphasis on text quantity and the composing rate, and (b) the

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developmental or multidimensional view of written fluency, incorporating the richness of the writer's processes and the writer's ability to organize composing strategies and the complexities of their use in a way that reflects her or his mature awareness of task demands" (as cited in Latif, 2009,p.533).

4) According to Snellings, van Gelderen & Glopper (2004) fluency is the sense of fluent production reflected in the written text. It is the ability to access a rich linguistic knowledge base and to retrieve proposed ideas and text efficiently or the speed of lexical retrieval while writing.

5) Hester (2001) adopts a more comprehensive definition of writing fluency, viewing it as a concept encompassing features of the composing rate, text quantity and quality, organization of ideas, and knowledge of writing conventions in the target language (as cited in Latif, 2009).

The above-mentioned definitions of writing fluency reflect the different ways in which researchers conceptualize writing fluency. As Bruton & Kirby put it,

The word fluency crops up often in discussions of written composition
 and holds an ambiguous position in theory and in practice . . .. Written fluency
is not easily explained, apparently, even when researchers rely on
simple, traditional measures such as composing rate. Yet, when any of these
researchers referred to the term fluency, they did so as though the term
were already widely understood and not in need of any further clarification.
<div align="right">(Bruton & Kirby 1987, as cited in Latif, 2009, p.89).</div>

Historically, writing fluency research dates back to 1946 when van Bruggen reported his study on the regularity of the flow of written words. Emphasis on writing fluency was found in the late 1970s in research measuring it by using the composing rate and/or text quantity. It can be argued that assessing writing fluency has been greatly influenced by speaking fluency measurement since that time.

Parameters of measuring writing fluency have been based on students' written texts, regardless of how these texts were produced. Many first language (L1) and second language (L2) studies of the composing process have measured writing fluency in terms of the 'composing rate', that is, the number of words written per minute, obtained by dividing the number of words in the text by the number of minutes spent writing.

According to Polio (1997), Latif (2009) , Smaeel, & Alireza, (2011) there are other reported measures of writing fluency which include holistic scoring of the text quantity; number of 't-units' (a 't-unit' is a main clause with all its subordinate clauses; number of correctly spelt words written, number of sentences written, and number of letter sequences. Of all these indicators, the composing rate has been the most frequently used in assessing writers' fluency.

Testing Written Fluency

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Writing fluency measures are of two types: one is product-based measures depending on written texts regardless of how they were produced and second one is process-based measures drawing upon the online observation of writers' composing processes. All the measures given in the table (1) are product-based indicators of writing fluency with the exception of three (pausing, length of rehearsed text, and length of translating episodes) which are process-based indictors. Latif's (2009) study compares speaking fluency measures with writing fluency measures. (See: Table 1 below)

Table 1: Speaking and Writing fluency measures comparison.

Speaking Fluency measures	Writing fluency measures
Breakdown fluency Repair fluency Speech rate Length of bursts occurring between pauses Listeners' perceptions of speakers' fluency	Writers' pausing (Spelman Miller 2000) Changes made to the text (Knoch 2007) Composing rate (Sasaki 2000) Text quantity (Baba 2009) Length of translating episodes written between pauses (Abdel Latif, 2009) Length of rehearsed text between pauses (Chenoweth and Hayes 2001) Linguistic features characterizing rhetorical functions (Reynolds 2005) Number and length of t-units (Storch 2009) Sentence length (Johnson et al. 2012) Text structure, coherence, and cohesion (Storch 2009)

(Latif, 2009, p.3)

According to Latif (2009) study on task performance variables influences the quantity of texts writers produce and their composing rates. The findings of his study say that first, producing longer or shorter texts may be dependent on factors such as writers' familiarity with the topic, and/or their pre-task decisions to include a specific amount of words or lines in the text. Moreover, judging writers' fluency through dividing the amount of text they produce by the time spent on performing the task may be disproved by the assumption that some writers do not spend much time performing a given task due to their negative affect (p.4).

The writers' pausing and speakers' pausing as fluency test measurement study shows different results. Matsuhashi's (1981) study states that "when writing moves fluently ahead most decisions are made at the sentence boundary before the writer begins to write' (p. 130). Accordingly, writers' pausing may enhance or hinder their fluency depending on its location and the composing processes used in pauses, while speakers' pausing is similarly viewed as an indicator of their dysfluency.

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Chenoweth and Hayes (2001) also signal the possibility of measuring writers' fluency using the length of the sentence parts they produce though some of these studies used the composing rate in assessing it (as cited in Latif, 2009). The observations reported by Chenoweth & Hayes (2001) as well as the empirical evidence given by the studies of van Bruggen (1946), Spelman Miller (2000) (as cited in Latif, 2009) indicates that the length of writers' translating episodes may assess their fluency more validly. Translating episodes are number of words written between pauses. The validity of this writing fluency and debate on writing and speaking measurements was supported by Latif (2012) study. Adopting the mean length of translating episodes as a measure of writing fluency is congruent with viewing it as an observable characteristic of real-time behaviour (Segalowitz 2010).

Snellings et al. (2004) study on retrieving words and fluency of writing is especially important in contexts with time restrictions imposed. It was evident in their study that if writers have too much attention on retrieving words, they may leave little working memory free to attend to generate detailed content and organized discourse. Because second language writers lack fluency, writing in a second language (L2) can be a very effortful process for beginning L2 learners, and it is therefore particularly important to get an insight into the process of lexical retrieval in written L2 production. Furthermore, Snellings et al.'s study has shown that enhancing lexical retrieval effectively increases production in actual writing. The implication of this finding is that in teaching, attention should be focused on speed of lexical retrieval as well. Simply teaching words until their meaning is known may not be sufficient. Only when students can retrieve words effortlessly, they will be able to use the words productively.

Jacobs et al. (1981), propose a 100-point analytic rating scale that measures a written text in five aspects. They are:

 1. Content (score ¼ 13–30)
2. Organization (score ¼ 7–20)
3. Vocabulary (score ¼ 7–20)
4. Language use (score ¼ 5–25)
5. Mechanics (score ¼ 2–5)

He uses them to examine the validity of the composing rate, text quantity, and the mean length of the translating episodes as indicators of writing fluency.

(Jacobs et al., 1981 as cited in Soleimani & Rasekh, 2010; Polio.G.C, 2012).

Conclusion

There are many studies on testing language proficiency but for testing language fluency a very few studies are available. In the present paper, existing research has presented in the form of review of literature. This review article is a contribution to the existing literature. The presented criteria for assessing spoken and written language fluency can be useful to the further researchers. The present article provides a comprehensive view on spoken and written English fluency and fluency evaluation.

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