



## Is there an Increase in Fluency over Levels of Proficiency? A Study of English L2 Usage of Japanese University Students

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**Abstract:** Oral fluency is one of the more difficult variables to track and measure in L2 speech. This paper reports on an empirical study to identify how fluency in both monologues and dialogues changes over three ranges of proficiency as marked by the TOEIC standardized test. Twenty-seven Japanese students were asked to give a self-introduction monologue, which was then followed by a three-question dialogue. Based on the TOEIC scores of these participants, three groups were formed, with the first group having scores that ranged from 150 to 370, the second from 371 to 570, and the third from 571 to 770. The interactions were videotaped and transcribed, with the transcriptions making up the Japanese University Student Fluency Corpus (JUSFC2018), which has 23,539 words. Research questions focused on significant differences among the three groups concerning the variables of monologue speaking time, dialogue speaking time, total speaking time, articulation rate, speaking rate, and the number of words spoken, and mean length runs. Results showed that for the first two proficiency groups monologue speaking time, speaking rates, and the number of words spoken showed significant differences, whereas in comparing the second and third proficiency groups, no significant differences were found. Furthermore, fluency showed a decrease on all variables with the highest proficiency group.

**Keywords:** English language, oral fluency, L2 speech

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### INTRODUCTION

Accountability in education has had a long history, and this has pushed educators throughout the world to prove that their students are making progress. As a result, standardized tests are being used as a common benchmark in proving students proficiency in math, science and language studies; however, regarding language learning, many of these standardized tests are based on multiple-choice answers, so passive skills are usually tested such as listening, reading, and grammatical knowledge. Fluency and communicative competence are thus often ignored. At issue is whether or not various tests (TOEIC, TOEFL) that purport to indicate a students proficiency ability has any correlation with his or her ability to communicate. High scores on such tests might provide a false sense of competency that can later prove to be problematic and embarrassing.

Part of the overall issue is that both teachers and students find it challenging to assess fluency. As Lennon (2006) noted, “fluency relates to the listeners overall impression of the speakers performance.” On the other hand, “idiomaticness, appropriateness, lexical range, and syntactic complexity” are related to linguistic knowledge. In short, spontaneous speech is notoriously messy with many speakers, both L2 and L1 speakers, having different accents, pronunciations, and styles of intonation along with various speaking rates. Most speakers will rephrase, repeat, and

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restate some of their ideas, with many of the utterances being fragmented, not fully well-formed, containing repairs, filled pauses, laughter, sighs, and incomprehensible speech. Thus, evaluation of fluency can be complicated: do teachers focus on speaking rates, production (number of words), mean length runs, pausing, or try to attend to various aspects of disfluency? For EFL and ESL students, a lack of real-life practice can be problematic. Many EFL learners throughout the world do not have enough opportunities to engage in extended dialogues that go beyond sentence- or phrase-length speech, even in seemingly metropolitan places.

In this research, the overall purpose is to study data gathered from 27 Japanese EFL speakers in 2018, who were requested to deliver a self-introduction monologue and next to involve themselves in a dialogue of three questions in order to examine (a) a possible significant changes in fluency among the first and second proficiency groups (determined by TOEIC scores), regarding variables such as speaking times (in monologues and dialogues), overall speaking period, speaking rates, articulation rate, and the quantity of verbal words, and (b) possible differences between groups 2 and 3 based on the same variables. The 27 Japanese students were grouped based on the TOEIC scores. The first group had scores that ranged from 150 to 370, the second from 371 to 570, and the third from 571 to 770. The communications were recorded, transcribed, and the transcriptions consist in the Japanese University Student Fluency Corpus (JUSFC) 2018, which has 23,539 words. The spoken data will take into consideration the variables of the number of micropauses, speaking rates, Mean Length Runs (MLR), and total time talking. Research questions examine exactly how fluency variables might increase over various levels of proficiency as distinguished by TOEIC scores. A secondary aim is to examine what are the specific shortcomings of Japanese EFL students fluency.

## REVIEW OF LITERATURE

### *Fluency*

Chambers (1997) pointed out that of all of the notions in ESL that fluency has been one of the most commonly used, yet it has also been one that has been the most difficult to define precisely. The concept of fluency can further be discussed by understanding how there is also attentional fluency and deduction fluency. Fluency is said to have an influence on judgments across a wide array of domains, and as such, it is best conceived as the difference between expected difficulty and actual difficulty (Oppenheimer, 2008). Thus, taking into account the variety of social interactions that an individual can be in, along with the social and pragmatic variables that might impact such interactions, fluency can be significantly impacted. Lennon (1990) defined fluency as “lying in the relationship and interaction between skill and knowledge” whereas Schmid (1992) focused on how “fluency is the processing and production of spoken language in real-time;” he stated, “fluency in speech production is [an] automatic procedural skill.” Though viewing fluency “as the quality of smoothness of execution of performance and the ability to speak at a normal rate without hesitation or interruption” (Bygate, 1999; Chambers, 1997; Nunan, 1999; Skehan, 2009), in the end, empirical research has emphasized how fluency needs to be based on “the elicitation of a speech corpus and analysis of temporal and qualitative aspects of speech. Speed or rate of speech has been found to be fundamental to a perception of fluency” (Wendel, 1997), and other researchers have focused on “temporal variables in speech such as speed, pauses, hesitations, fillers, among others.” Still, other studies focused on linking various aspects of performance with raters’ assessments of fluency (Lennon, 1990; Riggensbach, 1991; Freed, 1995; Mochtar, 2018; Svoboda & Zagar-Sostaric, 2019), while other investigators have compared first and L2 speech performance (Deschamps, 1980; Raupach, 1980), and still others have used “longitudinal examinations of the development of L2 spoken fluency” (Dechert & Raupach, 1980; Towell, 1987; Lennon, 1990; Hansen, Gardner, & Pollard, 1998).

“Despite this, silence is often seen as a sign of dysfluency, especially in foreign language speech where it may be perceived as signally poor functioning of mental processes, instead of viewing it as a normal feature of speech processing,” (Chambers, 1997). Researchers have some agreement that temporal variables relating to pausing, speaking rates, and MLRs are important to understanding fluency; pausing is seen as central with a distinction being made between natural and unnatural pauses (Sutthipornphalangkoon, 2016). Chambers (1997) discusses how a natural pause will occur before or after a semantic unit, whereas an unnatural pause will give the appearance of hesitation or uncertainty. Fillers (uh, um) will often be used for these hesitations with “lexical fillers such as ‘you know’ or ‘I mean.’” The pausing of native speakers will differ from second language learners. While the literature on fluency is extensive, there is a gap regarding how fluency changes in various kinds of spontaneous speech (monologues and dialogues), and how fluency changes with proficiency, and over time. Second, changes in dysfluency need to be further examined in regard to the levels of stated proficiency.

## **Terminology**

### **Fluency variables**

In computing a speaker's Articulation Rate (AR), the speech must be computed by "dividing the number of syllables by the cumulative time talking after deducting the amount for pausing," (Miller, Grosjean, & Lomanto, 1984); moreover, MLR takes into consideration the number of syllables a speaker utters before pausing. The Speech Rate (SR) is best understood as a ratio between "number of syllables of the uttered sequence/duration of the phonic chain, divided by seconds" (Levelt, 1989); to calculate fluency rate A, one must take the number of meaningful syllables within some output, and divide it by the number of seconds that the speaker spoke. The fluency rate B takes into account all meaningful and meaningless syllables or words that were recurrent or rephrased. A "fluency differential" reflects the difference between these two rates. In order to differentiate between a speaker's hesitation, any silence lasting longer than one second is counted as a pause while micropauses are counted as any silence less than one second.

## **RESEARCH METHODOLOGY**

### **Rationale**

Questions remain insofar as to whether or not other fluency (syntactical complexity, lexical complexity, articulation rates, talking time, etc.) and dysfluency indicators (mispronunciations, word fragments, abandoned sentences, retracings, repetitions, among others) can provide more consistent and reliable parameters of fluency (over proficiency as indicated by TOEIC scores) than rate of speech, pause and pause location, and the length of fluent runs. However, it is not yet clear as to which fluency and dysfluency variables are the most salient in distinguishing significant changes over proficiency.

### **Research Questions**

The first research question seeks to decide if there is a substantial variance in fluency between the first and second group, regarding variables such as monologue and "dialogue speaking time," "total speaking time," "articulation rate," "speaking rates," and "the number of words spoken"? Likewise, the second question is focused on the same variables but with groups 2 and 3. The third question is whether there is a substantial variance among all three groups concerning the number of words and MLR.

### **Participants**

There were a total of 27 participants, who were all Japanese, aged 18 to 19.

### **Transcripts**

Twenty-seven Japanese students were requested to deliver a self-introduction monologue, which was then followed by a dialogue of three questions. According to the TOEIC scores of these students, three groups were formed, with the first group having scores that ranged from 150 to 370, the second from 371 to 570, and the third from 571 to 770. The conversations were recorded and transcribed, and the transcriptions consist in the Japanese University Student Fluency Corpus (JUSFC2018), which has 23,539 words.

These videotaped interviews were started in April and May 2018. The interview contents were not shared with students, and students gave permission in writing for the videotapes to be used for research purposes. The coding of the transcripts reflects the "Conversational Analysis Conventions." Students did not know of the contents or questions of any topics beforehand. Students gave written permission for the videos to be used for study purposes and to be shown in conferences. Students were not paid for their interviews.

## **RESULTS**

It was interesting to note (see Table 1), the increases in fluency (or decreases in dysfluency) from group 1 to 2, as well as how these gains were negated when examining groups 2 and 3. In speaking times, we see a 13.2% increase from group 1 and 2, but in comparing the last two groups, there was -6.2% decrease in time spent talking. Likewise, in comparing the percentage of silence, groups 1 and 2, had a -36.5% decrease which with the last two groups increased by 42.9%. Fluency rate B and the number of words were less marked in these changes but showed similar patterns of increases followed by decreases.

As for the first research aims, concerning possible differences, a t-test showed there was significance for both Groups 1 and 2 for monologic speaking time monologic speaking time, ( $t(10) = -2.64562, p < 0.0245$ ), for speaking rate ( $t(10) = -2.37119, p < 0.03920$ ) and for number of words spoken, ( $t(10) = -2.76783, p < 0.01986$ ); however, no noteworthy significance was found for dialogic speaking times ( $t(10) = -0.67648, p < 0.51408$ ), total speaking time, ( $t(10) = -1.73709, p < 0.11302$ ), or AR, ( $t(10) = -1.62580, p < 0.13505$ ), see Table 1 for descriptive statistics, and figures 1 - 6 for graphic data.

Table 1 Descriptive Statistics

Variable	Group 1	Group 2	Group 3
Speaking time Monologue	110.2	180.1	123.1
Speaking Time Dialogue	174.6	197.7	185.3
Speaking Time Total	284.7	377.8	308.7
Articulation Rate	0.69	0.93	0.85
Speaking Rate A	46.1	65.3	58.7
Speaking Rate B	41.2	59.1	53.7
Fluency Differential (A-B)	4.8	5.3	5.1
Average Mean Length runs	8.6	8.2	9.7
Mean Pause Duration	7.1	4.3	4.7
Number of Words	162.6	301.7	259.5
Percentage of Silence	38.1	22.6	38.0

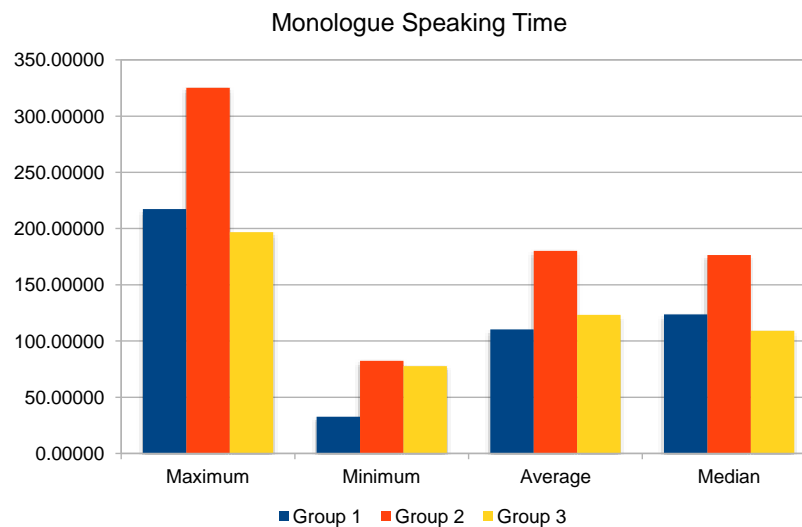


Figure 1 Monologue Speaking Time

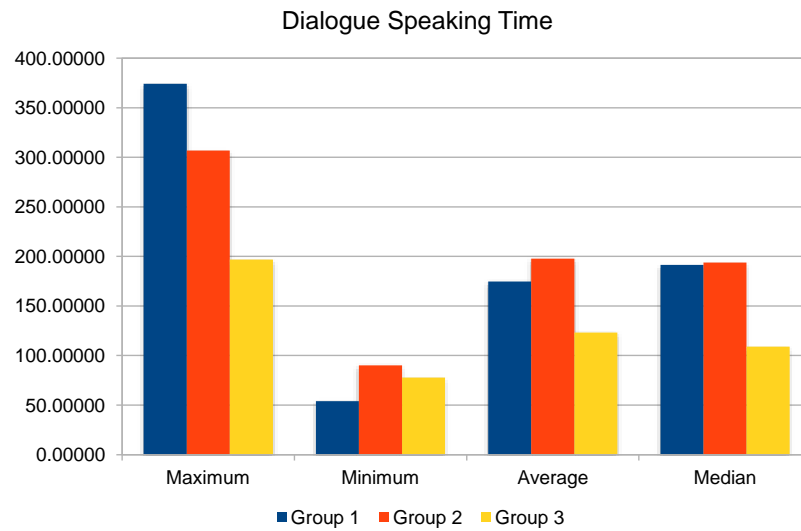


Figure 2 Dialogue Speaking Time

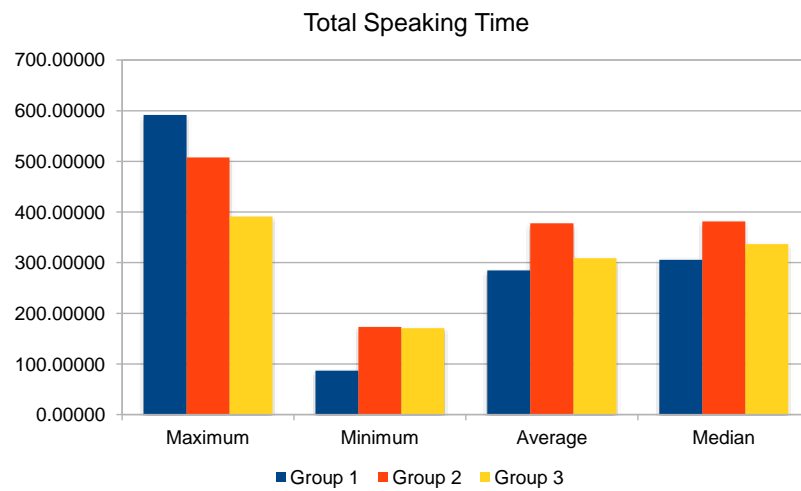


Figure 3 Total Speaking Time

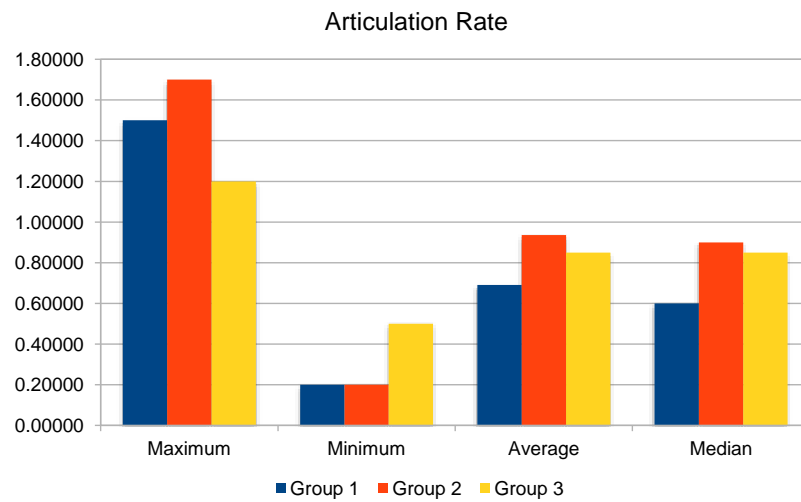
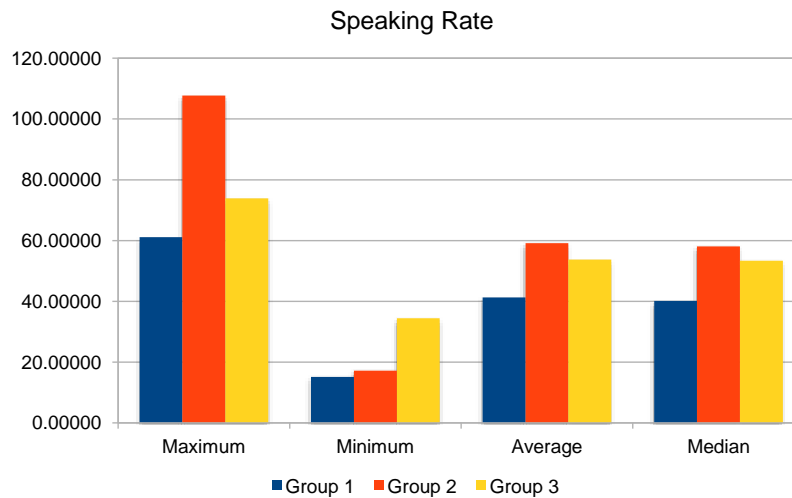
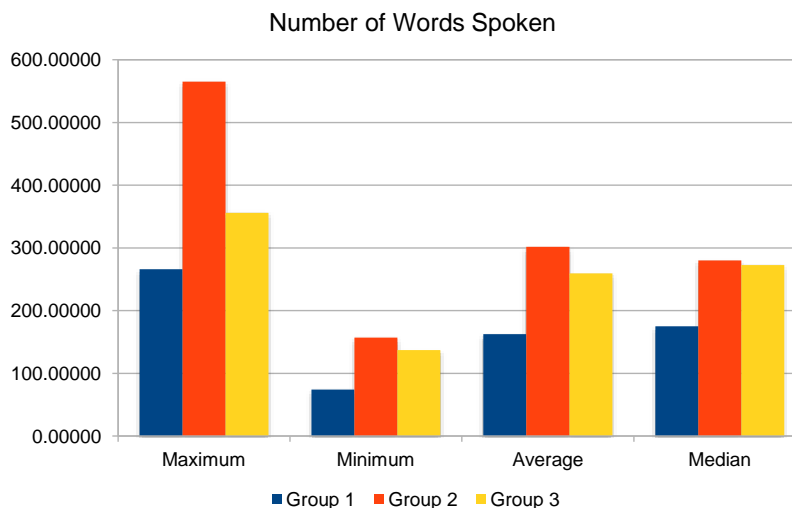


Figure 4 Articulation Rate

Figure 5 *Speaking rates*Figure 6 *Numbers of Words Spoken*

As for the second research question relating to possible differences between groups 2 and 3, no significance was found for all of the variables. Decreases were noted in the monologues with participants in group three speaking only 123.1 seconds on average compared to 180.1 for the second group; similarly, for total speaking time, group 3 spoke 308.7 seconds compared to group 2 which spoke on average 377.8 seconds. Articulation rates and speaking rates were also lower for the third group, but the difference was marginal; however, for the number of words spoken, group 3 averaged 259.5 words compared to group 2, which had 301.7. Finally, ANOVAs were conducted comparing all three groups: there was a statistical significance difference as determined by a one-way ANOVA ( $F(5.32901) = 3.42213, p = 0.01254$ ) for the number of words as well as for the mean length runs, ( $F(4.89872) = 3.42213, p = 0.01689$ ), see tables 2 and 3.

So as to better understand the variances in speech among the three proficiency groups, monologues were selected. Increases in fluency are noted from TOEIC scores 155/255 to 375 and then variables double at TOEIC 490, after which fluency decreases by half with TOEIC scores 620/705.

A secondary aim of this paper is to examine what are the specific shortcomings of Japanese EFL students fluency, and from these monologues, it is easy to see that the overall issue of production (short MLRs, total syllables, the number of words) was the most serious dysfluency, pauses and silence was a second problem, followed by a relatively slow speaking rate. The lack of syntactical and lexical complexity is also a serious concern.

Table 2 *Number of Words*

Source of Variation	SS	Df	MS	F	p-value	F-Critical
Between Groups	108930.42657	2.00000	54465.21329	5.32901	0.01254	3.42213
Within Groups	235071.72727	23.00000	10220.50988			
Total	344002.15385	25.00000				

Table 3 *Mean Length Run*

Source of Variation	SS	Df	MS	F	p-value	F-Critical
Between Groups	180928.77448	2.00000	90464.38724	4.89872	0.01689	3.42213
Within Groups	424739.84091	23.00000	18466.94960			
Total	605668.61538	25.00000				

## DISCUSSION

The outcomes of this preliminary research indicate that fluency may not correspond with the proficiency provided by TOEIC scores. TOEIC (Listening & Reading) is used in this research, not (Speaking & Writing), which might have shown more accuracy. Nevertheless, our experience of proficiency tests has shown that spoken English by Japanese is less related to the high scores as far as fluency is concerned. This data does show that research into fluency needs to expand beyond its principle construct of “Complexity, Accuracy, and Fluency” (CAF) as primary research variables. There is the need for educators and researchers to look more closely at depth, production, coherence, and interactivity. It is apparent from examining all of the transcripts that the biggest problem with students is complexity with almost all the spoken sentences being simple sentences, with some limited usage of conjunctions. Students are unable to produce longer sentences with more detail with relative pronouns being almost nonexistent in their discourse. Getting students to produce longer and more involved comments should be the first priority; however, it is significant to make up for more complex forms in spontaneous speech as it is found between the classmates, and strangers. This issue will allow researchers to scrutinize how problems such as cooperativeness, solidarity, balance might alter, and how dysfluency and fluency are influenced.

Based on these data, classroom pedagogy should address issues relating to pausing, and help them pay attention to repetition, filled pauses, and to grammatical forms such as verbs, and language use involving prepositions, and articles. It is also crucial to help students improve their speaking rate, especially with more lexical or syntactic complex material. This is problematic for Japanese EFL learners insofar that the need for accuracy and perfectionism is a common Japanese trait. Students might have attempted to make up perfect sentences in their mind.

As for specific tasks and techniques for improving fluency in the classroom, teachers should focus on videotaping timed interactions (having students read material that is more syntactically and lexically complex over time while decreasing the quantity of time in which to finish the task) and then to have students to evaluate their own performance. Timed gambits<sup>1</sup> are useful in that the scenario often includes pragmatic elements. Teachers can then read out exemplary discourses using shadowing<sup>2</sup> so that students can get used to saying a variety of expressions, comments, and questions at the rate that a native speaker would say them. Finally, there are many Internet resources such as Youtube videos concerning how to improve one’s presentation skills and pronunciation. It should be noted that the issue of truly realizing ones dysfluency and fluency comes only through investigating videos of ones speech, and if time allows, transcription and analysis. Improvements in fluency are difficult to achieve, but more so when there is little to no understanding of how poor ones fluency is and what needs to be corrected to make certain improvement.

## CONCLUSION AND IMPLICATIONS

This study shows the complexity of English acquisition, and of the multiple factors that can impact gains in fluency. As educators, it is essential to move past the static markers of standardized test scores and to highlight patterns of

fluency and dysfluency. While these fluency parameters of SR, silence, and articulation rates are key to help students to understand their overall impression of fluency, which can be easily influenced by one's intonation, pacing/stress, pause frequency, and the frequency of micropauses.

Today, to reduce social stress and pragmatic risks, many Japanese avoid face-to-face interactions; thus, they turn to various forms of Internet applications that involve chatting or emailing. Educators should be more aware of this and how this has adversely impacted fluency and actual production (talking time). For both native speakers and EFL learners, more attention should be paid to problems as short mean lengths, grammatical errors, fragmented speech, in short, the overall effectiveness of their language and how it is impacting the scope and depth of change in society.

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