VERSANT AND ADVANCED L2 SPEAKERS' RATINGS OF JAPANESE LEARNERS' ORAL ENGLISH

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It is important to evaluate the intelligibility of L2 speakers' English from a lingua-franca perspective. It is also now possible for computer programs to provide automatic evaluation of spoken English. It is of interest to know how such evaluations relate to those of L2 human listeners.

This study compared speaking test scores of intermediate proficiency level Japanese students generated by the machine-evaluated speaking test *Versant* with evaluations of the same informants made by advanced L2 speakers. Four Japanese informants' recordings were chosen such that overall *Versant* scores were similar but part-skill scores for 'fluency', 'pronunciation', 'grammar', and 'vocabulary' were different. Twenty-one Stockholm University English major students ranked the recordings twice, once in terms of intelligibility and once in terms of pronunciation quality. They also chose either segmentals or suprasegmentals as needing the most improvement.

The results show that what the program calls pronunciation is important for intelligibility. However, vocabulary seems also to affect intelligibility. Informants with lower *Versant* fluency scores were perceived as needing to learn suprasegmentals more than segmentals to improve intelligibility, while more fluent learners were perceived as needing to work on segmentals.

INTRODUCTION

Achieving intelligibility and comprehensibility is a priority for learners of English within the framework of World Englishes (Crystal, 2003; Jenkins, 2002, 2007; Kachru, 1992). According to Smith & Nelson (1985), intelligibility is the ability of the listener to recognize individual words or utterances while comprehensibility is the listener's ability to understand the meaning of the word or utterance in its given context.

Second language acquisition (SLA) research into intelligibility and comprehensibility has primarily looked at native listeners and non-native speakers of English (Derwing, Munro, & Thomson, 2008; Field, 2005; Hahn, 2004; Munro & Derwing, 1995). Both of these dimensions are usually connected to pronunciation and tend to be analyzed at the word or sentence level or are based on reading aloud (Derwing, 2003; Derwing & Munro, 1997, 2005; Derwing & Rossiter, 2003; Field, 2005).

The native listener/nonnative speaker model is not the only model that is relevant to speaking assessment, however. As the number of L2 speakers outnumbers that of L1 speakers, English has become a lingua franca for interaction between nonnative speakers around the globe, in what has come to be known as world Englishes (Crystal, 2003; Jenkins, 2002; Kachru, 1985, 1992). Kachru's (1985) three circles of world Englishes reflects the status and function of English in

different parts of the world. The inner circle refers to the countries where English is used as a mother tongue (i.e., the native speakers), while the outer circle can be used for countries where English has an official role and is used as a second language within the country. The expanding circle covers a wide range of countries where English is taught as a foreign language (i.e., the nonnative speakers). To show the interaction patterns of people in these three circles, Levis (2005) presented the speaker-listener matrix in Figure 1.

LISTENER

		Inner Circle (IC)	Outer Circle (OC)	Expanding Circle (EC)
	Inner Circle	*IC–IC* *(NS-NS)*	**1. IC–OC**	*IC–EC* *(NS–NNS)*
SPEAKER	Outer Circle	**2. OC–IC**	**3. OC–OC**	**4. OC–EC**
	Expanding Circle	*EC–IC* *(NNS–NS)*	**5. EC–OC**	*EC–EC* *(NNS–NNS)*

Figure 1. World Englishes speaker-listener intelligibility matrix (from Levis, 2005, p. 373)

According to Levis (2005), research on intelligibility and comprehensibility is especially lacking in the bolded cells, where outer circle and expanding circle speakers/listeners interact (Jenkins, 2000, 2002, 2005; Kachru, 1992; Seidlhofer, 2003). There is great variation in terms of exposure to oral English in these areas of interaction. For example, speaking is the main focus in English classes in Sweden (Hincks, 2005), while in Japan grammar translation is still prevalent in high school English classes (Kikuchi, 2009).

The most noticeable difficulties connected to loss of intelligibility often come from L1 interference with L2 pronunciation (Flege & Freida, 1995; Flege, Munro & MacKay, 1995; Flege, Frieda & Nozawa, 1997a; Thompson, 2001). Intelligibility may also be an issue with stress and intonation (Celce-Murcia, Brinton & Goodwin, 1996; Morley, 1991). Prosodic errors may be more serious than segmental errors for non-English speakers (Munro & Derwing, 1999). Hahn's (2004) study showed that sentence stress errors have a negative impact on intelligibility. Field (2005) investigated recognition of misstressed English words and found that certain misstressed patterns are more serious than others. Analyzing suprasegmentals at a discourse level, Kang et al. (2010) showed that suprasegmentals accounted for nearly 50% of the variance in intelligibility scores.

However, the role of suprasegmentals for world Englishes may be more complex than previously thought. First, some research has found that native English speakers pay more attention to

individual sounds than suprasegmentals (Kondo, 2009; Riney, Takagi & Inutsuka, 2005). Second, most suprasegmentals may not be essential for communication among L2 speakers (Jenkins, 2006, 2007; Seidlhofer, 2003, 2004). Indeed, the importance of suprasegmentals may be different due to the type of L2 speakers involved in spoken interaction and their proficiency levels.

Although studies on intelligibility often focus on pronunciation of words or reading sentences, in naturally occurring English it is not easy to tease out pronunciation problems from other issues such as vocabulary and grammar (Morell, 2004; Pickering, 2004, 2006). Language testing often evaluates speaking skills using separate criteria such as grammar, vocabulary, fluency and pronunciation (Brown & Abeywichrama, 2010). However, the main concern of the field has been to maintain reliability and validity rather than to test intelligibility and comprehensibility (Davies, 2008; Meierkord, 2004).

Currently it has become possible for internet based computer programs to provide automatic evaluation of spoken English, and given the advantages in speed and expense of automated evaluation, it is of interest to know how such evaluations relate to those of L2 human listeners who are not native speakers of English. Thus, the use of an automatic evaluation can be better compared to the reality of English in today's world.

This study compared speaking test scores of intermediate proficiency level Japanese informants as generated by a language evaluation program (*Versant*) with evaluations of the same informants made by advanced L2 speakers. There are three research questions for the study.

Research questions

1. What is the relationship between L2 speakers' evaluation and the internet based computer program *Versant*?

2. What relationship exists between the perception of intelligibility and the linguistic criteria of proficiency test?

3. Is there any relationship between errors in segmentals and suprasegmentals, and the linguistic criteria of proficiency test?

Data collection

This study uses a computerized speaking test, *Versant,* to evaluate learners' speaking skills according to four criteria: *grammar* (i.e., sentence level syntax), *vocabulary*, *fluency* and *pronunciation* with overall scores in a range of 20 to 80. (Note: The average scores for Japanese college students tend to be between 30 to 40 according to the Versant Japan office.)
The students were given six spoken tasks of increasing difficulty over 17 minutes.

1. Read sentences,

2. Repeat sentences,

3. Answer questions,

4. Sentence building,

5. Story telling,

6. Open-ended questions

This study used the recordings of the 4 Japanese informants' responses to Question 6 (2

open-ended questions at 40 seconds per question (Appendix 1) for the evaluation because it was the only recording available on the internet. It was not evaluated automatically but was recorded for the identification of the examinee. Thus the part that the machine program evaluated was not the same as that for the Stockholm university students' evaluation. However, as the recording was part of the test, the human evaluation was conducted on the most difficult question.

The Japanese informants and the selection of the test recordings

There were 541 Japanese informants who took the test over the phone to measure their speaking skills in English at a regional university in Japan. They represented one expanding circle speakers of English. Four Japanese informants' recordings were chosen from the 541 informants so that overall scores were in the same range (41 to 46) but part-skill scores were different for *fluency* (42 to 50), *pronunciation* (39 to 53), *grammar* (31 to 49), and *vocabulary* (27 to 49) (see Table 1).

The L2 evaluators: 21 Stockholm university students

The L2 evaluators were 21 advanced learners of English who were taking a Second Language Acquisition course conducted in English at Stockholm University. They were chosen to represent one group of L2 speakers in the expanding circle, those who use English as a means of instruction at a university. The evaluators' nationalities were 12 Swedish, 3 Hong Kong Chinese, 2 German, 1 Austrian, 1 Finnish, 1 Korean, and 1 Vietnamese. They were asked to evaluate the Japanese informants' spoken English as part of their course work to understand the English learners' pronunciation problems.

The evaluation procedure

The recordings of the four Japanese informants' response to question 6 were downloaded from the internet and uploaded to a course website at Stockholm University. The evaluators were asked to listen to them as many times as they needed over two weeks to 1) rank the English in terms of intelligibility and pronunciation, 2) comment on English problems, and 3) evaluate how segments and/or suprasegments disrupted intelligibility (Appendix 2).

RESULTS AND DISCUSSION

The evaluators' assessment and the Versant test scores

The rankings of the four Japanese informants were converted into numbers on an interval scale from 1-4. Figure 2 shows that the evaluators' assessment on the bar graph, while the *Versant* scores were on the line graph with their overall scores at the bottom. The evaluators ranked the Japanese informants in the order of D, B, C, and A in both intelligibility and pronunciation, supporting a close relationship between intelligibility and pronunciation (Jenkins, 2000; Meierkord, 2004).
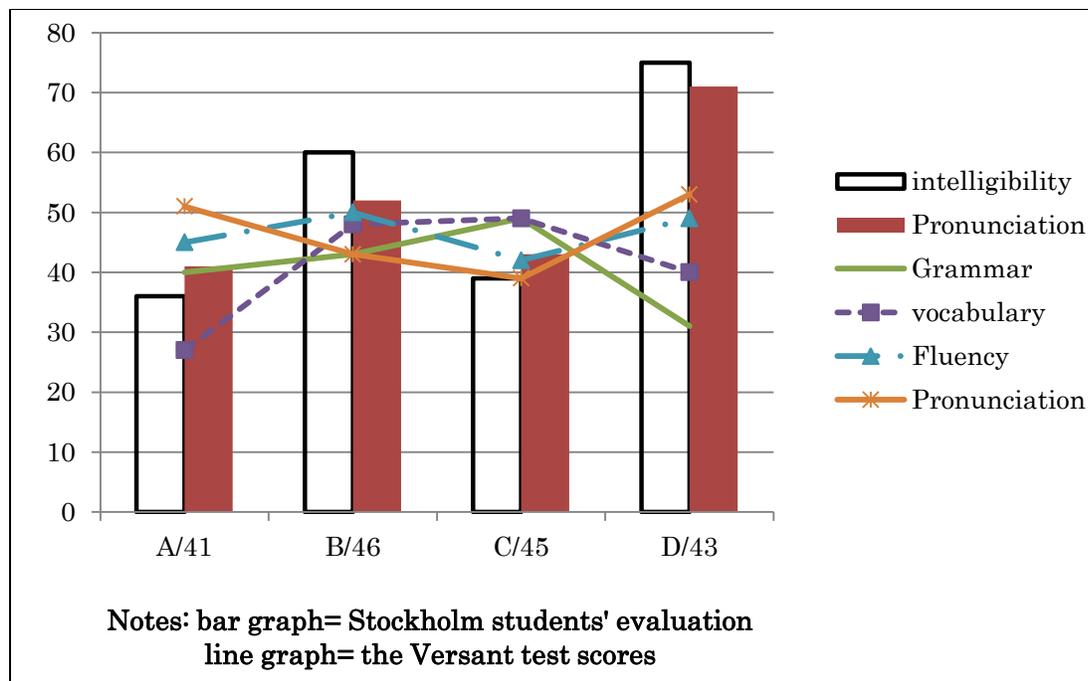
Notes: bar graph= Stockholm students' evaluation
line graph= the Versant test scores

Figure 2. Versant scores of the Japanese informants ABCD and their ranking by Stockholm university students

The comments on A, B, C and D by the evaluators shown in Table 1 also strengthen the role of pronunciation in relation to other criteria. For example, in the *Versant* test the student C was the best in both *grammar* and *vocabulary*, but the worst in *pronunciation*.

Table 1

Versant Test Scores and Comments on the Intelligibility by Stockholm University Students

	Versant scores					Types of and number of comments from Stockholm students
	Overall	S G	Vocab	Flu	Pron	
A	41	40	**27**	45	51	Lack of vocabulary 3, lack of connected speech 1, Basic grammar problem 1, rhythm 1
B	46	43	**48**	50	43	Good vocabulary 3, better than A due to pronunciation and vocabulary, Good grammar but lack of accuracy 2, fluency OK 1
C	45	**49**	49	42	**39**	Strong Japanese accent 3, better grammar 2, bad grammar 2, vocabulary OK 2, limited vocabulary 1, fluency OK
D	43	**31**	40	49	**53**	Bad grammar 3, good intonation 2, good vocabulary 2, lack of vocabulary 1, fluency OK1, good accent 1

Notes: SG: Sentence grammar, Flu: Fluency, Pron: Pronunciation

All in all, as shown in Table 1, the evaluators' comments often reflected the *Versant* test scores. For example, in vocabulary in *Versant,* B gained higher scores than D and the evaluators commented *good vocabulary* (3 times) on B. Also on D, who was the best in pronunciation but worst in grammar in *Versant* had comments such as *good intonation* (twice) and *bad grammar* (3 times) by the evaluators. Overall, the L2 speakers' evaluations are not far from that of the

computer program based on the L1 norms.

Table 1 also shows that *vocabulary* is connected to judgments of intelligibility and suggests a further link to *fluency*. The evaluators stated that a large vocabulary size enables the learner to paraphrase the message, thus clarifying the meaning and avoiding pauses. The second best informant in pronunciation, A, was ranked third in intelligibility by the evaluators.

Poor *Versant grammar* scores, however, did not seem to reduce judgments of intelligibility as much as shown by Meierkord (2004). Informant D was ranked the highest in intelligibility by the evaluators (and had the highest *pronunciation* scores) but had lower *grammar* scores.

Comments on Japanese informants' pronunciation

Comments were given mainly on consonants (*see* Appendix 3). Those on the vowels were limited to /i/ and /o/ with both referring to the pronunciation of informants B and D, but only /i/ to that of A, and none for C. Only D, the strongest in pronunciation had comments on vowels from three evaluators. One stated that the student D had problems with vowels more than consonants. It seems that comments on vowels came only when the pronunciation was good enough to identify the problem as was also found among the comments on Japanese informants' English provided by English speaking teachers and non-teachers (Okamura, 2011).

A further analysis was conducted on the consonants, as consonants drew much more comments than vowels. Although the evaluators noticed problems with 14 types of consonants in total, the four Japanese informants A, B, C, D only received two types, /ɹ, l/ and /θ/ from a multiple number of the evaluators. As was shown by native speaking teachers and students on Japanese learners of English (Okamura, 2011), the most common problem seems to be /l/ and /ɹ/ identified by the evaluators (A: 9, B: 13, C: 6, D: 7). Because other sound problems were also related to the mother tongue such as /t/, /d/, /n/, /s/, and consonant clusters (see Thompson 2001), L1 transfer seems to be the major problem (Flege, 1995, 1997). /θ/ was also noticed by multiple evaluators (A: 1, B: 3, C: 5, D: 1). /θ/ was not included in the Lingua Franca core (Jenkins, 2000) because it was not considered to cause misunderstanding. However, unlike the voiced counterparts, voiceless sound of /θ/ may cause some misunderstanding as it can create minimal pairs such as *think/sink*, *worth/worse*, *thick/sick*. Moreover, it can be said that listeners are not always focusing on the intelligibility of the talk of L2 speakers as was found in social psychology and communication studies (Hosoda, Stone-Romero & Walter, 2007; Hosoda & Stone-Romero, 2009; Gluszek & Dovidio, 2010a, b; Gluszek, Newheiser & Dovidio, 2011).

Regarding the suprasegmentals, all the informants except D received "choppy" as the description of their English from the evaluators. The weakest informant in pronunciation, C was referred to as having a "strong Japanese accent" three times, suggesting a problem of prosody rather than just segmental sounds (since all the Japanese informants had similar segmental difficulties). Furthermore, as C received comments to slow down from eight evaluators, lack of English rhythm may have been interpreted as excessive speed. Choppy English can be intelligible but it would demand an extra effort on the listener, which can be part of the reason for some negative attitude to heavily accented English (Mugglestone, 1995). Thus learning the suprasegmentals may lead to a more positive evaluation. One evaluator wrote about D, who was the best in perceived pronunciation,"Thanks to his reasonably good accent and intonation, he had less serious problems than the rest."

The importance of improving segmental and suprasegmental sounds

Figure 2 shows the evaluators' choices about the importance of segmental and suprasegmental sounds for the four Japanese informants.
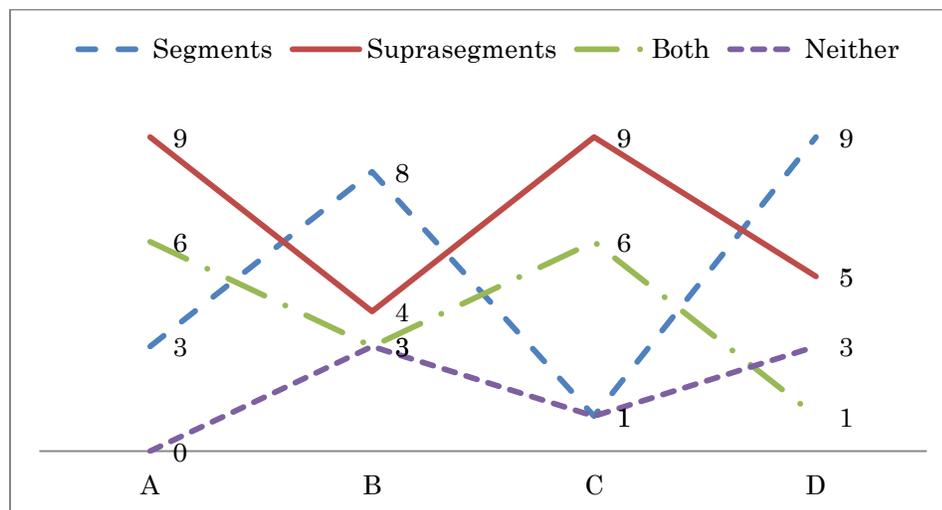

Figure 2. Importance of Segments and Suprasegmentals

Suprasegmentals were heard as being more important for A and C than B and D. It is interesting to note that A and C were given lower scores in fluency by *Versant* and intelligibility by the evaluators than B and D. Less fluent English appears to result in a perception of needing better suprasegmentals. As suggested by Kang et al. (2010), suprasegmentals seem to be highly related to intelligibility, which is also in agreement with the findings by Field (2005) and Hahn (2004). However, placing an emphasis on individual segmental sounds was suggested for those with higher rankings in intelligibility.

CONCLUSION

This study attempts to investigate what Japanese learners of English need to achieve intelligibility in the expanding circle interaction through the comparison of human and machine evaluation. This study showed that what the program called *pronunciation* was important for perceived intelligibility (Jenkins, 2002). The Japanese informant perceived as best in both intelligibility and pronunciation was also the one with the highest *Versant* scores in *pronunciation*.

However, this study also showed that pronunciation should be supported by vocabulary to increase intelligibility for L2 speakers as they can avoid the pronunciation problems through paraphrasing. By the same token, good pronunciation with lack of vocabulary seems to lead to unnecessary pauses, which can cause negative impressions of the speaker.

Informants with lower *Versant fluency* scores were perceived as needing to learn suprasegmentals more than segmentals to improve intelligibility, while more fluent learners were perceived as needing to work on segmentals. The *fluency* measure seemed to be associated with appropriate suprasegmentals, resulting in improved intelligibility. Machine evaluations can be usefully mapped on to listener perceptions, but interpretation is essential.

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Appendix 1

1. Versant Questions 6 as answered by the four Japanese informants

Japanese student A

1 Is it best for family members to help children with school work, or to let children complete school work alone without help? Please explain.

2 After the school day is over, some families allow children to play as long as they wish, while other families believe children should continue studying throughout most of the evening. What do you think is a good method for determining how much leisure time a child should have?

Japanese student B

1 In your opinion, where is the best location to raise a family? Why do you feel this way?

2 From your point of view, is it better to work in a large organization or in a small organization? Please explain your opinion.

Japanese student C

1 Today, many people are living longer, and many old people are being cared for by their children or grandchildren. How does this situation affect the family?

2 Should parents choose the course of study for their children, or should children choose their own course of study? Please explain your thinking.

Japanese student D

1 Some people think that week-ends should be spent resting and relaxing, while other people prefer to use the extra time to complete work. How do you like to spend week-end time? Please explain.

2 Do you think that every person in the family should help with household tasks, even very young children? Please explain your thinking.

Appendix 2

2. Swedish students' evaluation of Japanese learners' English

2.1. The first round: ranking in intelligibility and pronunciation

You are going to listen to four Japanese informants responding to questions in English. Please rank these four in terms of intelligibility and pronunciation.

Intelligibility and pronunciation ranking

	Speaker 1	Speaker 2	Speaker 3	Speaker 4
Intelligibility ranking				
Pronunciation ranking				

2.2. The second round: segmentals and suprasegmentals

You are going to listen to the same speech again. You may find that intelligibility difficulties arise from both individual sound problems and sentence level problems.

2.2.1. Which interfered more with your understanding?

(   ) A. Pronunciation of certain sounds such as /r/ or /s/

(   ) B. Pronunciation at sentence level such as English rhythm or English intonation.

(   ) Both A and B

(   ) Neither A nor B

2.2.2. What do you think are the most serious problems for them in terms of making their speech intelligible?

Pronunciation: segmental and suprasegmentals

Name	A, B, Both AB, Neither A nor B	Their difficulties
Speaker 1		
Speaker 2		
Speaker 3		
Speaker 4		

Appendix 3

Number of comments about segmental and suprasegmentals pronunciation problems

Category	A	B	C	D
Consonants	6 types/ 14 tokens	4 types/ 19 tokens	5 types/ 15 tokens	7 types/ 13 tokens
Vowels	1 type/1 /i/	2 types/1 /i/,/o/	0 type/	2 types/3 /i /, /o/
Supra-segmentals	3 types/8 Lack of Stressed syllables (2), Choppy rhythm (3) Intonation and fluency (3)	1type/2 Choppy rhythm (2)	1 type/ 3 Strong Japanese accent/ Rhythm (3)	1 type/1 Choppy rhythm (1)
Perceived speed	too slow: 1 too much hesitation: 7	fast : 1 long pause: 2	too fast: 8	Short pause : 3