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INTELLIGIBILITY OF VARIETIES OF ENGLISH AND LISTENERS' LANGUAGE LEARNING BACKGROUNDS

Takayuki Nagamine, Aichi Prefectural University

This study investigated how the English proficiency and the study abroad (SA) experience of native Japanese learners of English who learn English as a foreign language (EFL) affects their actual levels of understanding of accent varieties and their confidence to understand them. Forty-two Japanese EFL learners listened to seven speakers (from USA, UK, Canada, Australia, Germany, Taiwan, and Japan). They answered a total of 21 multiple-choice questions for measuring intelligibility and gave ratings for the measurement of confidence in understanding the content. The results indicated that the listener's English proficiency influenced confidence and intelligibility more than the SA experience. The effects of accent variation were small, although Taiwanese-accented English was related to both confidence and intelligibility.

INTRODUCTION

English is now widely used as *a lingua franca* for communication between speakers from different first language backgrounds (Seidlhofer, 2011). Communicative success in such situations can be achieved without sounding nativelike (Derwing & Munro, 2009), and learners of English are encouraged to aim for a realistic goal; to achieve higher *intelligibility* and *comprehensibility* instead of an ultimate *nativelikeness* (Levis, 2005). In discussing intelligibility and comprehensibility, the importance of listener-related factors should be highlighted (Levis, 2006), including the listener's language proficiency (Yan & Ginther, 2018) and their study abroad (SA) experience (Borràs & Llanes, 2019).

The purpose of this study is to investigate the effects of the listener-related factors (the listener's SA experience and the L2 proficiency) of Japanese learners of English on their levels of listening understanding (*intelligibility*) and their confidence in understanding varieties of English (*confidence*). More specifically, the goals are: 1) to investigate the relationships between listener-related factors and intelligibility and confidence, and 2) to compare the extent to which these variables influence the listeners' judgements of intelligibility and confidence.

Intelligibility and Comprehensibility of Accented Speech

The L2 speech has been understood in terms of *intelligibility*, *comprehensibility* and *accentedness* (Munro & Derwing, 2015) in SLA research. Munro and Derwing (2015, p.14) defined *intelligibility* as "the level of actual understanding", *comprehensibility* as "perceived degree of difficulty experienced by the listener in understanding speech", and *accentedness* as "perceived differences in pronunciation as compared with a local variety". *Intelligibility* is often measured through transcription tasks and comprehension questions, whereas *comprehensibility* and *accentedness* are often measured through a Likert scale of 1-9.

It has been known in the field that accented speech is not necessarily unintelligible (Munro & Derwing, 1995; Kang, Thompson, et al., 2019). Using transcription tasks, Munro and Derwing (1995) investigated the relationships among accentedness, comprehensibility, and intelligibility of Mandarin-accented English. Their results indicated that accentedness did not necessarily reduce comprehensibility and intelligibility of the speech. Furthermore, in Kang, Thompson, et al. (2019), in which a mock TOEFL iBT listening exam was administrated with speakers and listeners from Outer and Expanding Circle countries (cf., Kachru, 1982), the highly-proficient listeners' understanding of the Outer and Expanding Circle speakers (from India, Nigeria, Mexico, and South Korea) were not significantly lower than their understanding of Inner Circle speakers (i.e., native speakers of English, from Britain, USA, and Australia) when the speakers were equally comprehensible.

Listeners' English Proficiency

Listeners' L2 proficiency may influence their understanding of accented speech (Matsuura et al., 1999; Kang, Ahn, et al., 2019). Matsuura et al. (1999) found that intelligibility of the familiar (American English) and unfamiliar (Irish English) accents judged by Japanese university students was significantly correlated with their language proficiency, whereas the listener's judgement of comprehensibility was correlated with their familiarity with the speaker's accent. Matsuura et al. (1999) noted that greater familiarity with the accents might have helped the students build greater confidence and feel less inhibited to communicate with the native speakers. In Kang, Ahn, et al. (2019), listeners from South Korea with three levels of the English proficiency (beginner, intermediate, and advanced) performed transcription and listening-comprehension tasks for speakers from countries in the Inner Circle (from USA and UK), the Outer Circle (from South Africa and India), and the Expanding Circle (Mexico and Chinese). The results indicated that the listeners' sensitivity to accent variation was subject to their language proficiency; the intermediate listeners were more affected by the speaker's accents than the advanced listeners and the beginner listeners, the latter of which maintained a low level of understanding across the speakers.

On the other hand, the effect of the listener's language proficiency on the degree of understanding cannot be generalized across a wide range of accents. Orikasa (2016) found that the English proficiency of Japanese learners who learned English as a foreign language (EFL) correlated with intelligibility of only four of eight speakers (from USA, Vietnam, China, and Korea), providing evidence that a listener's English proficiency was not a good predictor of their judgements of speaker intelligibility.

Study Abroad (SA) Experience

EFL learners' English learning experience can vary depending on study abroad (SA) experience. SA offers a range of opportunities to improve learner's L2 skills through interacting with native and nonnative speakers of the target language (Borràs & Llanes, 2019). The SA experience enables learners to improve their listening skills at a faster pace when compared with the At Home (AH) environment. Beattie et al. (2014) tracked the developments of 75 EFL learners' listening skills at three different time points: the initial stage (T1), after the 6-month Formal Instruction (FI) period in their AH environment (T2), and seven months after T2 after the students had returned from their 3-month SA programs (T3). The results indicated that the learners' listening skills improved

significantly between T2 and T3 but not between T1 and T2. The findings suggested that the SA experience could facilitate more significant improvements in their listening skills than in the AH context.

On the other hand, evidence exists that SA experience may only be partially beneficial to the EFL learners' developments of listening skills but could improve confidence in their listening skills. Cubillos et al. (2008) investigated the effects of a five-week SA program on listening comprehension skills and confidence levels in listening skills between two groups of L2 learners of Spanish, divided into SA (n = 48) and AH (n = 92) groups. The results showed little difference in development of listening comprehension skills between the two groups. However, Cubillos et al. (2008) noted that the SA students expressed a greater degree of confidence in their listening skills, which could have resulted from their frequent interactions with native speakers of the target language that took place in the SA context. The SA experience may have facilitated a greater familiarity with the target language, which could have been manifested as increased confidence (cf., Matsuura et al., 1999, for discussions of the relationships between familiarity and confidence).

In the EFL setting in Japan, Orikasa (2016) also found a weak correlation between intelligibility of varieties of English and the length of a listener's SA experience. However, as Orikasa (2016) admitted, none of the participants in the study had an extended SA experience, which could have been the reason for the weak correlation. How the varying length of the EFL learner's SA experience affects their listening comprehension of accented speech remains unclear.

Research Questions

As previous studies have indicated, accentedness does not necessarily reduce intelligibility, and listener-related factors, such as language proficiency and SA experience, may influence a listener's understanding of accent varieties. Also, the SA experience appears to encourage learners to build confidence in their listening skills. However, the effect of such listener-related factors has not been widely studied. Therefore, this study aims to seek answers for the following research questions:

1. What are the relationships between the Japanese EFL learner's listener-related factors (SA experience and English proficiency) and the confidence and the level of understanding (intelligibility)?
2. Which variables (i.e., the Japanese EFL learner's SA experience, English proficiency, and the accent variation) predict confidence and intelligibility?

METHODS

Stimuli

The audio stimuli were recorded by four native speakers of English (from USA, UK, Canada, and Australia), two nonnative speakers of English (from Germany and Taiwan), and a native Japanese speaker of English. They recorded seven passages adopted from a practice book for the Test of English for International Communication (TOEIC) Test (Educational Testing Service, 2011).

The word count of each passage ranged from 66 to 72 words (M = 65.71, SD = 2.60). The difficulty levels of the vocabulary items were measured with a word list provided by the Japan Association for College English Teachers, the JACET List of 8000 Basic Words (JACET, 2003), with an online word-level checker for evaluating a text's readability (Someya, 2006). The list was "designed for all English learners in Japan" (Uemura & Ishikawa, 2004, p. 335), containing words that university students in Japan should know. The measurement suggested that the words in the chosen passages should not cause great difficulties in understanding for the participants, who were university undergraduate or master's students. The speech rate was kept nearly equal across the speakers (M = 4.49 syll/s, SD = .38). A one-way ANOVA showed that the speech rate was not significantly different between the speakers ($F(6,42) = 2.32$, $p = .06$, $\eta^2 = .24$). Please note that the threshold of significance was set at .05.

Participants

Forty-two Japanese EFL learners (20 males and 22 females) participated in this research. Most had studied English as a subject in school since the age of 12. Fourteen had SA experience of five months or more in an English-speaking country (SA listeners), in which two resided in the US for two and five years respectively. The rest had little SA experience, consisting of less than a month (Non-SA listeners).

The participants also reported their highest scores of TOEIC (R) Listening and Reading Test as a measure of their English proficiency at the time of the experiment, shown in scores between 10 and 990 (Educational Testing Service, n.d.). Higher scores signify a greater proficiency in listening and reading of the test taker. The mean of the participants' TOEIC score was 665.12 (SD = 182.28) overall, with M = 853.57 (SD = 57.22) for the SA listeners (n = 14), and M = 570.89 (SD = 146.71) for the Non-SA listeners (n = 28).

Procedure

The participants listened to seven monologues and answered three multiple-choice questions related to each monologue (i.e., 21 questions in total) to determine the speaker's intelligibility. Each question carried one point (min = 0, max = 21). The participants then indicated their confidence levels of understanding the speech content, with 1 being 'I did not understand the passage at all' and 5 being 'I completely understood the passage'. Seven test sets (Set A to G) were created out of the 49 recordings (i.e., seven speakers recorded seven monologues) to prevent the familiarity effects by ensuring no single speakers appeared more than once in a test set (See Table 1 below for details). Six participants were assigned to listen to one of the seven test sets so that all 42 participants listened to the same seven passages with different combinations of the speakers. No prior information about the speakers was given to the participants until the end of the listening. The participants met in a quiet room at a university in Japan and performed paper-based tasks. Each session took approximately 30 minutes.

Table 1
The speaker-question correspondence in seven test sets

	A	B	C	D	E	F	G
Q1	US	Taiwan	Germany	UK	Japan	Australia	Canada
Q2	Taiwan	Germany	UK	Japan	Australia	Canada	US
Q3	Germany	UK	Japan	Australia	Canada	US	Taiwan
Q4	UK	Japan	Australia	Canada	US	Taiwan	Germany
Q5	Japan	Australia	Canada	US	Taiwan	Germany	UK
Q6	Australia	Canada	US	Taiwan	Germany	UK	Japan
Q7	Canada	US	Taiwan	Germany	UK	Japan	Australia

Note. Letters A to Z, aligned horizontally, indicate the question sets.

RESULTS

The obtained data were analyzed using R version 3.6.1 (R Core Team, 2019). The confidence ratings and the intelligibility scores were coded as outcome variables, whereas the participant's SA experience (SA), their English proficiency (TOEIC), and the accent variation were coded as predictor variables. The Cronbach's alpha value, an indicator of data reliability, was $\alpha = .85$ for the confidence ratings and $\alpha = .62$ for the intelligibility measure. The SA experience was coded as dichotomous variables (1 = SA and 0 = Non-SA), and the accent variations were converted into dummy variables, with the American accent set as the baseline considering that American English serves as a model for EFL learners in Japan (Setter & Jenkins, 2005), and thus it was assumed participants would be familiar with this accent. All the values were normalized and converted into *z*-scores for statistical analysis.

First, in order to investigate the relationships between the listener-related factors and confidence and intelligibility, Pearson's correlation coefficients (r) were calculated (see Table 2 below). All the correlation coefficients shown in Table 2 were computed at the significance level of $p < .001$. Weak correlations were found between SA and intelligibility ($r = .23$, $t(292) = 4$, $p < .001$) and confidence ($r = .40$, $t(292) = 8$, $p < .001$), as well as between TOEIC and intelligibility ($r = .39$, $t(292) = 7$, $p < .001$). Also, moderate correlations were found between TOEIC and confidence ($r = .55$, $t(292) = 11$, $p < .001$) and between intelligibility and confidence ($r = .50$, $t(292) = 10$, $p < .001$). These results indicated that the listener's TOEIC scores were correlated with both confidence and intelligibility at a higher rate than with their SA experience.

In addition, the two predictor variables, SA and TOEIC, were correlated at a moderate level ($r = .73$, $t(292) = 18$, $p < .001$). While this could suggest that the SA listeners tended to score higher in TOEIC than Non-SA listeners, there was a possibility of multicollinearity. Therefore, the variance inflation factor (VIF) was calculated; the VIF value of greater than ten between predictor variables suggests multicollinearity. The obtained VIF value between SA and TOEIC was 2, suggesting no multicollinearity between them.

Table 2
The correlation matrix between the variables

	SA	TOEIC	Intelligibility	Confidence
SA	-	.73*	.23*	.40*
TOEIC	-	-	.39*	.55*
Intelligibility	-	-	-	.50*
Confidence	-	-	-	-

*$p < .001$

Second, stepwise multiple regression analyses were conducted in order to investigate the effects of listener's SA experience, their English proficiency, and the accent variations of the speakers. The stepwise multiple regression analysis selects the best fit model to predict the outcome variables by reducing the predictor variable inputs (backward elimination) based on the Akaike Information Criterion (AIC). Table 3 below shows the best fit models for confidence and comprehensibility.

Table 3
The results of stepwise multiple regression analyses. Note that only the best fit models are shown.

Outcome variables	Predictor variables	*B*	*SEB*	*β*	*t*	*p*	R^2
Step4							.35
Confidence	TOEIC	.003	< .001	.55	11.58	< .001*	
	Japanese accent	-.33	< .001	-.11	-2.10	.04 *	
	UK accent	-.40	.16	-.13	-2.55	.01*	
	German accent	-.31	.16	-.10	-1.95	.05	
	Taiwanese accent	-.81	.16	-.26	-5.11	< .001*	
	Intercept	.47	.21				
Step6							.17
Intelligibility	SA Experience	-.25	.17	-.12	-1.49	.14	
	TOEIC	.003	< .001	.48	6.04	< .001*	
	Taiwanese accent	-.41	.15	-.14	-2.68	.001*	
	Intercept	-.16	.26				

Note. B = coefficient estimate, SEB = standard error of B, β = standardized regression coefficient, R^2 = estimates of variance explained, * = statistically significant

The results show that listeners' TOEIC scores and a subset of accents (Japanese, UK, German, and Taiwanese) predicted the listener's confidence. These variables explained 35% ($R^2 = .35$, $p < .001$) of the variance. This R^2 value can be considered as medium compared with the values reported in the previous L2 research (Plonsky & Ghanbar, 2018). The effects of TOEIC and Japanese, UK, and Taiwanese accents were statistically significant. Standardized regression coefficient (β) suggested that the effect of TOEIC as a predictor of confidence was larger than that of other variables ($\beta = .55$, $p < .001$). The accents that predicted confidence at a significant level showed negative β values (Japanese, $\beta = -.11$, $p = .04$; UK, $\beta = -.13$, $p = .01$; Taiwanese, $\beta = -.26$, $p < .001$), indicating that the listeners were less confident in understanding the speakers from Japan, the UK, and Taiwan than the American speaker.

On the other hand, SA, TOEIC, and the Taiwanese accent predicted the intelligibility measure. The amount of variance that can be explained by these variables was small at 17% (R_2 = .17, p < .001). The effects of TOEIC (β = .48, p < .001) and the Taiwanese accent (β = -.14, p = .001) were found to be statistically significant while the effect of SA was small and non-significant (β = -.12, p = .14).

DISCUSSION AND CONCLUSION

This study aimed to explore the relationships between listener-related factors (English proficiency and SA experience) of Japanese EFL learners and how these variables, as well as accent variation, could predict their confidence and levels of understanding of accented speech. Regarding the first research question, the results from the correlation analysis showed that the listener's English proficiency was correlated with confidence and intelligibility to a greater extent than their SA experience. The stepwise multiple regression analysis also demonstrated that the listener's English proficiency significantly predicted confidence and intelligibility, but the effect of their SA experience was not significant for intelligibility or not included in the best fit model for confidence. Previous research has shown that the listeners' English proficiency correlates with their comprehension of accented speech, and the results from the current study are in line with those studies (Matsuura et al., 1999; Kang, Ahn, et al., 2019).

Concerning the second research question, the listener's English proficiency was shown to predict their confidence levels and the intelligibility measure to the greatest extent. The accent variation appeared to predict the listener's judgements of confidence more than their level of understanding, suggesting that accents did not cause the listeners great difficulties in understanding the accented speech (cf., Munro & Derwing, 1995). The stepwise multiple regression analysis indicated that the listeners were less confident in understanding the Japanese-, UK-, and Taiwanese-accented English than American English. The effect of the Taiwanese accent appeared to be large as it significantly predicted both listener's confidence and intelligibility ratings. Especially, among the accents, intelligibility was predicted mainly by the Taiwanese-accented English. Unfortunately, the degree of the listener's familiarity with each variety of English was not measured in the current study. Nevertheless, the listeners were assumed to be least familiar with Taiwanese-accented English, and thus the results align with the arguments in Matsuura et al. (1999) that familiarity with accents may have influenced the listener's perceived difficulty in understanding the accent. Also, further analysis according to the listener's proficiency levels would have better shown the effects of this unfamiliar accent on the listener's judgements of intelligibility (cf., Kang, Ahn, et al., 2019).

In addition, the effect of SA experience on confidence and intelligibility was not significant, differing from some of the previous studies showing that SA experience enhanced learner's confidence in their listening skills and their listening comprehension skills (Cubillos et al., 2008; Beattie et al., 2014). Rather, the results from the current study supported the results from Orikasa (2016) that the SA experience and intelligibility of varieties of English were not correlated significantly. This finding may have been influenced by the challenge in differentiating the two predictor variables (the listener's SA experience and English proficiency). The listeners with SA experience in this study were also those with the highest English proficiency, which is intuitively natural. Furthermore, despite no multicollinearity, the correlation coefficient between SA

experience and English proficiency was high (r = .73). In the future study, it is important to investigate the effects of the SA experience with participants who are at similar English proficiency levels.

Finally, some limitations need to be acknowledged, such as the use of the 5-point scale, which was less reliable than the 7- or 9-point scales (cf., Munro, 2018) and the possible ceiling effects were observed in the intelligibility measure due to the small number of multiple-choice questions. The wide range of the TOEIC scores may also have provided higher chances to detect differences than the dichotomous distinction of the SA experience. Nevertheless, this study showed that, with higher English proficiency, the Japanese EFL learners appeared to be able to overcome comprehension of accented speech regardless of SA experience, and it would certainly bring them a step forward to successful communication between speakers with diverse first language backgrounds.

ABOUT THE AUTHOR

Takayuki Nagamine is a part-time instructor in English Phonetics and a visiting research fellow at Aichi Prefectural University. He obtained an MA in Linguistics from University College London (UK). His research interests lie in speech production and perception of Japanese-accented English speech.

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