

DO L1 TRACES HELP LISTENERS IN L2?

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ABSTRACT

Four proficient Chinese speakers of English as a second language read intelligibility test materials to three groups of listeners. Under all testing conditions, American listeners performed best. Sharing the same native language did not always prove to be an advantage to listeners in L2.

INTRODUCTION

In the extensive literature dealing with the intelligibility of non-native talkers, there is evidence that L2 speakers understand speakers from their own language background somewhat better than speakers with less familiar speaking patterns.

This study was designed to examine intelligibility of proficient non-native talkers using controlled speaking materials. Talkers were tested in quiet and noisy speaking conditions.

The specific questions of interest concern the intelligibility of accented speech to proficient listeners from different language backgrounds; consistency of differences among listener groups across test materials and listening conditions; differences among talkers; and listener evaluations of talkers and test conditions.

METHOD

Four talkers participated in the experiment. All were male native speakers of Mandarin Chinese. The talkers had lived in the United States from 1 1/2 to 5 years. All four were highly fluent in English.

Materials

Each talker recorded two Modified Rhyme Test word lists and 20 sentences developed by Pisoni, et al. [1]. The MRT uses one-syllable test words in a carrier sentence. The test sentences were six words long. In responding to the MRT, listeners

identify a spoken word from a group of alternatives; consequently, the MRT does not require much memory or linguistic knowledge. Rather, it assesses clarity of pronunciation.

The sentence test requires listeners to understand a statement and to judge it as true or false. Because the sentence task demands linguistic knowledge as well as an acquaintance with real-world cultural background, it may be representative of communications situations.

Listeners heard the recordings either in quiet or mixed with pink noise at S/N 3 dB.

Listeners

All listeners were students at Ohio University. There were three groups, Americans, native speakers of Chinese, and other students from East Asia, primarily from Korea, Japan, and Thailand. The number of listeners in each condition is given in Table 1.

Table 1. Listeners

	Clear	Noise
Americans	12	20
Chinese	20	20
Other E Asian	22	20

Listeners were tested in small groups in a language laboratory. They heard both the MRT and the sentences over headphones in one listening condition. After hearing each talker, they evaluated the talker on a 5-point rating scale; 1 was defined as 'Easy' and 5 as 'Difficult.'

Data Analysis

The MRT and sentence scores were the dependent variables submitted to ANOVA, treating between-group and within-group effects separately. The independent variables were talkers, language background

of listeners, listening conditions, and tests. Talker and test were within-group factors; listening condition and language background were between-group factors. Post-hoc analyses of interactions used Cicchetti tests. In addition, correlations were calculated between subjective ratings and intelligibility scores.

RESULTS

As expected, clear speech was always more intelligible than speech mixed with noise. In addition, listeners from different language backgrounds performed differently, and the four talkers were not equally intelligible.

Listening Conditions

Fig. 1 shows the percent correct responses to the MRT in both the clear and

to the noise listening condition, American listeners showed the greatest performance decrement, 48%.

Fig. 1 also shows the percent correct responses to the sentence test in both clear and noise listening conditions. The expected drop in performance when listening in noise is present. The Americans performed extremely well in the clear condition, responding correctly to almost all sentences, 95% correct. The difference between the Americans and the other two groups was significant and greater than in the MRT, suggesting that both knowledge of language and cultural background were probably helpful.

The performance of the other two groups was similar to their performance on the MRT, and not significantly different. Lis-

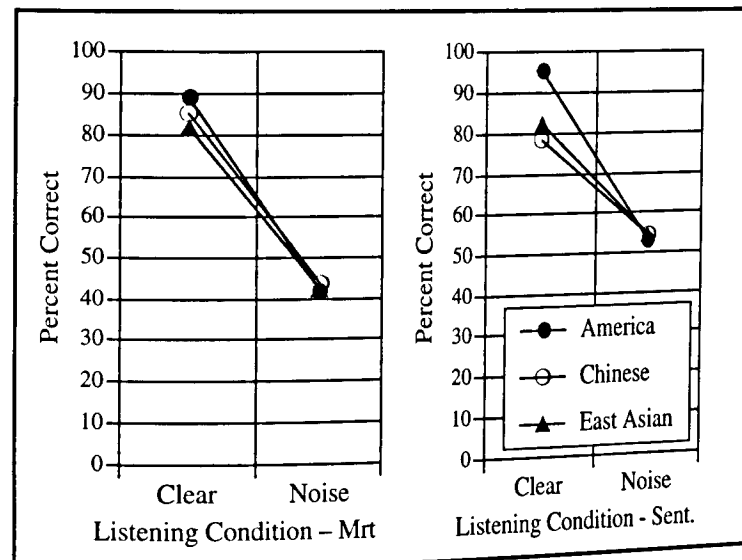


Figure 1.

tening in noise not only caused a drop in overall performance but also a reduction in the differences among the three groups. The interaction of language background by listening condition was significant ($F = 8.86, p < .01$).

In the MRT, differences among the

three groups were relatively small and decreased in noise. Differences among the groups were greater in the sentence test, and the performance of the Americans decreased more than that of the other two groups when listening in noise. Language background, therefore, favored the American listeners for all test materials. The Chinese listeners performed better than the other East Asians only on the MRT, though it is possible that knowledge of language and culture were sufficiently different between the two groups to account for the differences in performance on sentences. When listening to speech in noise, differences between the groups were much reduced. For all three listener groups, the MRT was more difficult than the sentence test.

greatest in responding to Talker 4 and small otherwise. Talker 3 was generally the least intelligible.

In responding to sentences, Americans are clearly superior to the other two groups. Differences between talkers were greater for the sentence test than in the MRT. Americans in particular found Talker 4 to be the most easy to understand. The language by talker interaction was significant ($F=2.88$, $p < .05$) as was the speaking condition by talker interaction ($F= 10.56$, $p < .01$). The three-way interaction was not significant.

We can conclude that talkers tend to vary in intelligibility somewhat, depending on the exact nature of an intelligibility test. However, a talker who is intelligible with one set of materials and in one speak-

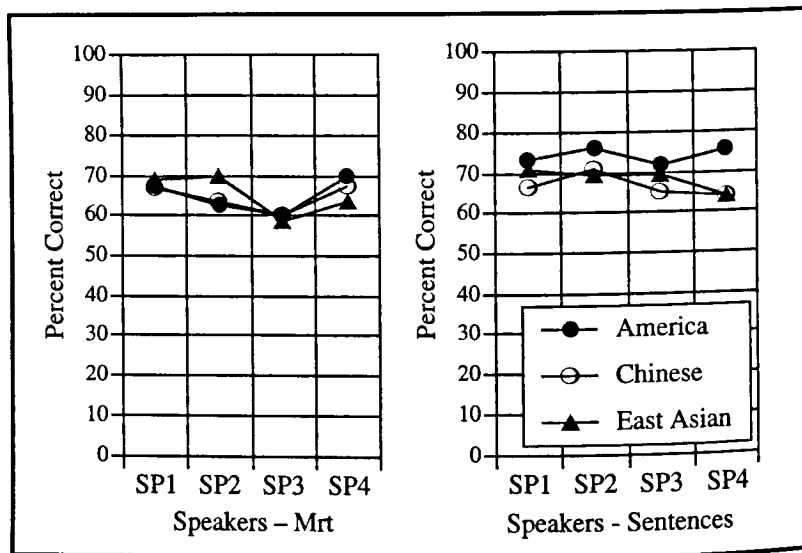


Figure 2.

Talkers

The percent correct responses to both the MRT and to the sentences for each talker are given in Fig. 2. In the MRT, Talkers 1 and 4 are somewhat easier to understand than Talkers 2 and 3. Differences between native language groups are

ing condition will remain relatively intelligible in other conditions.

Further, a talker who is relatively intelligible to one group of listeners will tend to be intelligible to other groups of listeners. These findings are in essential agreement with [2].

Ratings

Subjective ratings of intelligibility agreed with the test results. When ratings were correlated with intelligibility scores, the correlations tended to be high and significant. The exact values of the correlation coefficient were affected by the test itself, language background, and listening condition. For Americans, the correlations between ratings and test scores ranged between .52 to .92. For Chinese listeners, the range was .48 to .84. The ratings provided by the other East Asians were lower, ranging from .25 to .78.

The Americans tended to be most critical, judging the talkers relatively difficult to understand, an overall rating of 3.6. The East Asians provided an overall rating almost as unfavorable as the Americans, 3.5. The Chinese rated the talkers the highest, 3.1 overall.

DISCUSSION

Proficient listeners from different language backgrounds differ in their ability to understand accented speech. Americans, in spite of little familiarity with the target accent, scored better than the other two groups, particularly when responses to the test required knowledge of language and culture. Sharing language background, as the Chinese listeners did, was not invariably an advantage.

Differences among listener groups were not consistent across listening conditions. The superior performance of the Americans decreased substantially when the listening conditions deteriorated both in the MRT and in the sentence test.

Differences among talkers were not perfectly consistent across test materials and listening conditions. Americans, in particular, found some talkers much more intelligible than others. All three groups found talker 3 difficult to understand. Differences in intelligibility among talkers were relatively modest, though affected somewhat both by test and listening conditions.

Within language background groups, listener reactions to talkers and test conditions correlated quite well with their test perfor-

mance. That is, listeners could make relative judgments of intelligibility with high reliability. The three groups of listeners differed in their overall evaluation of the talkers. Even though the performance of the Americans was better than that of the other two groups, they were most critical. The Chinese listeners were least critical, even though their performance was not nearly as good as the Americans. The other East Asians were almost as critical of the talkers as the Americans.

The surprising finding in this study was the difficulty Americans experienced understanding non-native talkers in noisy listening conditions. Previous work has almost invariably found that non-native listeners experience much more difficulty than native listeners when presented with speech mixed with noise (see [3] and references cited there). In this previous work, talkers have always been native speakers of English.

Before the finding that native listeners have proportionately greater difficulty understanding non-native talkers in noisy conditions is accepted, this study must be replicated. It is possible that inadvertent differences in methodology, such as test item selection, test preparation, or test administration, are responsible for the decrement in the performance of Americans. To our knowledge, no directly comparable experiments are reported in the literature.

REFERENCES

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