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### The Effect of Age and Exposure in the Development of L2 Accent Perception

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# The Effect of Age and Exposure in the Development of L2 Accent Perception

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## Abstract

This study explored the effect of age and exposure on the perception of foreign accented speech. Students of different ages (nine years old and fifteen years old) listened to short sentences read by Cantonese speakers, answered them as either true or false, and rated them for ease of comprehension (comprehensibility) and degree of accentedness. A language background questionnaire was used to determine the extent of students' exposure to foreign accented speech. Overall, there were differences in actual ability to understand the utterances, with older listeners performing better than younger listeners, but no significant differences emerged in the comprehensibility and accentedness ratings. Exposure did not significantly affect either listeners' ability to understand or their perceptions of comprehensibility and accentedness. The implications of this study for research on the development of accent perception are discussed, along with suggestions for future research.

Scovel (1977) defined accent as “phonological cues, either segmental or suprasegmental, which identify the speaker as a non-native user of the language” (p. 38). He further pointed out that “the recognition of this phonological non-nativeness is usually immediate and based on a small speech corpus” (p. 38), which is supported by a number of studies (e.g., Flege, 1984; Major, 2007). Flege (1984) demonstrated that people can detect a foreign accent in as little as 0.03 seconds, while Major (2007) showed that people can recognize a foreign accent in an unfamiliar language. Furthermore, Munro, Derwing, and Burgess (2010) determined that listeners can detect an accent even in speech played backward.

Accent is just one dimension of pronunciation; both comprehensibility, or ease of understanding, and intelligibility, the extent that one actually understands an utterance, have also been studied. Most of these studies have used adults' perceptions of accent (e.g., Munro & Derwing, 1995a, 1995b; Derwing & Munro, 1997; Hahn, 2004); very few studies have examined

how children perceive accents and whether there is a developmental pattern in accent perception (e.g., Scovel, 1977).

The purpose of this study, then, was to compare two different age groups (9 years old and 15 years old) to determine what differences, if any, there were in their perceptions of comprehensibility and accentedness and how well they could understand accented speech. In the next section, I will review pronunciation research that focused on intelligibility, comprehensibility, and/or accentedness in both adult and child listeners and speakers. I will then explain the present experiment, including the stimuli, participants, and procedure, before presenting the results of the study. Finally, I will discuss the implications of this study for research on the development of accent perception in young learners and make suggestions for future research.

## **Background**

### *Intelligibility, Comprehensibility, and Accentedness*

The concept of intelligibility refers to how much a listener actually understands an utterance (Munro, Derwing, & Morton, 2006) and can be measured in several ways. Orthographic transcription, where listeners are asked to write what they heard, has commonly been used to measure intelligibility (e.g., Munro & Derwing, 1995a; Derwing & Munro, 1997). Other ways of measuring intelligibility include comprehension questions (e.g., Derwing, Rossiter, & Munro, 2002) and sentence verification or true/false questions (e.g., Munro, 1998; Munro & Derwing, 1995b). Some researchers have chosen to use transcription in conjunction with other tasks (e.g., Derwing, Rossiter, & Munro, 2002). Munro (1998) used both transcription and a sentence verification task to assess intelligibility and found similar results; he concluded that the

verification task, which is “generally faster and easier to administer” (p. 152), can be a useful method for assessing intelligibility.

Comprehensibility can be understood as a listener’s perceived difficulty in understanding an utterance (Munro, Derwing, & Morton, 2006) and is usually measured using rating scales (e.g., Derwing & Munro, 1997; Derwing, Munro, & Wiebe, 1998). It is possible for a speaker to be completely intelligible (i.e., a listener can transcribe the utterance with no mistakes) while being very difficult to understand.

Accentedness is defined as the extent to which the pronunciation of an utterance differs from the local or expected pattern (Munro, Derwing, & Morton, 2006). Like comprehensibility, it is usually measured with rating scales. Often, comprehensibility and accentedness are measured together (e.g., Munro & Derwing, 1995a, 1995b; Derwing & Munro, 1997; Munro, Derwing, & Morton, 2006). It is possible for a speaker to have a heavy accent and still be relatively easy to understand (Munro & Derwing, 1995a). Inter-rater reliability is generally high for judgments of comprehensibility and accentedness, which suggests that listeners perceive accented speech similarly (Munro & Derwing, 1995a; Derwing & Munro, 1997; Munro, Derwing, & Morton, 2006).

### *Factors that Affect Speakers’ Pronunciation*

Much of pronunciation research has focused on various factors that affect adult speakers’ pronunciation. There has been much debate surrounding the Critical Period Hypothesis (CPH) as it applies to the acquisition of nativelike pronunciation (e.g., Flege, 1987; Patkowski, 1990). The idea that “earlier is better” is prevalent in many studies that explore the effect of age on pronunciation (e.g., Flege & Fletcher, 1992; Flege, Munro, & MacKay, 1995a; Piske, MacKay, & Flege, 2001). However, Flege (1987) argues that while earlier acquisition often results in

greater ultimate attainment, this is not an indication of the existence of a critical period (CP). Other factors such as language use (e.g., Flege, Munro, & MacKay, 1995b), length of residence (e.g., Flege, Bohn, & Jang, 1999), quality of input (e.g., Flege & Liu, 2001), L1 background (e.g., Flege & Fletcher, 1992), and gender (e.g., Flege, Munro, & MacKay, 1995b) can affect second language (L2) learners' L2 productions.

Researchers have also explored the impact of segmental (individual sounds) and suprasegmental (prosodic) aspects of pronunciation on intelligibility. For example, Hahn (2004) determined that primary stress was important to overall intelligibility by testing students' understanding and ability to recall information in lectures that lacked sentence stress entirely or contained misplaced stress. An example of a segmental study is Munro and Derwing's (2006) study of functional load in pronunciation instruction, which showed that Catford's (1987) proposed hierarchy of sound contrasts appears to hold. More general aspects of pronunciation have also been investigated, including the effect of speech rate (Munro & Derwing, 2001), voice quality (Esling & Wong, 1983), and societal issues, such as accent discrimination (Munro, 2003).

#### *Factors that Affect Listeners' Perception of Accented Speech*

While much of the research in pronunciation focuses on the speaker, there are a number of studies that also explore the listener aspect. Markham and Hazan (2004) looked at the effect of both speaker and listener factors on intelligibility. They found that age was a significant factor for listeners: younger participants made more errors. Zielinski (2006) researched the effect of pronunciation errors on listeners' processing strategies and found that listeners tended to rely heavily on syllable stress patterns and individual sounds. She concluded that "reduced intelligibility was the result of the interaction between the listeners' processing strategies and the non-standard features, both suprasegmental and segmental, in the speech signal" (p. 40). In their

study of semantic context and listener experience, Kennedy and Trofimovich (2008) found that semantic context, or lack thereof, affected intelligibility and perceptions of comprehensibility and accentedness for L2 speech. They also found that listeners' experience with foreign accents helped them to better understand accented speech, but did not affect their comprehensibility or accentedness ratings (i.e., experienced and inexperienced listeners rated the utterances the same). The authors suggested that gaining experience with accented speech can aid listeners in better understanding it and that some training could be beneficial. Derwing, Rossiter, and Munro (2002) put this to the test when they evaluated the effect of accent training on native speaking social workers' ability and confidence to understand accented speech. They trained two different groups of social workers with either cross-cultural training only or a mixture of cross-cultural training and explicit linguistic instruction. A third group received no training at all. Pre- and post-tests revealed that, while the training had not actually improved listeners' abilities to understand accented speech, confidence and empathy had significantly improved for the groups that received training. The group that received both kinds of training reported the greatest increase in confidence, which suggests that there is some merit to training native speakers (NSs) to listen to accented speech.

Munro, Derwing, and Morton (2006) explored the non-native speaker (NNS) side by asking listeners from four different L1 backgrounds to judge L2 speech samples and found "striking similarities across listener groups in their comprehension and evaluation of nonnative utterances" (p. 125). Apart from the Japanese group, who understood the Japanese accented samples significantly better than the other groups, there did not appear to be any benefit to speaking the same L1 in the comprehension of accented speech. In fact, there was no evidence that being a L2 learner at all made understanding accents easier. Munro (1998) explored the

effect of noise on intelligibility and found that the intelligibility of NNS speech was lowered proportionately more than that of NS speech.

### *Development of Listeners' Perceptions of Accent*

There is little work on children's perceptions of accent or their ability to understand accented speech. Earlier studies include Scovel (1977; 1981, as cited in Flege et al., 1995b) who conducted research on children's perceptions of foreign accents. The study in his 1977 article "was designed to assess the ability of children to distinguish native from non-native English and to measure the age at which they reach the adult criterion level of recognition ability" (p. 40). Scovel played a brief passage recorded by NSs and NNSs to children aged 5-10 years old and to adults and asked them to decide whether the speaker was a native English speaker or not. Overall, he found that there was a developmental pattern for distinguishing non-native speech, where 5-year-old children identified NNSs correctly only 78% of the time and adult-like identification was reached by 9 years old (96% correct). While this study was illustrative of the differences between children and adults in the ability to identify NNS speech, it did not test the extent to which younger children perceived an accent, or if accented speech affected their understanding. Applying a sentence verification task, where listeners have to assess the truth value, or a transcription task (though not likely suitable for younger participants) can allow researchers to determine if age affects listeners' ability to understand accented utterances. Using scales for comprehensibility and accentedness, such as in Munro and Derwing (1995a), can help determine the extent to which listeners perceive ease of comprehension and degree of accent, to explore any perceptual differences based on age.

Markham and Hazan (2004) explored the effect of age on intelligibility by having children (aged 7-8 and 11-12 years old) and adults repeat words and nonwords after NNS

recordings (including both child and adult speakers). They found that the 7-8 year old listeners made slightly, but significantly, more errors than the 11-12 year olds, who were adult-like in their performance. They also explored familiarity with voices by looking at the effect of speakers' gender or age on intelligibility, under the assumption that children spend more time with women and children, and might therefore find those voices easier to understand. While female speakers were easier to understand for most listeners, there was no evidence that the age of the speaker positively affected intelligibility. This study did not explore child listeners' perceptions of accent, but demonstrated that younger children made more comprehension mistakes than older children when listening to accented speech, and that by the age of 11-12, children were adult-like in performance.

Nathan, Wells, and Donlan (1998) focused their research on regional accents, specifically the London and Glasgow dialects, to determine whether age made a difference on single word comprehension and if there were "age-related developmental changes in the way in which children process and interpret words spoken in an unfamiliar accent" (p. 350). While the experiment dealt with regional accents, the authors made connections to second language research, such as Flege's idea (1992, as cited in Nathan et al., 1998) of a "tolerance region" ... which allows the listener to detect divergences from phonetic norms as distortions or foreignness" (p. 345). They explained that it is the overlapping in tolerance regions of two different sounds that can lead to misunderstandings, specifically lexical misidentifications. The size of the lexicon, which would grow as the child does, can counteract these problems. Because adults have larger vocabularies and greater grammatical proficiency than children, they can more effectively use context to aid their comprehension of accented utterances that are difficult to understand. This leads into the developmental prediction proposed by Nathan et al. (1998) that

older children tend to make more lexical identification errors because there are more words in their vocabulary that can potentially be confused; younger children, on the other hand, more often fail to identify the word at all because they have smaller lexicons. The authors tested this prediction by asking 4-year old and 7-year-old listeners to first repeat a word (in answer to the question “what word do you think she is saying?”) and then define it to indicate that they had understood it. Overall, they found that four-year-old children made more errors, and that there was improvement in accurate lexical access for the accented speech between four and seven years of age. They found that as they had predicted, the difference between the younger and older children was not the number of misidentified words, but rather the number of lexical identifications that the younger listeners failed to make at all.

Another area of research involves younger listeners’ responses and attitudes towards accented speech. Sato (1998) investigated differences between how rural and urban high school and university NSs perceived and evaluated accented speech. She was also interested to see if age (i.e., high school versus university) played a role in people’s social evaluations of accent. Twelve speakers, from Cantonese, Canadian English, and Ukrainian L1 backgrounds, recorded short passages that were played to grade 11-12 students in a rural town and a city, as well as to university students in the same city. The listeners judged the NNS speech for comprehensibility, accentedness, and various personal traits, such as intelligence, reliability, attractiveness, kindness, work ethic, and wealth. The listeners were also asked to complete an extensive background questionnaire including questions about the languages they spoke, parents’ education level, travels, and other demographic information. Sato found that there were differences in how university and high school students judged personality traits in accented speech with the university students rating the NS similarly to the NNS; both sets of high school

students tended to favor the NS. She suggested that university students' "familiarity with cultural and linguistic diversity" (p. 93), age, education level, and experience with different cultures at university could be responsible for their more tolerant views of accent. While there were differences in perception between the two age groups, the actual difference in age was slight: the university students had a mean age of 22 years, while the high school students' average age was 17 years.

Another study (Butler, 2007) examined how Korean NNS English teachers' pronunciation affected their students' listening comprehension in Korean elementary schools. It also explored students' attitudes toward their NS and NNS teachers. A Korean-American recorded two texts: one with a Korean accent and one with an American English accent. One of these two were played to groups of grade six Korean students, who were asked to answer several comprehension questions. The students then listened to both texts and completed an attitudinal questionnaire. Finally, a background questionnaire was used to determine the extent of the students' experience with NSs of English. The attitudinal questionnaire probed students' perceptions of the speaker's ability to use English, including "'goodness' of pronunciation" (p. 742); English teaching strategies, including approach (accuracy vs. fluency) and enforcement of English use in the classroom; and general teaching strategies, including degree of strictness and empathy for students learning English. Students were also asked to identify which teacher, Korean or American, they would prefer to have. Butler found no significant evidence that the Korean-accented English affected students' listening comprehension, suggesting that there is little difference between having a NS or a NNS teacher. However, there were significant differences in students' attitudes towards their teachers, with most generally preferring a NS teacher. Overall, "the Korean elementary school children thought that the American-accented

English speaker...had better pronunciation, was more confident in her use of English, would focus more on fluency, and would use less Korean in the English class” (p. 745), despite the fact that their level of understanding was unaffected by the Korean accent.

The present study was designed to further explore differences between how children and young adolescents understand and perceive accented speech, and aimed to answer the following research questions:

1. Does age have a significant effect on how well one understands a foreign-accented utterance?
2. Does previous exposure to foreign-accented speech have a significant effect on how well one understands an utterance?
3. Are there significant differences in perceptions of comprehensibility and accentedness based on age or degree of exposure?

## **Method**

### *Stimuli*

Thirty-eight short sentences recorded by Cantonese speakers were randomly selected from a larger database. Each declarative sentence contained between four and nine commonly used words (mean length = 6.3 words) and could easily be judged as true or false (18 False, 20 True). Two false sentences from an original set of 40 were removed because they were evaluated as containing content that may have been unfamiliar to younger participants. One male and one female NS each recorded a sentence and these were added as a measure to determine whether the participants stayed on track while doing the task. Two randomizations of the 40 sentences were created and burned to a CD. Four different example sentences were included at the beginning to familiarize the participants with the task.

### *Participants*

In total, there were 104 listeners from grade four and grade 10. However, the data from 15 participants were removed (11 NNS and 4 NS) because it was clear that they were out of step on the task. The remaining 89 students (41 in grade four and 48 in grade ten) completed the task accordingly and were included in the analyses. The majority of the grade four students were nine years old (one student was 8 and one was 10) and most of the grade ten students were fifteen years old (four were 16 and two were 14). They were relatively balanced for gender (F = 48; M = 41). Because the students were under the age of 18, parental consent was obtained for their participation.

Just under half of the students had some kind of exposure to a language other than English outside of school ( $n = 38$ ), and 21 listeners had a first language other than English. Over half of the students were born in Canada ( $n = 66$ ); very few had ever spent an extended period of time living in a non-English speaking country. The participants came from a broad range of language backgrounds. Table 1 below indicates that there were 11 first languages, and exposure to one or more of 16 languages.

Table 1

*Number of Participants (out of 89) with Exposure to Languages other than English*

<b>Language</b>	<b>L1</b>	<b>Current Exposure</b>
Arabic	1	0
Cantonese	0	0
Cree	2	0
Dinka	1	1
Farsi	0	1
French	0	3
German	0	2
Italian	0	2
Japanese	0	1
Korean	2	2
Liberian	1	0
Mandarin	2	2
Patois	0	1
Patowa	1	1
Polish	0	2
Spanish	1	2
Tagalog	9	8
Ukrainian	0	1
Vietnamese	1	1

In some cases, listeners reported that they were born in Canada with English as their first language, but that their parents spoke another language at home. In others, students had a first language other than English, but no current exposure to it. Only one student reported having studied Cantonese and no one reported any exposure to Cantonese at home. From these self-

reports, it can be assumed that the participants had negligible familiarity with Cantonese-accented English.

### *Procedure*

I collected data in four schools: one grade four class with a high number of NNS students (11 out of 24), two grade four classes with a low number of NNS students (in total, 13 out of 52), one grade ten class with a high number of NNS students (8 out of about 18), and two grade ten classes with a low number of NS students (in total, 4 out of 48). The students first completed a language background questionnaire (LBQ) regarding gender, age, birthplace, first language, other languages studied in school, and other languages spoken at home. In one case, the students completed the LBQ with their teacher a few days before the listening experiment. The other classes completed the LBQ immediately prior to the listening experiment.

Once the LBQ was completed, the students were given clear instructions as to how to complete the listening part of the experiment. They were asked not to eat, drink, chew gum, or talk during the experiment. I explained that the task was not a test and they should not worry about “right” answers; I also emphasized the importance of their judgments. The students were discouraged from guessing and looking at each other’s booklets. If they could not confidently answer the sentence as true or false, they were told to circle “not sure” rather than guess the answer. Four example sentences were played to show students what “true” and “false” sentences were like, as well as to expose them to the full range of accentedness. The experiment started after the examples, and took between 45 and 90 minutes for the grade four classes and between 30 and 45 minutes for the grade ten classes to complete. After each sentence was played, I paused the CD, and listeners first judged the truth value of the sentence. They then judged comprehensibility on a 9-point scale (1 = very easy to understand; 9 = extremely difficult to

understand) and accentedness (1 = no accent; 9 = extremely strong accent). Once everyone was ready, I played the next sentence. Students were made aware that the CD would be paused and they would have adequate time to answer the questions. The grade four students were given a brief break just over halfway through; the grade ten students declined to take a break.

## **Results**

The data were checked to make sure that the participants correctly completed the task. Data were removed if a participant gave the native speakers scores higher than 3 or failed to use the entire scale. The two native speaker sentences were also removed from the collected data leaving 38 sentences for analysis in SPSS.

### *Intelligibility*

Each participant was given an intelligibility score, which was obtained by counting the number of correct answers (either True or False); “not sure” and unanswered questions were coded as incorrect. The participants were then divided into two groups, first based on grade and then based on self-reported exposure to accents. The total number of correct responses were then averaged for each group: grade four, grade ten, previous exposure to accents, and no previous exposure to accents. The mean intelligibility scores for age and exposure are shown below in Table 2. Overall, the grade ten students performed better than the grade four students on the true/false task. The difference between the two age groups was significant,  $t(87) = -3.658$ ,  $p < 0.01$ ,  $d = 0.78$ . Exposure did not significantly affect intelligibility,  $t(87) = 0.295$ ,  $p > 0.05$ .

Table 2

*Mean Intelligibility Scores for Groups Based on Age and Exposure to Foreign Accents*

	Age <sup>a</sup>	Exposure <sup>b</sup>
Group 1	23.78 (Range = 17-31)	25.48 (Range = 18-33)
Group 2	26.67 (Range = 18-34)	25.22 (Range = 17-34)

<sup>a</sup>Group 1 –

Grade 4 (n = 41); Group 2 – Grade 10 (n = 48)

<sup>b</sup>Group 1 – Exposure (n = 40); Group 2 – No exposure (n = 49)

These results suggest that there is a developmental pattern to understanding accented speech and that familiarity with foreign accents in general does not necessarily help to improve listeners' ability to understand accented speech. However, it is also possible that the experiment was difficult for the grade four students because they had to do three tasks for each sentence (answer true/false question and rate comprehensibility and accentedness on two scales). Scovel (1977) required his participants to only identify whether the speaker was native or non-native, and Nathan et al. (1998) had their participants repeat and define words (for the very young learners, pointing at a picture of the object was sufficient as a definition). Still, in this study, all the data had been checked, and those who had not understood the assignment were removed. The remaining students appeared to have completed the task correctly, and as will be discussed later, high inter-rater reliability was observed for the two groups. Because exposure did not have a substantial effect on intelligibility, the analyses for comprehensibility and accentedness were conducted for the age groups only.

### *Comprehensibility*

The comprehensibility ratings for each listener were averaged over the 38 NNS sentences, and the means for the grade four and grade ten students were compared using an independent samples *t* test. Table 3 shows the means for each group.

Table 3  
*Mean Comprehensibility Ratings for Groups Based on Age*

Group	Number of Students	<i>M</i> comprehensibility rating
Grade 4	41	4.51 (Range = 2.45-6.61)
Grade 10	48	4.45 (Range = 2.95-6.11)

Overall, there was no significant difference between comprehensibility ratings for the two groups,  $t(87) = .307, p > 0.05$ . This suggests that the two groups perceived the accented speech as easy or difficult to understand in much the same way, despite the fact the grade four students made more errors on the intelligibility task.

### *Accentedness*

The procedure for the accentedness ratings was the same as for comprehensibility, where ratings were averaged across the 38 sentences for each speaker and the difference between groups was tested using an independent samples *t* test. The mean accentedness ratings for the two age groups are shown below in Table 4. There was a slight, but significant, difference between how grade four and grade ten students rated the degree of accentedness, with the grade four students generally judging the utterances to be less accented,  $t(87) = -2.389, p < 0.05, d = 0.50$ . Overall, both groups rated accentedness more harshly than comprehensibility.

Table 4

*Mean Accentedness Ratings for Groups Based on Age*

Group	Number of Students	<i>M</i> accent rating
Grade 4	41	5.06 (Range = 2.89-7.71)
Grade 10	48	5.56 (Range = 3.92-7.63)

*Inter-rater reliability*

Inter-rater reliability was tested using Cronbach’s alpha and was found to be very high (Comprehensibility = .919; Accentedness = .938), indicating that there was a high level of agreement between the grade four and grade ten students’ judgments. There was no significant difference in comprehensibility ratings, and while the difference in accentedness ratings was significant, the effect size was very small, so it can be assumed that all the raters generally perceived comprehensibility and accentedness similarly.

**Discussion**

*Does Age Have a Significant Effect on How Well One Understands an Utterance?*

The age of a listener appeared to have a significant effect on intelligibility; the grade ten listeners correctly answered more of the true/false sentences than the grade four students did.

Considering that the content of the sentences was controlled to be age-appropriate for the younger listeners, it can be assumed that any difficulties in understanding the utterances arose from either aspects of the speech signal itself or something to do with the listener. In their study of children’s ability to understand dialectal accents, Nathan et al. (1998) suggested that lexical misidentification (as a result of overlapping tolerance regions for two different sounds, Flege

(1992), as cited by Nathan et al., 1998) could be responsible for comprehension errors. From this, they further predicted that older children, like adults, would make more misidentifications, where they chose the wrong word, and younger children were less likely to identify a word at all. I calculated the number of “not sure” answers for each participant and performed an independent measures *t* test to see whether there was any difference in the number of attempted questions between the grade four and grade ten students (i.e., did grade four students choose “not sure” more frequently because they had no idea what was being said?). The *t*-test confirmed that the grade four students had significantly more “not sure” responses than the grade ten students,  $t(87) = 2.2585, p < 0.05, d = 0.48$ . The fact that the grade four students were choosing “not sure” more frequently may indicate that they were in fact failing to identify words, as Nathan et al. suggested. If the grade ten students were misidentifying words, then it is logical that they had fewer “not sure” responses because they thought they had understood the utterance and were choosing either true or false accordingly. However, Nathan et al. noted that even by seven years old, in their data there were fewer failures to identify words. Considering that my youngest participants were approximately nine years old, it is possible that they were failing to identify words while also making misidentification errors, but this was not explicitly examined in this study. It would be interesting to see how nine-year-old (or older) children compare to seven-year-olds in a task similar to that of Nathan et al.

Nathan et al. (1998) observed that their seven-year-old listeners had higher intelligibility scores than the four-year-old listeners and concluded that “there were developmental differences in the extent of children’s difficulties with an unfamiliar accent” (p. 359). This was also true in the present study, where 15-year-old listeners performed better on the comprehension task than 9-year-old listeners. It would be interesting to compare these scores with those of adults to see at

what age comprehension becomes adult-like. Markham and Hazan (2004) found that 11-12 year old listeners did not differ from adult listeners' on an intelligibility task. However, *both* groups in the present study followed an adult pattern for their judgments of comprehensibility and accentedness, which will be discussed below.

*Does Previous Exposure to Foreign-accented Speech Have a Significant Effect on How Well One Understands an Utterance?*

Though the group that reported exposure to accents had a slightly higher intelligibility score than those who had reported no exposure, there was no significant difference in how either group understood accented speech. This may be because the self-reports of exposure to accents were unclear; it was difficult to determine the full extent of the participants' exposure. Kennedy and Trofimovich (2008) found that experienced listeners (ESL teachers) found accented speech more intelligible than inexperienced listeners who had reported no exposure to foreign accents. From this, they suggested that "it is important to expose inexperienced listeners to L2 speech produced by multiple speakers of multiple language backgrounds" (p. 480). It is possible that more rigorous control of experience with accents could shed more light on this issue. For instance, one could replicate this study with students in an urban centre and in a rural town, as Sato (1998) did. Although she examined the effect of experience on attitudes toward accents, one could just as easily explore intelligibility in the same way.

Exposure to specific accents was not tested in this study: all of the stimuli sentences were recorded by Cantonese speakers and no listeners reported any exposure to Cantonese in the home. It may be that external exposure to Cantonese may have helped, but not necessarily. Munro, Derwing, and Morton (2006) found that, apart from Japanese speakers, a shared L1 between speakers and listeners did not make a difference to intelligibility scores.

*Are There Significant Differences in Perceptions of Comprehensibility and Accentedness Based on Age or Degree of Exposure?*

Comprehensibility ratings did not differ significantly between the two age groups, indicating that the listeners perceived ease of comprehension similarly, despite differences in actual intelligibility. Kennedy and Trofimovich (2008) found similar results in that experienced listeners had understood more of the accented speech than inexperienced listeners, yet both groups judged comprehensibility and accentedness the same. The authors proposed that this was for one of two possible reasons: that the more experienced listeners understated their ability to understand, or, more likely, that the inexperienced listeners did not realize the extent of their misunderstanding and overstated their ease of comprehension. It is possible that members of the younger group in the current study did not realize that they were not understanding fully and thought they were answering the questions correctly, which may have led them to overestimate how easy the sentences were to understand.

The younger group perceived slightly less accentedness than the older group. The difference was statistically significant, with a medium effect size ( $d = 0.50$ ). Scovel (1977) found that there were differences between five-year-olds' and ten-year-olds' recognition of accented speech, such that by the age of nine or ten, listeners had reached adult-like levels of accent recognition. On the whole, fewer younger listeners noticed an accent in Scovel's study, which, in the present study, may be reflected in the finding that the nine-year olds judged the utterances to be slightly less accented than the older students did.

When the comprehensibility and accentedness ratings were considered together, both groups demonstrated an adult-like pattern. Like adults, the listeners rated the speakers more harshly for accent than for comprehensibility; that is, the speakers were perceived to be moderately easy to understand, despite relatively higher accent ratings (see Munro & Derwing,

1995a; Derwing & Munro, 1997). However, there were three listeners who consistently rated speakers as being “extremely difficult to understand” with “no accent”; these participants’ data were removed on the assumption that they had confused the two scales. Other than those three, the rest of the listeners were attuned to the fact that speakers can have an accent that does not compromise comprehensibility.

### *Limitations and Implications for Future Research*

There were several limitations to this study, which could be addressed with further research. First, only one accent, Cantonese, was used. It would be interesting to see how listeners of different ages reacted to a variety of different accents. Also, the effect of familiarity with different accents could be further examined with different age groups.

Second, the students’ attitudes towards accents were not studied in this experiment. Sato’s (1998) study examined attitudinal differences between high school students ( $M = 17y$ ) and university students ( $M = 22y$ ), where the difference between their ages was small. In the current study, there were a few individuals who clearly laughed at the accented speech on the CD. It would have been intriguing to see how these individuals might have responded in a questionnaire such as Sato’s (1998). Also, Derwing, Rossiter, and Munro (2002) showed that cross-cultural training was helpful in raising listeners’ empathy towards NNSs. It might be the case that similar training could be introduced to younger students, perhaps as part of a social studies unit, to increase their empathy as they grow older. This is particularly important since Canada is increasingly becoming more multicultural, and therefore more multilingual. A study such as Butler’s (2007) on students’ attitudes towards their L2 English teacher in a foreign country could have implications for foreign teachers in Canada. One student commented positively about a foreign teacher she had had the previous year, though the student reported having had difficulty

understanding the teacher at first. On the other hand, students may react negatively to having a foreign teacher. Munro (2003) cites the case of a Polish substitute teacher who was no longer called upon by a school board after an inspector put a note in his file about his accent indicating that the teacher did not speak English, despite the fact that the instructor had been teaching successfully in Canada for several years. An attitudinal questionnaire such as Butler's (2007) that asks students to judge their foreign teachers' proficiency, teaching style, and ability to teach could be very enlightening.

Third, the stimuli involved short sentences and were played under ideal conditions. While the students only heard each sentence once, the CD was paused to allow time for them to think about it. It is not clear how they would perform with longer speech samples, such as conversations, and under conditions where there is little time to think.

Finally, as has been mentioned before, there are limitations to self-reports of exposure to accented speech. Collection of data in different locations, where exposure to accents is relatively controlled by the context (such as rural and urban towns/cities), could help shed more light on the effect of exposure in children's abilities to understand accented speech.

## **Conclusion**

From the results of this study, it is evident that children perceive accented speech slightly differently than adolescents. While the present study adds to previous work on this topic, the work is preliminary, and there are a number of ways in which it can be extended to other areas, such as the exploration of attitudes and effects of cross-cultural training.

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