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Mismatch between Aspects of Hearing Impairment and Hearing Disability/Handicap in Adult/Elderly Cantonese Speakers: Some Hypotheses Concerning Cultural and Linguistic Influences

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Abstract

This paper addresses the observation that some Cantonese-speaking adults do not perceive a hearing problem even when hearing screening identifies hearing loss. A sample of 49 Cantonese speakers was surveyed about their self-perceptions of hearing prior to a 25 dB HTL pure-tone screening test. All 49 persons failed the screening test, yet 34 (69.4%) reported that they had no problems hearing during conversations. Persons who admitted hearing difficulties tended to have mean hearing levels in excess of 45 dB HTL. A number of hypotheses concerning cultural and linguistic influences are proposed as explanations for the apparent lack of significance of auditory sensitivity loss for some Cantonese speakers. Ways in which these hypotheses might be tested are suggested.

Key Words: Cantonese speakers, cultural considerations, hearing screening

Abbreviations: ANOVA = analysis of variance, ASHA = American Speech-Language Hearing Association, dB = decibel, HTL = hearing threshold level, Hz = Hertz, LFR = level of first response

Hearing screening programs have two aims: (1) to identify persons who have hearing loss likely to interfere with everyday communication, and (2) to identify persons who may require medical assessment and treatment for aural pathology (ASHA, 1990). This paper discusses the performance of hearing screening programs with regard to the first of these aims, when the persons screened are Cantonese speakers. Of particular interest are those cases in which there is a lack of agreement between an individual client's pure-tone screening test results and his/her own perception of the ability to hear and communicate. These cases are important to understand if informational counselling, postscreening evaluation, and use of resources are to be effective.

In this paper, we report a preliminary empirical study of 49 adult/elderly Cantonese speakers.

METHOD

Forty-nine adults attending a community center hearing screening in February 1995 comprised the subjects for this preliminary empirical study. Their mean age was 66.1 years (range: 49–83 years, SD: 8.45 years). Twenty-two of these individuals had experienced a previous hearing test; 21 had not. The ambient noise at the screening venue permitted the perception of 15 dB HTL tones at all test frequencies. When there was no response to the screening tone(s) of 25 dB HTL, the presentation level was raised until a level of first response (LFR) was obtained. LFR was defined as the level in dB HTL at which the client first indicated hearing the tone.

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The LFR was obtained to indicate the likely region in which auditory threshold lay, and served the purpose of informing referral decisions in some cases.

Prior to undergoing the screening test, subjects were asked four questions relating to hearing problems. These questions dealt with (1) overall self-perception of hearing (a 4-point rating scale); (2) degree of difficulty hearing (a 4-point rating scale); (3) frequency of difficulty hearing (a 5-point rating scale); and (4) hearing in a range of specific situations, such as conversation with family and watching television (a yes/no nine-item checklist). Completion of these simple questions, and the subsequent hearing screening tests, was carried out by students from the Department of Speech and Hearing Sciences at the University of Hong Kong under the supervision of the second author.

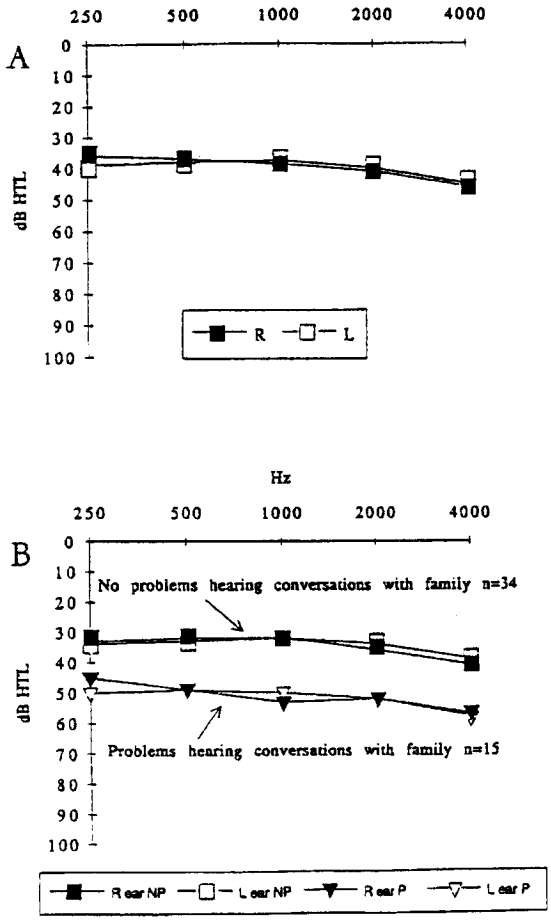

Figure 1 Mean levels of first response (LFRs) in 49 Cantonese speakers. Graph A shows LFRs for the entire group and graph B shows LFRs according to self-reported problems. NP = no problems hearing, P = problems hearing.

RESULTS

Screening Test Results

All 49 individuals failed hearing screening at 25 dB HTL for the frequencies 250, 500, 1000, 2000, and 4000 Hz. Figure 1 shows the LFRs in these 49 Cantonese speakers, both for the whole sample (upper audiogram) and for the sample divided by reports about conversational difficulties (lower audiogram). Variation in levels tended to increase with frequency. Standard deviations ranged from 13.87 dB (250 Hz right ear) to 22.50 dB (4000 Hz left ear) for the whole sample audiogram. It can be seen that the lower audiogram in Figure 1 suggests a 40 to 45 dB HTL divide between those Cantonese speakers who report hearing problems and those who report no hearing problems.

Reported Hearing Ability

Table 1 shows the distribution of responses to the three rating scales that sought subjects' self-assessment of hearing. Although the majority of the sample rated their hearing overall as only "fair," the ratings for degree and frequency of hearing problems indicated relatively little impact of hearing loss on life functions.

Table 2 summarizes responses to the question about specific listening situations. Roughly half of the sample reported difficulties hearing when watching television and slightly less than half had difficulties hearing when eating out. For all other listening situations, and notably for conversation with both family and strangers, the majority of the sample reported that they did not have problems hearing. These included individuals whose level of first responses on average exceeded 50 dB HTL.

The degree of difficulty in hearing was reportedly less for persons who had had a previous hearing test than for those who had not (chi square = 12.6, p = .0069), as was the frequency of hearing difficulty (chi square = 11.047, p = .026). Persons who reported poorer overall rating of hearing were more likely to have problems hearing conversations with strangers (chi square = 8.01, p = .046). Frequency of difficulty ratings was significantly associated with reports of problems hearing in all of the situations listed in question 4 (TV: chi square = 26.12, p = .001; telephone with family and/or strangers: chi square = 19.00, p = .0148; conversations with family and/or strangers: chi square = 15.633, p = .0036; shopping: chi square = 16.09, p = .044;

Table 1 Reported Self-Perception of Hearing in 49 Cantonese-speaking Adults Who Failed Hearing Screening

		1	2	3	4	Mean Ratings
Hearing rating		Excellent	Good	Fair	Poor	2.92
		4 (8%)	8 (16%)	25 (51%)	12 (25%)	(SD: 0.86)
		1	2	3	4	
Degree of hearing difficulty		None	Slight	Quite a lot	A great deal	1.96
		17 (35%)	21 (43%)	7 (14%)	4 (8%)	(SD: 0.91)
	1	2	3	4	5	
Frequency of hearing difficulty	Never	Occasionally	Fairly often	Most of the time	All of the time	2.47
	13 (27%)	16 (33%)	10 (20%)	4 (8%)	6 (12%)	(SD: 1.31)

eating out: chi square = 16.08, p = .0029; and hearing signals: chi square = 15.63, p = .0036). Degree of difficulty ratings were significantly associated with hearing TV (chi square = 14.74, p = .0224), conversations with family (chi square = 14.08, p = .0028) and with strangers (chi square = 8.48, p = .0371), and eating out (chi square = 11.46, p = .0095), but not with other items on question 4.

An analysis of variance (ANOVA) with repeated measures was performed using LFRs as the dependent variable, with the independent variables being report of hearing conversations with family (yes vs no problems), and audiometric frequency (250, 500, 1000, 2000, and 4000 Hz). There were significant main effects of report of hearing conversations (F = 17.95, p = .0001) and of frequency (F = 2.73, p = .0461) on LFRs, with higher LFRs (i.e., poorer hearing sensitivity) in higher frequencies. There was no significant interaction between report of hearing conversation and audiometric frequency (F = 1.85, p = .1413). An additional ANOVA with report of hearing conversations with strangers as an independent variable again showed a main effect for report of hearing conversations (F = 17.77, p = .0001) and a (stronger) main effect for frequency (F = 8.65, p = .0001), and no interaction effect (F = 1.09, p = .3624).

DISCUSSION

The findings of this preliminary study generally support the clinical observation that many elderly Cantonese-speaking clients appear unconcerned about audiometrically identified hearing loss. The 49 Cantonese-speaking individuals in this study all failed hearing screening at 25 dB HTL, and yet 12 (24.5%) of these persons rated their hearing as "excellent" or "good," 38 (77.5%) reported either slight or no hearing difficulties, 29 (59.2%) reported having hearing difficulties "never" or "occasionally," and 34 (69.4%) reported that they had no problems having conversations. Those persons who reported hearing difficulties in conversations

Table 2 Reported Situation-specific Hearing Problems in the 49 Preliminary Study Cantonese Speakers Who Failed Hearing Screening

	Problems			
Situation	*Yes (%)*	*No (%)*	*N/A (%)*	*Total Number of Responses*
TV	28 (57.1)	20 (40.8)	1 (2.1)	49
Telephone with familiar persons	19 (38.7)	29 (59.2)	1 (2.1)	49
Telephone with strangers	19 (38.7)	29 (59.2)	1 (2.1)	49
Conversation with family	15 (30.6)	34 (69.4)	0	49
Conversation with strangers	15 (30.6)	34 (69.4)	0	49
Shopping	16 (32.7)	30 (61.2)	2 (4.1)	48
Eating out	21 (42.9)	27 (55.1)	0	48
Hearing signals (e.g., phone, doorbell)	14 (28.6)	33 (67.4)	0	47
Other	4 (8)	4 (8)	0	8

could clearly be differentiated audiometrically from those persons who reported no hearing difficulties in conversations. Persons who admitted hearing difficulties tended to have mean LFRs in excess of 45 dB HTL. If the self-reports of these individuals are accepted as valid then their results support the suggestion that, while the 25 dB HTL screening level may accurately detect sensitivity loss, it may, in a significant proportion of Cantonese-speaking individuals, be too sensitive in regard to screening for self-perceived communication problems associated with that loss.

Linguistic and Cultural Hypotheses

Informal interviews with four Hong Kong based clinicians were conducted in February 1995. These interviews resulted in a list of three linguistic/environmental and six cultural features of communication in Hong Kong, each of which may in part explain the apparent lack of importance of hearing sensitivity loss to some Cantonese adults as documented in this paper.

Principal among the linguistic/environmental features identified is the fact that Cantonese speakers use lexical tone to signal meaning (Fok, 1974). These tones have fundamental frequencies below 400 Hz and pitch variation. That is, fundamental frequency variations are used to distinguish between words with identical phonemes. This situation is thought to explain, in part, why many deaf children who attend schools in mainland China appear able to develop spoken language even when functional personal hearing aids are not always available (Clezy, 1993).

The remaining two linguistic/environmental features of communication identified were that (a) relatively loud speech is accepted as normal among many Cantonese speakers, and (b) environmental noise in cities such as Hong Kong may result in louder speech in a range of situations and habituation to environmental noise.

The cultural features of communication identified were (a) older persons with hearing loss may communicate largely with familiar conversational partners around a familiar and restricted range of topics; (b) reduced hearing sensitivity may be seen by older persons as being part of their elderly character, rather than a problem; (c) elderly persons with hearing loss may feel able to pass the responsibility for successful conversation to communication partners; (d) many Chinese persons with hearing loss, especially those with little education, may hold concepts of health and health care in which hearing loss and assessment of hearing are irrelevant unless accompanied by other otologic symptoms and/or unless their employment is threatened; and (e) many older Chinese persons in Hong Kong have very limited disposable income. This, combined with local health care concepts, means that they are unlikely to give priority to spending money on hearing care, and aspects of Chinese culture may make it difficult to admit hearing difficulties.

Underlying these cultural features of communication is the notion that communication behavior is different when one member of the communication dyad is elderly. Elderly persons (who are likely to have hearing loss) usually expect and are accorded respect. Showing respect includes altering one's communication behavior to ensure the elderly person's understanding, and allowing the elderly person to occupy much of the conversational space if he/she so wishes. These behaviors will obviously reduce the significance of any peripheral hearing loss, as long as that loss is not sufficient to completely prevent perception of normal to loud speech.

Another important aspect of the Hong Kong situation is that hearing health care is not well understood by many persons. There are excellent audiologic and medical facilities available, although these are limited in number. However, many Hong Kong residents seek health care only when there are obvious otologic symptoms, and even then may first use traditional Chinese medicine. Hearing aids may be purchased in department stores at the same counter as Walkman radios (although there are excellent hearing aid dispensing services also available), and are seen by many persons as electrical devices rather than as communication or medical aids. Whether treatment for hearing loss is sought may depend on whether or not it is seen as a medical problem. In this and other ways, the understanding of what is available to assist persons with hearing loss is not well developed in Hong Kong.

In summary, the observations reported here lead to the hypotheses that (1) the particular qualities of the Cantonese language (which include lexical meaning conveyed by pitch variations, monosyllabic structure with final glottal stops, and no high-frequency grammatical morphemes) may be a significant advantage to persons with hearing sensitivity loss, and (2) that the culture and environment in Hong Kong further acts, in a significant number of cases, to

reduce the likelihood that individuals with hearing loss will seek help before their hearing loss effectively prevents understanding normal speech in most situations.

Possible future research directions include (a) studies of Cantonese speakers with normal hearing to determine what level of auditory sensitivity loss is tolerated before conversational speech perception is compromised; (b) studies to test the relative importance of high- and low-frequency information in Cantonese as opposed to English; (c) surveys of the conversational habits of Cantonese speakers to determine the degree to which behavior is modified to facilitate communication when one or more of the conversational partners has a hearing loss; and (d) studies of the attitudes of Cantonese speakers to acknowledging hearing difficulties. In the meantime, it is important not to assume that screening test results can be used to support informational counselling and referral for Cantonese-speaking clients in the same way as may apply for speakers of English.

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