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<th><strong>Title</strong></th>
<th>Teachers' attitudes towards children with voice problems</th>
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<td><strong>Author(s)</strong></td>
<td>Yu, Hiu-yin, Camille; 余曉燕</td>
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Teachers’ attitudes towards children with voice problems

Yu Hiu Yin Camille

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(Speech and Hearing Sciences), The University of Hong Kong, June 30, 2009
ABSTRACT

The present study investigated the teachers’ attitudes towards children with voice disorders. Three groups of listeners participated in this study: 15 primary school teachers, 15 speech therapy students, and 15 general university students. They were required to make attitude judgments for 12 children voices (6 with normal voice; 2 with mild voice disorder; 2 with moderate voice disorder; and 2 with severe voice disorder) on semantic differential scale with 22 adjective pairs about personality, social characteristics, and physical appearance. 10-cm long visual analog scale was used in measuring the attitude ratings. The result revealed that teachers, as the other two groups of listeners, reported a significantly more negative attitude towards children with voice problems. The result aroused the awareness on the adverse effect from the teachers’ negative attitudes on academic, social, and emotional development of school age children with voice disorders.

Keywords: attitudes, negative stereotype, teachers, children with dysphonia, nonspeech characteristics
INTRODUCTION

Voice problems in children are common. High prevalence figures of voice disorders have been reported in the pediatric population - with a rate of at least 6% (McNamara & Perry, 1994) to 17% (Akif Kilic, Okur, Yildirim, & Guzelsoy, 2004). Recently, there has been an increasing attention paid on children with voice problems. Previous studies revealed that compared to vocally healthy children, children with voice problems were perceived more negatively on their personality and physical appearance by their peers (Lass, Ruscello, Stout & Hoffmann, 1991), adolescent (Lass, Ruscello, Bradshaw & Blankenship, 1991) and university students (Ruscello, Lass & Podbesek, 1988). For example, children with voice problems were always defined negatively by their listeners as more “rigid”, “dishonest”, and “passive”.

Ruscello and colleagues in 1988 investigated the attitudes from 25 university students (aged from 19 to 26) towards children with and without voice disorders. The listeners were required to listen to 16 voices from children with and without voice problems (aged from 7 to 11). They then made judgment for each voice on 24 adjective pairs showing the semantic categories of evaluation, potency, and activity on a 7-point semantic differential scale. The authors found that children with voice disorders were perceived significantly more negative for all but three of the adjective pairs namely “rash-cautious”, “loud-quiet”, and “excitable-clam” than their normal peers. For “rash-cautious” and “excitable-clam”, there were no significant differences between the two groups of children. In the adjective pair of “loud-quiet”, the children with voice disorders were perceived significantly more positive than their normal peers. From the study, the voice
problem in children generalized its adverse effect to the perception of nonspeech characteristics of those children from the university students.

Lass et al. (1991a) studied adolescents’ perceptions of normal and voice-disordered children. They invited 19 adolescents from a middle school as the. The speakers were 16 children aged from 7 to 11 with healthy and disordered voice. Listeners were required to rate their attitudes of the voice samples using 22 adjective pairs on semantic differential scale which were related to the personality and physical appearance. Their study also used 7-point equal-appearing interval scale for judgment. The statistical results indicated that children with voice disorders were perceived as significantly more negative in 8 of the 22 adjective pairs such as “dirty-clean” and “foolish-wise”. They were perceived as statistically more positive only in one of the pairs “unlovable-lovable”. Their study suggested that adolescents in society perceived children with voice problems as more negative in their personality and physical appearance.

In the same year, Lass et al. (1991b) studied the attitudes from age peers towards children with and without voice disorders. Twenty students (aged from 9 to 11) from elementary school, who did not know the speakers, were invited to make the judgment on 16 children speakers (aged 7 to 11) with normal and disordered voice. The same 22 adjective pairs as those used in Lass et al. (1991a) were used for measuring the perception on personality and physical appearance of the speakers. Their result revealed that children with voice disorders were perceived more negative than those with normal voice in all the 22 adjective pairs. Moreover, statistically significant differences were found in 12 of these 22 pairs. Children with voice
disorders were defined with a negative stereotype by their age peers.

The above mentioned studies revealed that in general, children with voice problems were perceived more negative than their peers without voice problems in three groups of listeners including university students, adolescents, and age peers.

Besides investigating attitudes from different age groups, it is worth to investigate the attitudes from listeners who have close relationship or frequent daily interaction with the children with voice problems. It is because this group of listener would play an important role on children development. One of the examples is primary school teachers. Primary school teachers play an important role on the social, attitude, emotional and academic development of children.

From Hamre and Pianta (2001), teachers would “regulate the children’s activity level, communication, and contact with peers” (p.626). Teachers contributed a lot on facilitating or inhibiting a particular behavior among the students. From Hughes, Cavell, and Willson (2001), students’ attitude would be affected by the teachers’ attitude. In other words, how a teacher’s attitude towards a student was would affect the perception of the other classmates towards that student. Their finding was that the students who could not gain acceptance from peers were those who were not supported or welcomed by the teachers. Therefore, teachers play an important role on the attitude development and thus social interaction among the students.

Children emotional development would be another aspect affected by teachers’ attitudes. In a recent study by Connor, Cohen, Theis, Thibeault, Heatley and Bless (2008), they investigated the quality of life of the children with voice disorders. These children reported that
they felt frustrated and embarrassed when teachers who did not understand the children’s voice condition thought that they “had not tried their best” in lesson. From these children’s perception and self report, they thought that their teachers perceived them as not fully participating in the class. As a consequence, these children could not get satisfaction from school. Embarrassment, depression, anger and reduction in self-esteem were reported by these children. Therefore, it showed that the children cared so much on their teachers’ attitudes towards them. Teachers’ attitudes would take part in determining whether the children could develop their sense of competence and self-esteem positively which were important for their future development in adolescence and adulthood.

Because of the emotional burdens from teachers’ and peers’ attitudes, the children in Connor et al.’s study (2008) prevented from or were excluded from participating social and classroom activities. Their academic participation in the classroom were adversely affected which may therefore affected their overall academic performance.

Despite the important effect from teachers’ attitudes on children development, there have been no integrated studies on investigating the teachers’ attitudes towards children with voice problems. Moreover, this study would be the first study to focus on the attitudes from Chinese population. Cultural and linguistic difference may have an effect on people’s attitudes towards children with voice problems, when compared to the existing studies from the foreign countries. For example, the study from Altenberg and Ferrand (2006) revealed that there was difference between two lingual groups: Cantonese-English bilinguals and English monolinguals
on their perception of individuals with voice disorders.

In this study, we would thus compare the attitudes from three groups of listeners on children with voice disorders: (1) primary school teachers, (2) speech therapy students, and (3) general university students. Primary school teachers were chosen as they played an important role and had great effect on the academic, social, and emotional development of school-aged children. Speech therapy students were also investigated as we could find if this natural group of listeners, who were well equipped with voice knowledge, would have a different attitude towards children with dysphonia. General university students would be included as control in this study.

METHOD

Speakers

Twelve children (six with normal voices and six with chronic voice problems) from local primary schools in Hong Kong were recruited as speakers. Their ages ranged from 7.5 to 11 years old, with mean age of 9.37 years (SD=1.49). The parents of children with voice problems or the children themselves were interviewed to ensure that the voice problems existed over four weeks. The control group comprised of six children with healthy voices was intended to match the dysphonic speakers with their gender and age (within 1 year) individually. All the children participants were native Cantonese speakers without any history of hearing impairment and communication disorders such as articulatory, reading, and language disorders.
This criterion was set to rule out any characteristic features (e.g., speech errors, fluency problem) that might also influence the perception from listeners.

Preparing voice samples

The recording sessions were carried out in a local primary school in Hong Kong. The background noise of the recording room was about 46-49 dB-A, measured by sound level meter (TES-1350A). During voice recording, the children were required to sit upright. The voices were captured by using a headset microphone (AKG C 420) and through an external sound card (M-AUDIO). The microphone was kept 10 cm apart from the left mouth corner and with a depression angle of 45°. The waveforms of the samples were then treated by software Adobe Audition 3.0 to standardized amplitude. The onset and the offset of each sample were also standardized to be one second. It was to eliminate any other speech characteristics which would affect the perceptual ratings from listeners. The 12 voice samples were then duplicated to become 24 samples. The 24 voice samples were randomized and no consecutive samples were the same. The final version of the edited voice samples was saved as “.WAV” files on computer for presentation to listeners.

Listener

There were totally 45 listeners participated in this study. They came from three different groups: 15 primary school teachers (3 males and 12 females; mean age=25 years, SD=3.04,
range =21 to 30 years); 15 speech therapy students (6 males and 9 females; mean age=21.9 years, SD=1.16, range=20 to 24 years); and 15 general university students (8 males and 7 females; mean age=21.9 years, SD=1.92, range =18 to 25 years). All the participants were required to fill in a questionnaire on their voice care knowledge, their experiences contacting with voice-disordered people and their histories of having voice disorders (Appendix A). All of the listeners passed a hearing screening at 25-dB HL bilaterally at 500, 1000, 2000 and 4000 Hz. In addition, all of them were native Cantonese speakers.

Materials and Attitude Measurement

Voice samples. All of the children speakers were given the Cantonese passage “North Wind and the Sun” to read. The passage had 132 characters which were divided into four paragraphs. Passage was chosen as the stimulus in this study as it was more representative to the daily continuous speech (Yiu, Worrall, Longland & Mitchell, 2000). Besides, speech rate of each child speaker was also controlled, since the speech rate had been found to affect the listeners’ perceptions on speakers’ personality (Lalh & Putnam Rochet, 2000). The speech rates of all samples ranged from 145.25 to 213.95 words per minute (wpm) (mean=173.75 wpm, SD=23.66). The first paragraph was finally edited out and used as voice samples, as it was found that most of the children could read this paragraph with the least errors.

Three experienced speech therapists were invited to confirm the presence and the degree of severity of the voice problems in all these children. At least two of the experienced
speech therapists agreed on the severity ratings. For the voice samples not having the same severity ratings, his/her ratings must be within one point on the 4-point scale when compared to the ratings from the other two judges. Six of the children were confirmed to have healthy voice (mean age=9.33 years, SD=1.63, range=8 to 11 years); and the other six of them were confirmed to have different severity of voice problems (mean age=9.42 years, SD=1.50, range=7.5 to 11 years): two were mild, two were moderate, and two were severe. The judgment result was shown in Table 1.

**Table 1.** The judgments on voice problem severity from three speech therapists on all the voice samples.

<table>
<thead>
<tr>
<th>Voice samples number</th>
<th>Severity ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Speech therapist 1</td>
</tr>
<tr>
<td>1 *</td>
<td>mild</td>
</tr>
<tr>
<td>2</td>
<td>mild</td>
</tr>
<tr>
<td>3 *</td>
<td>moderate</td>
</tr>
<tr>
<td>4 *</td>
<td>moderate</td>
</tr>
<tr>
<td>5</td>
<td>severe</td>
</tr>
<tr>
<td>6 *</td>
<td>severe</td>
</tr>
<tr>
<td>7</td>
<td>normal</td>
</tr>
<tr>
<td>8 *</td>
<td>normal</td>
</tr>
<tr>
<td>9</td>
<td>normal</td>
</tr>
<tr>
<td>10 *</td>
<td>normal</td>
</tr>
<tr>
<td>11</td>
<td>normal</td>
</tr>
<tr>
<td>12 *</td>
<td>normal</td>
</tr>
</tbody>
</table>

* The severity was agreed by all three speech therapists

**Questionnaires.** The questionnaire collected information about the basic background
information such as the ages, experience of contacting people with voice problems and any history of voice problems and their voice knowledge (Appendix A). The voice knowledge part included asking about the phonation, symptoms of having voice problems, the causes and management of voice problems. The voice information was all extracted from a voice therapy instructional manual by Yiu and Ma (2001).

Before the questionnaire could be used in the study, a pilot study was carried out to modify and verify the question forms and words used. A group of university students who did not participate in the main study were invited to try to fill in the questionnaire and asked if the questions contained any ambiguities. None of them reported any ambiguities with the questionnaire format and wording.

**Scale for attitude measurement.** The attitudes from the listeners were assessed by using semantic differential scale with 22 bipolar adjective pairs (Appendix B). These 22 items were adjectives on personality traits, social characteristics and physical appearance, which were adapted from previous studies (Altenberg & Ferrand, 2006; Lallh & Putnam Rochet, 2000; Lass et al, 1991a; Lass et al, 1991b; Ruscello et al, 1988). Since there were linguistic differences, meanings of some adjective pairs were similar and indistinguishable in Chinese. For example, intelligent-unintelligent and wise-foolish carried similar meaning in Chinese. Therefore, only one pair of them was included. All these adjective pairs were all in English version in previous studies, thus they were translated into Chinese by a student studying translation at the university who did not participate in the main study. Another student who also
studied translation was invited to back translate the adjectives back into English. This procedure was to increase and confirm the accuracy of the translations. Finalized version was further confirmed with a focus group of 10 speech therapy students to ensure that the adjectives used were well-understood.

Listeners were required to rate these adjective pairs on a 10-cm long visual analogue scale (VAS). VAS was chosen as it was more sensitive to change when compared with other forms of scaling such as equal appearing interval scale (Ramig, Mead Bonitati, Lemke, & Horii, 1994). The positive members of each pair of adjectives were randomly assigned to the left or right end of the VAS to reduce the bias when the listeners gave the ratings on each adjective pair.

Procedures

Judgment session. Judgment sessions were held individually in sound-proof booth or in the participants’ offices with a background noise level of about 40 dB-A. Headphone (HD 280 pro, Sennheiser, Ireland) was used to present the voice samples at a comfortable intensity level which was adjusted by the listeners themselves at the beginning of the task for once only. Instructions were given at the beginning by the author about the rundown and the use of rating scale. At the beginning, two additional voice samples, which were not included in the 12 experimental voice samples, were for practice and not counted towards the result. Therefore, the participants were required to rate totally 26 voice samples. Each listener was required to
listen to each voice sample for three times. They could control when to play and pause the
voice sample by themselves during the rating process; however, the listeners could not refer to
the ratings again once they had finished the rating on 22 pairs of adjectives.

Data analyses

The questionnaire on the voice knowledge part would be analyzed to determine the
marks that each participant could gain to find if there were any group differences. Some
questions contained more than one answer. Each answer contained one mark; therefore, the
possible maximum score was 28.

The investigator was responsible for measuring the semantic differential scales. The
negative end always represented “0” and the positive end was “10”. Thus, the larger the
number measured, the more positive was the participant’s attitude. Besides, another rater was
invited to measure 25% of the participants’ data to determine the inter-rater reliability. The
investigator measured the same 25% of responses again two weeks after the first measurement
to determine the intra-rater reliability.

The agreement of each listener on each adjective scale of each sample was also
measured by requiring the listener to rate each voice sample for twice. The first rating on each
sample was compared to the second rating. It was to determine how often the two ratings
agreed with each other within ±1cm and ±2 cm.
RESULTS

Voice knowledge background

The three groups of listeners were significantly different on the amount of voice knowledge they had. Speech therapy students (mean= 21.0; SD= 2.73; range= 16-25) had a significantly higher amount of voice knowledge than the other two groups (p< 0.01). General university students (mean= 16.2; SD=3.93; range= 9 – 24) and teachers (mean=14.5; SD=3.23; range=9-21) were similar in the voice knowledge they had (p=0.40).

General attitudes towards children with normal and voice disorders

Table 2 showed the means and standard deviations of all listeners towards children with normal voice and disordered voice on 22 adjective pairs on semantic differential scale. Repeated ANOVA revealed that there was significant difference (p<0.001) between the ratings on children with voice problems and those with normal voices. Children with voice problems were perceived as more negative than those with normal voice in all the 22 adjective pairs. Independent t-tests were further carried out on each adjective pair. Since the conducting of multiple tests would increase the risk of making Type I error, the alpha level was adjusted to 0.002. The result indicated that all the 22 adjective pairs were statistically significantly different between children with normal voice and healthy voice (p <0.002).
Table 2. Means and standard deviations of the listeners’ ratings on children with normal and voice problems on each of the 22 pairs of adjectives on semantic differential scale.

<table>
<thead>
<tr>
<th>Adjective pairs</th>
<th>Children with normal voice</th>
<th>Children with voice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td><strong>Personality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unintelligent-intelligent*</td>
<td>6.63 (2.55)</td>
<td>5.38 (2.59)</td>
</tr>
<tr>
<td>Unsure-confident*</td>
<td>6.81 (2.47)</td>
<td>5.00 (2.93)</td>
</tr>
<tr>
<td>Nervous-calm*</td>
<td>6.63 (2.58)</td>
<td>4.91 (2.64)</td>
</tr>
<tr>
<td>Rigid-flexible*</td>
<td>6.04 (2.86)</td>
<td>5.03 (2.79)</td>
</tr>
<tr>
<td>Loud-quiet*</td>
<td>5.88 (2.60)</td>
<td>5.08 (2.65)</td>
</tr>
<tr>
<td>Dishonest-honest*</td>
<td>6.42 (2.32)</td>
<td>5.51 (2.30)</td>
</tr>
<tr>
<td>Aggravating-soothing*</td>
<td>6.77 (2.41)</td>
<td>5.47 (2.32)</td>
</tr>
<tr>
<td>Boring-interesting*</td>
<td>5.91 (2.45)</td>
<td>4.99 (2.54)</td>
</tr>
<tr>
<td><strong>Social Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unreliable-reliable*</td>
<td>6.68 (2.33)</td>
<td>5.30 (2.47)</td>
</tr>
<tr>
<td>Incompetent-competent*</td>
<td>6.60 (2.34)</td>
<td>5.06 (2.33)</td>
</tr>
<tr>
<td>Cooperative-uncooperative*</td>
<td>7.31 (2.23)</td>
<td>6.01 (2.47)</td>
</tr>
<tr>
<td>Unfriendly-friendly*</td>
<td>7.31 (1.91)</td>
<td>6.02 (2.23)</td>
</tr>
<tr>
<td>Passive-active*</td>
<td>6.05 (2.64)</td>
<td>5.13 (2.59)</td>
</tr>
<tr>
<td>Mean-nice*</td>
<td>6.46 (2.21)</td>
<td>5.65 (2.15)</td>
</tr>
<tr>
<td>Cruel-kind*</td>
<td>6.40 (2.14)</td>
<td>5.53 (2.11)</td>
</tr>
<tr>
<td>Unapproachable-approachable*</td>
<td>6.54 (2.19)</td>
<td>5.36 (2.45)</td>
</tr>
<tr>
<td>Unpleasant-pleasant*</td>
<td>6.53 (2.16)</td>
<td>5.75 (2.25)</td>
</tr>
<tr>
<td>Repelling-attracting*</td>
<td>6.28 (2.10)</td>
<td>5.35 (2.00)</td>
</tr>
<tr>
<td><strong>Physical Appearance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ugly-beautiful*</td>
<td>6.10 (2.09)</td>
<td>5.16 (2.09)</td>
</tr>
<tr>
<td>Weak-strong*</td>
<td>5.50 (2.18)</td>
<td>4.70 (2.15)</td>
</tr>
<tr>
<td>Dirty-clean*</td>
<td>6.89 (2.10)</td>
<td>5.59 (2.09)</td>
</tr>
<tr>
<td>Sick-healthy*</td>
<td>7.36 (2.07)</td>
<td>5.70 (2.53)</td>
</tr>
</tbody>
</table>

*p < 0.002. The order of the adjective pairs was randomized in the rating sheet. All the ratings were made on a 10-cm long VAS with the positive member of each adjective pair randomly
assigned to the left or right end.

**Attitudes across different types of voice disorders from different listener groups**

Table 3 listed the descriptive statistics for the attitudes from three groups of listeners on different severity of voice disorders. Figure 1 showed the general trend of attitude changes across different voice samples from different groups of listeners. From the figure, the attitudes towards children with normal voice and with mild voice problems were similar. However, the more severe the voice problems, the more negative were the attitudes. Three groups of listeners showed similar trends of attitude change on different types of voice samples with no significant differences (p=0.41)

By using one-way ANOVA for analyzing ratings from each listener group individually, it was found that all the three groups of listeners perceived no significantly difference between children with normal voice and those with mild voice problems. However, children with moderate and severe voice problems were perceived significantly more negative than those with no and mild voice problems. Once the children presented with moderate degree of voice problems, they were perceived as negative as those with severe voice problems. The inferential statistics were also displayed in Table 3. Besides, when considering the factors of listener groups and types of voice samples at the same time by using repeated ANOVA, no significant interaction of listener groups and types of voice samples was observed (p> 0.1).
Table 3. Means and standard deviations of ratings from different listeners on different voice samples

<table>
<thead>
<tr>
<th>Listeners</th>
<th>Normal Mean (SD)</th>
<th>Mild Mean (SD)</th>
<th>Moderate Mean (SD)</th>
<th>Severe Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school</td>
<td>6.37 (0.74)</td>
<td>6.58 (0.59)</td>
<td>4.98 (0.73) +#</td>
<td>4.24 (0.80)</td>
</tr>
<tr>
<td>Teachers</td>
<td>6.86 (0.80)</td>
<td>6.80 (1.09)</td>
<td>5.24 (0.91) +#</td>
<td>4.33</td>
</tr>
<tr>
<td>Speech therapy</td>
<td>6.49 (0.64)</td>
<td>6.41 (0.78)</td>
<td>5.16 (0.81) +#</td>
<td>4.35 (0.74)</td>
</tr>
</tbody>
</table>

Note: + = significantly different from normal; # = significantly different from mild; p<0.001. There was no significant difference on ratings between moderate and severe voice samples in all three groups of listeners.
Effects of daily exposure and self experience on voice problems

There were 23 listeners who reported to have daily exposure to people with voice problems and/or experienced voice problem themselves. Therefore, the other 22 listeners reported that they did not have any experience and exposure to voice problems. One-way ANOVA for repeated measures was used to analyze if there was any statistical significant effect from two groups of listeners across different types of voice disorders. The result indicated that there was no significant difference on the attitude ratings between the two groups (p>1.00). The general trend of their attitude change across different types of voice samples was
similar to findings above.

**Intra-rater reliability in attitude ratings from listeners**

The means of percentage agreements for each group of listeners were shown in Table 4. Each voice sample was duplicated so each listener had given attitude ratings on each voice sample twice. The percentage agreements on each pair of adjective on semantic differential scale for each voice sample from each listener were found.

**Table 4. Intra-rater reliability and agreement in attitude ratings**

<table>
<thead>
<tr>
<th>Listener Groups</th>
<th>Pearson’s r</th>
<th>Percentage of agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Within 1cm</td>
</tr>
<tr>
<td>Primary School Teachers</td>
<td>.835*</td>
<td>50.1</td>
</tr>
<tr>
<td>Speech therapy Students</td>
<td>.820*</td>
<td>48.0</td>
</tr>
<tr>
<td>General University Students</td>
<td>.859*</td>
<td>50.1</td>
</tr>
</tbody>
</table>

* Significant at 0.01 level (2-tailed)

**Reliability in measuring the points on visual analogue scale**

Pearson’s correlation coefficient was used to evaluate the interrater reliability in measuring the points on VAS. The interrater reliability was found to be high (Pearson’s $r = 1.00$;
DISCUSSION

In this study, we investigated the attitudes from primary school teachers towards children with and without voice problems. Such attitudes were then compared to those rated by a group of speech therapy students and general university students. The result revealed that all listeners’ attitudes towards children with voice problems were significantly more negative than those children with healthy voice. It suggested that children’s voice problems can give listeners negative perception on their nonspeech characteristics. For example, in the present study, children with voice problems were perceived as relatively “unintelligible”, “less confident”, and “less attractive”. The general negative attitude found was consistent with the previous findings in literature (Lass et al., 1991a; Lass et al., 1991b; Ruscello et al., 1988). Furthermore, in the present study, significantly more negative ratings towards children with voice problems were found in all the 22 adjective pairs (100%). From the previous studies on attitude measure, the more negative ratings on children with voice problems were found in only 68.2% to 91.7% of the adjective pairs (Lass et al., 1991a; Lass et al., 1991b; Ruscello et al., 1988). In other words, in some adjective attributes (8.3% to 31.8%), the children with voice disorder could be perceived more positive than their normal peers. And only 40.9%-91.7% of the ratings were statistically significantly different between normal and voice-disordered children. This discrepancy between the present and the previous studies may due to the cultural difference on
the use and understanding of the wordings used in the attitude measure. The present result supported to the finding from Altenberg and Ferrand (2006). Their finding also revealed that listeners from different cultural background would have significant different ratings on some adjective pairs. In their study, the attitude ratings from Cantonese-English bilinguals on people with severe voice problems were significantly more negative than the ratings from monolingual English listeners on attributes like “beautiful-ugly” and “clean-dirty”. In addition, the numbers and types of the adjective pairs used were inconsistent in the previous studies (Lass et al., 1991a; Lass et al., 1991b; Ruscello et al., 1988) and different from the present study. Therefore, the discrepancy could also be caused by the use of different adjective pairs in measuring the attitude. From the present study, all the 22 adjective pairs on nonspeech characteristics used were found to be adversely affected by voice problems.

In addition, this study investigated more on the attitude change across different types of voice samples which had not been concerned in previous literatures. The result indicated that listeners showed a similar attitude towards children with normal voice and those with mild voice problems. In other words, mild voice problems did not give notable adverse effect on children’s nonspeech characteristics. However, once the mild chronic voice problem developed into a moderate severity, the attitudes towards those children’s nonspeech characteristics became significantly more negative. Moreover, the listeners regarded the children with moderate voice problems as negative as those with severe voice problems. This gave valuable insights on the children voice therapy. The dysphonic children should receive voice therapy as
soon as possible before the problem developed into a more severe one, since the negative
attitude from listeners would give adverse effect on social and psychological development on
the children (Connor et al., 2008). On the other hand, this may also be a warning sign that
people in society did not have enough awareness on mild voice problems. It is because the
listeners from all the three groups perceived the children with mild voice problems as similar
as those children with normal voice. It implied that they accepted the mild voice problem as the
normal one. They thus would easily miss the opportunities for receiving voice therapy in time
as they may think that the mild voice problem was not a concern. It was important as to prevent
the worsening of voice problems before the problem became obvious enough to give negative
impression to listeners.

We had also tried to investigate if a natural group of listeners, speech therapy students,
who were well-equipped with theoretical voice knowledge, would have a relatively different
attitude towards dysphonic children when compared to listener groups with relatively weak
voice knowledge. However, the result indicated that even for listeners with theoretical voice
knowledge, they showed negative impression towards dysphonic children as the other two
groups of listeners without significant differences. Thus, it is apparent that educating people
with more theoretical voice knowledge which was suggested by many literatures in order to
improve the negative attitudes from society may not be practical enough.

For children with normal voice; however, the means of attitude ratings they gained
were just around 5.50 to 7.36 only in 10 points (see Table 2), which were about 55% to 74%.
The investigator had confirmed that this outcome was not due to the nature of the voice samples chosen. Only voice samples which were totally agreed by at least two experienced speech therapists on the severity ratings were used in this study. Moreover, this outcome was consistent with those studies which also investigated the attitudes on children speakers with and without voice problems. From Ruscello et al. (1988), Lass et al. (1991a) and Lass et al. (1991b), the ratings were around 57% to 79% (4.00 to 5.56 in 7-point scale), 55% to 72% (3.85 to 5.10 in 7-point scale), and 49% to 73% (3.45 to 5.07 in 7-point scale) respectively for normal children speakers.

**Clinical implications**

The present study revealed that children with moderate and severe voice disorder would give a significant negative impression to teachers which would adversely affect the children development in school. Speech therapists may need to concern the psychological stress the voice-disordered children faced. The present study arouse public awareness on the importance of making referral and receiving voice therapy in children as soon as possible before the problem developed into a more severe one.

**Further research directions**

From this present study, we had just collected brief information on the listeners’ experiences on people with voice disorders. However, this area was still worth to investigate
further as we had not controlled the degree of closeness between the listeners and the people who had voice problems they being exposed to. It was still plausible that listeners who had a very close relationship with the dysphonic children, for instance, parents of the children with voice disorders, would have a significantly better or different attitude towards children with voice problems. According to Triandis (1994), self experience may be a more effective and powerful way to build people’s attitudes towards an issue when compared to those people who just had brief and superficial understanding on that particular issue. Therefore, based on this theory from Triandis (1994), other than listeners who were closely related to children with voice problems like parents would be an interested listener group. On the other hand, the children spend much more time with their parents when compared to other adults like teachers. The effect of the parents’ attitudes on the children development is even more long-term which is throughout the children’s life time. Parents are also the one who make the final decision on whether the children with voice problems should seek for therapy. Their support and participation are important for the children progress. Therefore, it is valuable to investigate the attitudes from the parents towards children with voice problems.

Another limitation of this study was that we mainly included the younger group of primary school teachers who had relatively less teaching experiences in the present study. They might not be representative to all the primary school teachers in whole. More experienced primary school teachers might have another point of view towards dysphonic children as their amount of exposure to dysphonic children might be dramatically more than those with less
teaching experience.

CONCLUSION

To conclude, in Hong Kong, a the Chinese cultural society, the primary school teachers, speech therapist students and general university student showed significantly more negative impression towards children with moderate and severe voice problems than those with normal and mild voice problems. Since primary school teachers played a very important role on the school age children development, it was crucial to concern their negative impacts on these children. This study also arouses the essential of educating society on classifying children with voice problems and making referral to speech therapists as soon as possible. This was to prevent the voice problems to develop into a more severe on which would give negative impact on the children’s social and emotional development.

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REFERENCES


Appendix A

Questionnaire for listeners

香港大學
教育學院
言語及聽覺科學系

背景問卷

參與者編號: __________________
日期:  ___________________

請填寫以下問題，所得資料只作研究用途，絕對保密。

(1) 年齡: ______________        ;          (2) 性別: _________

(3) 職業: ______________

● 老師 / 言語治療師 / 正修讀教育 文憑或學位 的請回答以下問題:
  (a) 工作或教學年資: _______如正修讀教育，已實習時數: _______
  (b) 平均每星期接觸幾多位學生(直接授課，與他們有交流)？___________
  (c) 工作時 # 有 / 沒有 接觸過有聲線問題的學生(如: 聲音嘶啞, 走音, 失聲)?如有，平均佔接觸過的學生__________百份比 (%)。

(4) 你的教育程度:

□ 小學或以下        □ 中學        □ 預科        □ 大專、大學或以上

(5) 家庭總收入 (每月):

□ $5,000 或以下        □ $5,001-10,000        □ $10,001-20,000        □ $20,001-3,0000
□ $30,001-40,000        □ $40,001-50,000        □ $50,000 或以上

(6) 身邊有沒有認識或曾經接觸一些有聲線問題的家人或朋友，包括成人及小朋友?
    # 有 / 沒有

如有，請註明興他們的關係: # 家人 / 十分相熟及經常交流的朋友 / 沒有太多交流的
普通朋友/其他，請註明: ____________________

(7) 自己有沒有曾經遇上聲線問題的困擾?
    # 有/沒有
    如有，大約幾時出現問題? ___________________ 並持續了多久?
    ___________________

(8) 現在/曾經尋求醫生或言語治療師的協助嗎?
    # 有/沒有
    如有，當時的診斷是: ____________________

發聲及聲線障礙知識 * 1-5 題答選可多於一項

1. 以下哪些器官或部位會影響發聲?
   A. 肺部
   B. 口腔
   C. 鼻腔
   D. 喉帶
   E. 喉核

2. 是甚麼負責令聲帶振動?
   A. 由成聲帶的肌肉
   B. 神經系統控制
   C. 肺部呼出的空氣
   D. 喉核上的軟骨
   E. 荷爾蒙控制

3. 聲帶振動的次數會影響以下哪些方面?
   A. 聲量 (大/細聲)
   B. 聲調 (高/低音)
   C. 聲線嘶啞程度
   D. 肺部呼出的空氣量
   E. 說話速度

4. 以下哪些是患上聲線毛病的徵兆及病徵?
   A. 說話後覺得喉嚨疲倦
   B. 聲線變得低沉
   C. 喉嚨容易乾涸
   D. 說話時會走音
   E. 電話中會被誤會為另一性別

5. 如果想說話時聲量大一點，以下哪些是正確方法?
   A. 說話前先大力清一清喉嚨
   B. 說話時把口腔盡量張大
   C. 用胸部式呼吸
   D. 同腹部式呼吸
   E. 說話時盡量把聲調壓低
以下有些因素，它們可能是 1. 有助保護聲線的、2. 會損害聲線的 或 3. 與保護聲線沒有直接關係的。請你表達你對每一項因素的看法，並在適當的空格劃上“✓”。

<table>
<thead>
<tr>
<th>因素</th>
<th>有助保護聲線</th>
<th>沒有直接關係</th>
<th>會損害聲線</th>
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</thead>
<tbody>
<tr>
<td>1. 咳嗽</td>
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<td>2. 身體過重</td>
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<td>3. 多飲水</td>
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<td>4. 說話急促</td>
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<td>5. 大聲說話</td>
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<td>6. 用較沉的音調說話</td>
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<td>7. 游泳</td>
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<td>8. 坐姿正確</td>
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<td>9. 大哭／大笑</td>
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<td>10. 在嘈雜的地方交談</td>
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<td>11. 偏食</td>
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<td>12. 吃煎炸食物</td>
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<td>13. 清喉嚨</td>
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<td>14. 減慢說話速度</td>
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<tr>
<td>15. 吃和暖的食物</td>
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</tbody>
</table>
Appendix B

Rating sheet for attitude measurement

Voice sample number: ____________ Listener number: ____________

聰明的 [ ] 不聰明的 [ ]

無把握的 [ ] 有信心的 [ ]

不可靠的 [ ] 可靠的 [ ]

冷靜的 [ ] 緊張的 [ ]

靈活的 [ ] 死板的 [ ]

能幹的 [ ] 不能勝任的 [ ]

安靜的 [ ] 嘈吵的 [ ]

誠實的 [ ] 不誠實的 [ ]

容易激怒的 [ ] 鎮定的 [ ]

不合作的 [ ] 合作的 [ ]

不友善的 [ ] 友善的 [ ]

P.1
主動的 | 被動的
刻薄的 | 親切的
仁慈的 | 殘酷的
有趣的 | 沉悶的
易親近的 | 難接近的
討厭的 | 討人歡喜的
美麗的 | 醜陋的
強壯的 | 軟弱的
反感的 | 吸引的
骯髒的 | 乾淨的
健康的 | 生病的