VOCAL IDENTITY - DIFFERENCES AND SIMILARITIES BETWEEN CHILDREN FROM CROATIA AND FINLAND

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Abstract: The purpose of the present study was to find out if children between 8 and 10 years of age, from Croatia and Finland, are (i) able to identify appropriate voices from non-appropriate voices and (ii) are abusive in their voices. The third (iii) aim was to compare girls’ and boys’ vocal identity to each other. A structured questionnaire (Bolfan-Stosic, 2000) was used to investigate the children’s voice habits. Results indicated that participant children did not differ with regard to country of origin. However differences appeared in relation to gender. The Croatian and Finnish girls (n=24) were better in identification of voice quality and vocal abuse compared to the Croatian and Finnish boys (n=16). It is suggested that future studies should continue to consider cultural environment in children’s identification and understanding of own voice status.

Keywords: vocal identity, vocal abuse, pitch, loudness, school age, culture

I. INTRODUCTION

A child’s awareness of his/her own voice habits established at an early age may persist into adulthood [2]. For example, hoarseness is common among school-aged children and may cause severe organic changes in the vocal fold [3]. In a study published in Finland [4] school-aged children with voice disorders had also been given more general remedial education than those children with healthy voices. It seems important, therefore, to track children’s voice habits and to teach them how to identify when they are abusing their voices.

II. METHODOLOGY

In the present study one section of a Vocal Identity Questionnaire [5] was employed to study participant children’s ability to identify nice and bad voices. Pictures were used to help the children to understand the instructions. The children’s vocal abuse at home was also studied to find out if the child screams or yells a lot at home. The questionnaire was translated into Finnish language by one of the authors (AY) and then back into English to make sure the questions remain unchanged.

The following variables were used in the data analyses:

- ID = identification of differences between nice and bad voice
- LOUD = identification of differences between three levels of voice loudness
- PITCH = identification of differences between three levels of voice pitch
- VOCABUSE = screaming or yelling at home

Instructions:

- First the voice teacher sang the vowel a nicely whilst pointing to the white flower, and then badly, this time pointing to the
• black flower. The teacher then asks the child to listen to how the teacher sings and choose one picture that matches the sound. The same procedure is followed for the next two tasks where each child must recognize bad or nice vocal loudness and pitch whilst pointing to one of the bells and trees (there are three sizes of bells and trees corresponding to three levels of voice: loud-normal-silent and high-normal-low).

• The children evaluated themselves individually concerning whether they liked to scream or yell at home. The question is extracted from the Questionnaire as a variable of vocal abuse at home.

Data coding variables and statistical analysis:

ID, LOUD and PITCH: false answer = 1, correct answer = 2

VOCABUSE: positive answer/yes = 1, negative answer/no = 2

The statistical analysis was made by Statistics for Windows (version 6.0). The differences between girls and boys in the whole sample of Croatian and Finnish school-age children were analyzed using t-tests and Analysis of Variance and correlation between girls and boys were computed by the use of Correlation matrices.

III. RESULTS

The results (Table 1) indicate, that there are statistically significant differences in ID (i.e. identification of differences between nice and bad voice) between girls and boys. The means also demonstrate differences in the LOUD variable as well, but these are not significant. Usually girls were better than boys (Fig.1).

Table 1. Differences between the participant girls (N1=24) and boys (N2=16) from Croatia and Finland aged from 8 to 10 years in their identification of nice and bad voices (ID), voice loudness (LOUD) and pitch (PITCH)

<table>
<thead>
<tr>
<th></th>
<th>Mean1</th>
<th>Mean2</th>
<th>SD1</th>
<th>SD2</th>
<th>N1</th>
<th>N2</th>
<th>t-value</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>1.80</td>
<td>1.42</td>
<td>.41</td>
<td>.35</td>
<td>24</td>
<td>16</td>
<td>2.41</td>
<td>38</td>
<td>.0210</td>
</tr>
<tr>
<td>LOUD</td>
<td>1.80</td>
<td>1.50</td>
<td>.44</td>
<td>.50</td>
<td>24</td>
<td>16</td>
<td>1.64</td>
<td>38</td>
<td>.1097</td>
</tr>
<tr>
<td>PITCH</td>
<td>1.63</td>
<td>1.50</td>
<td>.50</td>
<td>.83</td>
<td>24</td>
<td>16</td>
<td>.77</td>
<td>38</td>
<td>.4463</td>
</tr>
</tbody>
</table>

ID = identification of differences between nice and bad voice, LOUD = identification of differences between three levels of voice loudness, PITCH = identification of differences between three levels of voice pitch, N1 = girls from Croatia and Finland aged from 8 to 10, N2 = boys from Croatia and Finland aged from 8 to 10

Fig. 1. Differences between the girls and boys aged from 8 to 10 years in ID, LOUD and PITCH according to the means.
In Table 2 there is a significant correlation shown between boys’ groups evaluations of vocal abuse and identification of nice and bad voices and also in three levels of voice loudness. In a group of 24 girls we did not find any corresponding significant correlations. But we found statistically significant differences between children from two countries in three of the four variables which indicate identification of differences of the voice quality.

Table 2. Correlations between Croatian and Finnish boys

<table>
<thead>
<tr>
<th></th>
<th>ID</th>
<th>LOUD</th>
<th>PITCH</th>
<th>VOCABUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>1.00</td>
<td>.38</td>
<td>-.13</td>
<td>.68</td>
</tr>
<tr>
<td>LOUD</td>
<td>.38</td>
<td>1.00</td>
<td>.25</td>
<td>.77</td>
</tr>
<tr>
<td>PITCH</td>
<td>-.13</td>
<td>.25</td>
<td>1.00</td>
<td>.26</td>
</tr>
<tr>
<td>VOCABUSE</td>
<td>.68</td>
<td>.77</td>
<td>.26</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Significant at level < .05

In Table 3 the differences between children of different ages by country are presented. The Finnish children from the oldest group (10 y) were best in ID (identification of nice and bad voices) compared to the other three groups. Both groups from Finland were better than the Croatian groups in ID and the younger group (8-9 y) from Finland were better in all three levels of LOUD than other three groups. The oldest Croatian children (10 y) were best in PITCH compared to other groups. Generally, the older children performed better in almost all the tasks (ID, LOUD, PITCH, VOCABUSE) than younger children, regardless of their country of origin.

Table 3. Differences in ID, LOUD and PITCH between children of different ages from Croatia (G1, G2) and Finland (G3, G4).

<table>
<thead>
<tr>
<th></th>
<th>ID</th>
<th>LOUD</th>
<th>LOUD</th>
<th>PITCH</th>
<th>PITCH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>G1</td>
<td>1.50</td>
<td>.53</td>
<td>1.30</td>
<td>.48</td>
<td>1.30</td>
</tr>
<tr>
<td>G2</td>
<td>1.40</td>
<td>.52</td>
<td>1.80</td>
<td>.42</td>
<td>2.00</td>
</tr>
<tr>
<td>G3</td>
<td>1.70</td>
<td>.48</td>
<td>2.00</td>
<td>.00</td>
<td>1.40</td>
</tr>
<tr>
<td>G4</td>
<td>2.00</td>
<td>.00</td>
<td>1.50</td>
<td>.53</td>
<td>1.60</td>
</tr>
</tbody>
</table>

Significant at level < .05
G1: children from Croatia age 8; G2: children from Croatia age 10; G3: children from Finland age from 8 to 9; G4: children from Finland age 10

IV. DISCUSSION

The significant difference between participant girls and boys were in their identification of nice and bad voice. Even though the girls performed better in their identification of nice and bad voices, they tend to have more longitudinal voice disorders according to the comprehensive Finnish study of school-age children [4]. On the other hand, there is also other evidence that girls’ maturation is faster than boys’ [6] which could be why they have better understanding and ability to find differences in different voice parameters is discern differences in cultural and economical background. Differences between the girls from Finland and Croatia and the boys from these countries were more significant than the cultural differences even though Finland and Croatia are very different countries both in cultural and economical background.

The vocal identity develops by the age. The youngest children (8 y) may not be aware of their voice status and they abuse their voices at home or at school. Based on clinical experience, parents usually do not pay attention to their children’s voices even if the voices are very hoarse. One reason is lack of knowledge. There are very few studies of children’s voice disorders and how to treat them. There is no some kind of “warning” program of vocal hygiene to alarm parents and society on different types of vocal abuse. On the contrary, voice is for the children more abstract than speech. It is easier for them to perceive for example singing, rate of speech ( too fast or slow) or misarticulations.
Children learn speech sounds by listening to their mother tongue around them. They develop vocal identity, too. They have different voice models around and they observe, listen and imitate other people's voices. If phoneticians ask themselves if children learn to discriminate all sounds very early, the voice research could ask if children establish awareness of voice status or vocal identity before voice maturation.

We found statistically significant differences between children from two countries in three of the four variables which indicate identification of differences of the voice quality. Although differences between children from these two countries were not so big as we expected. Could we find explanation of these outcomes in possible higher voice awareness of children from Finland? One possible explanation could derive from differences in schooling. If school provides children with musical education from early age, including focused development of voice and the development of communication skills, there may be greater awareness of appropriate vocal behaviours.

In the future it could be interesting to study voice habits from the linguistic point of view. According to the language typological categorization the Croatian language belongs to the Indo-European languages and especially to the South-Slavic group, whereas the Finnish language to the Uralic group [7]. The Croatian and Finnish language belong to different typological categories. The former is a typical flexion language with many prefixes, suffixes and word internal changes, and the latter an agglutinative language with many morphemes attached to word stem [7]. That difference might also be reflected in voice habits. For example the Finnish language is very monotonous with little changes in pitch, and maybe that is why the Finnish speaking children performed worse than the Croatian children in discriminating PITCH. These language bound features may also impact on vocal identity abilities.

The results of the present study did not offer explicit answer concerning vocal identity differences or similarities between the children from two cultures. Instead it supported the universal phenomenon that girls’ maturation is faster than that of boys’ even in vocal identity.

V. CONCLUSION

According to the results we conclude that:
1) Girls were better in ID (identification of nice and bad voices) than boys regardless of the cultural and economical background, which means that girls’ maturation is faster than boys’ in vocal identity.
2) The Finnish children identify better nice and bad voices compared to the Croatian children.
3) The younger group (8-9 y) from Finland identified the best LOUD (loud, normal or silent voice).
4) The oldest Croatian children (10 y) were better in discriminating PITCH (high, normal or low voice) compared to other groups.
5) Generally, the older children performed better in almost all the tasks (ID, LOUD, PITCH, VOCABUSE) regardless from which country they come from. In practice the younger children have more problems in identifying different voice parameters.

REFERENCES