Pediatric Voice Handicap Index (pVHI): Validation in European Portuguese Children

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Abstract: Objectives. To determine reliability and validity of the European Portuguese pVHI version (pVHI-EP).

Study design. Cross-sectional design.

Methods. The pVHI-EP and the talkative and global voice assessment scales were administered to the caregivers of children aged from 3 to 16 years old with and without dysphonia. Reliability (internal consistency and test-retest) was analyzed. The validity analyses performed were: (1) content validity by analyzing the percentage of missing data; (2) construct validity with intraclass correlation coefficients among pVHI-EP domains and overall score; (3) concurrent validity was conducted between pVHI-EP, the caregivers' judgment of the child's voice severity on a visual analog scale and the Speech-Language Pathologist perceptual voice assessment; (4) known-groups validity between children with and without dysphonia, and (5) predictive validity by calculating receiver operating characteristics, sensitivity and specificity and determining cut-off points.

Results. A total of 283 children (61.5% boys, mean age 8.3 years) participated in the study. The pVHI-EP showed an excellent internal consistency for the pVHI-EP total data. Strong to moderate test-retest reliability confirms pVHI-EP reproducibility. Excellent to good intraclass correlation coefficients between the pVHI-EP overall and the domains confirms its construct validity. Weak to moderate concurrent validity with visual analog scale and Speech-Language Pathologist perceptual voice assessment was confirmed. The pVHI-EP significantly distinguished two groups of different voice conditions. A cut-off point of 10.5 with 95.9% sensitivity and 92.5% specificity was determined for the overall score of the pVHI-EP.

Conclusions. The pVHI-EP is a reliable and valid caregiver voice outcome tool for EP children with dysphonia.

Key Words: Pediatric voice disorder−Childhood dysphonia−Pediatric voice handicap index−European Portuguese children.

INTRODUCTION

The incidence of childhood dysphonia is still a much-debated subject. Nevertheless, estimates range from 0.12% to 40%.[1−3] This disparity can be based on the studied age span or the data source. Concerning the prevalence of dysphonia in 8-year-old children, a large cohort of 6% was identified by clinicians whereas caregivers reported 11%.[1] In addition to this, research evidence also differs as to gender dominance in childhood dysphonia. One study reported male predominance between the ages of 7 and 12, whereas another study stressed female predominance between the ages of 6 and 11 years old.[2,3]

Among the causal factors of dysphonia, in children aged from 4 to 12 years, are the psychosocial ones, namely hyperactivity, anxiety, or impulsiveness. Consequently, vocal symptoms caused by phonotrauma may be associated with larynx dysfunction and/or pathology, being vocal nodules the most prevalent lesion. The frequency of occurrence of vocal nodules accounted for 52% with a higher prevalence in boys than girls.[3] However, vocal nodules and functional voice problems are mostly prevalent in adolescent girls.[3−6]

Dysphonia may adversely affect children's education as well as their social relationships.[5] Children with dysphonia were negatively compared to their vocally healthy peers, in characteristics such as physical appearance and personality traits.[4,5] Across all age groups, children and adolescents stated that their voices were different from their peers and that people tended to comment on their dysphonic voices. Focus interviews to children with dysphonia and their families, identified that chronic dysphonia negatively affects the physical, social/functional, and emotional domains of the children's lives.[7] The biggest concerns were found in physical and functional domains. Most of the young children (90%) expressed that was repeatedly asked by others to use a quieter voice. In both school-aged children and

Accepted for publication May 6, 2021.

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Journal of Voice, Vol. ■■, No. ■■, pp. ■■−■■
0892-1997

https://doi.org/10.1016/j.jvoice.2021.05.004

adolescents the predominant concerns were in the emotional and physical domains.[7]

The most effective management of childhood dysphonia is early detection and prevention.[8] Along with the use of clinician's assessment outcomes (eg, voice perceptual evaluation, videostroboscopic examination, aerodynamic, and acoustic analysis) caregivers' proxy reported outcomes are essential for the management of childhood dysphonia.[2,3] To date, there is evidence of the Paediatric Voice Symptom Questionnaire (pVSQ),[9] the Children's Voice Handicap Index-10 (CVHI-10),[10] the Pediatric Voice-Related Quality-of-Life (pV-RQOL),[11] and the Pediatric Voice Handicap Index (pVHI).[12] Since its original development, pVHI has been cross-culturally adapted and validated in twelve languages[13–24] one of which is the European Portuguese (pVHI-EP). Nevertheless, pVHI-EP formal validation has not been fully studied.[25,26]

The aim of the present study is to determine reliability and validity properties of the pVHI-EP version.

METHODS AND MATERIAL

This multicentre cross-sectional study was authorized by the ethics committees of nine hospitals and was carried out in compliance with the Declaration of Helsinki.

Participants

Children aged 3–16 years old, without neurological pathologies, hearing loss, and/or speech and language disorders were eligible to participate. Eligible criteria for children with dysphonia were (1) dysphonia for at least 6 months; (2) laryngeal pathology, and/or dysfunction diagnosed by an experienced ear, nose and throat (ENT) surgeon based on the video laryngoscopy examination; (3) dysphonia confirmed by a Speech-Language Pathologist's (SLP) based on perceptual voice assessment. Eligible criteria for children without dysphonia were (1) healthy voice confirmed by an SLP based on perceptual voice assessment and (2) no past or present history of voice problems.

Children with dysphonia were recruited when attending an ENT and those with a healthy voice were recruited among children accompanying adults attending an ENT or at school settings.

Written consent was obtained from all caregivers and data were collected between February 2019 and January 2020.

Material

The pVHI has three parts: (1) an initial question regarding the child's ability to talk (Talkativeness scale), rated from one to seven, where 1 = silent listener; 4 = speaker, and 7 = extremely talkative; (2) 23 items divided into three domains: "Functional," with seven statements, "Physical," with nine, and "Emotional," with seven statements. The rating system involves a Likert-type scale ranging from never (score 0) to always (score 4). The highest score corresponds to the highest negative impact; (3) at the end there is a question regarding the caregivers' judgment of the child's voice severity on a visual analog scale (VAS) of 100 mm (Appendix A).

Data analysis

Descriptive statistics were reported for all participants. Shapiro–Wilk demonstrated that continuous variables were not normally distributed, therefore, the Mann-Whitney U test was used.

The specific psychometric data analysis were performed following the COSMIN (COnsensus-based Standards for the selection of health status Measurement INstruments) taxonomy of measurement properties[27]: (1) reliability was assessed using internal consistency ($0.7 \leq$ Cronbach's $\alpha < 0.90$ good and ≥ 0.90 excellent), and test-retest within 15 days for 29 randomly chosen children with dysphonia (intraclass correlation coefficient (ICC) and their 95% confident intervals (CI). ICC values ≥ 0.75 were considered strong, and $0.60 \leq$ ICC ≤ 0.74 moderate); (2) validity analysis was carried out for pVHI-EP: content validity, construct validity, concurrent validity, known-groups validity, and predictive validity. Content validity was evaluated by examining the items' response rate and considered adequate if above 95%. Construct validity was determined with ICC among pVHI-EP domains and the overall score. Concurrent validity was checked between the VAS and the SLP perceptual voice assessment with pVHI-EP scores using the nonparametric correlation coefficient (Spearman rho > 0.7 was considered strong, between 0.7 and 0.4 moderate, and < 0.40 weak). Known-groups validity was determined between the two groups (Dysphonia and Control groups) for pVHI-EP. Predictive validity was analyzed by calculating receiver operating characteristics (ROC), sensitivity and specificity to set up the best cut-off points for the overall and subscore domains of the pVHI-EP. The areas under the ROC curves (AUC) and their 95% CI were also calculated. The AUC criteria for sensitivity and specificity was 1–0.90 (perfect), 0.89–0.80 (good), 0.79–0.70 (fair).

The Statistical Package for Social Sciences software (version 23, Inc., Chicago, IL) was used. A P value of less than 0.05 was defined as the level of significance.

RESULTS

Participants

Table 1 shows the caregivers and children's demographic and clinical information. The pVHI-EP was filled out by women in their 40s. Women with children with dysphonia declared they frequently felt voice problems (Table 1).

Data from 283 children (61.5% boys) with a mean age of 8.3 years (SD=2.6) were obtained. Both children's groups have a similar mean age (Mann-Whitney U = 10423,500; $P = 0.466$) and education level (mainly elementary school). Boys are predominant in the dysphonia group as opposed to the control group, where girls are the majority. In the

TABLE 1.
Caregivers and Children's Demographic and Clinical Information

	Dysphonia	Controls	
n	147	136	
Caregivers' age (years) mean (SD) range	40.3 (6.4) 26 −63	41.3 (5.9) 27 −64	
Gender Female|Male N(%)	127 (86.4)|20 (13.6)	129 (94.9)|7 (5.1)	
Voice symptoms self-assessment N(%)			
Never or almost never	11 (7.5)	131 (96.3)	
Sometimes	68 (46.3)	4 (2.9)	
Frequently	68 (46.3)	1 (0.7)	
Children's age (years) Mean (SD) Range	8.4 (2.6) 3−16	8.7 (2.4) 3−16	
Sex (Boys|Girls) N(%)	103 (70.1) | 44 (29.1)	64 (47.1) | 72 (52.9)	
Education level N (%) Kindergarten	24 (16.3)	2 (1.5)	
Elementary school	1st cycle—4 years	81 (55.1)	58 (42.6)
	2nd cycle—2 years	27 (18.4)	20 (14.7)
	3rd cycle—3 years	13 (8.8)	16 (11.8)
Secondary school—3 years	2 (1.4)	3 (2.2)	
Children's ENT diagnosis vocal fold nodules	96 (65.3)	Not applicable	
Vocal fold cyst/polyp	23 (15.6)		
Muscle tension dysphonia	21 (14.2)		
Unilateral vocal fold paralysis	2 (1.4)		
Reinke's edema	2 (1.4)		
Laryngitis	1 (0.7)		
Anterior synechia	1 (0.7)		
Dysphonia since N(%)			
≤ 6 months	20 (13.8)		
[7−12 months]	29 (20.0)		
≥13 months	96 (66.0)		

dysphonia group, the majority of children have chronic dysphonia (Table 1).

The most prevalent children's ENT diagnosis are epithelial and lamina propria abnormalities (nodules, cysts, polyp (s), and Reinke's edema) followed by muscle tension dysphonia, neurologic disorders (Unilateral vocal fold paralysis), inflammatory conditions (Laryngitis), and congenital changes (Synechia) (Table 1).

Clinimetric properties

Reliability

Cronbach's alpha coefficients for the total data (n = 283) was between 0.849 and 0.946 inclusively, indicating good to excellent degrees of internal consistency for the pVHI-EP (Table 2). Good internal consistency was observed for both dysphonia and control groups' data (Table 2).

All but functional and emotional domains showed excellent ICC between the first and second pVHI-EP administration indicating strong reproducibility (Table 3).

Validity

The content validity was verified considering the inexistence of item missing data for the 23-items pVHI-EP.

ICC values between pVHI-EP overall and domains show strong to moderate construct validity (Table 4). pVHI-EP overall versus emotional domain show the lowest ICC value. Nevertheless, the result is within the range criteria for moderate ICC coefficients (Table 4).

TABLE 2.
Internal Consistency (Cronbach alpha) of the pVHI-EP

	Total Data	Dysphonia	Controls
n	283	147	136
Functional domain	0.865	0.803	0.752
Physical domain	0.927	0.803	0.834
Emotional domain	0.849	0.831	0.705
Overall score	0.946	0.890	0.898

Cronbach alpha coefficients are significant at the level of 0.001 level.

TABLE 3.
Test-retest Reliability of the pVHI-EP

	Dysphonia ICC Mean [95% CI]	*P* value
Functional domain	0.74 [0.63–0.83]	<0.001
Physical domain	0.89 [0.84–0.93]	<0.001
Emotional domain	0.75 [0.64–0.84]	<0.001
Overall score	0.91 [0.88–0.94]	<0.001

Concurrent validity for both dysphonia and control groups between the pVHI-EP scores and the VAS was weak to moderate and with SLP perceptual voice assessment was weak (Table 5).

A highly significant difference between dysphonia and control groups was observed for all pVHI-EP scores confirming known-groups validity (Table 6). For both groups, the physical domain presents the highest mean score whilst the emotional domain obtained the lowest score (Table 6).

TABLE 4.
Construct Validity of the pVHI-EP

	Total Data		
	ICC Mean [95% CI]		
	Functional	Physical	Emotional
Functional domain	–	0.76 [0.70–0.81]	0.85 [0.82–0.88]
Physical domain	–	–	0.72 [0.66–0.78]
Overall score	0.70 [0.62–0.76]	0.87 [0.84–0.90]	0.63 [0.54–0.70]

ICC correlations are significant at the level of 0.001 level (two tailed).

TABLE 5.
Concurrent Validity (Spearman rhô) of the pVHI-EP

	VAS				SLP voice assessment			
	Dysphonia		Controls		Dysphonia		Controls	
	r	*P* value	r	*P* value	r	*P* value	r	*P* value
Functional	0.194	<0.05	0.338	<0.001	0.218	<0.01	0.358	<0.001
Physical	0.459	<0.001	0.441	<0.001	0.241	<0.01	0.365	<0.001
Emotional	0.323	<0.001	0.417	<0.001	0.165	<0.05	0.365	<0.001
Overall	0.412	<0.001	0.442	<0.001	0.279	<0.001	0.367	<0.001

TABLE 6.
Known-group Validity of the pVHI-EP

	Dysphonia Mean [95% CI]	Controls Mean [95% CI]	Mann-Whitney	
			U	*P* value
Talkativeness scale	5.3 [5.1–5.5]	4.5 [4.3–4.7]	6819.500	<0.001
Functional domain	8.0 [7.1–8.8]	2.0 [1.5–2.4]	2852.000	<0.001
Physical domain	15.5 [14.4–16.5]	2.4 [1.9–3.0]	669.000	<0.001
Emotional domain	5.9 [5.0–6.7]	1.5 [1.1–1.9]	3903.500	<0.001
Overall	29.3 [27.0–31.6]	5.9 [4.7–7.2]	956.000	<0.001
VAS	1.49 [5.0–6.7]	0.19 [5.0–6.7]	2312.00	<0.001

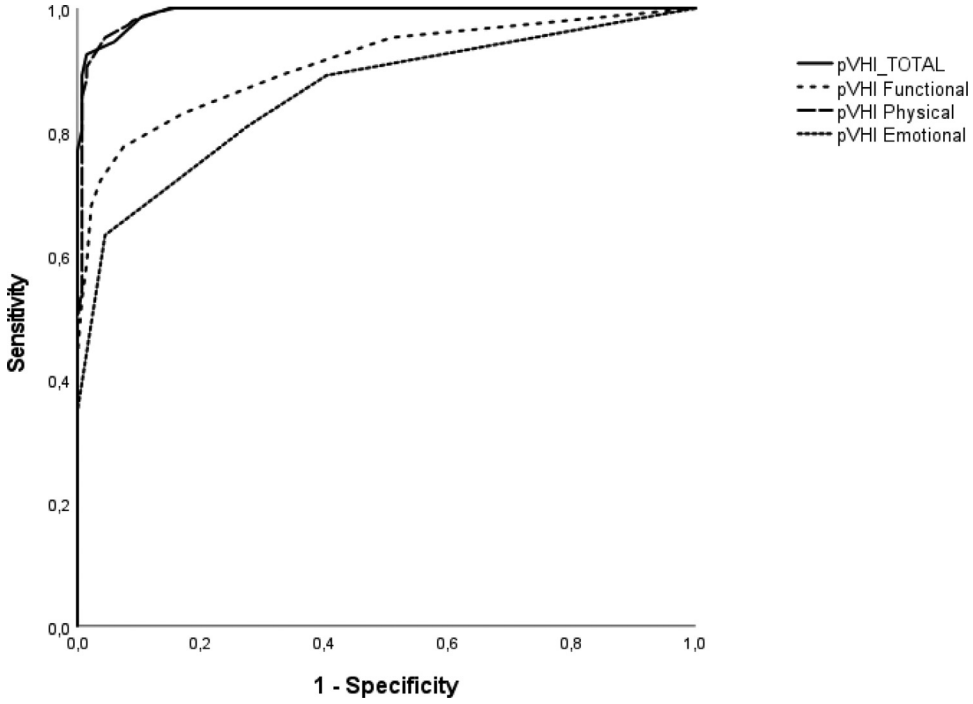

FIGURE 1. ROC curves for the pVHI-EP. ROC, receiver operating characteristics.

TABLE 7.
Cut-off Point, Sensitivity, and Specificity of the pVHI-EP

	Cut-off Point	Sensitivity (%)	Specificity (%)	AUC [95% CI]	*P* value
Functional domain	3.5	77.6	92.5	0.910 [0.875–0.944]	<0.001
Physical domain	7.5	88.4	98.5	0.991 [0.983–0.999]	<0.001
Emotional domain	2.5	70.1	86.6	0.861 [0.818–0.904]	<0.001
Overall score	10.5	95.9	92.5	0.993 [0.987–0.999]	<0.001

The AUC values, specificity and sensitivity percentages, and cut-off points for pVHI-EP scores are presented in Table 6. As shown in Figure 1, the AUCs of the ROC curves provide a highly significant result with the slopes for the overall and domain scores falling on the upper left corner of the space (Table 7).

DISCUSSION

In this study, the pVHI-EP clinimetric properties were analyzed in 283 Portuguese children. These analyses were based on one of the largest samples when compared to other pVHI formal validation studies. For example, all but the Mandarin Chinese study[20] (n = 338) sample size varied between 73[13] and 201.[19] Also, the group with dysphonia (n = 147), in the present study, is one of the largest compared to other cross-cultural validations studies, eg, Persian[24] (n = 45), Danish[23] (n = 19). Additionally, the higher proportion of boys versus girls in the dysphonia group is in accordance with the data used for other pVHI formal validation studies.[13,15,18,21,22] Moreover, the higher prevalence of vocal nodules against other laryngeal pathologies observed in the present study is similar to other studies.[13,15,18,21,22]

The validation of the pVHI-EP showed reliability for children aged from 3 to 16 years.

The present study results indicated evidence of excellent internal consistency for the pVHI-EP total data confirming that the items are a manifestation of the same underlying construct. These findings are in line with those reported for other cross-cultural adaptations.[13–15,17–19,21,22,24]

The strong test-retest reliability results suggested high stability and reproducibility of pVHI-EP scores overtime. Therefore, this implies that the pVHI-EP scores obtained were primarily due to differences among children rather than other factors. These results corroborate those reported for other validation studies.[13–15,18,21,22]

The validity of pVHI-EP as a measurement tool for the psychosocial impact of dysphonia in children was confirmed in this study.

Complete full data (content validity) were found for the pVHI-EP which is in line with the proposed criteria (<5%), and it is consistent with that reported for the Italian pVHI version.[13] A possible interpretation of this result is the pVHI-EP easy readability by Portuguese caregivers which is in agreement with the Italian researchers' observation.[13]

A good fit between the overall score and subscores (construct validity) was identified. The fact that correlation coefficients vary between the three domains suggests that all items are different and represent complementary information of the same underlying construct.

In the present study, the significant positive moderate correlation between VAS and pVHI-EP overall score proves concurrent validity. This indicates that both measures have similar relevant information but remain nevertheless independent and complementary.

Therefore, pVHI-EP can be a useful tool in the screening of dysphonia in children when it is not possible to apply invasive assessment measures.[15]

The results show that pVHI-EP has been able to distinguish groups that empirical evidence shown to be different (dysphonia and healthy voice) thus supporting its known-groups validity. This is in line with the other published studies.[13–19,21–24] The pVHI-EP mean overall score (29.3) for children with dysphonia is nearly close to that previously reported in the Korean[15] (33.1), French[21] (25.5), Dutch[19] (25), and Spanish[16] (24.5) cross-cultural adaptations studies. The physical domain mean score, in the present study, was found to be the highest compared to the functional and emotional domains. Similar results have been reported in a previous pVHI-EP study[25] and in some of the other pVHI cross-cultural adaptations.[13,15,16,17,19,21,23] It is possible that physical symptoms such as hoarseness are more easily associated with voice problems than emotional and functional symptoms which may be interpreted as being related to other factors than voice.[13,14]

The accuracy of the pVHI-EP was verified indicating that it can be used as a screening tool to predict dysphonia in European Portuguese children. The high sensitivity and specificity values (95.9% and 92.5%, respectively) show that pVHI-EP overall score identified a high proportion of children with dysphonia (true positives) and indicated a low risk of false positive screening. Only the overall Dutch version of pVHI[19] sensitivity percentage (100%) is higher than the percentage obtained in the present study. Also, the reported sensitivity percentages for the Turkish,[18] Dutch,[19] and Mandarin Chinese[23] versions of pVHI (78.3%, 85%, and 84.9%, respectively) are lower than the ones obtained in the current study which implies higher risk of false positives than in the pVHI-EP. The cut-off score of 10.5 for the overall pVHI-EP is nearly close to that reported for Mandarin Chinese[23] (cut-off = 9.5) and Turkish[18] (cut-off = 13) but slightly higher than the one reported for Dutch[19] (cut-off = 7).

Study limitations

The present study expanded the current literature for childhood voice dysphonia. A limitation of the current study relies in the gender disproportion between the groups (dysphonia and controls) more specifically boys. This is partially inherent to the exclusion of 46 children, 34 boys, and 12 girls, who had past history of voice disorder or were attending SLP intervention due to speech disorders. Boys' predominance in childhood dysphonia seems to be in line with the literature.[2,3] Future research could strengthen these results by including more boys with healthy voices.

Another limitation is that the current study relied on a dichotomous SLP perceptual voice screening. If GRBAS scale[28] had been used, as in other studies[13,15,21] it would have been possible to identify, the type, and degree of dysphonia for example. Further research can be done in this area in the future. Also, in the future, with regard to empowering clinical utility other assessment analyses (eg, acoustic analysis) should be added to the above-mentioned outcomes (eg, pVHI; GRBAS) because voice is a multidimensional behavior.

CONCLUSIONS

The pVHI-EP is a caregiver proxy outcome measurement tool with adequate reliability and validity for children with dysphonia.

DECLARATION OF COMPETING INTEREST

None.

Acknowledgements

We would like to thank all participants who enthusiastically accepted to participate in this study.

APPENDIX A

Pediatric Voice Handicap Index (pVHI) (Zur *et al.*, 2007)
Índice de Desvantagem Vocal Pediátrico - versão Português Europeu
Subject Number: _____ Date: ___/___/___
Número de Identificação: _____ Data: ___/___/___

I would rate my child's talkativeness as follows (circle the answer)
Eu classificaria o discurso do(a) meu/minha filho(a) da seguinte forma (faça um círculo na resposta):

1 2 3 4 5 6 7
Quiet/Listener Average/Talkative Extremely/Talkative
Ouvinte/silencioso Falador Extremamente falador

Instructions: The following are statements that many people have used to describe their voices and the effects of their voices in their lives. Circle the answer that indicates how frequently you have the same experience.
Instruções: Estas são declarações que muitas pessoas usaram para descrever os efeitos das suas vozes, nas suas vidas. Assinale a resposta que indica com que frequência teve a mesma experiência em relação à voz do seu filho.
(Never= 0 points; Almost Never = 1 point; Sometimes= 2 points; Almost always= 3 points; Always= 4 points)
(Nunca= 0 pontos; Quase nunca= 1; Às vezes= 2; Quase sempre= 3; Sempre= 4 pontos)

	(Never) Nunca	(Almost Never) Quase nunca	(Sometimes) Às vezes	(Almost always) Quase sempre	(Always) Sempre
F1. My child's voice makes it difficult for people to hear him/her. F1. A voz do(a) meu/minha filho(a) faz com que seja difícil os outros ouvirem-no(a)					
P1. My child is short of breath when talking Fi1. O(A) meu/minha filho(a) fica sem ar quando fala					
F2. People have difficulty understanding my child in a noisy room F2. As pessoas têm dificuldade em perceber o(a) meu/minha filho(a) num local com ruído					
P2. The sound of my child's voice changes througout the day Fi2. O som da voz do(a) meu/minha filho(a) altera-se ao longo do dia					
F3. At home, we have difficulty hearing my child when he/she calls us F3. Em casa, temos dificuldade em ouvir o(a) meu/minha filho(a) quando nos chama					
E1. My child seems tense when talking to others because of his or her voice E1. O(a) meu/minha filho(a) parece tenso quando fala com os outros, devido à sua voz					
F4. My child tends to avoid communication because of his/her voice F4. O(A) meu/minha filho(a) evita comunicar por causa da sua voz					
E2. People seem irritated by my child's voice E2 As pessoas parecem irritadas com a voz do(a) meu/minha filho(a)					
P3. People ask, "what's wrong with your child's voice?" Fi3. As pessoas perguntam "O que se passa com a voz do(a) seu/sua filho(a)?"					
F5. My child speaks with friends, neighbours, or relatives less often because of his/her voice F5 O(A) meu/minha filho(a) fala menos com os amigos, vizinhos ou familiares por causa da sua voz					
F6. People ask my child to repeat what he/she has said when speaking face-to-face					

(*Continued*)

APPENDIX A. (*Continued*)

	(Never) Nunca	(Almost Never) Quase nunca	(Sometimes) Às vezes	(Almost always) Quase sempre	(Always) Sempre
F6. As pessoas pedem ao/à meu/minha filho(a) para repetir quando falam cara-a-cara					
P4. My child's voice sounds dry, raspy, and/or hoarse Fi4. A voz do(a) meu/minha filho(a) é seca, áspera e/ou rouca					
P5. The quality of my child's voice is unpredictable Fi5. A qualidade da voz do(a) meu/minha filho(a) é imprevisível					
E3. I find other people don't understand my child's voice problem E3. Considero que as pessoas não entendem o problema de voz do(a) meu/minha filho(a)					
F7. My child's voice difficulties hinder personal, educational and social activities F7. As dificuldades de voz do(a) meu/minha filho(a) limitam as suas actividades pessoais, educacionais e sociais					
P6. My child uses a great deal of effort to speak (e.g., straining) Fí6. O(A) meu/minha filho(a) faz muito esforço (p. ex. tensão) para falar					
P7. My child's voice is worse in the evening Fí7. A voz do(a) meu/minha filho(a) está pior à noite					
P8. My child's voice "breaks" when he/she speaks Fí8. A voz do(a) meu/minha filho(a) "falha" quando está a falar					
E4. My child is frustrated about his/her voice problem E4 O(a) meu/minha filho(a) está frustrado(a) com o seu problema de voz					
P9. My child has to yell for others to hear him/her Fí9. O(a) meu/minha filho(a) tem que gritar para que os outros o(a) ouçam					
E5. My child is less outgoing because of his/her voice problem E5. O(A) meu/minha filho(a) é menos extrovertido(a) por causa do seu problema de voz					
E6. My child is annoyed when people ask him/her to repeat what he/she has said E6. O(A) meu/minha filho(a) fica aborrecido(a) quando as pessoas lhe pedem para repetir o que disse					
E7. My child is embarrassed when people ask him/her to repeat what he has said E7. O(A) meu/minha filho(a) fica envergonhado(a) quando as pessoas lhe pedem para repetir o que disse					

Subtitle: E-emotional subscale, F-functional subscale, and P-physical subscale.
Legenda: E-emocional, F-funcional e Fi – física.

Overall Severity Rating of Voice

(People place "X" mark anywhere along this line to indicate the severity of your child's voice; the verbal descriptions serve as a guide)

Classificação geral de gravidade da voz

(Deve colocar a marca "X" em qualquer lugar ao longo desta linha para indicar a gravidade da voz do seu filho; a legenda serve como guia)

Normal Severe

Normal Severa

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