

# An Update in Thinking About Nonorganic Voice Disorders

Eberhard Seifert, PhD, MD; Juerg Kollbrunner, PhD

**Objective:** To describe and evaluate psychosocial factors in nonorganic voice disorders (NVDs). Nonorganic voice disorders are presumed to be the result of increased muscular tension that is caused to varying extents by vocal misuse and emotional stress. It is therefore necessary to include both of these in the diagnosis and treatment of patients with voice disorders.

**Design:** Clinical survey.

**Setting:** Academic tertiary referral center.

**Patients:** To evaluate psychosocial factors in NVDs, a sample of 74 patients with NVDs was examined psychologically using the Giessen Test and Picture Frustration Test. The results were compared with a control group of 19 patients with an organic dysphonia (vocal cord paralysis).

**Main Outcome Measures:** Six scales of the Giessen Test (social response, dominance, control, underlying

mood, permeability, and social potency), 3 reaction types of the Picture Frustration Test (obstacle dominance, ego defense, and need persistence), and 3 aggression categories of the Picture Frustration Test (extrapunitive, in-trapunitive, and impunitive).

**Results:** The most striking significant difference between the 2 groups was that in conflict situations, patients with NVDs sought a quick solution or expected other people to provide one, which prevented them from understanding the underlying causes of the conflict.

**Conclusions:** Only if the psychosocial aspects are taken into account can patients with NVD be offered a therapy that treats the causes of the voice disorder. It must be decided individually whether and when a voice training approach or a more psychological-psychotherapeutic approach is preferable.

*Arch Otolaryngol Head Neck Surg.* 2006;132:1128-1132

**A** VOICE DISORDER IS CHARACTERIZED primarily by hoarseness, ranging from a mild degree to complete voice loss.<sup>1</sup> Aronson<sup>2</sup> postulates that a voice disorder exists when "quality, pitch, loudness or flexibility differs from the voices of others of similar age, sex and cultural group."<sup>2(p6)</sup>

The prevalence of voice disorders varies from 3% to 9% of the total US population and from 12% to 35% of elderly individuals.<sup>1</sup> Between 6%<sup>3</sup> and 46% of children in Europe or North America<sup>4</sup> are estimated to have voice disorders, respectively.

A distinction must be made between organic and nonorganic voice disorders (NVDs). Organic voice disorders are, for example, the result of malformations of the larynx, acute or chronic inflammations of the vocal cords, trauma, vocal cord paralysis, or benign or malignant tumors. Nonorganic voice disorders, sometimes also called functional or psychogenic voice disorders,<sup>5</sup> are defined as an impaired voice

sound, and/or reduced vocal capacity, and/or laryngeal sensations in the absence of organic laryngeal disease. The term *dysphonia* includes all these phenomena, unlike *hoarseness*, which is a description only of the sound of the voice. Herein, the term *functional dysphonia* (FD) is used to describe NVDs.<sup>2,6</sup>

## ETIOLOGY OF NVDs

The etiology of NVDs is controversially discussed, a fact that is reflected by the different terminology used. On one hand, these disorders are thought to be of psychogenic origin, "as a manifestation of psychological disequilibrium."<sup>2(p121)</sup> On the other hand, increased muscle tension (eg, with vocal abuse) is thought to play an important role in their genesis. This is, however, only an apparent contradiction, for an exquisite sensitivity to emotional stress of the extrinsic and intrinsic laryngeal muscles is suspected.<sup>2,7</sup> The causality of an FD seems to lie in the close association of psychosocial factors and muscular ten-

**Author Affiliations:** Division of Phoniatics, Ear, Nose, and Throat Clinic, Head and Neck Surgery, Inselspital, University of Berne, Berne, Switzerland.

sion. Thus, these 2 factors may represent the 2 ends of a wide spectrum of causal factors: it is not so much a matter of whether a voice disorder is the result of vocal misuse or of psychosocial factors; rather, it is a "question of degree to which the underlying emotional stresses contribute to onset and perpetuation of the excessive laryngeal tension."<sup>5(p85)</sup> For this reason, the diagnostic approach should not be restricted to the examination of single parameters of vocal function. Emotional stress, the personal life situation, and at least parts of the personal life history of the patients have to be taken into account.<sup>8</sup>

## DIAGNOSIS OF FD

The following approach has been established at the Division of Phoniatics, University Hospital, University of Berne (Berne, Switzerland), for the examination of patients with suspected NVDs.

The anamnesis includes the ongoing problems that have led to the consultation plus the patient's detailed medical history. While going over the medical history, the examiner pays particular attention to any hints or brief mentions of current interpersonal conflicts, to the way in which the patient shows emotions, and to the examiner's own emotional reactions toward the patient. Using all this information, the examiner tries to understand the subjective significance that the voice disorder may have for the patient at this stage in his or her life.

The ear, nose, and throat examination, which includes a videolaryngostroboscopy<sup>9</sup> and an audiometry if necessary, is followed by a perceptive voice analysis using the Roughness-Breathiness-Hoarseness Scale.<sup>10,11</sup> The acoustic voice analysis is based on the voice range profile, fundamental frequency, jitter and shimmer, and noise to harmonic ratio.<sup>12</sup>

A referral to the psychologist (J.K.) is made for all patients who report psychosocial stress situations in their anamnesis (whether short term or long term). In addition, all patients with psychogenic aphonia, contact granuloma, or mutation voice disorder, as well as those patients who have a persistent voice disorder despite more than 12 sessions of voice therapy, are referred to the psychologist.

The study used 2 psychological tests to evaluate the self-perception of patients with NVDs, their perception of reality, their needs structure, and their means of dealing with aggression.

## METHODS

During the observation period (May 2000 to June 2004), 105 patients with NVDs were referred for voice-psychological examination. This examination consisted of 3 consultations and comprised an extended examination of the patient's psychodynamic and family-dynamic history, the 2 psychological tests (Giessen Test [GT] and Picture Frustration Test [PFT]), and a detailed final discussion of the findings.

The diagnosis of an NVD was confirmed when the patients complained of subjectively felt symptoms of a voice disorder, which was then objectified by means of a perceptive and acoustic voice analysis and by whether a potential organic reason for

**Table 1. Detailed Diagnosis of the Patients in the Study Group**

| Diagnosis                    | Women, No. | Men, No.  |
|------------------------------|------------|-----------|
| NVDs and stress or conflict* | 30         | 12        |
| Contact granuloma            | 0          | 21        |
| Psychogenic aphonia          | 7          | 0         |
| Mutation voice disorder      | 0          | 4         |
| <b>Total</b>                 | <b>37</b>  | <b>37</b> |

Abbreviation: NVDs, nonorganic voice disorders.

\*Patients with NVDs who complained about stress or conflict situations or who continued to have an NVD despite 12 sessions of voice therapy.

these symptoms could be ruled out either by clinical history (eg, of spasmodic dysphonia) or by laryngostroboscopic diagnosis.

## STUDY GROUPS

Included in the investigation group were all patients with an NVD who complained about having 1 or more psychosocial stress or conflict situation in the last 9 months; all patients who continued to have a persistent NVD despite more than 12 sessions of voice therapy; and all patients with laryngostroboscopically diagnosed contact granuloma, psychogenic aphonia, or mutation voice disorder.

Fourteen patients turned down the advice to consult the psychologist, and the psychological tests could not be undertaken with another 17 patients because they were speakers of a foreign language, because the procedure was broken off prematurely, or because from the very beginning only 1 counseling session had been planned. This left 74 patients with NVDs (37 men, mean [SD] age, 46.9 [13.2] years; and 37 women, mean [SD] age, 46.0 [14.7] years); these patients were examined by means of psychological tests, although 4 of them were given only 1 of the 2 tests. The detailed diagnosis of the patients in the study group is shown in **Table 1**. Patients with irritable larynx syndrome were not included.

The control group consisted of 19 patients (6 men, mean [SD] age, 55.7 [10.6] years; and 13 women, mean [SD] age, 55.2 [13.7] years) who had purely organic dysphonia (OD), a vocal cord paralysis after surgical intervention. These interventions were thyroidectomy (n=12), operation of the cervical spine (n=3), cardiovascular operations (n=3), and 1 resection of the vagal nerve. Patients with malignant diseases were not included in the control group. The diagnosis of the voice disorder was confirmed in the same way as for the patients in the study group.

## TESTS AND THE BASE OF DATA ANALYSIS

The GT permits an insight into the patient's self-evaluation, perception of reality, and needs structure and has been shown to be especially relevant in studies with patients with voice disorders.<sup>13,14</sup> In addition, patients like working with this test. In the GT, the patient is given 40 bipolar statements and asked to evaluate himself or herself according to 7 grades. The answers are summarized in 6 scales (social response, dominance, control, underlying mood, permeability, and social potency).

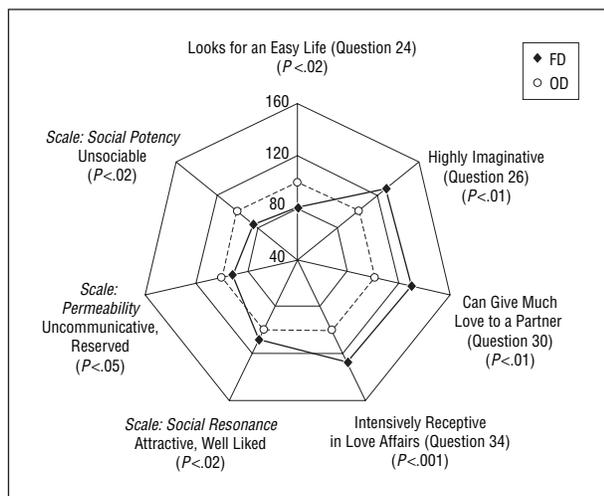
The PFT makes it possible to assess the patient's preferred way of handling aggressive impulses. This test has also proved to be worthwhile in several studies of patients with NVDs.<sup>13,15</sup> In the PFT, the patient is asked to react verbally to 24 draw-

**Table 2. Assignment of Answers to the PFT Items\***

| Direction of Aggression | Type of Reaction   |             |                  |
|-------------------------|--------------------|-------------|------------------|
|                         | Obstacle Dominance | Ego Defense | Need Persistence |
| Extrapunitive           | E'                 | E           | e                |
| Intropunitive           | I'                 | I           | i                |
| Impunitive              | M'                 | M           | m                |

Abbreviation: PFT, Picture Frustration Test.

\*The symbols are defined by the intersection of types of reaction with the directions of aggression. Capital letters denote ego defense reaction; capital letters with prime symbol, obstacle dominance reaction; and lowercase letters, need persistence reaction. The different directions of aggressions are expressed in different characters: E denotes extrapunitive (E, E', e); I, intropunitive (I, I', and i); and M, impunitive (M, M', m).



**Figure 1.** Differences between the patients with functional dysphonia (FD) and those with organic dysphonia (OD) in Giessen Test scores.

ings showing common frustrating situations by filling out an empty speech bubble for a character experiencing the frustration. The answers are assigned to the 3 different reaction types (obstacle dominance, ego defense, and need persistence) and the 3 directions of aggression (extrapunitive [externally directed aggression], intropunitive [internally directed aggression], and impunitive [avoidance of aggression])<sup>16</sup> (Table 2) and some special indices.

The significance of mean differences between the investigation group and the control group were calculated by the Mann-Whitney test. Only group differences that are significant ( $P < .05$ ) are presented and discussed. Significant mean differences in the scales and in single items of both tests are presented as percentage deviations from the mean of the control group.

## RESULTS

The 2 groups, those with FD and those with OD (men and women counted together), show a total of 12 significant mean differences ( $P < .05$ ).

In the self-images revealed by the GT (Figure 1), patients with FD evaluated themselves as more attractive (social resonance) in comparison with patients with OD, less reserved (permeability), less unsociable (social potency), more imaginative (question 26), more receptive

in love affairs (question 34), more able to give love to a partner (question 30), and less concerned about having an easy life (question 24).

Using the E-E index (a special index, where E is an aggressive, extrapunitive reaction and E is an aggressive denial of responsibility), what is particularly striking in the PFT results (Figure 2) is that in comparison with patients with OD, the scores registered by patients with FD were more than twice as high for the expectation that other people will provide solutions (e) and that they chose significantly more often the reaction type “need persistence,” that is, striving to fulfill their own needs and desires. Compared with patients with OD, however, the patients with FD were less inclined to deny frustration (I'), showed less externally directed “pure” aggression (E-E), and were less likely to lay blame on other people (E). (See Table 2 footnote.)

Men and women with FD demonstrated significant mean differences ( $P < .03$ ) in 6 variables of the GT and PFT. Their scores and a comparison with patients with OD are represented in Figure 3. Compared with men, women with FD described themselves as more concerned about their appearance (question 27) and more anxious (question 8) but also more sociable (question 2) and, less frequently, regarded as weak by others (question 36). In the PFT results, women's answers more frequently showed extrapunitive, whereas men tended to give answers that indicated impunitive.

## COMMENT

To understand the development of an NVD, it is essential not to restrict ourselves to the perceptive and acoustic impression of the voice and what can be ascertained visually from the vocal cords but rather to go further and look at psychosomatic factors lying behind the voice disorder. If psychosocial factors are not considered, this will lead to a vicious circle that is described by Aronson<sup>17</sup>(p288): “If we do not ask about psychological problems, we do not hear about them. If we do not hear about them, we do not believe in them. And, if we do not believe in them, we do not ask about them.” In the examination of patients with voice disorders, therefore, great attention should be paid to the psychosocial aspects of the etiology, although other possible causes should naturally not be ignored in the differential diagnosis.

The differentiation within the group of NVDs between habitual and psychogenic dysphonias is discussed rather controversially in the literature. The type of NVD (eg, hyperfunctional dysphonia, contact granuloma, vocal cord thickening, and mutation voice disorder) can be determined by phenomenological criteria. However, these criteria do not imply an exclusive etiology for the particular type of NVD. Aronson<sup>2</sup> differentiates 3 groups of voice disorders: organic voice disorders (“caused by structural . . . disease”<sup>2</sup>(p8)), voice disorders of multiple etiology (eg, spasmodic dysphonia), and psychogenic voice disorders. He regards the terms *functional* and *psychogenic* as synonymous. Therefore, he proposes that all NVDs should be understood to be psychogenic and that they should be so designated.<sup>2</sup> This

discussion could be approached more usefully if terms like *psychogenic*, *psychosomatic*, *somatoform*, or *somatization* are used.<sup>2,18</sup> Unfortunately, these terms are not used consistently. It seems therefore to be much more reasonable to regard the etiology of an NVD as situated on a continuum of partially psychosocial causality. Psychogenic factors are then presumed to be involved in the etiology of all FDs.<sup>19</sup> This continuum goes from *professional dysphonia* (lower occurrence) via FD and *psychogenic dysphonia* to *psychogenic aphonia* (maximum occurrence). Even the first disorder often stems not only from vocal misuse but also from problems of dissatisfaction or conflicts in private life or at work.

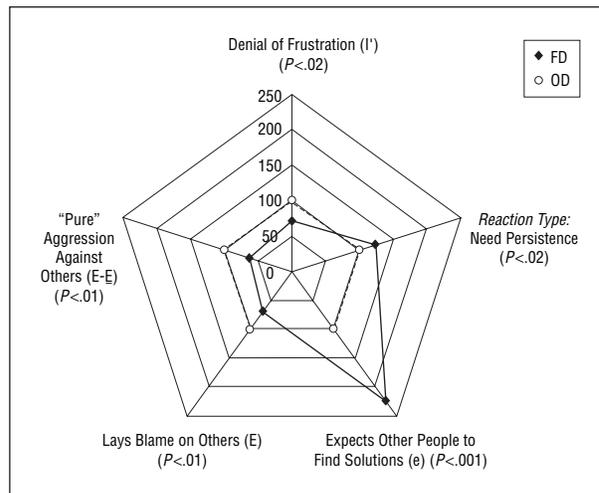
The voice disorder is a result of an event that triggers the symptom of dysphonia. This may be an acute vocal abuse, an acute laryngitis, an episode of gastroesophageal reflux, or even simply an acute conflict situation (eg, in the partnership, family, or workplace).

The empirical results of the GT show that patients with FD feel themselves to be oriented toward other people and that they see themselves as more open, less unsociable, more imaginative, and more attractive than do patients with OD. In particular, patients with FD evaluate their receptiveness in love affairs and their ability to give love to a partner more highly than do patients with OD. This striking finding seems to be in contradiction to much clinical experience because many patients with FD seem to be rather inhibited and too careful (ie, too concerned about what others may think) in their behavior in interpersonal relationships.

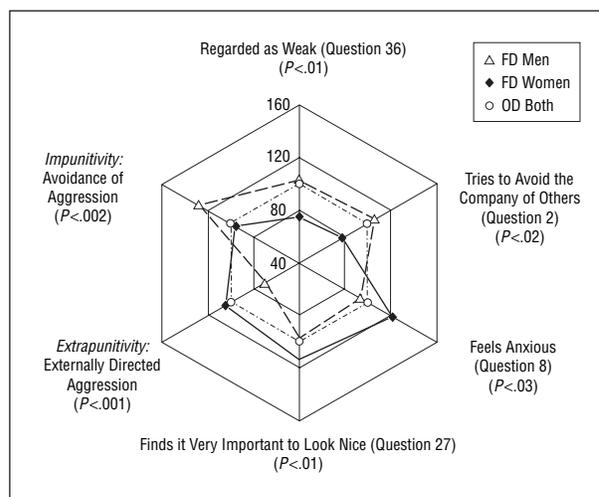
The results of the PFT explain this apparent contradiction: patients with FD are indeed clearly interested in fulfilling their desires (need persistence). They show a marked expectation that other people should fulfill these desires. Their low score for externally directed aggression and the fact that they refrain from blaming other people inhibit authentic interpersonal discussion, which is the only thing that would make it possible for the patients to live up to their potential. Patients with FD recognize their frustrations (and do not deny them), but they seem to have decided (unconsciously, but presumably also consciously) to wait for a knight in shining armor (or the female equivalent) to come along and save them. So they remain stuck in their frustration.

These patients avoid conflicts ("anything for the sake of peace") and control their annoyance. The causes of such conflicts seem to be not so much deeply rooted psychopathological problems but rather daily anxieties, failures, injuries, annoyances, disappointments over themselves and others, the nonfulfillment of desires, feelings of inadequacy, and lack of self-confidence.<sup>20</sup> Instead of recognizing that the causes of a conflict lie in part with themselves and with the partners in the interaction and in part with social (and biographical) circumstances, the frustration is simply accepted as something unavoidable.

In the significant mean differences between men and women with FD (Figure 3), it is not surprising that women seem to find it more important to look nice or perhaps that women evaluate themselves as more anxious and regard themselves as more sociable than men do. It is more surprising that in comparison with men with FD, women believe that others regard them as strong and also show



**Figure 2.** Differences between the patients with functional dysphonia (FD) and those with organic dysphonia (OD) in Picture Frustration Test scores. For definitions of e, E, and I, see the Table 2 footnote. For the definition of E-E, see the third paragraph of the "Results" section.



**Figure 3.** Differences between men and women with functional dysphonia (FD). OD denotes organic dysphonia.

a clearer tendency toward externally directed aggression (extrapunitivity). These differences may reflect a certain resignation among the men that could be the result of their marked tendency to avoid aggression as much as possible (impunitivity).

In evaluating the events that precede the onset of FD, House and Andrews<sup>21</sup>(p312) developed the dimension "conflict over speaking out" (CSO). The basis of this dimension is formed by an event, in the sense of a conflict, in which the subject is under pressure to say something (because of her or his commitment) but is constrained not to do so. The authors observed that in 54% of the female patients with FD, a CSO event or a CSO difficulty had occurred in the year before the onset of the voice disorder, but this was the case in only 16% of the control group. They conclude that those affected are women who find themselves in a social network in which they feel that too many burdens have been placed on them and that they are powerless to deal with them.<sup>21</sup>

Butcher<sup>22</sup> describes female patients with FD in a similar way. They tend to have taken on above-average responsibilities, are frequently caught up in family and interpersonal relationship difficulties, commonly have difficulties in assertiveness and in the expression of emotions or negative feelings, and feel powerless about making personal changes. From these results he formulates the model that life stresses and interpersonal problems in individuals predisposed to having difficulties in expressing feelings or views would produce involuntary anxiety symptoms and muscular-skeletal tension, which would center on voice production and inhibit it. Butcher<sup>22</sup> also indicates that the increased likelihood of a link between anxiety and muscular tension is caused by specific frustrations in early childhood.

The results of our study allow interpretations that correspond well with the reports in the literature.<sup>21,22</sup> Many psychosocial studies of the past decades have shown that psychosomatic knowledge and thinking need to be applied consistently in the diagnosis and therapy of patients with FD. This can be done in many different ways but should always take into account not only the patient's current life situation but also his or her life history and that of his or her family. If the patients succeed in gaining a greater understanding of their life history, more opportunities (to make free choices) open up for them in their daily lives.

It is only by taking such a broad-angled view—as is also being recognized more and more with other phoniatic disorders like stuttering or language development disorders—that a sound decision can be taken as to which patient should receive therapeutic support oriented toward voice training and which should receive psychological and psychotherapeutic support, and at what point. In this way, both therapeutic strategies may be indicated either synchronistically or one after the other. On one hand, if patients are referred to the psychologist too early, the result is sometimes a refusal or only superficial acceptance because for many patients this step may be too direct and may induce fear. On the other hand, if voicetraining therapies are prescribed too early, many patients may be deprived of the chance to understand their psychosomatic symptom and hence to change the interpersonal conflict situation in which they find themselves.

**Submitted for Publication:** July 22, 2005; final revision received May 23, 2006; accepted July 9, 2006.

**Correspondence:** Eberhard Seifert, PhD, MD, Division of Phoniatics, Ear, Nose, and Throat Clinic, University of Berne, Inselspital, 3010 Berne, Switzerland (eberhard.seifert@insel.ch).

**Author Contributions:** The authors had full access to all the data in the study and take responsibility for the in-

tegrity of the data and the accuracy of the data analysis. *Study concept and design:* Seifert and Kollbrunner. *Acquisition of data:* Seifert and Kollbrunner. *Analysis and interpretation of data:* Seifert and Kollbrunner. *Drafting of the manuscript:* Seifert and Kollbrunner. *Critical revision of the manuscript for important intellectual content:* Seifert and Kollbrunner. *Statistical analysis:* Kollbrunner. *Administrative, technical, and material support:* Seifert and Kollbrunner. *Study supervision:* Seifert.  
**Financial Disclosure:** None reported.

## REFERENCES

1. Ramig LO, Verdolini K. Treatment efficacy: voice disorders. *J Speech Lang Hear Res.* 1998;41:S101-S116.
2. Aronson AE. *Clinical Voice Disorders.* 3rd ed. Stuttgart, Germany: Georg Thieme Verlag; 1990.
3. Silverman EM, Zimmer CH. Incidence of chronic hoarseness among school-age children. *J Speech Hear Dis.* 1975;40:211-215.
4. Kittel G. Dysphonie im Kindesalter. *Laryngol Rhinol Otol (Stuttg).* 1984;63:208-211.
5. Baker J. Psychogenic voice disorders: heroes or hysterics? a brief overview with questions and discussion. *Log Phon Vocol.* 2002;27:84-91.
6. Pascher W, Bauer HH. *Differentialdiagnose von Sprach-, Stimm- und Hörstörungen.* 2nd ed. Frankfurt am Main, Germany: Wözel; 1998.
7. Rubin JS, Greenberg M. Psychogenic voice disorders in performers: a psychodynamic model. *J Voice.* 2002;16:544-548.
8. Roy N, Bless DM, Heisey D. Personality and voice disorders: a superfactor trait analysis. *J Speech Lang Hear Res.* 2000;43:749-768.
9. Schneider B, Wendler J, Seidner W. The relevance of stroboscopy in functional dysphonias. *Folia Phoniatr Logop.* 2002;54:44-54.
10. Nawka T, Anders LC, Wendler J. Die auditive Beurteilung heiserer Stimmen nach dem RBH-System. *Sprache Stimme Gehör.* 1994;18:130-133.
11. Dejonckere PH, Bradley P, Clemente P, et al. A basic protocol for functional assessment of voice pathology, especially for investigating the efficacy of (phonosurgical) treatments and evaluating new assessment techniques. *Eur Arch Otorhinolaryngol.* 2001;258:77-82.
12. Jaeger M, Fröhlich M, Hertrich I, Ackermann H, Schönle PW. Dysphonia subsequent to severe traumatic brain injury: comparative perceptual, acoustic and electrolaryngographic analyses. *Folia Phoniatr Logop.* 2001;53:326-337.
13. Schäuble HH, Schlünder M, Bernhard P, Lamprecht F. Psychosomatische Aspekte der funktionellen Dysphonie. *Prax Klin Verh Med Rehab.* 1988;1:34-37.
14. Mans EJ. Indikationen zur psychotherapeutischen Behandlung bei funktionellen Dysphonien. *HNO.* 1993;41:371-379.
15. Nienkerke Springer A. *Die Kinderstimme: Ein systemischer Förderansatz: Neu-wied, Kriffel.* Berlin, Germany: Luchterhand; 2000.
16. Rauchfleisch U. *Handbuch zum Rosenzweig Picture-Frustration Test (PFT).* Bern, Switzerland: Huber; 1979.
17. Aronson AE. Importance of the psychosocial interview in the diagnosis and treatment of "functional" voice disorders. *J Voice.* 1990;4:287-289.
18. Kinzl J, Biebl W, Rauchegger H, Weissbacher S, Hinterhuber H. Funktionelle Aphonie: ein Konversionssymptom zur Angstabwehr. *Psychother Psychosom Med Psychol.* 1988;38:347-351.
19. Krumbach G. Psychologische Befunde bei funktionellen Dysphonien. In: Gundermann H, ed. *Aktuelle Probleme der Stimmtherapie.* Stuttgart, Germany: Gustav Fischer; 1987:137-149.
20. Winkler F. Psychogene Stimmstörungen. *HNO.* 1987;35:242-245.
21. House AO, Andrews HB. Life events and difficulties preceding the onset of functional dysphonia. *J Psychosom Res.* 1988;32:311-319.
22. Butcher P. Psychological processes in psychogenic voice disorder. *Eur J Disord Commun.* 1995;30:467-474.