Transcultural Adaptation and Validation of the German Version of the Vocal Tract Discomfort Scale

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Summary: Objectives. Currently, there is no standardized German questionnaire to assess vocal tract discomfort in voice patients. The aim of this study was to evaluate the internal consistency, reliability, and validity of the German version of the Vocal Tract Discomfort (VTD) Scale.

Study Design. This is a cross-sectional study.

Methods. First, a cross-cultural translation and adaptation from English to German was performed. One hundred seven patients between the ages of 18 and 76 with voice disorders were divided into two different diagnosis-related groups (organic and functional voice disorder) and 50 vocally healthy adults were included. All participants completed the VTD Scale and the Voice Handicap Index (VHI). The internal consistency of the VTD Scale was analyzed through Cronbach’s α coefficient. Pearson correlation between the VDT Scale and VHI total scores was used to determine criterion validity. The VDT Scale score differences related to diagnosis groups were assessed with analysis of variance.

Results. Excellent internal consistency was found (α = 0.919, P < 0.05), and criterion validity was confirmed by a high correlation between the total VTD Scale and VHI (r = 0.674). There was a significant difference between the diagnosis groups’ total VTD Scale score (F[4.135] = 15.114, P = 0.000). Furthermore, the vocally healthy adults had significantly lower values than the two diagnosis groups (Y: 11.48, s = 8.340).

Conclusions. The German version of the VTD Scale has an excellent internal consistency and reliability, and shows high clinical validity. Thus, it is a useful instrument in voice diagnostics.

Key Words: Vocal Tract Discomfort Scale–adaptation–translation–validity–reliability.
subscore, and up to 98 for the total score. In summary, the VTD Scale is a standardized tool to quantify the severity and frequency of an individual’s throat discomfort by using qualitative descriptors. The VTD Scale has been translated into Polish, Portuguese, and Persian. The quality criteria reliability could be confirmed for all translations.

To date, there is, however, no German version of the VTD Scale available. The self-evaluation of subjective voice symptoms in German-speaking countries is commonly conducted through the Voice Handicap Index (VHI). It assesses the physical, functional, and emotional effects of voice disorders, but specific throat-related symptoms are not considered. Especially because complaints related to these symptoms are frequent in voice therapy, it is important to have a standardized tool for assessing sensory throat symptoms. The relatively short questionnaire VTD Scale allows a specific assessment of throat-related symptoms. Furthermore, a standardized questionnaire helps to effectively assess therapy effects in the individual, as well as group effects in larger research studies.

Therefore, the main aims of the present work were to translate the VTD Scale into German and to evaluate the internal consistency and criterion validity of this first German version of the VTD Scale.

### METHODS

#### Cross-cultural translation and pretest of the Vocal Tract Discomfort Scale

The cross-cultural translation and adaptation of the original English version of the VTD Scale into German was done in accordance with Beaton et al. In their “Guidelines for the Process of Cross Cultural Adaptation of Self-Reports,” five translation and review steps are defined (Figure 1).

First, the VTD Scale was translated by two independent translators into the target language German, followed by a synthesis of the two versions. The back-translation from German to English was carried out by two English native speakers. For every translation and synthesis step, a report describing possible problems or ambiguities was written. In the fourth step, an expert committee consisting of three speech and language therapists (SLTs), two with research background, one experienced practitioner, and one naïve person with excellent English skills reviewed all translations and written reports, and agreed on the prefinal version for the pretest.

#### Pretest of the German version of the VTD Scale

Thirty persons with ($n = 18$) and without ($n = 12$) self-reported symptoms of voice disorders were included in the pretest. These subjects were recruited from different private speech therapist practices in the Hildesheim area (Germany) and from a school for speech therapists (Diakonie Kolleg Hildesheim). For the voice patients, the diagnosis of a voice disorder was provided by a phoniatrician or an ear, nose, throat (ENT) physician. The VTD Scale was distributed by one of the authors (J. Lukaschyk). Each participant completed the German version of the VTD Scale without further instructions. Afterwards, an open interview was conducted to assess the understandability and wording of the questionnaire. After assessing the pretest data and the informal interviews, no changes had to be made to the German version of the VDT Scale.

#### Validation study

For the validation study, each participant ($n = 158$) completed the German version of the VTD Scale (Appendix 2), the VHI (version with 30 items), and a questionnaire for person-related data (gender, profession, diagnosis). The VHI-30 is a standardized self-rating questionnaire with 30 statements that are rated on a 5-point Likert scale from 0 (never) to 4 (always). Subjective voice-related problems are examined in three domains:

![Figure 1. Cross-cultural translation and adaptation process, adapted from Beaton et al.](image-url)
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