

Translation and Adaptation to Hebrew of the Singers' Voice Handicap Index Questionnaire

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Summary: Objectives. This study aimed to present and validate the Hebrew version of the Singing Voice Handicap Index (SVHI-Heb). It also examined possible differences in voice handicap between professional singers and singing students and among singers of various singing styles.

Methods. The original SVHI questionnaire was translated and adapted to Hebrew. The resulting Hebrew version was administered to 153 singers. Of them, 111 were professional singers, and 42 were singing students. The singers were also arranged according to their singing style to facilitate a comparison of voice handicap scores among four singing style groups (pop, rock, classical, and Mediterranean).

Results. Internal consistency of the SVHI-Heb was high, with Cronbach's $\alpha = 0.96$. Principle component analysis revealed a single factor on which all items were loaded, explaining 44.48% of the variance. A strong external validity was found between the questionnaire's scores and a four-point scale of voice disorder severity ($r_{(151)} = 0.79$, $P < 0.001$). No significant group differences were found between the scores obtained for the professional singers and those obtained for the singing students. Similarly, no significant differences were found in the scores for the four singing style groups.

Conclusions. The SVHI-Heb is a reliable and valid measure for capturing and assessing voice handicap in singers.

Key Words: SVHI—Voice—Singing—Singers—Quality of life.

INTRODUCTION

Voice disorders are diagnosed and evaluated multi-dimensionally using instrumental and subjective approaches. Instrumental approaches include, for example, laryngeal examination, aerodynamic testing, and acoustic analysis. Subjective approaches include perceptual evaluation of voice quality performed by expert listeners (Speech Language Pathologists (SLPs) or physicians) and self-reports on voice handicap made by the speakers.^{1,2} Numerous studies have acknowledged the importance of capturing the subjective experience of dysphonic individuals and demonstrated the merit, validity, and clinical value of incorporating self-report voice handicap questionnaires into the process of diagnosing and evaluating people with voice disorders.²⁻⁴

Many self-report questionnaires suitable for dysphonic adults have been developed over the years. These include, for example, the Voice-Related Quality of Life,⁵ the Voice Symptom Scale,⁶ the Vocal Performance Questionnaire⁷ and the Voice Activity and Participation Profile.⁸ Within this category, the Voice Handicap Index (VHI)⁹ is the most prevalent in research and clinical settings. Consequently, the VHI was translated and adapted to many languages. However, despite the variety of available self-report voice handicap questionnaires, research shows that these questionnaires might not adequately capture the subjective experience of

specific dysphonic populations. This is because such populations could have specific voice characteristics and even more specific voice requirements, which—in turn—affect their satisfaction with their voice as well as their voice handicap (for review, see Slavysh et al¹⁰). To address this limitation, specific voice handicap questionnaires were developed for different sub-populations of dysphonic patients seeking treatment.

Singers are a unique professional population, often considered “vocal athletes” due to their superior vocal abilities, requirements for vocal accuracy, and extensive vocal load, compared to the general population.¹¹ Because of that, singers are at a greater risk of developing organic or functional voice disorders that could negatively affect their speaking and singing voice. Interestingly, singers' scores on the VHI are often lower (ie, indicating lower voice handicap) than those obtained by dysphonic patients who are not singers. This is because the VHI does not directly address the singing voice, the artistic aspects of the voice performance, or the singers' unique subjective experience.^{12,13} In light of this lacuna, Cohen and colleagues presented a new instrument in 2007, the Singers' Voice Handicap Index (SVHI),^{14,15} which was then translated and adapted to several languages.¹⁶⁻²⁰

Since its presentation, the SVHI has been used to evaluate voice handicap in singers in various countries and languages. In these studies, dysphonic singers consistently scored higher on the SVHI than non-dysphonic singers.^{14,17,18} On the other hand, differences in singing style have not yielded consistent differences in SVHI scores.^{14,20} In addition, while most studies in the field have highlighted the observed differences between dysphonic and non-dysphonic singers, they did not directly examine the potential effect of professional experience on SVHI scores. Cohen et al¹⁵ indeed reported that, in their study, being an amateur singer was associated

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with increased SVHI scores. This observation, however, was not confirmed by others.

The present study aimed to translate and adapt the SVHI to Hebrew. During that process, we were also interested in learning whether differences in voice handicap are found between experienced and inexperienced singers and between those who specialize in different singing styles prevalent locally.

METHODS

Translation and adaptation

The original English version of the SVHI¹⁴ was first translated into Hebrew independently by four native speakers of Hebrew, who are also highly proficient in written and spoken English. The resulting four Hebrew versions were then translated back into English independently by four native speakers of English who are also highly proficient in written and spoken Hebrew. The four translated English versions were evaluated separately for all items compared to the original SVHI. The final Hebrew version included the items most accurately translated between the two languages. Finally, three bilingual judges examined the resulting Hebrew version and confirmed it is comparable with the original English version (see [Appendix A](#)). Before the administration of the final Hebrew version to the participants, two native Hebrew speakers who are also experts in the field of voice disorders (a speech pathologist who specializes in voice disorders and a singing teacher who is also a speech pathologist) reviewed the translated questionnaire. They confirmed that the final version is appropriate for content relevance and suitable for Hebrew speakers both linguistically and culturally.

Participants

After obtaining the approval of our institutional ethics committee (#2120/2018), a survey was distributed through various social media platforms (ie, Facebook, Instagram, WhatsApp) in groups of singers. The survey was also distributed in several professional singing schools. Consequently, 153 singers (92 women, 61 men) aged 19-66 years (mean age 31 years, SD = 8.42) signed an informed consent form and volunteered to participate in the study. Participants were divided into two groups based on their professional experience. The first group consisted of 111 professional singers (61 women, 50 men) who reported performing regularly and described professional

singing as their primary occupation. Potential participants who did not report singing as their primary occupation were excluded from this group and could not complete the questionnaire. The second group comprised 42 singing students (31 women and 11 men). All singers reported their primary singing style and were assigned to four groups accordingly (Pop = 67, Rock = 48, Classical = 22, and Mediterranean = 16). [Table 1](#) summarizes the gender and age distribution of the singers in the four singing style groups.

Sixty singers (39%) reported smoking, with a mean reported number of eight cigarettes/day. Forty-three singers (28%) reported having allergies, 50 (33%) reported phlegm, 18 (12%) reported occasional reflux, and 18 (12%) reported other medical conditions. Sixty-seven singers (44%) reported being examined by an Ear, Nose & Throat physician over the past year, 18 (12%) reported known vocal folds pathology/condition (eg, vocal nodules, edema, incomplete glottal closure, benign lesions), 28 (18%) were treated by an SLP for voice disorders, and 50 reported a history of surgery under general anesthesia.

Procedure

All participants completed an online survey consisting of four sections. The first section included general background questions (eg, gender, age, general medical condition, sleeping habits, smoking). The second section contained questions about voice (eg, amount of speech during the day, reported voice disorders, laryngeal pathologies). The third section included questions regarding the participants' professional singing activities (eg, experience, genre, singing education). The fourth section consisted of the translated SVHI questionnaire (36 items) and a 4-point scale on which they subjectively rated their voice problem (0 = no problem, 1 = mild problem, 2 = moderate problem, 3 = severe problem). Participation was voluntary and took 10-15 minutes.

RESULTS

Internal consistency, reliability, and validity

Internal consistency of the Hebrew version of the SVHI (SVHI-Heb) was high, with Cronbach's $\alpha = 0.96$. As noted, the SVHI consists of 36 items, originally arranged to capture three domains: physical, functional, and emotional. Cronbach's α was also calculated separately for the three domains, yielding

TABLE 1.

The Gender and Age Distribution (N and % in Parentheses for Gender; Mean and SD for Age) of the Singers in the Four Singing Style Groups

		Singing style				Total
		Pop	Rock	Classical	Mediterranean	
Gender	Men	33 (34.3%)	22 (45.8%)	5 (22.7%)	11 (68.7%)	61
	Women	44 (65.7%)	26 (54.2%)	17 (77.3%)	5 (31.3%)	92
Age (SD)		31.3 (6.6)	31.5 (9.8)	31.0 (8.3)	26.6 (7.1)	31.0 (8.4)

TABLE 2.
Pearson Correlation Coefficient* Obtained Among the Three Domains of the SVHI

SVHI domains	Physical	Functional	Emotional
Physical	–		
Functional	0.85	–	
Emotional	0.84	0.87	–
Total	0.94	0.95	0.96

* All coefficients are statistically significant ($P < 0.01$).

high values for all three sections. Specifically, for the physical section (10 items) $\alpha = 0.86$, for the functional section (10 items) $\alpha = 0.85$, and the emotional section (16 items) $\alpha = 0.94$.

Factor analysis was performed to evaluate the structure validity of the translated questionnaire, with principle component analysis as the method of factor extraction. Results demonstrated a single factor on which all items were loaded with an Eigenvalue of 16.12, explaining 44.48% of the items' variance. This result was also supported by the high Pearson correlation coefficients ($0.84 \leq r \leq 0.96$) found among the scores obtained for the three domains and the total score of the questionnaire. A summary of the Pearson correlation coefficients obtained among the three domains is presented in Table 2.

The external validity of the translated questionnaire was evaluated by computing the Pearson correlation coefficient for the comparison between the total score of the questionnaire and the participants' ratings on the four-point scale of voice disorder severity. Results revealed a strong correlation between the two measures ($r_{(151)} = 0.79$, $P < 0.001$).

Group differences

To examine differences in voice handicap between singing students and professional singers, data were calculated for the two groups. Table 3 summarizes the results obtained for the two groups on the Hebrew version of the SVHI.

TABLE 3.
Means Scores and Standard Deviations (In Parentheses) Obtained for Students and Professional Singers on the Three Domains and Total Score of the SVHI Questionnaire

Domain	Group		$t_{(151)}$	P
	Students ($n = 42$)	Professionals ($n = 111$)		
Physical	7.29 (5.86)	7.22 (6.36)	0.06	0.951
Functional	7.12 (5.46)	7.09 (6.06)	0.27	0.978
Emotional	6.93 (8.54)	7.47 (9.60)	–0.32	0.750
Total	21.33 (18.99)	21.77 (20.92)	–0.12	0.905

Data show that similar handicap scores were obtained for the two groups, with minuscule numeric differences ranging between 0.03 and 0.54. Four separate independent-sample t tests were conducted to evaluate these differences. As shown, results demonstrated no significant differences between the two groups for all domains and the questionnaire's total score.

To examine for differences in voice handicap among the four singing styles (pop, rock, classical, and Mediterranean), data were arranged by the four groups. Table 4 summarizes the results obtained for the four singing style groups.

As shown, similar group means were obtained for the three domains and total score of the questionnaire, with slightly lower values for the classical singers than the other three groups. Nonetheless, the results of the four separate ANOVAs revealed no significant group differences among the four signing style groups for all scores of the SVHI.

DISCUSSION

The primary goal of this study was to prepare and validate the SVHI-Heb. As noted above, the original English version of the SVHI was developed to capture voice handicap among singers. Since its publication in 2007, it has been translated into different languages, and its added contribution to the multidimensional evaluation of voice disorders in singers has gradually made it an essential instrument.

The original questionnaire was initially designed to include questions that capture three domains (physical, functional, and emotional). However, results demonstrated that the singers responded similarly to all questionnaire items, yielding a single factor that explained 51.5% of the variance. Consequently, it was concluded that the SVHI may be regarded as a single-score scale.¹⁴ Our findings, established on a group of 153 singers who are native speakers of Hebrew, agree with that. Specifically, the principal component analysis supported a single-factor solution that explained 44.5% of the variance. This finding, combined with the data reported in the original study, suggests that the results obtained from the SVHI should not be taken as providing information on the three domains. Instead, the questionnaire provides a holistic estimate of the singers' voice handicap. Yet, it should be noted that despite this conclusion, results were presented here for the originally intended three domains (physical, functional, and emotional), in addition to the overall questionnaire's score. This was done to facilitate future comparisons with data from translations of the SVHI to other languages. It is our hope that such data could provide additional insight into the unique experience of singers and their subjective perception of voice handicap.

The fact that the SVHI was shown to be a single-factor questionnaire has led its authors to present a shortened version,²¹ suggesting that while the complete 36-item questionnaire provides a reliable overall estimation of the singers' voice handicap, a shortened version could offer a similar, more compact, yet reliable version. Our result may be interpreted as adding support to this line of thinking. Indeed, after the

TABLE 4.
Means Scores and Standard Deviations (In Parentheses) Obtained for the Four Singing Style Groups on the Three Domains and the Total Score of the SVHI Questionnaire

Domain	Singing style					$F_{(3149)}$	P
	Pop ($n = 67$)	Rock ($n = 48$)	Classical ($n = 22$)	Mediterranean ($n = 16$)	Overall ($n = 153$)		
Physical	7.76 (6.99)	7.63 (5.18)	4.82 (3.76)	7.19 (7.79)	7.24 (6.21)	1.35	0.262
Functional	7.30 (7.02)	7.44 (4.87)	5.32 (2.53)	7.69 (6.75)	7.10 (5.89)	0.80	0.496
Emotional	7.94 (10.97)	7.38 (6.95)	4.50 (4.98)	8.44 (12.05)	7.32 (9.29)	0.85	0.469
Total	23.00 (23.84)	22.44 (16.01)	14.64 (10.28)	23.31 (25.66)	21.65 (20.35)	1.03	0.381

presentation of the full 36-item Hebrew version of the SVHI, we aim also to examine and present its shortened version.

Beyond the presentation of the Hebrew version of the SVHI, we were interested in learning whether differences in voice handicap will be found between professional singers and singing students. This question was motivated by the discrepancies between previous reports. On the one hand, Cohen et al.¹⁵ for example, reported that the level of expertise in singing was strongly associated with voice handicap scores obtained on the SVHI. On the other hand, this finding was not replicated when the SVHI was translated into Polish²⁰ and Italian.¹⁷ Both studies included professional singers and singing students but failed to examine differences in SVHI scores between those groups.

Our results support previous studies that found no impact of professional experience on voice handicap. Different contradicting explanations for this may be suggested. For example, most of the singing students who participated in our study have reported not having an active singing career yet. Therefore, they may not be exposed to high vocal demands at this point in their professional career. However, some reported working in occupations involving intense vocal use other than singing (eg, bartending or waitressing), which could explain higher voice handicap scores.^{22,23} Similarly, professional singers are well-trained in vocal techniques and are therefore expected to use their voices properly without inflicting harm upon themselves. However, being a professional singer often involves intensive vocal use during performances or recordings, which may increase the risk of vocal load¹¹ and lead to higher voice handicap scores. Beyond that, voice handicap scores could be strongly affected by additional factors that are not directly related to professional experience. Such related factors could involve personality, emotional attributes, stress, or even daily life events.^{24,25} In short, our findings support previous studies that found no significant difference in reported voice handicap as a factor of professional experience. We interpret that as showing that the SVHI is not sensitive to this factor, which implies that it may be used reliably for both professional and less-experienced singers.

Finally, we were interested in examining whether voice handicap differences would be found among singers of

locally prevalent singing styles. This question was motivated by inconsistent findings reported in previous studies. On the one hand, Cohen et al.,¹⁵ for example, reported that Gospel singers exhibited higher voice handicap scores compared to singers of other styles. On the other hand, others contradicted these findings and reported a similar prevalence of voice disorders among singers of different styles,¹¹ with no differences in SVHI scores between classical and contemporary singers.¹⁹ Our findings showed no significant differences in SVHI scores among singers of the four observed styles (pop, rock, classical, and Mediterranean). Interestingly, while the classical singers exhibited lower handicap scores than all other singers, these differences failed to reach statistical significance. This finding is reminiscent of Phylant et al.,²⁶ who compared classical, musical, and contemporary singers and found consistent training and vocal load differences. Specifically, opera singers were found to perform fewer times than other singers but practiced more hours per month. Moreover, classical singers had a higher level of singing education compared to all other singers. These differences suggest that classical singers might be at a lower risk for developing voice disorders. Interestingly, despite the seeming superiority of the classical singers' training and their lower vocal demands, the researchers did not find any significant differences between the three different styles of singers in their experience of vocal impairment, disability, or handicap. Our results align with these reports,^{11,26} as our classical singers had slightly lower scores on the SVHI, but—as noted above—these differences failed to reach statistical significance. In light of these findings, we suggest that future research should corroborate this point and further examine possible differences in voice handicap between singers of various styles while controlling for background measures and personal attributes and by using standardized and well-established instruments.

CONCLUSIONS

The SVHI-Heb has been demonstrated to be a reliable and valid tool for assessing and quantifying voice

handicap among singers. It is now available for both clinical and research applications. Future studies could explore differences in voice handicap across various singing styles while accounting for additional intra-personal and inter-group variables. In addition, the present study did not examine differences in SVHI scores between dysphonic and non-dysphonic singers. Therefore, examining such group differences among Hebrew-speaking singers and comparing them to available data in other languages and singing styles would be of special interest, thus promoting local and international research on the singing voice. Finally, an additional future direction is determining the discriminant ability as well as treatment responsiveness of the SVHI-Heb. We hope

that the addition of the SVHI-Heb to the available translated versions will foster international collaborations among researchers and clinicians, ultimately benefiting singers locally and worldwide.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

APPENDIX

The Hebrew version of the SVHI (SVHI-Heb)

הנחיות: המשפטים הבאים נאמרו על ידי זמרים רבים, כדי לתאר את קולם ואת ההשפעה שיש לקול השירה שלהם על חייהם. נא להקיף בעיגול את המספר המתאר באיזו תדירות המשפט נכון עבורך.

0=אף פעם	1=לעיתים רחוקות	2=לפעמים	3=לעיתים קרובות	4=תמיד	
F.1				0	נדרש ממני מאמץ רב כדי לשיר
P.2				0	הקול שלי נסדק ונשבר
F.3				0	אני מתוסכל מהשירה שלי
P.4				0	אנשים שואלים "מה הבעיה בקול שלך?" כשאני שר
F.5				0	היכולת שלי לשיר משתנה מיום ליום
F.6				0	הקול שלי "נגמר" לי כשאני שר
E.7				0	קול השירה שלי גורם לי להרגיש רע
F.8				0	בעיות השירה שלי גורמות לי לא לרצות לשיר/להופיע
E.9				0	אני נבוך מהשירה שלי
P.10				0	אני לא יכול להשתמש ב"קול הגבוה" שלי
F.11				0	אני נלחץ לפני שאני שר בגלל בעיות השירה שלי
F.12				0	קול הדיבור שלי אינו נורמלי
P.13				0	הגרונ שלי יבש כשאני שר
P.14				0	נאלצתי לוותר על שירים מסוימים בהופעות שלי
E.15				0	אין לי בטחון בקול השירה שלי
F.16				0	קול השירה שלי אף פעם לא נורמלי
P.17				0	קשה לי לגרום לקול שלי לעשות מה שאני רוצה
P.18				0	עלי "ללחוץ" כדי להפיק את הקול שלי כשאני שר
F.19				0	קשה לי לשלוט בנשיפתיות שבקול שלי
P.20				0	קשה לי לשלוט בחספוס של הקול שלי
P.21				0	קשה לי לשיר בקול רם
F.22				0	קשה לי לשמור על הטון כשאני שר
E.23				0	אני חרד לגבי השירה שלי
E.24				0	השירה שלי נשמעת מאומצת
E.25				0	קול הדיבור שלי צרוד אחרי שאני שר
P.26				0	איכות הקול שלי אינה עקבית
E.27				0	קול השירה שלי מקשה על הקהל להאזין לי
E.28				0	השירה שלי גורמת לי להרגיש מוגבל
E.29				0	קול השירה שלי מתעייף בקלות
E.30				0	אני מרגיש כאב, עקצוץ או מתנן כשאני שר
E.31				0	אני לא בטוח "מה יצא" כשאני שר
E.32				0	אני מרגיש שמשוהו חסר בחיי בגלל חוסר היכולת שלי לשיר
E.33				0	אני חושש שבעיות השירה שלי יגרמו לי לאבדן הכנסה
E.34				0	אני מרגיש "מחוץ לעניינים" בסצנת המוזיקה בגלל הקול שלי
E.35				0	השירה שלי גורמת לי להרגיש חסר יכולת
E.36				0	אני נאלץ לבטל הופעות, חזרות או אימונים בגלל השירה שלי

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