Factors Affecting Voice Therapy Completion in Singers

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Summary: Objective. The purpose of this study was to determine (a) which factors may affect singers' completing voice therapy, and (b) develop predictive profiles to capture those singers at risk for dropping out of voice therapy.
Study Design. A case-control study was conducted comparing singers who completed voice therapy to singers who dropped out of voice therapy.
Methods. Six factors, including age, gender, diagnosis, length of time between laryngology referral and commencement of therapy, type of singer, and referral source were investigated in relation to voice therapy completion using the medical records of 409 singers in the Massachusetts General Hospital Voice Center database.
Results. Referral source and type of singer were demonstrated to be the most robust predictor of singers' completion of therapy.
Conclusions. Forty-seven percent of singers who were referred to voice therapy completed their course of treatment. Sixty percent of singers who dropped out of voice therapy were reliably identified based on what types of music they sing (type of singer) and who referred them for laryngology evaluation (referral source), aiding in early identification of those singers who may need additional support to reach their therapy goals. Identifying specific characteristics of singers completing or dropping out of voice therapy may allow medical professionals to better serve the specialized needs of singers who use their voices professionally and recreationally.
Key Words: Voice therapy–Voice rehabilitation–Singing voice rehabilitation–Therapy completion–Therapy dropout.

INTRODUCTION

The ultimate goal of medical and/or rehabilitative therapy—be it physical therapy, occupational therapy, speech-language therapy, psychotherapy—is to be able to serve the patient and produce positive outcomes. A breakdown in this service delivery occurs, however, when a patient does not adhere to the recommendation for therapy or drops out before its completion. Voice therapy has been established as an effective treatment for dysphonia.[1–5] For those singers who use their voices professionally and recreationally, completion of a voice therapy rehabilitation program, which focuses on singing and/or speaking voice rehabilitation, may be integral to a successful return to the stage or a recording career after vocal fold injury or loss of function. Understanding the intricacies of those singers who have completed voice therapy could lead to medical professionals being better able to serve the very specific needs of those who use their voices professionally and recreationally.

There are myriad factors potentially influencing voice therapy completion. These include scheduling issues, time between initial laryngological evaluation and first therapy session, number of therapy sessions, time between referral and evaluation, insurance coverage, gender, and age.[6,7] Voice-therapy-specific data

imply that attendance and attrition vary at different stages of evaluation and intervention. Portone et al (2008)[8] found that 38% of patients did not seek evaluation by a speech pathologist after referral from a laryngologist and that of those who did, 47% did not follow through with therapy after the initial voice therapy evaluation. In a 2009 study by Hapner et al of those who began voice therapy, 65% dropped out before completion.[9] In their study, Hapner et al describe a completer of voice therapy as having met any of the three following criteria: "(1) the patient reached therapy goals, (2) the patient indicated satisfaction with voice quality, and (3) no additional benefit was expected from future sessions and the patient was referred to another discipline (medical/surgical intervention, singing voice specialist, psychology and others)." A subsequent study by Portone Maira et al studied temporal variables and their ability to predict voice therapy completion.[6] Number of therapy sessions attended and the duration between otolaryngology referral and the initial voice therapy evaluation session were predictors of voice therapy completion. The Emory group's studies in 2008, 2009, and 2011 on voice therapy completion did not look at voice therapy outcomes or the alliance between care providers and patients/clients. However, regarding the former, John et al found that good outcomes in voice therapy treatment were associated with completion of voice therapy.[10] It has been established that good communication and alliance between health-care provider and patient are associated with adherence.[11,12] Studies regarding voice therapy completion, however, only examine data that are an aggregate of both singers' and nonsingers' attrition and attendance.[6,8,9,13]

In this connection, several factors may provide predictive information regarding voice therapy completion. These include: (1) the means by which a singer arrives at the office of a laryngologist (referral by voice coach, physician, etc); (2) genre of music he or she sings; (3) length of time between laryngological evaluation and commencement of therapy; (4) underlying medical

pathology; (5) age; and (6) gender. Previous non–singer-specific voice therapy attendance data have assessed the profiles of a voice therapy dropout[9] with regard to gender, age, race/ethnicity, quality of life impact, severity of dysphonia and diagnosis, as well as the predictive role of temporal variables influencing voice therapy completion.[6] Therefore, creating profiles that capture these variables may be useful in predicting a singer's likelihood to comply with the prescribed voice therapy (for the singing and/or speaking voice), helping to identify at-risk patients. The primary purpose of this research study was to identify factors affecting singers' completing or dropping out of a of a voice therapy program as well as define predictive profiles of completers and dropouts.

METHODS

Study design
A case control study was conducted using the Massachusetts General Hospital, Center for Laryngeal Surgery & Voice Rehabilitation (MGH Voice Center) Database, encompassing 2 years from September 1, 2011 to August 31, 2013. Patients were singers referred to the MGH Voice Center by a variety of sources (referral by voice coach, physician, etc), subsequently assessed by MGH Voice Center laryngologists and then referred to voice therapy for the speaking and/or singing voice. Singers were then treated by one of three Speech-Language Pathologists on staff, all of whom were singers of various genres of music and represented both male and female genders. This study is concerned with the original outside referral source to the MGH Voice Center. The MGH Voice Center provides multidisciplinary care to a wide variety of singers locally, regionally, and internationally.

Participants
All patients listed in the database who self-reported as singers—both amateur and professional—during the above dates were analyzed, including those who attended initial medical evaluation but did not follow up for voice therapy. Database and patient files, including physician report, voice therapy clinic notes, voice evaluation reports, and video-taped interviews ("face tapes") were accessed by the first author of this study—who was not a treating clinician—for analysis. Of the 790 patients referred for voice therapy during this 24-month period, 409 were singers and were analyzed for this study.

Instrumentation and categorization
Type of singer was self-reported by the patient during initial evaluation by the laryngologist, referenced in the case history form or weekly therapy SOAP notes (subjective, objective, assessment, and plan treatment note), and was then coded into three categories: (1) classical/opera, (2) music theater, and (3) popular. Popular music encompasses all genres of music beyond classical/opera and music theater, including but not limited to pop, rock, jazz, country, gospel, etc. The categorization reflects the performance behaviors and conditions expected within each of these genres. Classical/opera singers are trained to sing unamplified over large orchestras of 80+ instruments for

long periods of time. In addition to the expectation of using their voices for song, behaviorally, music theater singers may also be performing with spoken dialogue and/or dancing. These performances are frequently amplified and many times, but not always, the accompanying instruments are below the stage. Lastly, those singers in the popular singer category usually perform in venues with amplification, and usually with no expectation of spoken dialogue and variable presence of dancing. Within these genres the accompanying instruments are often, but not always, on the same level as the singer, rather than in an orchestra pit below the stage. Diagnosis was coded in terms of Rosen and Murry,[14] which consists of four areas: (1) organic (nodules, polyps, cysts, fibrovascular changes), (2) nonorganic (muscle tension dysphonia, functional dysphonia), (3) movement disorders of the larynx (paresis, paralysis, paradoxical vocal fold movement, spasmodic dysphonia, tremor), and (4) systemic disease affecting voice production (laryngitis, tonsillitis, laryngopharyngeal reflux disease, other neurologic diseases such as Parkinson's). Patients were coded as having one or more of these based on report from the referring MGH Voice Center laryngologist. Ninety patients had both and organic and functional diagnosis. As such, during analysis, these four categories were re-coded to better reflect the heterogeneity of laryngeal diagnoses (Table 1). Referral source was reported to the physician during the initial laryngology evaluation and/or was reported during appointment scheduling at the Center and noted in the Voice Center's electronic medical records. If necessary, the patient's video-recorded interview ("face tape") was consulted to obtain data points. Length of time (LOT) between evaluation by an MGH Voice Center laryngologist and the commencement of therapy was also recorded. The timeframe for this slightly differed based upon whether a patient was given a voice evaluation, which included a full acoustic and aerodynamic assessment, or was expedited straight into therapy without a full voice evaluation with acoustic and aerodynamic assessment. Thus, for the former, LOT was calculated as the time between the initial examination by the laryngologist and the voice evaluation, whereas for the latter, LOT was calculated as the time between the laryngology examination and the first session of therapy. For those who did have a full voice evaluation, this was not counted as a "session" of voice therapy. Age at the time of medical evaluation was used.

TABLE 1.
Diagnostic Categorization

Original Diagnosis Coding Categories From Rosen and Murry (2000)[5]	Diagnosis Coding Used in Analysis
(1) Organic disorder	(1) Organic only
(2) Functional disorder	(2) Functional only
(3) Movement disorder of the larynx	(3) Both organic and functional
(4) Systemic disease affecting voice production	(4) Other

TABLE 2.
Variables Investigated

Independent Variable	Type of Variable
Age	*Continuous*
Gender	(1) Female, (2) Male
Diagnosis (based on Rosen and Murry, 2000)[5]	(1) Organic only (2) Functional only (3) Both organic and functional (4) Other
Length of time	Between MD evaluation and voice evaluation/start of therapy: *Continuous*
Type of singer	(1) Classical/Opera (2) Music theater (3) Popular
Referral source	(1) Word of mouth, Internet, Grammy's (2) Voice teacher, voice coach, or other music professional (3) Outside MD, PCP, ENT, voice therapist, or other medical professional (4) Patient was a previous patient or current patient; already in Voice Center System (5) Unknown

Procedures

Six independent variables (Table 2) were investigated in relation to the dependent variable of completion of voice therapy. A completer was defined as: (1) a patient who achieved therapy goals and was discharged from therapy; (2) a patient who achieved therapy goals and was given "return as needed" (pro re nata) note; (3) a patient who expressed satisfaction with present voice function without having met stated goals, and a mutual decision was made to discharge from voice therapy; and (4) a patient who did not achieve therapy goals, but was compliant with recommendations and no further progress was expected. All other patients who were referred for voice therapy but did not complete were defined as voice therapy dropouts. Data were anonymized and coded. This study did not address voice therapy outcomes or the number of voice therapy sessions a patient attended.

Data analysis

All statistical analyses were conducted using *IBM SPSS* (Version 21, IBM Corp, Armonk, NY) with alpha set at $P < 0.05$. A multiple binary logistic regression analysis was conducted to predict completion based on the six variables, in which those variables were analyzed by simple contrasts. Analyses using simple contrasts allow the groups in each category to be compared to an identified reference group. Reference groups were chosen based upon possible areas of interest. In this instance, for the referral source variable: voice teacher was chosen as a referent variable (as previous non–singer-specific studies did not address referral source)[6,9]; for diagnosis: the diagnostic category of both organic and functional was chosen as the referent variable to account for the heterogeneity of voice disorders themselves; for type of singer: classical singer was chosen as the referent variable, as previous literature indicates classical singers have increased health information-seeking behaviors.[15] Significant variables were further investigated with contingency tables. The predictive probability for completion was determined.

RESULTS

Of the 409 participants who met the inclusion criteria, 194 (47%) completed their voice therapy program.

Significant predictors of voice therapy completion

Gender, referral source, and type of singer (Table 3), were all significant predictors of voice therapy completion at the omnibus level; diagnosis, age, and length of time were not significant predictors. When controlling for all six variables, significant variables included gender, referral source, and singer type: women had 1.77 greater odds of completing voice therapy compared to men; singers referred by voice teachers had almost 2.80 times the odds of completing voice therapy compared to patients who were previous patients at the Center; and classical singers had 2.44 times the odds of completing therapy compared to popular music singers. At the omnibus level therapy, completion rates of music theater singers were not significant in relation to the reference group.

In individual categorical analyses of the relationships between the significant independent variables of gender, referral source, and type of singer, and the dependent variable of completion, slightly different patterns emerged. Both men and women completed therapy as expected in the univariate analysis and symmetric measure of gender (Tables 4 and 5). However, both referral source (Tables 6 and 7) and type of singer (Tables 8 and 9) were significant using univariate analyses and symmetric measures. As indicated in Table 6, previous patients at the Voice Center completed therapy at less than expected rates (13 singers compared to the expected 19 singers), whereas those patients referred by a primary care physician/doctor of medicine (PCP/MD) to a laryngologist at the Center completed voice therapy at greater than expected rates (36 singers compared to the expected 27 singers). Classical singers completed voice therapy at greater rates than expected (45 singers compared to the expected 36 singers), whereas popular music singers completed voice therapy at less

TABLE 3.
Multiple Binary Logistic Regression

Variable	df	Sig.	Exp (B)	95% CI Lower	95% CI Upper
Gender	**1**	**.050**	**.566**	**.320**	**1.000**
Diagnosis: organic and functional	3	.281			
Diagnosis: organic only	1	.439	.741	.347	1.583
Diagnosis: functional only	1	.435	1.328	.651	2.710
Diagnosis: other	1	.383	.729	.359	1.482
Referral source: voice teacher	4	.121			
Referral source: word of mouth	1	.700	1.161	.544	2.477
Referral source: PCP/MD	1	.439	1.391	.603	3.207
Referral source: previous patients	**1**	**.041**	**.357**	**.133**	**.957**
Referral source unknown	1	.570	.820	.412	1.629
Singer type: classical	***2***	***.048***			
Singer type: popular	**1**	**.014**	**.409**	**.201**	**.832**
Singer type: music theater	1	.106	.473	.191	1.172
Age	1	.745	.997	.980	1.015
Length of time	1	.270	.998	.993	1.002
Constant	1	.002	4.614		

P < 0.05; Referent variables are italicized; Significant variables are in bold.

than expected rates (112 compared to the expected 123) (Table 8). Thus, at both the omnibus level and individual categorical level, type of singer and referral source are predictors, whereas gender is only significant at the omnibus level.

Classification table
The classification table (Table 10) indicates a 60% negative predictive value (46/46 + 32 = 46/78), which predicts noncompletion/drop-out rate and a 64% positive predictive value (129/72 + 129 = 129/201) to predict completion. Therefore, using the six variables of age, gender, diagnosis, length of time between laryngology referral and commencement of therapy, type of singer, and referral source, 60% of the voice therapy dropouts can be predicted, which is slightly above chance.

TABLE 4.
Univariate Analysis With Adjusted Residuals: Gender*

		Completion No	Completion Yes	
Female	Count	149	142	291
	Expected count	153.0	138.0	
	% Within gender	51.2%	48.8%	100.0%
	Adjusted residual	−.9	.9	
Male	Count	66	52	118
	Expected count	62.0	56.0	
	% Within gender	55.9%	44.1%	100.0%
	Adjusted residual	.9	−.9	
Total	Count	215	194	409
	Expected count	215.0	194.0	409.0
	% Within gender	52.6%	47.4%	100.0%

* Statistical significance = 1.96 absolute.

DISCUSSION
Referral source and type of singer proved to be the driving force behind predicting singers' completion of voice therapy for singing and/or speaking voice rehabilitation. This was revealed in statistically significant results in the univariate analyses with adjusted residuals as well as in the multiple binary logistic regression analyses.

Significant predictors
Singers in this study who were originally referred to the Center by a PCP or general ear, nose, and throat physician (ENT) and then seen at the Center by a laryngologist were following the recommendations of not just one, but two physicians by attending voice therapy for singing and/speaking voice rehabilitation. In looking at the adjusted residuals from the chi-square analyses, singers referred by a PCP completed voice therapy at greater rates than expected. Fundamentally, this indicates the potential influence of a physician's care on a performer's needs and further points to the importance in continuity of care and interdisciplinary collaboration among medical professionals.[16] In this same analysis, singers who were previous patients at the Center had poorer completion of voice therapy in both univariate and regression analyses. It could be hypothesized that their low

TABLE 5.
Symmetric Measures: Gender*

		Value	Approximate Significance
Nominal by nominal	Phi	−.043	.385
	Cramer's V	.043	.385
N of valid cases		409	

* *P* < 0.05.

TABLE 6.
Univariate Analysis With Adjusted Residuals: Referral Source

| | | Completion | | Total |
		No	Yes	
Voice teacher	Count	77	74	151
	Expected count	79.4	71.6	
	% Within referral	51.0%	49.0%	100.0%
	Adjusted residual	−.5	.5	
Word of mouth	Count	42	33	75
	Expected count	39.4	35.6	
	% Within referral	56.0%	44.0%	100.0%
	Adjusted residual	.7	−.7	
PCP/MD	Count	21	36	57
	Expected count	30.0	27.0	
	% Within referral	36.8%	63.2%	100.0%
	Adjusted residual	**−2.6***	**2.6***	
Previous patients	Count	27	13	40
	Expected count	21.0	19.0	
	% Within referral	67.5%	32.5%	100.0%
	Adjusted residual	**2.0***	**−2.0***	
Unknown	Count	48	38	86
	Expected count	45.2	40.8	
	% Within referral	55.8%	44.2%	100.0%
	Adjusted residual	.7	−.7	
Count		215	194	409
Expected count		215.0	195.0	409.0
% Within referral		52.6%	47.4%	100.0%

* Statistical significance (indicated in bold) = 1.96 absolute.

completion rates could indicate that overall they are a subset of patients for whom therapy may not be a priority and/or logistical or insurance issues may repeatedly prevent their full completion. For example, some may be music professionals whose performing schedules prevent them from finishing advocated courses of therapy due to professional touring demands or out-of-town engagements. Alternatively, they may be a group that continues to return to the Center multiple times for re-examination and re-referral only to ultimately not follow through with the recommendations given, perhaps because they prematurely conclude that therapy will be ineffective based on their prior experience. It is possible that having been unsuccessful with past voice rehabilitation precluded previous patients from returning again for further therapy, which necessitates redefining how best to assist the patient in meeting their voice goals. Another possible vantage may be that prior therapy was indeed successful

and the patient may feel comfortable with an independent review of therapy tasks in the home environment, rather than coming into the Center.

Being the most populous referral source category (n = 151), a large number of singers clearly rely on a recommendation from a voice teacher or other music professional before seeking help from a medical professional for a voice-related problem. This aligns with what Petty[15] found when investigating health information-seeking behaviors in classical singers: approximately 50% of classical singers sought the advice of a voice teacher first when experiencing a vocal problem. Therefore, the teachers' role in the referral process cannot be discounted—singers clearly rely on them when seeking help for a voice-related problem. Furthermore, it may be hypothesized that some voice teachers are referring singers to a laryngologist for a baseline check of their vocal folds before the commencement of their voice studies. This check may not identify a vocal problem necessarily, but it may give both the teacher and the student the peace of mind that there are no organic vocal fold issues. However, if during that laryngological evaluation, the laryngologist sees evidence of a functional issue, he or she may refer that singer onward to therapy. Uncovering more specifics about the behaviors of voice teacher-referred singers would be a possible area of future research.

Type of singer was significant at predicting singers' completion of voice therapy (Tables 8 and 9). Looking at the adjusted residuals of the univariate analysis, classical/opera singers

TABLE 7.
Symmetric Measures: Referral Source

		Value	Approximate Significance
Nominal by nominal	Phi	.157	.039*
	Cramer's V	.157	.039*
N of valid cases		409	

* P < 0.05.

TABLE 8.
Univariate Analysis With Adjusted Residuals: Type of Singer

		Completion		
		No	Yes	Total
Classical	Count	30	45	75
	Expected count	39.4	35.6	
	% Within singer	40.0%	60.0%	100.0%
	Adjusted residual	**−2.4**	**2.4***	
Popular	Count	147	112	259
	Expected count	136.1	122.9	
	% Within singer	56.8%	43.2%	100.0%
	Adjusted residual	**2.2**	**−2.2***	
Music theater	Count	38	37	75
	Expected count	39.4	35.6	
	% Within singer	50.7%	49.3%	100.0%
	Adjusted residual	−.4	.4	
Count		215	194	409
% Within singer		52.6%	47.4%	100.0%

* Statistical significance (indicated in bold) = 1.96 absolute.

completed voice therapy at greater rates (60%) than expected (47.4%). In the multiple binary logistic regression analysis, classical/opera singers had two times the odds of complying with therapy compared to those singers who sing popular music (Table 3). Gilman et al state that "contemporary commercial music (CCM) is the largest, and possibly the most popular genre of music in the United States at this time" and that these contemporary commercial music singers may not be aware of the importance of voice care due to lack of awareness and/or may lack health-care coverage to seek it out.[17] Phyland et al found when surveying singers of varying styles—opera, musical theater, contemporary—that there were no significant differences in the self-reported prevalence of vocal impairment, diagnosed vocal

conditions, disability, and handicap across genres/styles.[18] Therefore, although there is no difference in the prevalence of vocal impairment among these groups, those who sing contemporary/popular music may be less likely to seek help for their voice problem. Consequently, information regarding vocal health and wellness, vocal anatomy and physiology, and a thorough and complete plan of care should be made available to all singers regardless of genre. This may require increasing awareness and support among subgroups of singers who may not know that voice care is important or not have the means to seek it out.[17] Furthermore, it should not be assumed by a clinician that a singer of one genre has the health information relevant to their voice problem without further inquiry and probes.

Gender proved to be a predictor of therapy completion at the omnibus level, but not in symmetric and univariate analyses, with women completing at greater rates than men. It is well known in the literature that the majority of voice therapy patients are women.[19,20] Both Roy et al and Martins et al report a gender distribution of approximately 60% female and approximately 40% male. In this study, there was a greater percentage of women (n = 291, 71%) to men (n = 118, 29%)—slightly higher than reported averages. When controlling for all six variables at the omnibus level, gender was a significant predictor. It may be a predictor, but certainly not a robust one without the other influencing factors of type of singer and referral source, as seen in the univariate analysis.

TABLE 9.
Symmetric Measures: Type of Singer

		Value	Approximate Significance
Nominal by Nominal	Phi	.128	.035*
	Cramer's V	.128	.035*
N of Valid Cases		409	

* *P* < 0.05.

TABLE 10.
Classification Table

		Predicted		
		Completion		Percentage
Observed		No	Yes	Correct
Completion	No	46	72	39.0
	Yes	32	129	80.1
Overall percentage				62.7

Nonsignificant predictors
Diagnosis was not a predictor of completion of voice therapy. It may be hypothesized that using Rosen and Murry's definition[14] limited exploring the full power of diagnosis in predicting completion, given their four-category system. This predetermined categorization coupled with the fact that many patients at the Center had more than one diagnosis from the laryngologist may not have led to the clearest representation of patients' diagnoses.

Future work may want to include some diagnoses (such as laryngopharyngeal reflux and tonsillitis, which in their definition fell into the systemic disease category) in a more general overarching category of organic changes to the vocal folds. It may be that once the upper respiratory infection or tonsillitis resolves, a patient is less motivated to complete therapy[21]; or that prescription medication for reflux has remediated their symptoms.

Age and length of time between laryngological evaluation and commencement of therapy were not found to be significant in predicting voice therapy completion in this singer-specific study. Regarding age, these results complement what is currently seen in general in the literature regarding completion of voice therapy, when singers and nonsingers were aggregated together and speaking voice versus singing voice therapy was undefined—age is not a predictor of voice therapy completion.[6,9]

Implications and future directions

Two findings from this study have implications for how best to provide singing and speaking voice rehabilitation to singers: (a) the largest cohort of singers were referred by voice teachers, and (b) popular music singers completed voice therapy at less than expected rates. Both the former and latter reinforce the need for cross-disciplinary collaboration between medical and arts professionals to ensure optimal care is given to those who have singing-specific health-care needs. Regarding the latter, perhaps increased communication with this subgroup, via e-mail appointment reminders,[22] portable digital media players with voice therapy exercises,[23] and personal communication with therapists could potentially reduce attrition and improve follow-through. Additionally, for those singers who have engagements in other cities, telemedicine[24] could be an option to allow them to stay on track with their therapy goals and continue to get support from the knowledgeable Speech-Language Pathologists on staff.

In any discussion regarding patient follow-through with health-care recommendations, the potential for real or perceived clinician bias deserves attention, although bias was not a direct focus of this study. It is understood that any professional relationship is based on various factors: knowledge of the provider and recipient, personality, trust, experience, and collaboration to highlight a few. Biases are bidirectional, and aside from the typical concerns for preconceived notions based on race, age, gender, etc, an important potential bias in the therapeutic dynamic for singers is genre. The Speech-Language Pathologists in this retrospective study all were singers of various genres and included both male and female genders. Although they were accustomed to working with singers across a wide range of backgrounds, and understood that the therapeutic goals and means of achieving them differ by genre and individual, an impact of perceived bias from the therapist cannot be ruled out.

Research by van Leer and colleagues seeks to better define the behavior change processes[25] that underlie voice therapy, as well identify barriers to completion and promote a framework to optimize improvement.[26] The nature of singing as a dynamic and complex act of motor control, and the years of study needed to perfect such an integration of artistry and athleticism, may naturally set up singers to be more compliant to voice therapy,

as they are already disciplined, focused, and committed to a process of continuous improvement in a one-on-one environment (with a voice therapist, voice teacher, or voice coach). Studying how these behavioral change models apply to specific singer subgroups may be an area of future research, which could include subdividing singers into professional and amateur status.

Singers in this study complied at greater rates to voice therapy (47%) when compared to previous studies on voice therapy completion (35%), which did not define singer/nonsinger status.[6,8] Given singers' investment in their voices as their instruments and possible source of livelihood, this is not necessarily surprising. This further reinforces a team approach to voice rehabilitation which involves laryngologists and speech-language pathologists who focus on the needs of these highly trained vocal athletes.[27–29]

CONCLUSIONS

The purpose of this study was to determine (a) which factors may affect singers' completing voice therapy and (b) develop predictive profiles to capture those singers at risk for dropping out of voice therapy. In this study, previous patients at the Center who sang popular music had greater odds of dropping out of therapy. However, the variables investigated in this study may not capture or entirely define the behaviors of singers with regard to completing a voice therapy treatment program versus dropping out of one. Future directions of research regarding singer-specific voice therapy might address how clinicians delivering speaking and singing voice therapy can improve therapy completion. A final implication for this study lies in the probability in predicting completion. It is valuable to reflect on service-delivery to ultimately provide better access for patients who need voice rehabilitation. The six factors investigated in this study were able to identify 60% of the true negatives—those singers who dropped out of voice therapy at a rate above chance. Further investigation using a more specified diagnostic categorization system along with variables of insurance status, socioeconomic status, psychodynamic status, and professional versus amateur status may further refine predictive profiles for voice therapy completion in singers. At present, the predictors of type of singer and referral source can help predict completion to voice therapy.

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