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Patient Perceptions of Voice Therapy Adherence

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Abstract

Purpose—Patient perspectives of behavioral voice therapy, including perspectives of treatment adherence, have not been formally documented. Because treatment adherence is to a large extent determined by patient beliefs, assessment of patient perspectives is integral to the study of adherence.

Methods—Fifteen patients who had undergone at least 2 sessions of direct voice therapy for a variety of voice disorders/complaints were interviewed about their perspectives on voice therapy, with a particular focus on adherence. Interviews were transcribed and analyzed for content according to qualitative methods.

Results—Three common content themes emerged from the transcripts: Voice Therapy is Hard, Make it Happen, and The Match Matters. Findings are compared to reports of patient experiences in other behavioral interventions such as diet and exercise, and related to existing theoretical models of behavior change and the therapeutic process.

Conclusion—This study yields information toward the development of scales to measure adherence-related constructs and strategies to improve treatment adherence in voice therapy.

Introduction

Voice therapy is a behavioral intervention that can reduce or resolve various functional and organic voice disorders¹⁻³. In general, voice therapy may comprise completion of daily voice exercises, acquisition and generalization of improved voice production technique, elimination of vocally damaging behaviors, and in some instances, reduction of overall voice use^{2, 4}. Because of the requirements for consistent practice outside of the therapy room and behavior change, voice therapy requires patients to play a highly active role in their own vocal improvement. Consequently, the efficacy of voice therapy can be limited by the degree to which patients adhere to treatment recommendations⁵.

Adherence to voice therapy is a challenge failed by an estimated 18 to 65% of patients⁵⁻⁸. Clinical observations and applications of social-cognitive theories have related voice therapy adherence to patient perspectives such as outcome expectations (i.e. whether the patient

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“buys in” to voice therapy), interest in improving vocal function (i.e. motivation, readiness), and confidence in one's own ability to change voice use (i.e. self-efficacy)⁹⁻¹¹ Thus, patients' beliefs may indirectly affect voice therapy outcomes via adherence, with improved outcomes motivating further adherence and, therefore, voice improvement (Figure 1). While putative links among patient beliefs, treatment adherence to voice therapy, and voice improvement have been suggested, empirical identification of factors central to patient beliefs and treatment adherence has not been pursued. The study of patient perceptions of voice therapy and adherence, therefore, is an important component of the greater goal of improving voice treatment outcomes.

Outside of the field of speech-language pathology, factors that affect adherence to behavioral interventions have been studied extensively. These factors are sometimes divided into those external to the individual (e.g. environmental and social variables) and factors internal to the individual (e.g. cognitive, emotional and physical variables)¹²⁻¹⁴. Within these general categories of internal and external, variables are further divided into barriers and facilitators. Barriers impede adherence to health behavior, while facilitators assist it. Measurement scales are used to capture both internal factors and patient perceptions of external factors¹⁵. Sources of information used to construct these scales include theoretical models, clinical experience, and qualitative data¹⁶. Qualitative data regarding patient perspectives are typically obtained via interviews¹⁷. Aside from scale development, the information rendered from qualitative studies can also be used to evaluate and improve existing interventions and build theoretical models¹⁸. While some studies of adherence have been performed in other areas of behavioral management, these types of investigations are absent from the existing literature in behavioral voice therapy.

There are general commonalities in the demands of voice therapy and other behavioral regimens such as exercise, counseling, or smoking cessation. For instance, voice therapy patients must schedule and complete voice exercises in a manner similar to what is required in physical therapy or physical exercise programs; voice patients must self-monitor and self-correct movement as others must do in some physical therapy regimens. Voice patients must often change interaction or parenting style as may be targeted in counseling. Like patients in weight loss or smoking cessation programs, voice therapy patients must resist reverting to problematic behavior in social settings. There is a therapeutic relationship with the health care provider that is known as the therapeutic alliance, similar to that of behavioral programs and counseling/psychotherapy. This therapeutic alliance largely determines the outcome of treatment in counseling and psychotherapy¹⁹ and may play a role in voice therapy. Previously described internal barriers to assimilating new health behaviors such as physical exercise, may also apply to voice therapy, including lack of motivation, forgetting to practice or self-monitor, fatigue or pain during exercise, and low self-efficacy^{14, 20-24}. Documented internal facilitators to health behavior adherence include motivation, improvement (outcomes), use of self-motivating self-talk and strategies to organize self and environment^{13, 25-27}. The organizational and motivational strategies that individuals devise and implement to overcome external and internal barriers to adherence exemplify the concept of human agency put forth by Social Cognitive Theory: people are capable of affecting their own internal thoughts and feelings, their behavior, and their environment^{28, 29}.

Because of the general similarities between the demands of voice therapy and other behavioral interventions, it is tempting to draw from prior studies of these other behaviors and assume that patient perceptions of barriers and facilitators to voice therapy adherence are similar to these other well-studied behavioral interventions. For example, it's reasonable to assume that voice therapy patients will have perceptions similar to patient-perceived external barriers to physical exercise and diet modification that include the time

commitment involved to practice the new behavior³⁰ and external facilitators that include accountability to a therapist and to peers³¹, instruction, feedback, and encouragement from the therapist^{12, 32, 33}. However, while patient perspectives of voice *disorders* have been examined empirically³⁴⁻³⁶, patient perspectives of behavioral vocal *rehabilitation* have not been documented directly and studied systematically. Given the importance of voice therapy adherence to treatment outcomes, it is worthwhile to investigate these perspectives directly and systematically, with particular focus on issues related to treatment adherence. We hypothesize that patient perspectives will relate to motor learning, self-regulation, and possibly, the therapeutic relationship.

The purpose of the present investigation was to directly document patient perspectives of voice therapy barriers and facilitators, and to frame them within a theoretical and interdisciplinary context. This information is needed to develop valid measures¹⁶ of voice treatment adherence and to formulate effective strategies geared toward improved adherence and voice therapy outcomes. The information may also be useful for counseling patients participating in voice therapy.

Methods

Subjects

This study was approved by the University of Wisconsin Minimal Risk Institutional Review Board (MR-IRB).

Fifteen adult patients (ages 21 to 76; 3 men and 12 women) who had completed at least two sessions of voice therapy within the previous three months at the University of Wisconsin (UW) Voice and Swallow Clinic were identified from the clinic schedule history and agreed to participate in this study when invited. Diagnoses included both organic and functional voice disorders including hyperfunctional voice disorders with and without vocal fold lesions and hypofunctional voice disorders (Table 1). The average age of the six patients with hypofunctional voice disorders was 71 (range: 66 to 76), and the average age of the nine patients with hyperfunctional voice disorders was 39 (range: 21 to 52). The distribution of voice disorders and etiologies represented the variety of voice disorders typically seen in the UW Voice and Swallow Clinic. All individuals received individualized voice therapy based on a Resonant Voice Therapy protocol. Patients undergoing Lee Silverman Voice Treatment (LSVT) were excluded in order to hold therapy type relatively constant across patients and therapists.

Of the 15 participants, six were interviewed via the telephone while nine were interviewed in person in the voice clinic. All interviews were transcribed by the interviewer (EvL) either during the interview (for telephone interviews) or from an audio recording immediately following the interview (for in person interviews).

Procedure

Participant perspectives were obtained and analyzed according to established qualitative research methods that included semi-structured interviewing, content analysis and triangulation.³⁷⁻³⁹ Pre-scripted interview questions were modified when necessary during the interview to add clarity and to follow up on the interviewee's responses. Interview questions are listed in Table 2. Interviews began with "warm up questions" that directed participants toward their voice disorder and initial treatment goals. Subsequently, participants were asked about barriers and facilitators to practice, to generalization, and to change in communication behaviors. Next, participants were asked about social support and the role of the therapist. The last two questions were designed to summarize participant perspectives of their voice therapy experience.

Content analysis of interview transcripts involved parsing the content of transcripts into “meaning units,” which are groups of words that “relate to the same central meaning”⁴⁰, developing content codes to label these meaning units, and subsequently identifying overarching themes that emerged across groups of codes. In an effort to maintain the integrity of participant perceptions, only manifest (i.e. explicitly stated) content was identified in the development and assignment of content codes. Latent content that was implied by participants but not explicitly stated was not coded.

In order to reduce investigator bias and increase dependability (e.g. reliability) of transcript interpretation, a subset of 10 transcripts was read separately by both investigators to develop content codes. Investigators met and agreed upon a total of 28 content codes that captured all information provided across participants. Next, the investigators separately recoded two sets of two transcripts. The first round resulted in 66% agreement. Disagreements in assignments of meaning units to codes were resolved through discussion. In this process, four content codes were collapsed into two, and categories of “assorted barriers” and “assorted facilitators” were established for the remaining meaning units that could not be captured by the established 27 codes. A different set of transcripts was reanalyzed resulting in 87% agreement. Using these revised codes, all transcripts were then analyzed by investigator EvL. Meaning units were identified in each transcript and assigned to content codes. This process resulted in a tabular assignment of approximately 95% of transcript content to revised content codes. Resultant content tables were read by investigator NPC and remaining differences in code assignment resolved through discussion. From these content tables, the two investigators separately identified four overarching themes, agreeing on three out of four themes. The fourth theme was eliminated through discussion. In order to provide semi-quantitative data and to assess the frequency of use of each content code across subjects, the number of subjects (i.e. transcripts) in which a code appears was tallied, as incorporated in Tables 3-5. In the revision process of this manuscript, content codes were re-worded by the investigators in a more colloquial style as consistent with qualitative research (e.g. “being unsure” instead of “accuracy of practice”).

In qualitative content analysis, separate analysis of transcripts and verification of themes by study participants are part of a process termed “triangulation” and grossly reflects processes equivalent to validity and reliability testing in quantitative research³⁸. In this study, trustworthiness of the qualitative analysis was further supported by asking two study participants to evaluate the identified themes. Both participants agreed that analysis had captured the voice therapy experience. One participant added that for her, individualization of voice exercises was the most important aspect of her success in adhering to therapy, while the other stated that all themes were equally important to her.

Results

The following three themes emerged from the transcripts: 1) Voice therapy is hard; 2) Make it happen and, 3) The (clinician-patient) Match Matters. Content codes were grouped into these three themes. Actual utterances from study participants that served as exemplars of particular themes and codes are presented below within quotation marks. Several content codes were be grouped together to form sub-themes, as shown in Tables 3-5.

Theme 1: Voice Therapy is Hard

Many content codes contributed to the overarching theme of “Voice therapy is hard,” as listed in Table 3. Voice therapy was thought to be inherently difficult because of the attention, awareness and compliance it demanded, because of external barriers such as the structured time it required for home practice and loud environments that made adherence difficult, and because of multiple internal cognitive and emotional barriers such as finding

the exercises silly, feeling unmotivated, or forgetting to practice. Frequently occurring content areas contributing to this theme are discussed below.

Sub-Theme: Starting from Scratch—Several content codes showed that participants had little technical and conceptual knowledge of healthy voice use at the onset of treatment. These together formed the sub-theme “starting from scratch.” Coded as “strain” most participants reported pushing “from the back of my throat,” “throat voice,” and “huge tension in my throat.” Coded as “weakness,” most participants also reported various kinds of vocal weakness or fatigue, as exemplified by statements such as “I remember parties where I could only articulate (i.e. whisper)” or there was “a three-month period where I didn't ever totally lose it, but it was very, very weak.” In addition, most patients attested to having little or no knowledge (“no idea”) of the possible content of voice therapy, let alone the behavioral/functional aspect of voice production. Exemplifying the belief that only organic structure determines vocal health, one patient said, “I thought it (i.e. voice therapy) was kind of a dumb thing. The damage was done. But, I give things a try.” Based on a friend's fast improvement through vocal nodule surgery, another patient expressed that she had not expected her own voice therapy to be as demanding as it turned out to be. She had expected “a miracle.” Taken together across codes, participant statements show that initial knowledge of vocal function was low when entering voice therapy.

Sub-theme: Being Embarrassed—The combination of content codes attesting to the unusual nature of voice therapy warranted this sub-theme. Many participants perceived voice therapy exercises as “embarrassing sorts of things” (code “it's silly/weird”). Voice exercises were described as “silly” or “weird,” and use of a resonant voice was described occasionally as “unnatural” or somehow outside of participants' vocal self-concept. For example, one participant said, “It doesn't sound normal to me.” Moreover, several patients reported the external barrier of ridicule (or fear of ridicule) by others, in particular, by family members, and this was coded as “teasing.” One participant expressed reluctance to generalize resonant voice in connected speech due to fear that “my kids will think I'm crazy.” Several participants reported coping with negative or ambivalent statements from family members, such as, “That sounds so affected,” and “Oh, is that how you're going to talk now?” One patient noted that his family was driven “a little nuts” by his practice in the car. Most patients reported practicing only in places where no one could hear them, and one college student reported that she did not practice at all when she was living with roommates who could hear her practice. The barrier of “teasing” is also underscored by the finding that only three participants reported receiving active support from others. Taken together, “silly/weird,” “teasing” and the external barrier of “not enough time alone” to practice appeared to form a substantial barrier to adherence.

Sub-Theme: Learning Voice Technique—Participants found voice therapy tasks to be difficult to understand and execute independently outside of the clinic, and were therefore unsure of the accuracy of their productions during home practice (content code “being unsure”). One participant noted, “If anything, the most difficult part is the feedback loop,” and went on to explain that accuracy of voice technique is more difficult to judge than other motor tasks such as bicycling. A similar comparison to other motor skills was made by a participant who noted that “Jogging is easier- takes less concentration than voice. My focus needs to be there to know if I'm doing it wrong.” This difficulty discerning accuracy was great enough to discourage practice between sessions, with several patients emphasizing the need for increased session frequency so as not to “keep starting from scratch.” One participant was helped by his wife to judge accuracy.

Most patients made emphatic comments about the attention and self-awareness required to both to acquire voice technique and implement its use in daily life, thus coded as “paying

attention/being aware.” In order to complete exercises correctly, “You need 100% attention.” Self-awareness was needed for generalization: “It was all because of the exercises and the awareness. You do have to be aware. Seriously, you're like in my mind (emphatically).” Participants attested to the primacy of self-reflective cognitive processes in vocal rehabilitation with statements like: “I'm more conscious now- I used to go until I lost my voice and then I'd go, ‘Oh shoot’, “I think it's helping me to realize, be more aware on how I use my voice, when I'm not using it as streamlined as I could, as healthfully as I could.” Several meaning units in this category were also double-coded under “being unsure” such as “I need you to come with me today because I don't feel it or hear it unless I'm thinking about it.” Thus, patients stressed that practice and generalization required a substantial degree of mindfulness.

To improve voice status, participants recommended regular, attentive practice (code “being compliant”), thus again underscoring the various demands of voice therapy. Some patients stressed this as one of the most important things they would wish to communicate to new patients. For instance, participants would have advised new patients “to make sure you do it. When someone says hum 5 times per day or 120 times, it seems like a long time but it does go by. Do all the exercises that are assigned because they're going to help;” and, “If you don't do your homework there's no sense to come and see you (for therapy).” According to several patients, even brief sessions of practice help: “10 to 15 minutes at a time that was best but 2 to 3 minutes is better than nothing. It is.”

Sub-Themes: Thoughts and Feelings/Situations That Don't Help—Participants reported numerous additional barriers to practice and generalization. Being busy and not having time (including not having time alone) were the most commonly mentioned extrinsic barriers. Heavy vocal demand at work was reported (“I have to talk constantly at my work”) as well as loud social environments “everywhere I go people have the radio on.” Internal barriers included forgetting to practice, being stressed, being tired, just “not feeling like” practicing, and seeing only slow improvement. Being a talkative person by nature and becoming easily aggravated by others, were internal obstacles to one patient's healthy voice use. Another patient would forget to complete vocal function exercises during periods that his vocal symptoms and demands reduced. Several retired patients did *not* have difficulty scheduling exercise. One of these retired patients hypothesized that patients who had difficulty scheduling practice were “a little lazy” or “don't believe in exercise.”

Theme 2: Make it happen

Given the difficulty of vocal rehabilitation, the second theme “Make it Happen,” or actively engaging the voice therapy process, was perceived by patients as necessary to adherence and vocal improvement. Rather than passively responding to an environment that does not support vocal health, or giving in to internal barriers, patients reported a very active process of affecting their own behavior, internal states, and to a lesser extent, their environment. In addition, facilitators to adherence were reported.

Sub-Theme: Motivation—Several patients explicitly stressed that “you need motivation” and “If you're not really motivated to really want to change, you're not going to. It's hard work.” All participants perceived their goals as “very” important and typically followed this statement with a description of the vocal handicap. Thus, the disparity between patients' goals and their vocal handicap appeared to have motivated their participation in therapy. However, while participants had good reason for seeking voice treatment, their desire for improvement did not eliminate the challenges of voice therapy. That is, even these motivated patients perceive multiple barriers to adherence. Furthermore, only half of patients described actually enjoying working on their voice.

Sub-Theme: I Can Do It—Eight content codes describing various self-regulatory actions conveyed the sub-theme of “I Can Do It.” Nine participants used strategies of “motivating/reminding yourself” to practice their voice exercises in the face of various barriers. Most reported some sort of reminder strategy such as putting up post-it notes or placing their exercise sheet on the car visor, or combining practice with an existing daily routine such as taking medication or brushing one’s teeth. One patient used external self-reward and said, “I have to motivate myself. I put a little chocolate out. I get it when I finish. Sometimes I cheat and I begin to eat the chocolate, but I still finish my exercises.” Two participants reported that thinking about their voice clinician led them to practice or attend to voice. For example, “I always think about my instructor, and he’s sitting next to me, or she is, and then I’m terrified, and I do what they say.” Attesting to patients’ initiative to self-regulate practice was the participant, a teacher, who developed a practice strategy during the interview itself, to be applied at the start of the next semester: “I’ll bet you I won’t do it [vocal warm-ups] before I go to work [in the morning]. Why couldn’t I do that when I’m setting up my classroom every morning? And I’m ‘setting up’ my voice. The music teacher will probably catch on right away and know what I’m doing. So, that’s good. I hadn’t thought that far ahead, and I just figured out that strategy.” Several patients discussed ways to manage unsupportive friends or family members: one participant told friends who ridiculed her voice exercises: “...you try it! And they couldn’t.” Grouped under code “convenient times/places,” 12 patients chose convenient situations for practice such as in the car, during TV commercials, or when they were home alone without significant distractions (e.g. while doing laundry or when in the barn). Others reported practicing “all the time,” “randomly,” and “everywhere.”

Patients reported making an active choice to attend to and implement healthy voice techniques in connected speech across settings, captured as the code “staying in your good voice.” Positive self-talk to counter the desire to revert to non-resonant voice was reported (and was double-coded under “motivating/reminding yourself”), with one participant using the analogy that sticking with voice therapy is like resisting relapse in drug or alcohol addiction. She reported that it was still tempting to revert to hyperfunctional voice, “but I choose not to.” Patients specifically described strategies to self-regulate of resonant voice and spoke on the topic of voice placement at length. One of many comments representing this process was, “Well, when we’re in a habit we don’t realize how uncomfortable it is until we get out of it. Now when it happens I can go “hmm” to get out of it. I know what to do to get out of it - either stop talking or think about where the resonances are... It feels much less connected to the neck and throat.”

A related but separate code of content was control: the perspective that vocal health was dependent on one’s own behavior. Most patients spoke to the issue of shifting focus to a functional rather than structural understanding of voice during the therapy process. Example utterances included: “Voice therapy has really helped me learn that I can control a lot of it myself,” “Even though there’s this structural thing there is a way to improve,” “I discovered I wasn’t talking right...my voice quality was related to vocal cord damage but also I discovered that how I spoke to my benefit so I learned new techniques for creating clearer sound” and “that there are actual exercises just like any other part of your body.” Several participants noted that they therapy had given them the tools to continue improving independently.

In the code “choosing when to talk,” some patients discussed mindset and behavior changes to facilitate reduced phonotrauma or overuse, such as reducing loudness, ending conversations when upset, using a microphone, and reducing the total amount of speaking: “I started instead of yelling trying to go to quiet voice. When I get mad now I get quiet and sweet...like wicked sweet,” and “Now it’s like: you know what, I don’t really need to say

this to this person. I can...email...or...write them a note. I don't need to be involved in so many conversations... So now I think I'm more choosy on when I want to use my voice. I choose to use it." Re-structuring one's work environment to reduce vocal demand and was also reported under "managing the environment."

Several participants described being open to the concept of present and future learning, coded as "learning attitude." This included the concept of exploration/experimentation (for instance, to "take a risk and get out on the skinny branches just a little bit") and the concept of continued independent learning, for example that one shouldn't think." Well I'm all done doing these voice exercises [in voice therapy]. I have to continue it...on my own [after formal therapy has been completed]."

Last, the barrier codes of "paying attention/being aware" and "being compliant" can be placed under the sub-theme of "I can do it" since their content presents both a barrier as well as a facilitator of adherence. Adherence is challenging because attention/awareness and compliance (frequent practice) are needed to reap benefits of therapy. On the other hand, these same actions facilitate increasing accuracy of healthy/resonant voice production, thus motivating continued adherence.

Theme 3: The Clinician-Patient Match Matters

As may be expected, participants reported that learning voice technique itself was instrumental to their outcome, as coded under "technique is useful." Because they provide the content of voice therapy, voice clinicians are vital to patient vocal improvement. However, aside from teaching speaking-voice technique, the clinician was perceived as a facilitator to adherence. Theme 3 suggests that the therapist actions and the relationship between therapist and patient may play a role in motivating treatment adherence.

When analyzing participant statements in this study, it was difficult to split the content into separate codes (Table 5). Comments suggested that clinician actions to enhance participant learning were interpreted as inherently supportive, rather than as purely informational interactions. For example, the participant statement "you're helping to get it there though...if you didn't do that I wouldn't...try...I wouldn't try as much" suggests a psychological effect of a technical action. Thus, the way in which the clinician taught was perceived as a form of showing support (or not, in some instances). Grouped under the code "feedback is helpful," participants reported the following clinician behaviors that were perceived as helpful or caring: use of a variety of analogies and strategies to demonstrate voice technique; individualization of exercises to the needs and level of understanding of the patient; provision of feedback to disambiguate accuracy of production' and provision of explicit strategies to manage connected speech (rather than focusing on isolated exercises). One participant noted that feedback about accuracy had a motivating effect on her, while being asked to judge feedback herself left her "totally demoralized."

Participant need for individualization that brought the concept of caring to the forefront was coded as "the therapist is on my side." This content was manifested by statements such as "They'd think about what would help me instead of patient one or two or four or five," and recommendations such as "Find a voice therapist that you can really work with that is working *with* you to become who you want to be and to improve upon yourself and not just go to a voice therapist to go through their 'ay ee ii' and go back the next week and 'ay ee ii.'" One participant recommended that new patients "think of their therapist as their friend because you feel silly and who wants to feel silly in front of someone they're not comfortable with. You're gonna do silly things. It's OK, the therapist will do silly things with you." Conversely, another patient noted that he was "afraid" of his therapists and therefore adhered. Thus, depending on the patient, friendliness or fearsomeness may have encouraged

adherence. Likewise, several patients stated strong preferences for one therapist over another, but no one therapist was rejected or favored by all participants who had studied with multiple therapists. These findings suggest that, within a general treatment approach of resonant voice, the match between clinician style and patient preferences played a role in voice therapy adherence.

While the interview did not include questions about the referring otolaryngologist, one participant noted that the physician's recommendation to undergo voice therapy led her to do so. She said, "That's why I did it. That's why I tried."

Relative importance of themes—Participants' perceptions of the relative importance of aspects of voice therapy were addressed by the interview questions "What is the most important thing you learned in therapy?" and "What would you advise patients who are going to undergo therapy?" Answers are reported in Table 4. As shown, the majority of participants found the acquisition of resonant voice production skill and the use of attention/awareness the most important things learned in therapy. Compliance with the program and attention/self-awareness constituted the primary advice to new patients.

Discussion

The aim of this study was to document patients' perceptions of the voice therapy process, including both barriers and facilitators to adherence, in an effort to understand the challenges faced by adults undergoing treatment and to provide a basis for measurement and future interventions geared toward addressing these challenges. Our results indicated that patients perceived vocal rehabilitation as an effective but demanding process and, among other things, required difficult motor learning, active self-regulation, and a good match with the clinician. Three themes emerged: Voice Therapy is Hard, Make it Happen, and The Match Matters. Examined in the light of existing research into patient experiences with behavioral interventions, as well as basic knowledge of the content of voice therapy, the results are not surprising. Patient perceptions included both those shared across other behavioral interventions, and those unique to voice therapy, in correspondence with the similarities and differences between voice therapy and other behavioral interventions.

Perceptions shared across behavioral interventions

Barriers and facilitators to voice therapy adherence in part overlap with those experienced by patients across health behavior interventions because all behavioral interventions share the common factor of behavioral self-regulation outside of the clinical encounter⁴¹. Thus, whether the clinical session concerns voice production, weight loss, exercise, or smoking cessation, the session itself presents only one component of the intervention. Patient self-regulatory actions outside of the clinic such as practice, self-motivation, self-monitoring, and self-correction, comprise the larger part of treatment.

In Theme 1, assorted reported barriers of not having enough time, forgetting, having poor motivation, and experiencing slow improvement, are comparable to barriers to physical therapy, physical exercise, weight loss, and medical (i.e. pharmacological) regimens^{12-14, 20-26, 30, 42}. The concept of temptation to revert back to poor voice technique in response to various internal and external barriers is also somewhat comparable to that experienced by people in weight loss and smoking cessation programs^{42, 43}.

In Theme 2, Make it Happen, participants' use of self regulation emphasizes the importance of patient agency in the voice therapy. Similar "agentic" perceptions are observed in successfully adherent patients ranging from those who have learned to maintain an exercise program to those who have managed to tolerate and adhere to anti-retroviral medications²⁵.

31⁴⁴. These agentic patients report conscious decisions to adhere (i.e. commitment), and a sense of increased control over their behavior and health, similar to our participants' sense of control over their voice production technique. Additionally, our participants' reported shift from a structural perspective at the onset of therapy ("the damage was done"), to a functional perspective of voice later in therapy (code: "control") exemplifies skill attribution, a relevant construct in the study of self-regulation. The perception that a skill is acquirable rather than fixed has shown to increase student motivation and perseverance in academic learning⁴⁵ and may play a similar motivating role in voice therapy. Findings that adherent voice therapy patients continue to improve after formal treatment is completed⁴⁶ may further attest to patients' skill attribution, self-efficacy, and agency.

In Theme 3, our results suggest that the therapeutic alliance (i.e. relationship) plays a role in voice therapy adherence, as it does in psychotherapy^{19, 47}. The therapeutic alliance has been conceptualized as consisting of three interdependent dimensions: client-clinician goal agreement, client-clinician task agreement, and client-clinician bond^{48, 49}. Our participants' statements of appreciation for therapy content and feedback, reflect the dimension of goal and task agreement: the patient agrees with the clinician's approach. Feeling that "the therapist is on my side" reflects the bond dimension. Given that some elements of voice therapy and counseling/psychotherapy can overlap (e.g. changing social interaction, setting boundaries) it is reasonable to believe that the therapeutic alliance plays a role in voice therapy. Furthermore, the external facilitating and motivating effect of therapist feedback and support have also been documented in various health behavior interventions^{12, 32, 33} aside from psychotherapy. Participants' preferences for individualization may also support the theory that adults (unlike children) require problem-based learning that is adapted to their individual goals⁵⁰, again reflecting the goal-agreement dimension of the therapeutic alliance. In addition, physician influence, as reported by one participant in our study, is a documented facilitator of treatment adherence^{51, 52} in smoking cessation. Strong physician support may add urgency and importance to the voice therapy endeavor. Therefore, in order to better understand and predict adherence, the therapeutic relationship may be worthy of further investigation in voice therapy.

Perceptions Specific to Voice Therapy

Several patient perceptions are specific to voice rehabilitation, rather than to behavior change in general, or feature more prominently in our study than in qualitative studies of other health interventions. These perceptions relate to voice production and motor learning.

Participants' reports of difficulty discerning the target of resonant voice and interpreting sensory (acoustic-kinesthetic) feedback, including statements that other physical exercises are easier, suggest that voice therapy may present a unique sensory-motor challenge. Moreover, accuracy of voice exercise goal attainment may be inherently more difficult to evaluate than goals of other health behavior programs: improvement can not be quantified like lifted weights, exercise repetitions, run distances, medication doses, calories, or cigarettes. Furthermore, participants' initial lack of knowledge of vocal rehabilitation may play a role in perceived difficulty, differentiating voice therapy from common interventions such as diet and exercise. Thus multiple factors may determine why "being unsure" is part of the voice therapy process. There is debate whether provision of visual augmented feedback, which can clarify the target of voice therapy, may help or harm motor learning⁵³⁻⁵⁵.

The need to pay attention during both practice and generalization, and to practice frequently, reflect established principles of motor skill acquisition, in particular the Law of Practice and the Power Law of Practice⁵⁶. Complex motor learning and generalization within the context of communication are not part of other health interventions. It is possible that voice

technique generalization is particularly demanding of attentional resources because the task has little “functional distance” to other cognitive processes involved in communication⁵⁷.

Perceiving voice exercises as silly is a barrier unique to voice therapy, and one that may play a role in treatment adherence because it requires that the patient practice in private. Our data suggest that a good relationship with the therapist may help patients cope with it, but other strategies were not revealed. Additionally, vocal self-concept barriers commonly expressed in the clinic and represented in this study, are unique to the voice therapy process. While the problem of vocal self-concept as a barrier to adherence has been observed clinically⁵⁸, the relationship between vocal self-perception, self-concept and treatment adherence have not been explored empirically.

Experiencing poor social support is not specific to patients with voice disorders, but in voice therapy, there is no established pathway to improve social support. Although peer support groups are occasionally available to patients with head and neck cancer and spasmodic dysphonia, for most voice disorders the individual service delivery model limits social support only to the therapist. While individualized treatment in voice therapy is effective, the absence of a peer support component to voice therapy is a historical rather than an evidence-based tradition. Peer support is well-established facilitator of adherence across health interventions, and the second most important source of self-efficacy within social cognitive theory. It is possible that voice therapy barriers can be reduced in weight, and facilitators supported, through peer support. For example, patients may acquire practice strategies, voice technique and confidence from peer examples, and benefit from accountability to peers. Given the known positive effect of peer models on learning, adherence and self-efficacy, it may be worthwhile to investigate the effect of peer models on adherence and self-efficacy in voice patients.

Limitations

A potential limitation of this study is that it did not include patients who chose not to attend voice therapy. Therefore, this study has not captured the views of those who do not pursue therapy at all, or discontinue therapy early in the process. In addition, the patient perceptions in this study were focused on the resonant voice therapy approach and patient perceptions might be different for other treatment approaches. For instance, indirect types of treatment that do not include motor learning, such as reduction of overall voice use and practice of general relaxation exercises may be associated with fewer barriers to adherence because difficult motor learning processes would be eliminated. However, in this example, the sense of voice related agency might be reduced as well, because patients would not learn to produce healthy voice directly. Additionally, data were not analyzed separately by demographic. It is likely that perceptions of retired or presbyphonic voice patients differ from those of middle aged and younger individuals, and that these groups require different intervention strategies to improve adherence. Within our sample, some variation of perceptions was noted, but this variation was reduced in the analysis process by this study's focus on common themes. Last, the barriers and facilitators noted by our participants are by no means comprehensive. In clinical practice, each individual patient may present with unique voice therapy perceptions that reflect the patient's personal characteristics and circumstances.

Implications for voice therapy research and practice

This qualitative study demonstrated some commonalities and differences in the barriers and facilitators perceived in voice therapy compared to other behavioral interventions. The information is relevant to the development of voice therapy adherence research, including the construction of voice-therapy-specific adherence measures, models or theories of

adherence, and interventions to maximize adherence. The data suggest that self-regulatory agency, sensory-motor learning and the therapeutic alliance all play a role in voice therapy adherence. Future research may attempt to quantify the relative contribution of each to the adherence process: how much agency, vocal sensory-motor ability, and clinician support are necessary to insure successful adherence and outcome? To what extent can some factors compensate for the deficit of another? Aside from those discussed in this manuscript, what other barriers and facilitators contribute to adherence?

Interventions to improve adherence may incorporate strategies that reduce barriers and support facilitators. Overt listing and discussion of barriers and facilitators, as is suggested in Motivational Interviewing⁵⁹, may be helpful in this process, followed by problem-solving. For example, the barrier of accuracy of practice can be addressed by increasing intensity of treatment during the motor skill acquisition phase, peer support may be exploited to improve motivation and long term maintenance, physician recommendations to “do everything the voice therapists says” may increase patient commitment. Various strategies can be tested in clinical practice and subsequently evaluated empirically via group or single subject designs.

Conclusion

Adherence to behavioral voice therapy is a process that, according to the majority of patients who participated in this study, requires motivation, commitment, learning, self-regulation, and a good relationship with the therapist. Future research may reveal whether voice therapy adherence can be improved through the efforts of clinicians, or whether it is pre-determined by patient factors beyond our control.

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References

1. Ruotsalainen J, Sellman J, Lehto L, et al. Systematic review of the treatment of functional dysphonia and prevention of voice disorders. *Otolaryngol Head Neck Surg* 2008;138:557–565. [PubMed: 18439458]
2. Ramig LO, Verdolini K. Treatment efficacy: voice disorders. *J Speech Lang Hear Res* 1998;41:S101–16. [PubMed: 9493749]
3. Spielman J, Ramig L, Mahler L, et al. Effects of an Extended Version of the Lee Silverman Voice Treatment on Voice and Speech in Parkinson's Disease. *Am J Speech Lang Pathol* 2007;16:95–107. [PubMed: 17456888]
4. Stemple, JC. *Clinical voice pathology : theory and management*. Columbus: C.E. Merrill Pub. Co.; 1984.
5. Verdolini-Marston K, Katherine Burke M, Lessac A, et al. Preliminary study of two methods of treatment for laryngeal nodules. *Journal of Voice* 1995 Mar;9:74–85. [PubMed: 7757153]
6. Roy N, Weinrich B, Gray SD, et al. Three treatments for teachers with voice disorders: a randomized clinical trial. *J Speech Lang Hear Res* 2003;46:670–688. [PubMed: 14696994]
7. Portone CR, Johns M, Hapner ER. *A Review of Patient Adherence to the Recommendation for Voice Therapy*. 2006
8. Hapner ER, Portone CR, Johns M. A Study of Voice Therapy Drop-out. *J Voice*. In press.
9. Behrman A. Facilitating behavioral change in voice therapy: the relevance of motivational interviewing. *Am J Speech Lang Pathol* 2006;15:215–225. [PubMed: 16896171]
10. van Leer E, Hapner ER, Connor NP. The Transtheoretical Model of Health Behavior Applied to Voice Therapy. *J Voice*. In press.

11. Stemple, JC. Successful Voice Therapy. In: Stemple, JC., editor. Voice Therapy Clinical Studies. St. Louis, MO: Mosby; 1993. p. 172-179.
12. Dodd KJ, Taylor NF, Denisenko S, et al. A qualitative analysis of a progressive resistance exercise programme for people with multiple sclerosis. *Disability & Rehabilitation* 2006;28:1127-1134. [PubMed: 16966233]
13. O'Shea SD, Taylor NF, Paratz JD. ...But watch out for the weather: factors affecting adherence to progressive resistance exercise for persons with COPD. *J Cardiopulm Rehabil Prev* 2007;27:166-74. quiz 175-6. [PubMed: 17558200]
14. Coon SK, Coleman EA. Exercise decisions within the context of multiple myeloma, transplant, and fatigue. *Cancer Nurs* 2004;27:108-118. [PubMed: 15253168]
15. DiIorio, CK. Measurement in Health Behavior: Methods for Research and Evaluation. San Francisco, CA: Jossey-Bass; 2006.
16. DeVellis, RF. Scale development: Theory and applications. Thousand Oaks, CA, US; Sage Publications, Inc; 1991.
17. Burnard P. A method of analysing interview transcripts in qualitative research. *Nurse Educ Today* 1991;11:461-466. [PubMed: 1775125]
18. Glanz, K.; Rimer, BK.; Marcus Lewis, F. Theory, Research and Practice in Health Behavior and Health Education. In: Glanz, Karen; Rimer, Barbara K.; Lewis, Frances Marcus, editors. Health Behavior and Health Education: Theory, Research and Practice. San-Francisco: Jossey-Bass; 2002. p. 34
19. Martin DJ, Garske JP, Davis MK. Relation of the therapeutic alliance with outcome and other variables: a meta-analytic review. *J Consult Clin Psychol* 2000;68:438-450. [PubMed: 10883561]
20. May S. Patients' attitudes and beliefs about back pain and its management after physiotherapy for low back pain. *Physiotherapy Research International* 2007;12:126-135. [PubMed: 17624898]
21. Chang M, Brown R, Nitzke S. Scale Development: Factors Affecting Diet, Exercise, and Stress Management (FADESM). *BMC Public Health* 2008;8:76. [PubMed: 18302762]
22. Veenhof C, van Hasselt TJ, Koke AJ, et al. Active involvement and long-term goals influence long-term adherence to behavioural graded activity in patients with osteoarthritis: a qualitative study. *Aust J Physiother* 2006;52:273-278. [PubMed: 17132122]
23. Conrad, KJ. Dissertation Abstracts International: Section B: The Sciences and Engineering. Vol. 65. 2005. Self-reported haart adherence: Personality traits, the patient-provider relationship, and depressed mood; p. 4329-4329.
24. Grembowski D, Patrick D, Diehr P, et al. Self-efficacy and health behavior among older adults. *J Health Soc Behav* 1993;34:89-104. [PubMed: 8277130]
25. Gray J. Becoming adherent: experiences of persons living with HIV/AIDS. *J Assoc Nurses AIDS Care* 2006;17:47-54. [PubMed: 16829362]
26. Blanchard CM, Reid RD, Morrin LI, et al. Barrier Self-Efficacy and Physical Activity Over a 12-Month Period in Men and Women Who Do and Do Not Attend Cardiac Rehabilitation. *Rehabilitation Psychology* 2007;52:65-73.
27. Elley CR, Dean S, Kerse N. Physical activity promotion in general practice--patient attitudes. *Aust Fam Physician* 2007;36:1061-1064. [PubMed: 18075637]
28. Bandura, A. Social foundations of thought and action : a social cognitive theory. Englewood Cliffs, N.J.: Prentice-Hall; 1986.
29. Bandura A. The Primacy of Self-Regulation in Health Promotion. *Applied Psychology: An International Review* 2005;54:245-254.
30. Dominick, KL.; Morey, M. Adherence to Physical Activity. In: Bosworth, Hayden B.; Oddone, Eugene Z.; Weinberger, Morris, editors. Patient Treatment Adherence: Concepts, Interventions, and Management. Mahwah, New Jersey USA: Lawrence Erlbaum Associates; 2006. p. 49-94.
31. Crone D. Walking back to health: a qualitative investigation into service users' experiences of a walking project. *Issues Ment Health Nurs* 2007;28:167-183. [PubMed: 17365166]
32. Sluijs E, Kok G, van der Zee J. Correlates of exercise compliance in physical therapy. *PHYS THER* 1993;73:771-782. [PubMed: 8234458]

33. Burke LE, Steenkiste A, Music E, et al. A descriptive study of past experiences with weight-loss treatment. *J Am Diet Assoc* 2008;108:640–647. [PubMed: 18375220]
34. Baylor CR, Yorkston KM, Eadie TL. The consequences of spasmodic dysphonia on communication-related quality of life: A qualitative study of the insider's experiences. *Journal of Communication Disorders* 2005;38:395–419. [PubMed: 15963338]
35. Speyer R, Wieneke GH, Dejonckere PH. Self-assessment of voice therapy for chronic dysphonia. *Clin Otolaryngol Allied Sci* 2004;29:66–74. [PubMed: 14961855]
36. Jacobson BH, Johnson A, Grywalski C, et al. The Voice Handicap Index (VHI): Development and validation. *American Journal of Speech-Language Pathology* 6:66–70.
37. Heath H, Cowley S. Developing a grounded theory approach: a comparison of Glaser and Strauss. *Int J Nurs Stud* 2004;41:141–150. [PubMed: 14725778]
38. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today* 2004;24:105–112. [PubMed: 14769454]
39. McCann TV, Clark E. Grounded theory in nursing research: Part 3--Application. *Nurse Res* 2003;11:29–39. [PubMed: 14708427]
40. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today* 2004;24:105–112. [PubMed: 14769454]
41. Bandura A. The Primacy of Self-Regulation in Health Promotion. *Applied Psychology: An International Review* 2005;54:245–254.
42. Yancy, WS.; Boan, J. Adherence to Diet Recommendations. In: Bosworth, Hayden B.; Oddone, Eugene Z.; Weinberger, Morris, editors. *Patient Treatment Adherence: Concepts, Interventions, and Management*. Mahwah, New Jersey USA: Lawrence Erlbaum Associates; 2006. p. 95-123.
43. Cobb AK, Bott MJ, O'Connell KA, et al. A Qualitative/Interpretive Taxonomy of Stop Smoking Strategies (QU/ITS). *West J Nurs Res* 1997;19:702–725.
44. Milne JL, Moore KN. Factors impacting self-care for urinary incontinence. *Urol Nurs* 2006;26:41–51. [PubMed: 16562385]
45. Dweck CS, Chiu C, Hong Y. Implicit Theories and Their Role in Judgments and Reactions: A World from Two Perspectives. *Psychological Inquiry* 1995;6:267–285.
46. Behrman A, Rutledge J, Hembree A, et al. Vocal hygiene education, voice production therapy, and the role of patient adherence: a treatment effectiveness study in women with phonotrauma. *J Speech Lang Hear Res* 2008;51:350–366. [PubMed: 18367682]
47. Ilgen MA, McKellar J, Moos R, et al. Therapeutic alliance and the relationship between motivation and treatment outcomes in patients with alcohol use disorder. *J Subst Abuse Treat* 2006;31:157–162. [PubMed: 16919743]
48. Horvath AO, Greenberg LS. Development and validation of the Working Alliance Inventory. *Journal of Counseling Psychology* 1989;36:223–233.
49. Horvath AO. The Alliance in Context: Accomplishments, Challenges, and Future Directions. *Psychotherapy: Theory, Research, Practice, Training* 2006;43:258–263.
50. Milligan F. In defence of andragogy. *Nurse Education Today* 1995;15:22–27. [PubMed: 7708024]
51. Brown RL, Pfeiffer JM. Wisconsin Tobacco Intervention Basic Skills Guide Module 4: ASK about tobacco use. 2004;2006
52. Anderson JE, Jorenby DE, Scott WJ, et al. Treating tobacco use and dependence: an evidence-based clinical practice guideline for tobacco cessation. *Chest* 2002;121:932–941. [PubMed: 11888979]
53. Wulf G, Toole T. Physical assistance devices in complex motor skill learning: benefits of a self-controlled practice schedule. *Research Quarterly for Exercise & Sport* 1999;70:265–272. [PubMed: 10522284]
54. Yiu EM, Verdolini K, Chow LP. Electromyographic study of motor learning for a voice production task. *J Speech Lang Hear Res* 2005;48:1254–1268. [PubMed: 16478369]
55. Verdolini K, Ross D. Making New Behaviors Stick. Oct;2006

56. Newell, A.; Roosenbloom, P. Mechanisms of skill acquisition and the Law of Practice. In: Anderson, R., editor. Cognitive Skills and their acquisition. Hillsdale N.J: Erlbaum Associates; 1981. p. 1-55.
57. Dromey C, Shim E. The Effects of Divided Attention on Speech Motor, Verbal Fluency, and Manual Task Performance. *J Speech Lang Hear Res* 2008;51:1171–1182. [PubMed: 18664706]
58. Haskell JA. Adjusting Adolescents' Vocal Self-Perception. *Lang Speech Hear Serv Sch* 1991;22:168–172.
59. Rollnick, S.; Mason, P.; Butler, C. Health behavior change : a guide for practitioners. Edinburgh ; New York: Churchill Livingstone; 1999.

Figure 1.
The hypothetical relationship between patient beliefs, adherence, and outcomes in voice therapy.

Table 1

Subject description including age, sex, etiology or history as described by the participant, number of voice therapy sessions completed at time of interview, and condition of the interview (in person or via telephone).

Subject	Age	Sex	Disorder	# sessions	Interview
1	28	F	Nodules Hyperfunction	7	In person
2	67	F	Scarring Remote history of thyroplasty	8	In person
3	49	F	Hyperfunction	3	In person
4	76	M	Vocal fold atrophy related to progressive degenerative neuromuscular disease	5	In person
5	66	F	Presbyphonia	5	Telephone
6	67	F	Status-post thyroplasty for Unilateral Vocal Fold Paralysis	7	Telephone
7	71	F	Status-post thyroplasty for Unilateral Vocal Fold Paralysis	6	Telephone
8	41	F	Scarring Hyperfunction	5	Telephone
9	46	M	Hyperfunction Granuloma	4	Telephone
10	21	F	Nodules Hyperfunction	9	In person
11	47	M	Sulcus vocalis	5	Telephone
12	52	F	Hyperfunction Chronic cough	3	In person
13	26	F	Hyperfunction	7	In person
14	79	F	Presbyphonia Hyperfunction	4	In person
15	41	F	Hyperfunction Status-post surgical excision of cyst	5	In person

Table 2

Interview questions to address patient perspectives of treatment adherence in voice therapy.

Category	Interview Questions
“Warm-up” questions: disorder, goals	<p>How would you describe your voice problem?</p> <p>How important was it for you to resolve your voice problem?</p> <p>What did you expect from voice therapy?</p> <p>In what ways did voice therapy address your goals?</p> <p>In what ways did it not?</p>
Voice Therapy Goals	<p>What does your habitual voice sound like? Feel like?</p> <p>What does your target/healthy voice sound/feel like to you?</p>
Barriers/Facilitator to Practice	<p>How did you go about practicing your exercises?</p> <p>What are some of the difficulties you encountered in practicing?</p> <p>What was helpful in getting your practice done?</p>
Barriers/facilitators to Target Voice Use (generalization)	<p>What are some of the difficulties you encountered in using/applying your target voice? What was helpful?</p> <p>What were some of the changes you made in how you relate to/communicate with people?</p> <p>What about this was hard? What was helpful?</p>
Social Support	<p>How did people around you respond to you working on your voice? To you having a developing a different voice?</p>
Therapeutic Alliance	<p>What kinds of things your therapist did were helpful? Not helpful?</p>
Summary	<p>What was the most important thing you learned from voice therapy?</p> <p>What would you advise people who are going to go through voice therapy?</p>

Table 3

Theme 1: Voice Therapy is Hard. Sub-themes, content codes, exemplar quotations, and descriptions of content codes. The number of participant interviews that contained a particular content code is noted in parentheses.

Sub-Theme	Content Codes	Participant quotations	Description
Starting from scratch	Strain (11)	"...pushing (from) the back of my throat"	Hyperfunctional voice production
	Weakness (15)	"It was very, very weak"	Vocal fatigue ²⁰ to hyperfunction, presbyphonia, neurogenic issues
	No idea (10)	"I had no idea" "The damage was done"	No conceptualization of behavioral voice rehabilitation
Being Embarrassed	It's silly/weird (9)	"The voice exercises are embarrassing sorts of things" "It didn't sound natural"	Finding the exercises strange/ embarrassing/silly, or having one's vocal self-concept differ from that of health voice production
	Teasing (9)	"My husband would say: that sounds so affected"	Being misunderstood or actively made fun of for using/practicing healthy voice
Learning voice technique	Paying attention/ being aware (11)	"You need 100% attention" "You have to be aware"	demand on attentional resources during practice and generalization
	Being unsure (7)	"The most difficult part is the feedback loop"	Difficulty judging practice accuracy without the therapist
	Being compliant, practicing (12)	"Do it, don't just say you're gonna do it"	Compliance and frequent practice needed to improve vocal function
Thoughts and feelings that don't help	Emotions get in the way (3)	"When I'm aggravated" "Stressed"	Interference of emotions (e.g. excitement or frustration) with attention to voice technique
	Tired (12)	"...when I'm tired, for sure, I just don't have the energy to pay attention"	General fatigue affecting ability to attend to/ use healthy voice
	Forgetting (12)	"I'd forget about it"	Forgetting to practice or use healthy voice
	Personality (2)	"I'm a talker"	Extraversion
	Too slow (3)	"I wish it was just like...quick fix" "Mucous"	Impatience/disappointment with slow progress
	No symptoms (1)	"The main barrier is, when you feel like you're not in crisis then you just blow it off"	Not practicing on a day that the voice is working well
Situations that don't help	Not enough time, not enough time alone (12)	"(don't)I have time alone"	Difficulty finding time to practice, or finding time when others can not hear you practice
	Demands on my voice (4)	"I spend about 10 hrs a day constantly using my voice" "Everyone always has the radio on"	Encountering vocally demanding social/ physical/professional environments

Table 4

Theme: Make it Happen. Sub-themes, content codes, exemplar quotations, and descriptions of content codes. The number of participant interviews that contained a particular content code is noted in parentheses.

Sub-Theme	Content Codes	Participant quotations	Description
Motivation	Motivation/commitment (5)	"You have to be in it for a 100%"	Being motivated/committed to goals of therapy
	My voice is important (15)	"It's very important"	Importance of rehabilitating voice
I can do it	Motivating/reminding yourself (9)	"I have to motivate myself" "I leave myself notes"	Using self-motivating and reminder strategies to practice voice exercises
	Convenient times/places (12)	"When I'm driving" "I do them all the time" "During commercials"	Doing voice exercises in convenient situations
	Staying in your good voice (14)	"Get my voice up front where it's supposed to be"	Using awareness and strategies to find and maintain resonant voice
	Choosing when to talk (8)	"I can write them a note" "Instead of yelling, going to quiet voice"	Intentionally altering communication style to support healthy voice
	Being in control (15)	"Voice therapy really helped me learn that I can control a lot of it myself"	Having functional/behavioral control over vocal health
	Learning attitude (7)	"I have to continue it on my own" "Use this as an opportunity"	Having an open mind to current and future voice-related learning
	Paying attention/being aware/being compliant (see barrier codes Table 2)	"You need 100% attention" "You have to be aware" "Do it"	Attending, being self-aware, and practicing leads to vocal improvement, which is encouraging
	Managing the environment (2)	"I had to adjust my work routine for my voice"	Altering the environment to support vocal health
Involving supportive people	See the voice clinician (3)	"When...you're frustrated, make an extra appointment"	Increasing frequency of appointments to improve accuracy/understanding
	Involving supportive people (3)	"My wife helps me" "They all had prayers for me"	Receiving active support by others

Table 5

Theme 3: The Match Matters. Content codes, exemplar quotations, and descriptions of content codes. The number of participant interviews that contained a particular content code is noted in parentheses.

Content Code	Participant quotations	Description
Technique is useful (15)	“It was the exercises and the awareness” “You help me get my voice where it's supposed to me”	Content of voice therapy
Feedback is helpful (13)	“If I wasn't getting something, the therapist would stop and they'd use different descriptors” “Receiving no feedback and no encouragement absolutely demotivated me”	Individualized feedback was considered both technically helpful and also motivating
The therapist is on my side (5)	“I would advice them to think of their therapist as their friends” “I feel that you were doing this to help ME, not just to help yourself say like Oh yeah I got another patient”	Feeling supported and individually cared for by the therapist.

Table 6

Participant responses to summary interview questions. Number of participants providing a particular response is noted between parenthesis.

Interview Question	Participant Response Content
What was the most important thing you learned in voice therapy?	(14) Technique, including awareness/attention (1) Learning attitude
What would you advise to other patients?	(14) Motivation, Compliance (1) Learning attitude (2) Find a therapist you like