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Transtheoretical Model of Health Behavior Change Applied to Voice Therapy

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Summary

Studies of patient adherence to health behavior programs, such as physical exercise, smoking cessation, and diet, have resulted in the formulation and validation of the Transtheoretical Model (TTM) of behavior change. Although widely accepted as a guide for the development of health behavior interventions, this model has not been applied to vocal rehabilitation. Because resolution of vocal difficulties frequently depends on a patient's ability to make changes in vocal and health behaviors, the TTM may be a useful way to conceptualize voice behavior change processes, including the patient's readiness for change. The purpose of this paper is to apply the TTM to the voice therapy process to: (1) provide an organizing framework for understanding of behavior change in voice therapy, (2) explain how treatment adherence problems can arise, and (3) provide broad strategies to improve treatment adherence. Given the significant role of treatment adherence in treatment outcome, considering readiness for behavior change should be taken into account when planning treatment. Principles of health behavior change can aid speech pathologists in such understanding and estimating readiness for voice therapy.

Keywords

Voice therapy; Transtheoretical model; Stages of change; Treatment adherence; Patient compliance; Motivational interviewing

INTRODUCTION

Why do some voice patients diligently practice their daily voice exercises, whereas others return only to provide reasons for not doing so? Why do some overcome struggles in changing vocal health behaviors, whereas others give up at the first sign of difficulty? The relationship between learning how to rehabilitate one's voice, and taking action to do so, appears neither transparent nor direct. As voice therapy is a behavioral intervention that primarily aims to resolve the behavioral component of a voice disorder, it depends inherently on active patient involvement. Any behavioral approach can only be as effective as a patient's adherence to it. Moreover, there is evidence suggesting that for some voice disorders, patient adherence to treatment, rather than any specific treatment approach, determines outcome, or is suspected to play a substantial role.[1–5]

Although factors underlying treatment adherence have not been investigated in voice research, they have received considerable attention in other areas of health behavior research. Study of

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treatment adherence has led to the development of various conceptualizations of health behavior change, including the Transtheoretical Model (TTM),[6,7] the Theory of Reasoned Action,[8,9] the Health Belief Model,[10–12] and health applications of Social Cognitive Theory.[13] This current knowledge of intentional health behavior change can inform our understanding of behavior change in voice therapy and therefore our understanding of voice therapy adherence. Given its clinically operational constructs, the TTM appears particularly well suited to the voice clinic, and may explain some of the adherence and behavior challenges we observe in our voice patients.

PURPOSE

The purpose of this paper is to apply the TTM to the voice therapy process to: (1) provide an organizing framework for understanding of behavior change in voice therapy, (2) explain how treatment adherence problems can arise, and (3) provide strategies to informally assess patient readiness and facilitate behavior change. Core constructs of the TTM will be discussed first, including stages of change, decisional balance, processes of change, and self-efficacy. Next, treatment adherence problems will be discussed from a TTM perspective of strategy-to-stage mismatch, unresolved ambivalence, and poor self-efficacy. Last, the role of assessing stages, importance, and confidence in clinical voice practice are discussed. Examples and quotations are derived from the authors' clinical experience.

BACKGROUND OF THE TRANSTHEORETICAL MODEL

The TTM has become one of the most widely accepted model of health behavior change.[14] The model was developed inductively, through study of the change strategies used by individuals who independently quit tobacco use. Initially describing only smoking cessation, further studies have shaped the model to represent how individuals succeed or fail in changing various health behaviors, including quitting addictive behaviors and initiating new health regimens. For instance, the TTM has been extensively applied across a variety of health behaviors including physical exercise, nutrition and diet, and HIV prevention.[14–22]

One of the primary contributions of the TTM is the finding that successful self-changers draw upon strategies across psychotherapeutic approaches to achieve their goals.[20,23–29] The TTM does not recommend any particular approach, but rather, provides a "Transtheoretical" organizing framework for understanding and facilitating the process of health behavior change.

At this time, the TTM provides the foundation for health intervention programs and research guided by the Centers for Disease Control & Prevention, including the study of HIV prevention,[30] and cancer prevention (www.cancer.gov) and is applied internationally.[31,32]

TRANSTHEORETICAL MODEL CONSTRUCTS

The TTM postulates that behavior change is accomplished through a series of stages, rather than a single or sudden event. These five stages of change are precontemplation, contemplation, action, preparation, and maintenance. Time spent in each stage can vary, and "recycling" through a prior stage can occur. The first three stages describe the development of intention to take action, whereas the last two stages describe the process of fully actualizing the intent to change. Thus the initial stages concern introspective cognitions about change, whereas the latter stages are characterized by observable behavior change.[6,22] Different experiences and self-regulatory strategies (termed "processes of change") aid the individual in moving from one stage to the next.[33] Self-efficacy influences the entire course of changing.

Stages of change

Precontemplation—In the stage of precontemplation, individuals are not seriously considering behavioral change. Two distinct groups of precontemplators exist: those who are *not aware* that behavior change is possible or beneficial and those who *are aware* but choose not to pursue it. In the voice clinic, examples of the former group may include individuals with hyper-functional voice disorders who, on initial examination, are not aware of the behavioral component of their dysphonia. When these individuals, after examination and education, do not accept the diagnosis of a functional component or etiology, they remain in this unaware type of precontemplation. The latter (aware) group consists of individuals who, for a variety of reasons, are not interested in changing vocal- or voice-related behaviors. Some examples include patients who are "happy as long as it isn't cancer"; have other more pressing priorities than vocal (re)habilitation, and those who are retaining their dysphonia for financial or psychosocial reward.

When speaking with a precontemplative patient, strong antichange statements may be observed, such as "Smoking is my best friend," "I've talked this way all my life: that can't be the cause," or "My husband *makes* me yell!" Such antichange statements suggest these patients are not yet considering change, and thus residing in the stage of precontemplation.

Stage 2: Contemplation—In this stage, individuals actively consider making a change in behavior, weighing the advantages and disadvantages, or "pros and cons" of changing. Ambivalence, defined as feeling two ways about change, is the primary characteristic of contemplation.[34] This ambivalence must be resolved before any action-oriented therapy can successfully commence.

Ambivalent patients voice opinions both for and against change, such as "I love going to the bar with my friends even though it really makes my throat hurt. I do miss singing." For those who enroll in voice therapy at the urging of the voice team, as distinct from their own desire to enroll, ambivalence during sessions and poor adherence outside of therapy are likely ("I tried to do my homework but my in-laws were in from out of town"). Other signs of contemplation include the need for repeated discussion of possible causes of the problem rather than the solution ("Do you think this all started when the horse bit my ear?"[35]), continued requests for evidence supporting the efficacy of voice therapy when this information has already been provided, and requests to explain voice exercises/mechanics when this material has been covered repeatedly. Prochaska et al speculate that a subgroup of contemplators may hope that, while contemplating, the problem will resolve without further action, or that contemplation will provide a solution that does not necessitate action.[34]

Stage 3: Preparation—As patients become more resolved about pursuing change, and less ambivalent, they enter the stage of preparation. In preparation, the commitment to change is made. Verbal commitment statements (eg, "I want to work on this" or "I have to do this now"; "I'm really excited about learning better technique") are indicative of the preparation stage. According to the TTM, collaborative goal setting for a treatment plan is now possible, because the patient is ready to take action. Small steps toward change can also be initiated: patients may wish to clear their schedule of vocally demanding activities, identify practice times, or purchase an amplifier.

Stage 4: Action—In this stage, patients are actively engaged in modifying their voice-related behavior. The voice patient in action uses therapy sessions to discuss accomplishments and difficulties of adopting new behaviors and to review relevant voice exercises and techniques. With mastery experiences in and outside the clinic, a patient's skill and confidence grows ("I noticed my throat getting tense so I started to talk softer. And that's when people started

listening to me."), but the possibility for failure also exists, putting the patient at risk for recycling to a previous stage of change: "I'm working on staying in my resonant voice but it's just so hard to do."

Stage 5: Maintenance—Maintenance is defined as integration of the newly developed behavior. In voice therapy, patients enter this stage when they are effectively and independently maintaining healthy voice use and vocal health-related behaviors on an ongoing basis. This typically signals the end of regular voice therapy sessions. The patient may state that "I think I'm done with therapy," "I know what to do when I lose my tone-focus," or "I don't have to think about it that much anymore."

Part of successful maintenance is mastering the ability to return to healthy voice use in case of relapse/recycling. Therefore, as the patient moves into the maintenance stage, discussion of relapse prevention is important.[18,21,36]

Decisional balance

In the TTM, the process of resolving ambivalence in contemplation is referred to as *decisional balance*. A significant increase in the perceived pros of change as compared with the perceived cons of change is seen in patients who resolve ambivalence and commit to action.[37,38] This shift comes about if the patient finds that the behavior change is vital to an important goal in his or her life. For instance, a patient who sings in church may resolve her ambivalence when realizing that singing is a vital part of worship for her, and that worship is fundamental to her values.

Processes of change

The TTM identifies 10 self-regulation strategies that successful self-changers use to move from stage to stage.[7,39] These function as independent variables between the dependent variables of stages.[40,41] TTM proposes that these "processes of change" can be elicited or applied in therapeutic interventions. Table 1 describes each process of change and provides voice-related examples. The strategies should be considered broad categories of therapeutic interventions, rather than specific techniques. For example, the process of "consciousness raising" is a broad strategy that can be accomplished through very different techniques from oppositional schools of psychotherapy or counseling.

Although any process can be used at any stage, it has been found that "experiential processes" typically help develop the intent to change, thus increasing readiness for action in the preaction stages (precontemplation, contemplation, and preparation), whereas "behavioral processes" support change in the action and maintenance stages. Experiential processes raise awareness of the importance of change in the individual's life and help resolve ambivalence about change. Behavioral processes are practical strategies that help reinforce outward behavior change.

It is relevant to note that different psychotherapeutic approaches tend to focus on a subset of processes of change. For instance, Gestalt therapy engages experiential processes to develop awareness and resolve ambivalence, but does not address outward behavior change.[42] Conversely, behavior modification[43] addresses reinforcement of outward behavior, but omits the cognitive/experiential component. Each psychotherapeutic technique appears to focus on a part of the change continuum, but not on all components, and therefore does not necessarily provide tools to progress through the entire path of change.[34]

Self-efficacy

In addition to the 10 processes of change, the construct of self-efficacy is a variable that affects the progressive movement from stage to stage. Self-efficacy refers to an individual's

confidence in his or her ability to accomplish a specific task in a specific situation,[44] or their *task-specific confidence*. Introduced by Bandura as a core component of the Social Cognitive Theory of human behavior,[44] self-efficacy has been incorporated into the TTM. Self-efficacy has shown to be a strong predictor of successful outcome in both health behavior change[28,45–47] and academic learning.[48–51] Self-efficacy determines which goals people choose to consider, how long they will persist in the face of failure experiences, the outcome they expect from their efforts, and the effort they invest.[44,52]

It has been postulated that an adequate level of self-efficacy must be present for a patient to first consider making changes in health behaviors and subsequently an even higher level is needed for an individual to take action.[27] In the voice clinic, patients commonly express a lack of confidence in their abilities, eg, "I've talked like this all my life- I'll never be able to change my voice," or "I've tried before and I'm just too tense to quit cigarettes." These statements reflect poor self-efficacy for the task at hand. Such beliefs may stop a patient from taking action, and lead to recycling/relapse in a patient who is in the action stage. Therefore, self-efficacy beliefs in voice patients may need to be supported to encourage successful attainment of the behavior change goals.

Sources of self-efficacy—It is reasonable to assume that self-efficacy for vocal tasks can be developed. In contrast to stable personality traits associated with voice disorders,[53–55] self-efficacy beliefs are changeable.[56,57] Thus, positive self-efficacy beliefs should support the pursuit of goals in voice therapy, even in individuals whose (unchangeable) personality traits constitute a risk factor for vocal deterioration. For instance, the neurotic extraversion identified in many patients with vocal hyperfunction[54] is a stable personality trait. However, active listening skills that can reduce vocal misuse in conversations can be learned regardless of this trait. Social Cognitive Theory proposes and has accrued evidence for four sources of self-efficacy beliefs. In order of importance these include: mastery experience, vicarious experience, verbal persuasion, and emotional-physiological state.[58]

Source 1: Mastery: Mastery experience, defined as the successful accomplishment of a task, provides strong positive self-efficacy beliefs. Failure to master a task has a discouraging effect. Therefore, it is important to structure therapy tasks that are likely to lead to success.

Source 2: Vicarious Experience: Vicarious experience (ie, learning by observing others) is the second strongest source of self-efficacy. An observer's self-efficacy is increased when a social model successfully achieves a desired goal, if the observer perceives this model's inherent abilities as comparable with his or her own. Thus, for a model's success to have a positive effect on an observer's self-efficacy, the observer must identify with the model. If the model is perceived as less capable than the observer, and yet succeeds, the observer's self-efficacy also increases ("If they can do it, I can do it."). Conversely, self-efficacy is lowered if the observer perceives the model's abilities to be higher than his/her own potential. The latter experience suggests that the skill to succeed is out of reach.

In the voice therapy session, the voice clinician serves as the social model for vicarious learning. Although the clinician's skill in producing the target voice is a useful model for motor learning, the clinician's high skill level may suggest that only vocally talented individuals can improve voice production mechanics. As such, the voice clinician may not be an optimal source of self-efficacy. The importance of group therapy in providing comparable social models should not be underestimated.

Source 3: Verbal persuasion: The third source of self-efficacy is verbal persuasion, defined as verbal encouragement from others. Bandura[44] proposes that the salience of such verbal support is weaker than that of mastery experiences and vicarious learning because verbal

support ("You can do it!" or "I know it's hard right now, but I think you can succeed") can be discredited by failure experiences or seeing others fail. However, recent investigation suggests that there may be a gender difference in the salience of verbal persuasion compared with vicarious learning: women may derive more self-efficacy from verbal persuasion than from vicarious learning, while this may be reversed for men.[59]

Negative verbal persuasion is thought to carry substantial weight, resulting in self-limiting beliefs. In the voice clinic, spousal statements such as "You'll never rest your voice- you just can't shut up" most likely have a substantial negative effect on setting and attaining voice goals.

Source 4: Physiological/psychological state: Physiological and emotional states also provide self-efficacy information. Feeling physically or emotionally uncomfortable (as may be the case when habituating to a different voice quality) is thought to decrease self-efficacy.

ADHERENCE PROBLEMS AND SOLUTIONS

According to the TTM and TTM research,[41,60–63] adherence issues can arise due to (1) strategy-to-stage mismatch, (2) neglect of self-efficacy, or (3) poor maintenance support.

Adherence issue 1: Strategy-to-stage mismatch

When a treatment intervention is applied that is not appropriate to the patient's given stage of change, we speak of a "strategy-to-stage mismatch."[64] Traditional health behavior change programs may fail because they are designed only for patients who are ready to take action, whereas most patients do not present to a clinic in this stage.[39,61]

Individuals can consult the voice clinic at varying levels of readiness to change, and may exhibit different degrees of readiness for each individual treatment goal (eg, dietary changes, phonotrauma reduction, and daily voice exercise practice). Mismatch can occur when a clinician recommends a change process that aids the action stage (eg, a counter-conditioning strategy such as finding the quieter room for conversation at a noisy party) while the patient resides in the contemplation stage as to whether to take action. Thus, the patient is ambivalent (or perhaps entirely disinterested) in pursuing change, whereas the clinician recommends action. The patient is then unlikely to follow the clinician's action-oriented recommendation. Moreover, a verbal dispute with the clinician may occur, in which the patient asserts his or her anti-change standpoint. This phenomenon has been described as "patient resistance" and can be expected when action-oriented advice is provided before the patient's ambivalence about taking action is resolved.[65] As medical professionals are traditionally trained to advise and persuade, encountering patient resistance is not unusual.[21]

Mismatch can be avoided by identifying stage of change and then drawing on appropriate processes of change to guide intervention as illustrated in Figure 1. Resistance can be avoided (or diffused) by using a client-centered (rather than confrontational) communication style[21,22,66,67] that includes active listening techniques. Examples of client-centered, stage-based statements are provided in Table 2. Motivational Interviewing, a communication approach particularly useful for working with patients in preaction stages,[66,67] is one approach that holds promise for application in the voice clinic.[68]

Adherence issue 2: Neglecting self-efficacy

Self-efficacy plays a role throughout the stages of change and requires consideration to avoid resistance and adherence failure. For example, poor patient compliance and continuing pathology on laryngeal exam may prompt the clinician to "lecture" the patient on the importance of behavior change. In this case, the clinician assumes that change has not been sufficiently *important* to the patient, whereas lack of change may be may be due to poor self-

efficacy. If poor self-efficacy underlies poor compliance, a different treatment strategy (ie, increasing self-efficacy) is warranted than if low importance is present. Reframing of past failure experiences and restructuring of the treatment plan may be necessary to counteract self-defeating beliefs.

Adherence issue 3: Maintenance support

Although traditional health behavior programs typically end when the action stage is completed, long-term treatment adherence may require continued follow-up support.[69,70] Likewise, voice patients may require follow-up voice therapy appointments. As a side note, it is not known how long maintenance-supporting processes of change such as self-reward and social support are needed to maintain a new behavior. For each individual, certain behaviors may never become fully "automatic" or integrated, and always require some conscious implementation.

CLINICAL APPLICATION QUESTIONS

Clinician role and time concerns

As patient needs and therapeutic strategies vary by stage, so does the role of the clinician. In the preaction stages, the clinician in the motivational interviewing approach is perceived as a client-centered counselor who directs the *conversation about* change, but does not attempt to control the *decision* to pursue change.[66–68] As the patient begins to take action, the clinician's role becomes that of a "coach," and as greater independence is reached, that of a "consultant."[70]

Exploring and supporting patients' readiness for change can, but does not, fundamentally require a modification in session length or treatment duration. Rather, the key modification consists of a shift in the clinical interacting style. For instance, where previously a clinician might have spent time persuading the patient to take action, the clinician could alternatively use this time to help the patient weigh the pros and cons of change. As a patient's readiness level may vary by goal, clinician style might vary by goal as well, ranging from a very client-centered discussion ("Tell me a little bit about what singing means to you") to a more directive coaching style ("Here's what you can do to improve") as shown in Table 3.

Limitations

The TTM has received a considerable amount of criticism in the past 10 years.[71,72] Criticism of the TTM is primarily, but not exclusively, focused on the stage construct as empirical entity. Use of the term "stage" is disputed[73] as it suggests a strict linear progression, whereas in actuality, relapse into previous stages can occur. Also, the categorical nature of change stages has been called into question: it is thought that their existence may comprise an arbitrary artifact caused by measurement methodology.[74] In the clinical setting, clinician interaction style may influence the patient's perceived readiness level as in the case of eliciting resistance, resulting in inaccurate assessment of stage. From a voice patient's perspective, multiple motivations may play a role in his or her readiness to take action regarding the voice problem, and this balance may change when the patient is contemplating the issue further after the clinic visit. Therefore, it may be more useful to view stages as cognitive benchmarks for the clinician[66,67,75] than as conceptual realities present in the patient. Such benchmarks can inform clinician choice of interaction style and therapeutic strategies, taking into account the fluidity of the perceived and actual stage.

Another general limitation of a model such as the TTM is that while providing *categories of experiences* that may move someone forward, it cannot suggest *exact* experiences that do so with certainty. For example, for one voice patient, a near brush diagnosis of cancer can result

in commitment to quit smoking, whereas for another, this experience has no such effect. In addition, the very assumption of stage-matching may be violated and still result in a positive outcome. Although empirical study of matched versus deliberately mismatched treatment showed improved outcomes for the matched treatment group,[64] other studies have shown mixed results in effectiveness.[19] In the voice clinic, a patient who is ambivalent about voice therapy may be provided with "trial voice exercises" for 1 week, receive benefit from these exercises, and return with high commitment to change. In this case, "action" was taken before ambivalence was resolved. Similarly, a directive clinical style may elicit resistance in some, but not all, preaction patients. Thus, clinical decision making regarding therapeutic approach and style remains directed by clinical judgment.

Lastly, the TTM is based on behaviors that are similar to, but not exactly like, vocal (re) habilitation. For instance, barriers to physical exercise adherence and barriers to completing voice exercises are likely to differ substantially. Other issues unique to vocal development, such as kinesthetic ability and voice-related self-awareness, may influence self-efficacy in unique ways. Validation of TTM constructs in the voice clinic would fill in the voice-specific details not outlined by the general TTM framework. Identifying the most common barriers to our patients' vocal improvement could be useful in developing ways to avoid or manage these.

An alternative conceptualization of change

A readiness continuum—Alternative to the categorical stage-based model is the conceptualization of readiness to change as a combination of importance and confidence.[66, 67] Together, the perceived importance of change and self-efficacy (confidence) for change add up to an individual's total readiness or commitment to take action as illustrated in Figure 2. When either (or both) of these is low, readiness for action will be reduced, but readiness increases as either (or both) increases. At any time, we can consider patients as belonging grossly to one of four categories of readiness[66] as shown in Figure 3. Patients who rate themselves high in both perceived importance and confidence are likely to be ready to take actions. Those who rate importance as low but report high confidence for hypothetical change (eg, "I think I could do it, if I put my mind to it") are unlikely to take action unless a change can be elicited in the perceived importance. Those who value the importance of change but are not confident in their abilities, require support in confidence through the sources of self-efficacy. Patients low in both importance and confidence place low value on changing and are not confident they would achieve hypothetical change: in this case, both exploration of importance and self-efficacy are warranted.

Assessing readiness—One way to estimate and discuss importance and confidence is by asking the patient to rate both constructs on a visual analog scale or "readiness ruler"[66] as pictured in Figure 4. The patient can then be asked why they rated themselves as they did. Asking the patient why they did not rate themselves lower than their chosen point ("Why did you give yourself a 5, and not a 2?) will elicit statements of confidence and importance (eg, "Well, I've been able to do it before, so I should be able to succeed again" or "My hoarseness does bother me.") and subsequently asking them what it would take to raise the score ("What would it take to get you to an eight?") focuses the patient on identification of goals and barriers ("To get higher, I'd really have to find ways to remind myself of using my resonant voice") which in turn will aid in developing a treatment plan. The movement toward increased readiness based on therapeutic exploration of importance and support of confidence is conceptualized in Figure 2.

CONCLUSION

The TTM provides a practical model of intentional behavior change that may bear relevance to voice therapy. The model illustrates the pursuit of behavior change in a stage-like manner, from the initial internal conceptualization of change to the long-term integration of a new outward behavior. Self-efficacy and processes of change affect movement from stage to stage. The suggestions of matching processes of change to stages, and supporting self-efficacy throughout treatment, may provide guidance for voice clinicians looking to improve treatment adherence, whereas empirical data are not yet available in our field. Further interesting implications include that (1) the role of the clinician varies by stage and (2) the definition of treatment "success" may need to be broadened to include progress within the preaction stages.

Clinicians can *influence* but not *control* the process of change. Active participation and collaboration is required of both parties. Investigation into strategies that facilitate change (both in the areas of treatment adherence and treatment efficacy) is necessary to help demarcate the boundary between clinician and patient responsibility in pursuing vocal improvement.

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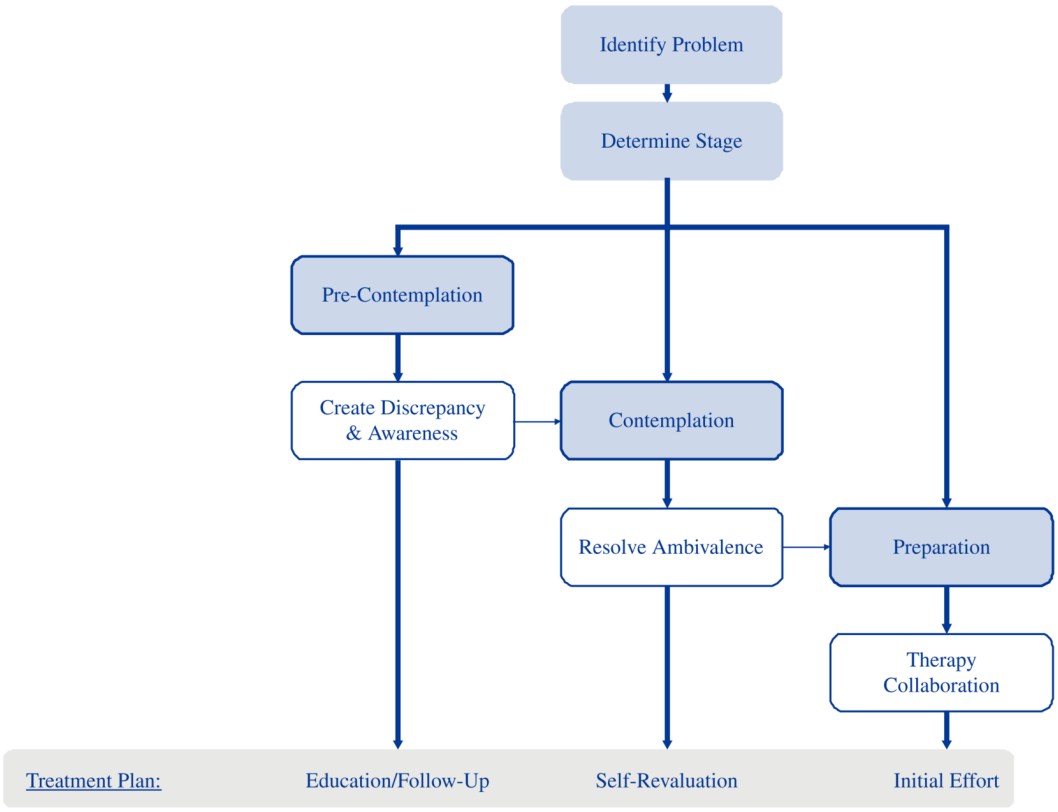

FIGURE 1.
A decision tree for determining readiness based on a transtheoretical approach. First, the behavior contributing to the voice disorder is identified. Next, the stage of readiness to change this behavior is identified. Depending on the stage (precontemplation, contemplation, or preparation) the clinician uses different strategies to either help the patient move to the next stage, or decide on a stage-appropriate treatment plan.

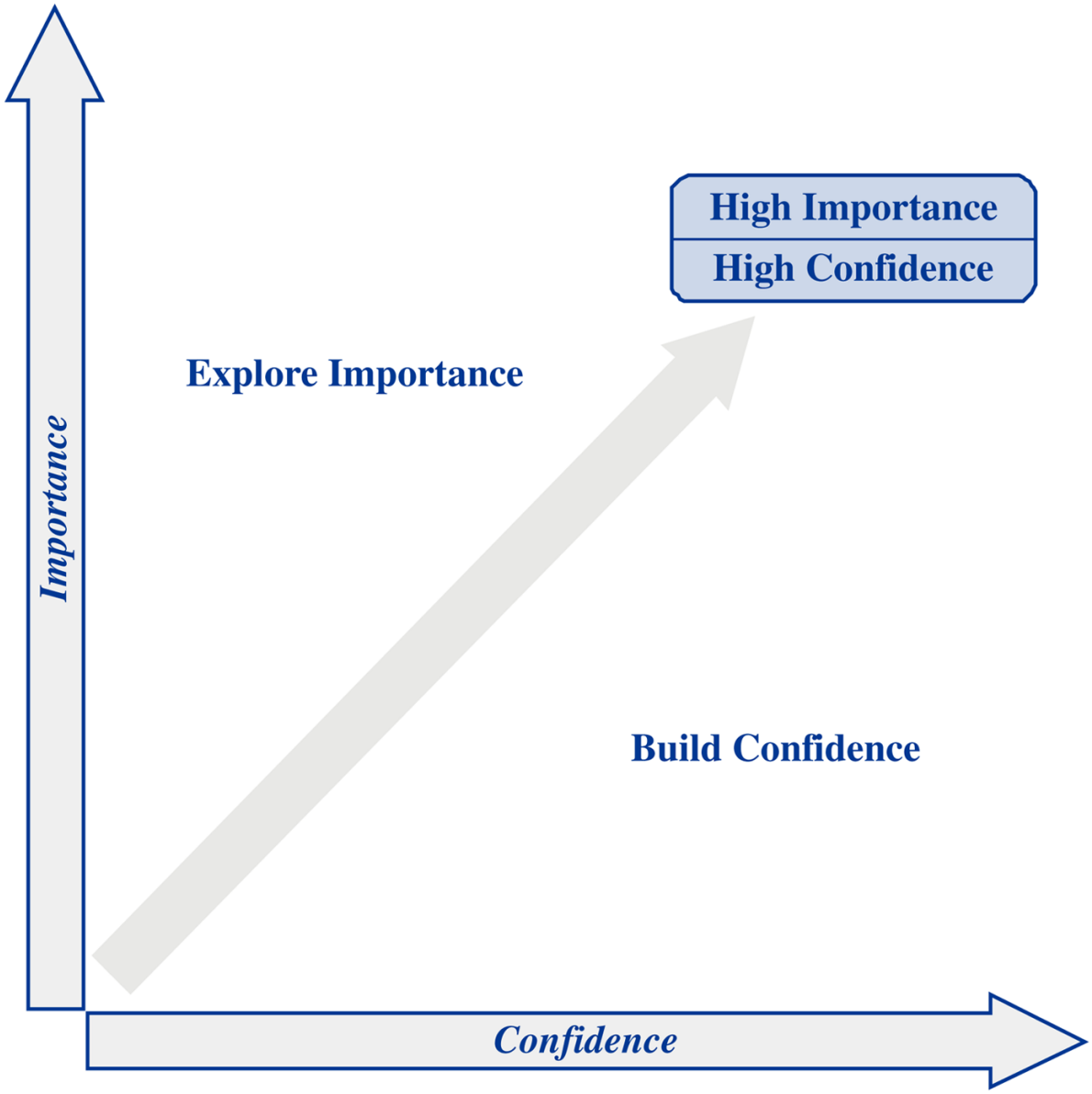

FIGURE 2.
An illustration of the clinician's role of exploring importance and building confidence toward the goal of behavior change, as conceptualized in Motivational Interviewing.[65,66]

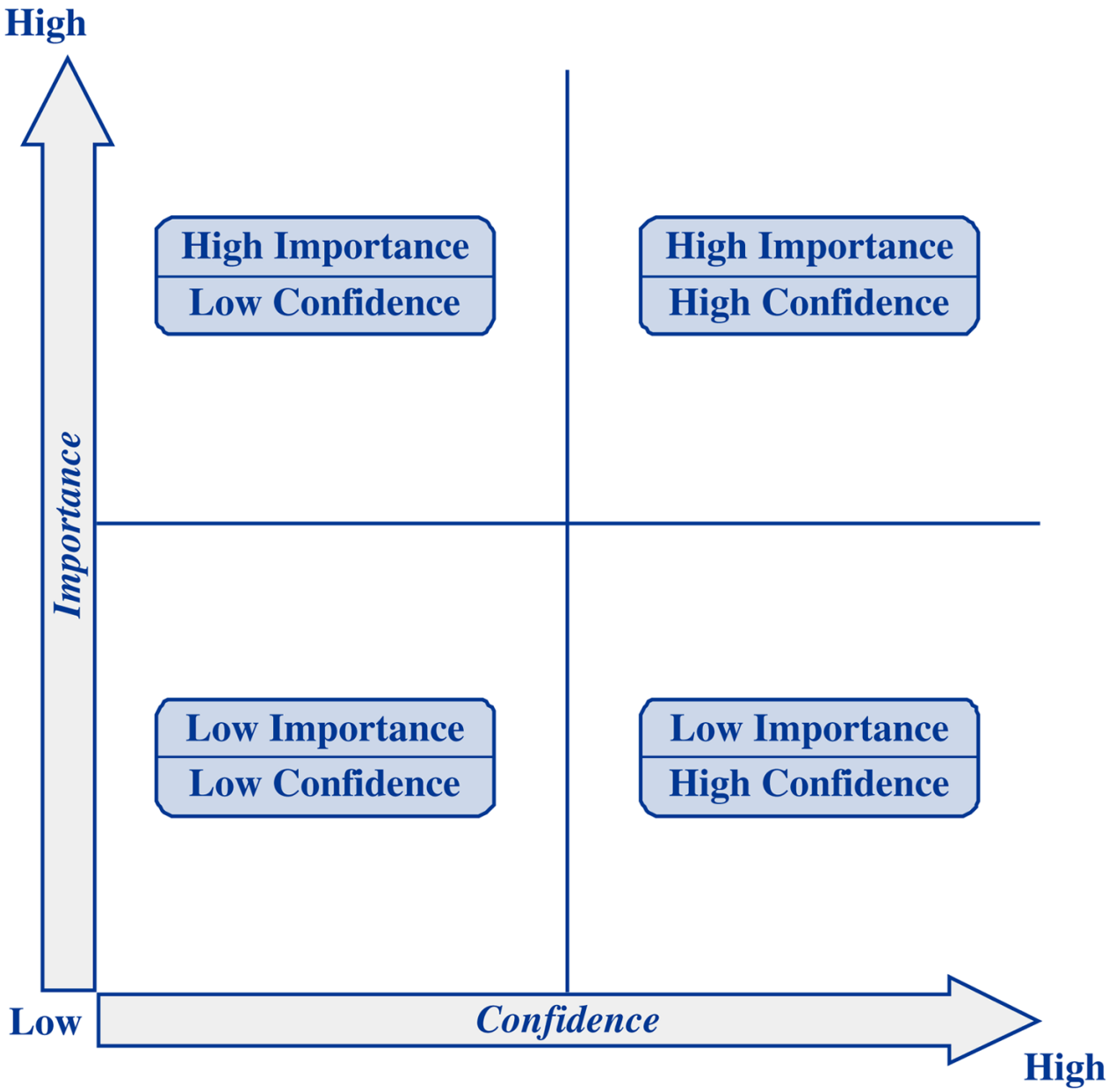

FIGURE 3.

Patient readiness for change is conceptualized as a combination of perceived importance of change and confidence in achieving change, as conceived in Motivational Interviewing.[65,66] Visually, one can sort patients into four groups in a matrix: those with high confidence and importance regarding change; those for whom the change is not important but confidence to potentially succeed is high; those for whom the opposite is true; and those for whom both importance and confidence are low.

FIGURE 4.
A readiness ruler to assess patients' perceived importance of change and confidence in achieving change, as conceptualized in Motivational Interviewing.[65,66]

TABLE 1

Change Process Categories, Descriptors, and Examples Applied to Voice Therapy

	Change Process	Description of Change Process	Example of Change Process Related to Voice Therapy
Typically used in preaction stages	Consciousness raising	Education and awareness of the unhealthy behavior, and benefit of changing the behavior	Learning about the importance of vocal warm-ups before singing Identifying which behaviors consistently lead to dysphonia
	Social liberation	Realizing that the social norms are changing in the direction of supporting the healthy behavior change	Becoming aware of nonsmoking restaurants
	Emotional arousal (dramatic relief)	Experiencing negative emotions that result from the behavior	Exploring the emotional impact of the vocal handicapping effects such as experiencing the sadness associated with loss of the singing voice Experiencing fear of effects of smoking
	Self-reevaluation	Realizing that behavior change is consistent with one's values and identity	Realizing one does not want to engage in phonotraumatic communication style Realizing that singing is important at a spiritual level Realizing that strength can be communicated in ways other than lowering pitch and increasing loudness
	Commitment (self-liberation)	Making a firm commitment to change	Setting a quit date for smoking cessation Telling colleagues that one will be taking lunch alone to rest the voice Scheduling voice therapy
Typically used in action and maintenance stages	Counter-conditioning	Substituting healthy alternative behavior and cognition for the unhealthy behaviors	Identifying when vocal hyperfunction occurs, and shifting to resonant voice immediately Using extreme forward tone focus in noisy environments Using a quiet tone when communicating with children rather than raising one's voice Catching up with friends at a quiet venue before seeing a band together, rather than shouting over rock music
	Stimulus control	Removing reminders or cues to engage in the unhealthy behavior and adding cues or reminders to engage in the healthy behavior	Placing reminder notes around the office to "breathe" or do voice exercises Programming reminders to complete voice exercises into one's scheduling system
	Contingency management	Increasing the rewards for the positive behavior change and decreasing the rewards for the negative behavior	Having a coffee drink as a treat after rather than before lecturing
	Helping relationships	Seeking and using social support for the healthy behavior change	Asking friends to assist in self-monitoring Assigning reading-aloud activities to the teacher's aid Enlisting one's spouse in child-rearing efforts
	Environmental reevaluation	Realizing the negative effect of the behavior on one's social environment	Realizing that increasingly loud voice use in the classroom begets increasingly loud students Examining how not allowing silence in conversations reduces the conversational partner's perception of being heard

TABLE 2

For Each Stage/State of Change (column 1), Patient Statements Indicative of This Stage are Provided (column 2), Followed by Examples of Appropriate Therapeutic Strategies (column 3), and Sample Clinician Statements Illustrating the Use of Such Strategies (column 4)[15]

Stage/State	Sample Patient Statements	Facilitative Strategy	Sample Clinician Statements
Precontemplation	"I've always talked this way: how I'm talking can't be a problem"	Raise consciousness of behaviors that negatively affect voice. Develop discrepancy between desired outcome and current behavior.	"You notice that you're hoarse after going out with friends, and it takes longer and longer to recover. How do you see this playing out in the long run?"
	"My brother smokes more than I do and he's fine"		
			"You notice your symptoms increasing now that you've taken up smoking again."
		Develop discrepancy between patient behavior and patient goals	"You remember how well you could breathe when you weren't smoking"
		Reflect statements that oppose change, and support pro-change statements.	"You'd like your son to live in a smoke-free environment"
Contemplation	"I tried to do my voice exercises this week, but I'm so busy with the kids"	Decisional balance: reflect ambivalence	"On the one hand, you'd love to be able to sing again. On the other, it's hard to pay attention to your voice right now."
	"How can I possibly pay attention to my voice all the time"		"You love being at the bar with friends, but you're concerned about how your voice sounds the next day"
	"I need to blow off steam with my friends"		"I wonder what role singing plays in your life. Can you tell me a little about that?"
	"I remember how I could smell the trees when I quit smoking for a while"	Self-reevaluation: identifying if vocal improvement is related to the patient's core values or beliefs.	"How important is this to you right now?"
			"What would make this a priority?"
Preparation	"I really want to do this but I'm not sure how make time for it."	Collaborate on a treatment plan, setting concrete realistic goals the patient is confident to achieve.	"Does that sound like something you would like to do?"
	"How will I know if I'm practicing correctly?"		"How confident are you that you can accomplish that this week?"
	"I could start taking voice naps during lunch."	Ask permission to give advice.	"Would you like a suggestion?"
			"Would you like to know what has helped some of my other patients?"
Action	"My voice was much less effortful after warm-ups"	Help the patient identify and resolve obstacles to vocal improvement.	"What worked and what didn't work this week?"
	"It's hard to think about using my voice correctly when I'm upset."	Support successful practice and self-regulation.	
	"I'm realizing that I keep pushing even after my throat feels tired"		"Your perseverance with your voice exercises is fantastic!"
			"How do your warm-ups help you?" "What are some ways you could remind yourself to do this?'

Stage/State	Sample Patient Statements	Facilitative Strategy	Sample Clinician Statements
		Devise action-oriented processes/ strategies, eg, counter-conditioning.	
		Identify social support sources	“Who can help you pay attention to this?”
Maintenance	“I think I’m done with voice therapy”	Review plan for independent self-regulation and relapse prevention. Emphasize what has been learned.	“What will you do next time you get laryngitis or if you feel you overdid it?”
	“I want to try this myself for a while”		“How do you handle your voice differently now compared to when we started?”
			“What would you like to do for follow up?”

TABLE 3

Stage-Specific Conversation about Change

Case Study: Sample Dialogue
The dialogue is based on a discussion with a 26-year-old woman initially seen for a complaint of globus sensation and hoarseness in recreational singing. She presented with signs of laryngopharyngeal reflux and vocal hyperfunction for which she was recommended proton pump inhibitors and voice therapy. Clinician interaction strategies and processes of change are shown in parenthesis.
Clinician: It's been a few weeks since we saw you here for your exam- tell me how you've been doing with your voice? (*open-ended question*)
Patient: Well, I started smoking again.
Clinician: You don't sound too happy about that (*reflection of affect*)
Patient: Well, I had quit last time- I hadn't smoked for 6 weeks when I was here.
Clinician: Tell me what led to your starting up again (*open-ended question re: relapse factors*)
Patient: Well, I've been going through a rough time- my son's father is having problems and can't help with child support. I'm doing everything by myself.
Clinician: It's pretty stressful right now. (*reflection*)
Patient: Yeah, I just got so stressed, and that's when I wanted to smoke. So now I'm smoking again.
Clinician: A lot of people have trouble staying quit when they're stressed (*focus on problem*). They need other ways to deal with stress, but haven't quite developed them well enough. (*express empathy, provide information*)
Patient: It kind of calms me down to smoke- but it's not what I want in the long run.
Clinician: In what way? (*open-ended question eliciting self-reevaluation*)
Patient: I don't really want to smoke in front of my son. My father smokes, and my mom, and it's not what I want in my house. I want a non-smoking house. My ex husband's family doesn't smoke, but they all drink, and I don't want that either. (*self-reevaluation, social liberation, "change talk"*)
Clinician: You're pretty resolved about wanting to be a non-smoker, but you're having a hard time. How did you quit last time? What was helpful then? (*problem solving, commitment, self-efficacy*)
Patient: I went on bupropion. That took all the cravings away. I didn't have any cravings. I've been thinking about going back to my doctor to get another prescription.
Clinician: That sounds like a great idea (*support self-efficacy and commitment*). Shifting focus for a moment: have you been thinking about working on your voice quality? We worked on finding your most effortless voice last time. You did very well with that-identifying how you strain, and then switching into a less effortful voice. I'm wondering if this is the right time for you to pursue working on your voice. You have a lot on your plate. (*summarization*)
Patient: Actually I'd really like to. It'll give me something positive to work on. I really need that. It was fun.
Clinician: I think you're going to do well with that. (*Traditional voice therapy session commences*)