Chapter 71
Cognitive Behavioral Treatment (CBT)

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Keypoints

1. Cognitive behavioral interventions are the most widely used psychological strategies for coping with tinnitus.
2. The goal of the therapy is to alter maladaptive cognitive, emotional, and behavioral responses to tinnitus and not to abolish the sound itself.
3. There are two main components to this approach:
   (a) Cognitive restructuring and
   (b) Behavioral modification.
4. Treatment programs comprise of techniques like relaxation training, cognitive restructuring, attention control techniques, imagery training, and exposure to difficult situations.
5. The combined approach assists patients in identifying and modifying maladaptive behavior and promotes habituation to tinnitus.
6. The collaboration of patient and therapist is a prerequisite for a positive outcome of therapy.

Keywords Tinnitus • Cognitive behavioral therapy • Relaxation training • Cognitive restructuring • Attention control techniques • Imagery techniques • Behavioral techniques

Abbreviations

CBT	Cognitive behavioral therapy
PMR	Progressive muscle relaxation
RET	Rational-Emotive Therapy

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Introduction

In the history of tinnitus research and treatment, many attempts have been directed toward abolishing or minimizing tinnitus. Despite all these efforts, until now no treatment has been found to successfully eliminate tinnitus permanently. As a consequence, increasing efforts have been undertaken by behavioral scientists and psychologists to eliminate or at least ameliorate psychological symptoms associated with tinnitus. The aim of psychological interventions is not to "cure" or to eliminate the inner noise but to reduce tinnitus-related distress and increase quality of life. If patients are no longer bothered by their inner noises and the question of how tinnitus can be removed, they might become secondary. As long as tinnitus itself cannot be eliminated, the main intention of all therapeutic interventions is to alleviate suffering from tinnitus.

Cognitive Theories of Behavior Regulation

Most interventions in reducing tinnitus-related distress are predicated on cognitive theories of behavior regulation. One of the most influential theories was developed by Beck [1, 2]. Cognitive behavior therapy is based on the "rationale that an individual's affect and behavior are largely determined by the way in which he structures the world."

A general cognitive framework as shown in Fig. 71.1 asserts that the emotional and behavioral consequences of an event or situation experienced by a person are modified by the way a person thinks about it. In other words, emotions and behavioral reactions are the result of

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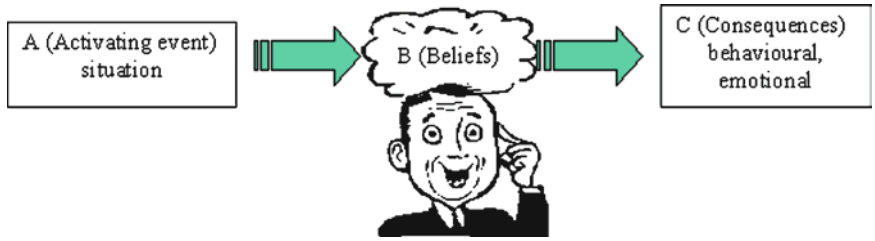

Fig. 71.1 A-B-C model

Activating Event (A)	Beliefs (B)		Emotional Consequences (C)
	"I can not live with it"	>>	desperate, hopeless
	"There is nothing I can do about it"	>>	helpless, depressed
	"If I did not have to work in this noisy environment, I would not have gotten tinnitus"	>>	anger, hostility

Fig. 71.2 Association between tinnitus, specific beliefs, and emotional consequences

appraisals of an event and are not the result of the event itself. This model dates back to Ellis (1973) [3], who termed it the A-B-C model. A stands for activating events, B for beliefs, and C for consequences (see Fig. 71.1).

Patients have to be educated and instructed according to this model. It is made clear that mainly the thoughts, beliefs, and expectations about tinnitus are creating the problem. Tinnitus itself does not have the power to ruin one's life. This assumption can be illustrated by the fact that the majority of individuals permanently afflicted by tinnitus – even if they describe it as loud – do not feel distressed by it. Nevertheless, the therapist should make it explicitly clear that he or she knows that the tinnitus is real, not imagined, and that the patient's response to the abnormal tinnitus perception can be well understood.

In general, patients blame their tinnitus for their emotional impairment. They are convinced that the tinnitus is "making" them depressed, anxious, and worried and that their ways of dealing with tinnitus are of no account. Furthermore, if the patient thinks that there is nothing that can be done to alleviate the symptoms, he or she will likely become hopeless and depressed. Blaming a situation or person for the onset of tinnitus will create anger and hostility (see Fig. 71.2).

Cognitive responses to tinnitus can be very different. Regardless of the cause of tinnitus, "suffering" is a function of how the patient reacts to tinnitus – how he or she copes with it. Patients have to be made aware that their way of coping can be modified. The goal of the therapy is to alter maladaptive cognitive, emotional, and behavioral responses to tinnitus and not the sound itself.

A comprehensive model for the chronification of tinnitus, including various dysfunctional cognition and behavior, is described by Kroener-Herwig [4] based on the assumptions regarding tinnitus tolerance made by Hallam and Jakes [5] (see Fig. 71.3).

This model describes the vicious cycle of tinnitus distress and demonstrates how different cognitive, emotional, and behavioral factors interact and create positive feedback loops generating and maintaining tinnitus-related annoyance and discomfort. Attention plays a pivotal role. Focusing attention on tinnitus, accompanied by specific dysfunctional cognitive processes of appraisal like catastrophic thoughts and rumination, leads to negative emotional consequences. Furthermore, behavior resulting from illness often based on avoidance learning (e.g., exculpation from daily routine, justification for absence of work) can be reinforced by family or friends.

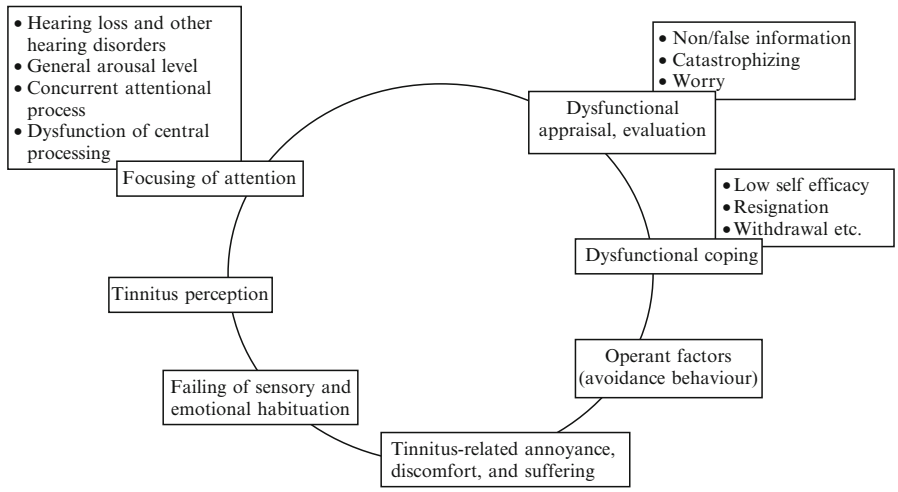

Fig. 71.3 A vicious circle model of tinnitus [17], after [16]

Cognitive Behavioral Therapy

The origin of cognitive behavioral therapy goes back to the 1950s and 1960s when Wolpe and Lazarus [6] developed new techniques for changing behavior – in particular in patients with anxiety disorders – based on experimental psychology. In the early phases, therapy (then called behavior therapy) was dominated by techniques like operant conditioning [7], systematic desensitization [8], or aversion therapy [9], which were directed at overt behavior change. In the 1970s, increasingly cognition-centered theories of behavior regulation were established and, consequently, cognitive interventions were implemented into therapy. Beck [2] has been most influential in introducing cognitive interventions into therapeutic strategies. In accordance with this trend, Ellis [10] introduced Rational-Emotive Therapy (RET) based on his A-B-C model. Meichenbaum [11] introduced the notion of the specific importance of self-talk and self-instructions for behavior regulation. Bandura [12] states in his social learning theory that self-efficacy beliefs play a most important role in guiding behavior.

Cognitive behavioral therapy was developed mainly as a treatment for affective disorders such as depression and anxiety. Subsequently, this therapy has been successfully utilized for patients with aversive medical conditions (e.g., chronic pain). A cognitive behavioral approach was first applied in the treatment of patients with tinnitus in the 1980s [13–16]. Nowadays, it is one of the most widely used and accepted psychological strategies for coping with intractable disorders [17–19].

There are two main components to this approach:

– Cognitive restructuring
– Behavioral modification

The combined approach assists patients in identifying and modifying maladaptive behavior and promotes habituation to tinnitus. The collaboration of patient and therapist is a prerequisite for a positive outcome of therapy.

Treatment programs comprise of techniques like relaxation training, cognitive restructuring, attention control, imagery training, and exposure to difficult situations.

Relaxation Training

Relaxation methods were one of the earliest psychological treatments applied to patients with tinnitus [20]. There are several forms of relaxation training. The most common is progressive muscle relaxation (PMR). In this technique, a person is shown how to decrease muscular tension and to achieve states of relaxation in a very brief period of time after detecting tension. The therapist instructs patients how to sequentially tense and relax various muscle groups, moving from practice in comfortable settings to practice in real-life

situations such as sitting at a desk, watching television, etc. Relaxation techniques may be helpful in assisting people in learning a way of coping with tension and anxiety related to tinnitus. Furthermore, it is commonly reported by patients that stress exacerbates tinnitus or causes a person to experience the tinnitus more intensely, and that a reduction in stress levels may reduce loudness and annoyance. Also, listening to one's tinnitus in a relaxed state can foster habituation and retain serenity in the presence of tinnitus.

Despite the popularity of relaxation training in clinical practice, research shows that relaxation seems to be of limited value for most tinnitus patients when used as the sole treatment [21]. To be successful, it has to be an integral part of a larger treatment program.

Cognitive Restructuring

In general, cognitive therapy involves the identification of dysfunctional beliefs and negative thoughts, which occur in response to life events or sources of distress. Patients are taught methods of challenging those thoughts and substituting their catastrophic, unrealistic thoughts with more constructive ones (cognitive restructuring). Cognitive restructuring helps patients think differently and adopt a different attitude about their problem. It is used as a method to guide patients recognize and subsequently abandon rigid, unhelpful thinking patterns and replace them with constructive cognitions and thoughts. This is different from simple "positive thinking" or from "directive counseling," a treatment component of tinnitus retraining therapy [22], because in cognitive restructuring the therapist and patient collaborate in identifying, testing, and challenging dysfunctional thoughts, beliefs, attitudes, or attributions [4, 23]. It is theorized that for patients with tinnitus, the source of distress is not the sound itself, but the way in which the person evaluates and interprets the sound. A person may have negative thoughts such as "The noise is driving me crazy" or "This is the worst thing that could ever happen." Alternatively, he or she could think: "The noise doesn't hurt me – it is bad, but it generally gets better by-and-by" or "Do something enjoyable, rather than being occupied with the noise in your head."

The therapist helps the clients to challenge and test the validity of their automatic thoughts and to learn ways to substitute them with more constructive ones.

Attention Control Techniques

Attention control interventions make patients aware that they indeed have control over their attentional focus, and that directing attention to other aspects of the external or internal environment can make the tinnitus "disappear." Instructing patients to switch attention to and from tinnitus illustrates that tinnitus can be "controlled." Patients are encouraged to augment their use of other sensory modalities (e.g., smelling coffee, tasting honey). Furthermore, strategies to specifically manipulate the acoustical environment are recommended.

Imagery Techniques

Imagery techniques are used to change the negative associations related to tinnitus either by "masking" the noises or by integrating them into positive scenes. In imagery exercises, a patient may be asked to imagine that the tinnitus is masked by the sound of a waterfall or the waves of the sea. No real sounds are used to mask tinnitus in this exercise. Masking is achieved by imagination. Tinnitus also may be incorporated into pleasant scenes. Patients might be instructed to imagine walking through a landscape by listening to the singing of birds or lying on a blooming field and hearing the noises of bumblebees, cicadas, and other insects. Alternatively, a patient may imagine a cold and snowy winter day, sitting comfortably in front of the fire place, hearing the sizzling of a teakettle, and looking forward to enjoying a cup of hot tea.

In clinical practice, these approaches are rarely used as sole therapeutic methods, but are incorporated into relaxation training or cognitive restructuring interventions.

Behavioral Techniques

Tinnitus patients may tend to avoid situations where they feel impaired or distressed by their tinnitus, i.e., conversations with more than one person, a concert, a stroll in the city. This may have developed into generalized avoidance behavior. Cognitive behavioral therapy (CBT) encourages patients to expose themselves to those situations in order to realize that they can cope without major negative

consequences. These behavioral "experiments" must be well prepared and these new skills should be frequently practiced.

In some patients, "suffering" from tinnitus allows her/him to avoid situations, which were threatening, and anxiety inducing for non-tinnitus-related reasons, e.g., office work or participating in social events. Tinnitus for them is an acceptable solution or "a legitimate excuse" for avoiding these situations. Thus, tinnitus complaints are under operant control and are therefore maintained. In these cases, patients have to become aware of the underlying problem and are assisted in finding adaptive problem solutions.

Multimodal CBT has been evaluated in several studies. The meta-analysis of Anderson and Lytthens [21] showed that psychological treatments are very effective regarding the reduction of tinnitus-related distress. The average effect size of 0.86 reveals a high efficacy. Recently, Martinez Devesa et al. [24] prepared a meta-analysis of randomized controlled group trials on CBT for the Cochrane Collaboration and came to the conclusion that the CBT is effective for improving the quality of life based on the analysis of 24 trials.

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