



Assessment and Intervention for Individuals With Misophonia

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Abstract

Misophonia is a condition characterized by marked distress following the perception of innocuous sounds and is often accompanied by behavioral avoidance. This presentation is currently absent from the Diagnostic and Statistical Manual of Mental Disorders, as it remains poorly understood and understudied. Despite these limitations, there have been recent efforts to develop empirically supported assessment tools and intervention. Interventions for misophonia predominantly incorporate principles of cognitive-behavioral interventions. This article describes in detail the assessment and intervention process of working with an individual with misophonia.

Keywords Misophonia · Assessment · Treatment · Psychotherapy · Obsessive-compulsive spectrum disorders

Vignette

Alexis, a 21-year-old female, arrives in your office complaining of intense sensitivity and extreme reactions to certain sounds. She was previously diagnosed with major depressive disorder and generalized anxiety disorder. At age 15, she was diagnosed with a chronic physical health condition. Around the same time, Alexis began to experience intense emotional distress in response to certain sounds, specifically the sound of low pitch male voices and eating sounds (e.g., utensils, lip smacking, throat clearing). Since that time, she has seen a variety of health professionals to better understand the distress and anger she feels when confronted with these sounds. She has undergone medical testing and worked with audiologists to address her concerns. She has made several unsuccessful attempts at tinnitus treatments to reduce distress. Her family has accommodated her sensitivity over time, and Alexis uses distractions to cope. Alexis is hoping to reduce her distress reactions and develop adaptive coping skills. Is this a case of misophonia? What signs or symptoms may aid in your decision process? What approach might be most helpful, as there is no empirically supported treatment? How can you be of the greatest help to this patient (and her family)?

Clinical Challenge

What is Misophonia?

The word *misophonia* is a literal translation from the Greek words “*miso*” and “*phonia*,” which translate to *hatred* and

sound, respectively. This *hatred of sounds*, or misophonia, is a clinical presentation marked by distress and avoidant behaviors following the anticipation or perception of innocuous or repetitive sounds. This sensitivity to sounds is generally first observed during childhood, with sounds originating from other people (e.g., smacking lips, chewing, sniffing) as well as the natural environment (e.g., animals, vehicles, clicking pens).

While harmless in nature, these sounds often elicit both anxious arousal (i.e., “fight-or-flight” response) and strong emotional reactions (i.e., anger) that are atypical when compared to those without misophonia. This presentation was first described by Jastreboff and Jastreboff (2001, 2002) by differentiating misophonia’s clinical presentation from other audiological pathologies such as tinnitus. In the twenty years since initial identification, misophonia has received growing attention from the field of psychology. Additionally, the term misophonia has been growing in popularity among the general public. However, this clinical presentation remains understudied and poorly understood.

Misophonia exhibits symptom overlap with other pathologies, including phonophobia and hyperacusis. All three conditions are associated with avoidance of auditory stimuli, including the use of behavioral distractions. Important distinctions exist, however, which have caused researchers and clinicians to conceptualize misophonia as a separate pathology. Most notably, misophonic reactions appear isolated to real and specific external auditory stimuli, which facilitate feelings of anger, distress, and disgust, along with avoidant behaviors (Johnson et al., 2013). In contrast, phonophobia and hyperacusis are associated with

feelings of fear (as is the case with *all* specific phobias) rather than anger, distress, and disgust, and an exaggerated perception of volume rather than hatred of a specific sound, respectively.

In response to symptoms, individuals with misophonia may verbally or physically confront others who are creating distressing sounds (e.g., family members). They may also avoid certain people, situations, or settings that have previously triggered reactions of distress, disgust, and anger (Taylor, 2017). Over time, family members may create accommodations by changing their behaviors (e.g., eating in separate rooms). Taken together, these perceptual and behavioral symptoms can result in significant impairment in work, school, family, and interpersonal functioning.

Essential Features of Misophonia

Schröder et al. (2013) suggested diagnostic criteria for misophonia, with further elaboration by Jager et al. (2020). The later modifications were designed to be more inclusive (e.g., the inclusion of bold movements by others as misophonic response inducing stimuli) and to specify that all criteria must be met for a diagnosis (which allows for separate categorizations of subclinical presentations that do not meet all criteria). The essential features are (a) preoccupation with specific external sounds, (b) responses to sounds that cause feelings of intense distress (e.g., anger and disgust), (c) emotional reactions that are excessive and accompanied by a fear of or actual loss of control, (d) avoidance of triggering sounds, (e) the symptoms result in functional impairments, and (f) the aforementioned symptoms cannot be better explained by another diagnosis. Full criteria outlined by Schröder et al. (2013) and Jager et al. (2020) can be found in Tables 1 and 2.

Despite a clear symptom profile associated with clinical impairment, misophonia is not currently a diagnosable condition in the Diagnostic and Statistical Manual of Mental Disorders or the International Classification of Diseases (DSM-5; American Psychiatric Association, 2013; ICD-10; World Health Organization, 1992). This omission has been called into question by some pushing for misophonia to become its own psychiatric diagnosis (Schröder et al., 2013). Even with this suggestion, others caution against including misophonia as a diagnosable condition at this point, due to concerns of over-pathologizing human phenomenon, scant literature, and insufficient theoretical models of how this presentation manifests and perpetuates (Taylor, 2017). Additionally, it is unclear if misophonia is best categorized as a discrete diagnosis, or rather as a transdiagnostic cluster of symptoms found across pathologies (Cavanna & Seri, 2015).

Table 1 Schröder and colleagues' (2013) Diagnostic Criteria for Misophonia

Symptom
A) The presence or anticipation of a specific sound originating from a human being (e.g., eating or breathing sounds) that elicits an aversive physiological reaction that starts with irritation or disgust and develops into anger.
B) The anger initiates a profound loss of self-control with rare but potentially aggressive outbursts.
C) The anger or disgust is recognized as excessive, unreasonable, or out of proportion to the circumstance or the provoking stressors.
D) The individual tends to avoid misophonic situations, or if they do not avoid them, they endure encounters with the misophonic sound with intense discomfort, distress, anger, or disgust.
E) The individual's anger, disgust, or avoidance causes significant distress or impairment in day-to-day functioning.
F) The person's anger, disgust, and avoidance are not better explained by another disorder, such as obsessive-compulsive disorder (e.g., disgust in someone with an obsession about contamination) or post-traumatic stress disorder (e.g., avoidance of stimuli associated with a trauma or related to threatened death, serious injury, or threat to the physical integrity of self or others).

Note. Criteria originally developed by Schröder et al. (2013)

Table 2 Jager and colleagues' (2020) Revised Diagnostic Criteria for Misophonia

Symptom
A-R) Preoccupation with specific auditory, visual or sensory cues which are predominantly induced by another person. It is required that oral or nasal sounds are a trigger.
B-R) Cue evokes intense feelings of irritation, anger and/or disgust of which the individual recognizes it is excessive, unreasonable or out of proportion to the circumstance.
C-R) Since emotions trigger an impulsive aversive physical reaction, the individual experiences a profound sense of loss of self-control with rare but potentially aggressive outbursts.
D-R) The individual actively avoids situations in which triggers occur or endures triggers with intense discomfort, irritation, anger or disgust.
E-R) The irritation, anger, or disgust and avoidance cause significant distress and/or significant interference in an individual's day-to-day functioning. For example, it is impossible to eat together, work in an open office, or live together.
F-R) The irritation, anger, or disgust and avoidance are not better explained by another disorder, such as autism spectrum disorder (e.g., a general hypersensitivity or hyperarousal to all sensory stimuli) or attention deficit hyperactivity disorder (e.g., attention problems with high distractibility in general).

Note. Individuals must endorse all of the symptoms outlined by Jager et al. (2020) to help differentiate clinical and subclinical levels of impairment associated with misophonia. Criteria developed by Jager et al. (2020), modified from Schröder et al. (2013)

Comorbidities and Prevalence

The lack of consensus regarding if and how misophonia should be diagnosed has not dissuaded groups from attempting to improve our understanding. Misophonia has largely been conceptualized as an obsessive-compulsive spectrum disorder given similar behavioral theories, comorbidity patterns, and symptom overlap (Schröder et al., 2013). A positive association between misophonia and obsessive-compulsive personality disorder (OCPD) has been documented, with more than half of the sample meeting criteria for OCPD in the study by Schröder et al. (2013). In the largest study to date, 575 individuals with misophonia were recruited, and nearly a quarter of the sample endorsed personality traits consistent with OCPD—with 2.4% of the sample meeting diagnostic criteria for OCPD (Jager et al., 2020). Misophonia has also been consistently associated with symptoms of anxiety, depression, and OCD (Jager et al., 2020; Quek et al., 2018; Schröder et al., 2013; Wu et al., 2014). Collectively, these findings suggest that misophonia is related to, but distinct from these pathologies.

These findings are consistent with what is often observed in treatment settings; anxiety disorders and obsessive-compulsive spectrum disorders have notable symptom overlap. Depressed mood is often a consequence of recurrent obsessive or anxiety-specific symptoms, as individuals are often unable to fully engage with life because of obsessive thoughts, urges, and behaviors they have little control over. While individual findings are promising, additional large-scale efforts are needed to more fully understand misophonia's relationship to other pathologies.

Not surprisingly, prevalence research for misophonia is extremely limited. Existing prevalence data from correlational research should be interpreted with caution, as participants may self-select into misophonia research, making it difficult to draw population-based conclusions (Taylor, 2017). Further complicating this is the fact that misophonia is not a diagnosable condition listed in the DSM-5 or ICD-10.

Assessment of Misophonia

A comprehensive clinical assessment is required to determine whether someone has misophonia, as with all psychiatric illnesses. While there are no formal DSM-5 diagnostic criteria outlined, professionals who see and treat misophonia tend to agree upon core common symptoms that make misophonia unique from other pathologies as described earlier. There have been growing efforts to develop psychometrically valid self-report measures to assess misophonia symptom severity. Many clinicians incorporate other related self-report tools to gauge functional impairment or severity of related symptoms associated with misophonia, but development of these measures remains limited. At this point, the primary goal for clinicians and researchers should be to determine if misophonia

should be included as a discrete pathology, and if so, what symptoms should be included in making a diagnosis.

Understanding the disease onset, progression, and functional impairment (in addition to the symptom profile) can be helpful in determining which interventions should be used. For example, knowing that a patient with misophonia has a history of impulsivity and deficits in emotion regulation may lead a provider to select treatments that account for these deficiencies (e.g., incorporate DBT skills training). Similarly, knowledge that a patient avoids social, occupational, or educational responsibilities may suggest an exposure-based intervention, similar to what is used with anxiety disorders (despite possibly being resisted by the patient with misophonia).

Tools for Assessment of Misophonia

Even with clinical interviews, providers can miss important facets of an individual's presentation. To address this limitation, different measures should be incorporated into the assessment process. These measures include checklists of misophonic triggers and behavioral responses, questionnaires to assess symptom severity and functional impairment, and measures to assess related symptoms. We provide an overview of the clinically relevant tools that should be considered during the assessment process.

The Misophonia Questionnaire (MQ; Wu et al., 2014) is a three-part self-report measure used to assess misophonic triggers, emotional and behavioral consequences of symptoms, and severity of sound sensitivity. This scale is strengthened by its robust psychometric properties, including good internal consistency documented for the misophonia trigger, and emotional and behavioral subscales, as well as the full measure (all α 's > .80). Furthermore, this scale shows strong correlations ($r = .50$) with convergent constructs and small-to-moderate correlations ($r = .33$) with divergent constructs, further demonstrating the ability for this measure to accurately capture misophonic symptoms. Finally, the sound severity measure of this assessment tool of the MQ was adapted from the NIMH Global Obsessive-Compulsive Scale (NIMH GOCS; Murphy et al., 1982) and relies on a 1 to 15 rating scale from “*minimal*” to “*very severe*” with scores above 7 suggestive of significant impairment.

The Amsterdam Misophonia Scale (A-MISO-S; Schröder et al., 2013) and the newer Amsterdam Misophonia Scale - Revised (AMISOS-R; Schröder & Spape, 2014) are two additional measures that should be considered in clinical practice. While the psychometric properties of each scale remain unknown, there are current efforts to measure the reliability and validity of the AMISOS-R (Jager et al., 2020). Even without these metrics, providers may find utility in these instruments, as they can be used to capture the types of sounds that perpetuate distress and the self-reported severity of emotional and behavioral reactions to misophonic sounds. In addition to the A-

MISO-S and AMISOS-R, Schröder (2014) has created the Misophonia Sound List that can be used to assess the degree of irritation to human (e.g., lip smacking, chewing, snoring), non-human (e.g., electrical devices), and visual triggers (e.g., twitching legs), and the extent to which individuals use different avoidance strategies (e.g., listening to music, walking away) to cope.

Most recently, the MisoQuest (Siepsiak et al., 2020) appears as a promising tool for assessing misophonia. Its clinical application is currently limited because of its recent development. The authors emphasize that this tool should be preferred over the AQ, A-MISO-S, and AMISOS-R because of its theoretical independence from OCD, which the authors suggest allows for better measurement of misophonia severity rather than the presence of different misophonia symptoms. Despite their theory and empirically sound development of the scale, there is a need for greater utilization of the MisoQuest in clinical settings to determine if this tool has any added benefit over the AQ, A-MISO-S, or AMISOS-R.

As previously noted, misophonia is associated with varying degrees of impairment, behavioral and emotional reactions, and deficits in day-to-day functioning. For these reasons, it can be clinically informative to use questionnaires that assess related problem areas. We have found the Adult Sensory Questionnaire (Kinnealey & Oliver, 2002) helpful for assessing sensory experiences that are distressing and could result in misophonic reactions, the Rage Outburst and Anger

Rating Scale (Budman et al., 2008) for assessing reactivity to triggers, and the widely used Sheehan Disability Scale (Sheehan, 1983) to assess impairment in work, school, social, and familial roles. A list of the measures reviewed can be found in Table 3.

The assessment tools discussed above should not be used as a replacement for a comprehensive clinical interview, but rather, they should be used in conjunction to provide corroborating support of the suspected presences of misophonia, to determine symptom severity, and to gain insight about functional impairment and deficits in day-to-day functioning. All of these measures can be administered by the provider or completed independently by the individual seeking treatment. Furthermore, these measures should be administered several times over the course of treatment for ongoing assessment and to track improvements in symptomatology and functioning.

Steps for Assessment

Before the Evaluation

Prior to the initial evaluation, it can be helpful to speak with the prospective patient to get a sense of their presenting concern, and to create hypotheses about potential and relevant differential diagnoses. The goal here is not to complete a diagnostic evaluation over the phone, but to gather vital

Table 3 Widely Used Self-Report Measures of Misophonia and Related Symptoms

Scale	Description of measure	Authors	Year
Misophonia Questionnaire	A three-factor scale designed to assess: 1) presence of misophonia symptoms, 2) behavioral and emotional responses to misophonia stimuli, and 3) symptom severity.	Wu, Lewin, Murphy, & Storch	2014
Amsterdam Misophonia Scale	A six-item, modified version of the Yale-Brown Obsessive Compulsive Scale relying on a 0–4 scale to assess symptoms of misophonia.*	Schröder, Vulink, & Denys	2013
Amsterdam Misophonia Scale - Revised	A 10-item, revised version of the Amsterdam Misophonia Scale that uses a 0–4 scale to assess symptoms of misophonia.**	Schröder	2014
Misophonia Sound List	A check-list inventory of human and non-human sounds, visual triggers and avoidant behaviors found across misophonia presentations.	Schröder	2014
MisoQuest	A 14-item measure used to assess misophonia symptoms outlined by Schröder et al., 2013. Consistent with current conceptualization of misophonia, items are not derived from OCD questionnaires.	Siepsiak, Sliwerski, & Dragan	2020
Adult Sensory Questionnaire	A 26-item measure to which participants respond using “yes” or “no” to identify distressing sensory experiences.	Kinnealey & Oliver	2002
Sheehan Disability Scale	A widely used, three-item tool to which participants report impairment in: 1) work/school, 2) social, and 3) family life/home responsibilities.	Sheehan	1983
Rage Outburst and Anger Rating Scale	A three-item measure which assesses: 1) frequency, 2) intensity, and 3) duration of rage outbursts.	Budman et al.	2008

Note. * The psychometric properties of the Amsterdam Misophonia Scale have not been assessed, however, this scale is commonly used in research and clinical practice. **The psychometric properties of the Amsterdam Misophonia Scale - Revised are currently under investigation by the author of the measure

information to help guide the initial evaluation. Patients with misophonia who are seeking care from mental health professionals have likely worked with audiologists or primary care providers before presenting, so obtaining records from these providers prior to the first meeting can provide additional diagnostically relevant information for the initial evaluation. Asking the patient to bring these records to their appointment or asking them to sign a release of information to obtain these records is recommended.

Symptom insight varies from patient to patient, and it is important to remember during the initial contact that patients may have limited knowledge about misophonia and psychopathology as a whole. The following are examples of statements during an initial contact that are suggestive of misophonia, as well as differing levels of symptom insight:

- *“I can’t stand listening to my brother chew. I try to avoid it, no matter what. When I hear him chew, my heart starts beating quickly, and I get very warm and sweaty and I become upset. Sometimes it feels like I am going to snap at him! I really need help with this.”*
- *“Some noises just really get me worked up. I do not know how to explain it, I just can’t be around those noises. I really don’t know why, but it’s getting in the way of things.”*
- *“I hate the sound of my co-worker’s voice. I do everything in my power to avoid being around him because I cringe every time he speaks. Sometimes I will skip meetings that I know he is attending.”*

From these statements, misophonia is certainly a leading diagnostic candidate. However, providers should be aware that other diagnoses or comorbidities, such as phonophobia, are plausible. This information is valuable, as it helps inform the types of questions the provider might ask during the evaluation. Furthermore, patients often report functional impairment related to their symptoms, as noted in the third example. These statements are not diagnostic by themselves, but are helpful for directing the initial evaluation.

Sending the patient electronic versions of the questionnaires outlined earlier can be helpful when misophonia is the leading diagnostic candidate. It is not necessary to send all of the measures. Rather, providers should determine the utility of each measure on their own and use them accordingly. Having these measures completed before the evaluation and brought to the appointment can help elucidate the level of impairment and types of misophonic triggers that facilitate distress, resulting in a more parsimonious evaluation.

The Initial Evaluation

The primary goals for the evaluation are to assess (1) the presence of misophonia and comorbid psychopathology, (2)

misophonic triggers and resulting behavioral, emotional, and cognitive reactions, and (3) functional deficits. These goals should not be thought of as separate and unrelated tasks to be completed. Completing one aim often leads to information relevant to the other two.

There are no structured or semi-structured interviews for misophonia, to date, so providers must rely on unstructured clinical interviews to gain better insight into symptoms. Diagnostic recommendations by Schröder et al. (2013) and Jager et al. (2020), along with information obtained before the appointment (i.e., notes from outside providers or information from a brief phone screen) should guide the clinical interview. Diagnostic criteria should be used as board targets for the assessment, while information specific to the patient should be used to individualize the assessment process.

The following examples are questions designed to assess the presence of misophonic symptoms, tailored specifically to our vignette patient, Alexis:

- Criterion A: *“Alexis, it sounds like some of these sounds are upsetting to you. How often are you worrying about them? For example, when do you worry about your brother making noises that cause you to become upset?”*
- Criterion B: *“When you do hear your brother chewing, what happens next? Do you become upset? Irritated? I wonder, how do other people respond to these sounds?”*
- Criterion C: *“It sounds like you get pretty upset. Does it ever feel like you can’t control your response or like your reactions are overwhelming and involuntary? What do those responses look like? What would I see if you were to watch you while you heard someone speak with a low-pitched voice?”*
- Criterion D: *“Is there anything you don’t do, or actively avoid, because you could hear the sounds we have been discussing? Do you find it more difficult to be in public where men might be speaking, or where others might be eating?”*
- Criterion E: *“What responsibilities or tasks are you unable to do, or are more difficult than they ought to be, because of these intense reactions to sounds? I imagine tasks such as eating with the family or doing the dishes could be difficult.”*
- Criterion F: *“What you are telling me sounds like what we call ‘misophonia.’ Sometimes there are other diagnoses that can also explain the symptoms we have discussed, such as ADHD or autism, however it does not seem like these diagnoses fit your experience.”*

After determining that misophonia is the most appropriate diagnosis for the current symptoms, it is essential to identify the misophonic triggers. Patients are generally able to identify their misophonic triggers. However, for patients with limited

descriptive skills it may be helpful in identifying misophonic triggers to use the Misophonia Sound List (Schröder, 2014).

It is crucial to understand the resulting emotional, behavioral, and cognitive impact of these misophonic triggers. This may be achieved by asking:

- “What usually happens after you hear men speaking? What sort of emotions do you feel? What thoughts are going on before and after you hear them speaking?”
- “I am curious what you do in order to avoid these sounds once you hear them?”
- “What are the people or places you avoid because of these sounds?”
- “On a zero-to-ten scale, how upsetting is it to hear the following sounds...”

Finally, providers must assess functional impairments and deficits resulting from the misophonic symptoms. For some patients, their symptoms may not prevent them from completing day-to-day responsibilities, but tasks are made more difficult than they would be in the absence of misophonia. Areas of impairment may include eating near others or going out to dinner, attending loud social gatherings or events, riding in vehicles, working in an office or near people typing, or kissing a partner or spouse. These areas of impairment are not an exhaustive list, but rather examples of different domains that can be affected because of misophonia. Assessing impairment should be specific to the patient, as this will facilitate an individualized treatment focused on functional goals.

Overall, the assessment of misophonia is not dissimilar to that of other psychiatric conditions. What makes misophonia unique, much like orthorexia or internet gaming disorder, is that misophonia is not a diagnosable condition in the DSM-5 or ICD-10. This can result in confusion with billing and record keeping. However, the ICD-10 code *H93.239, hyperacusis, unspecified ear*, is used in both psychology and audiology clinics and appears to best fit this presentation. Furthermore, this code is often reimbursed by insurers, and if it is not, individuals with misophonia often have comorbidities (i.e., anxiety or mood disorders) that are reimbursed. Once a provider is able to determine that a patient has misophonia, they are set to proceed with treatment.

Ongoing Assessment

Ongoing assessment is a crucial aspect of patient care that must be incorporated in the treatment of misophonia. This process should include both formal assessment tools (e.g., re-administering the MQ or AMISOS-R) as well as asking the patient about their ongoing functional impairment compared to when they first presented, or another relevant time point. For our patient, Alexis, this can involve assessing the

extent to which parents have reduced accommodations for her misophonic symptoms. Attempts to get at this may include asking:

- “A few weeks ago, you mentioned that your family no longer eats dinner together because of how upsetting it was to you to hear your brother eat. How are you doing today with this compared to when you first mentioned this?”
- “Are you still asking your brother not to speak near you? How upsetting is it when he does speak compared to the last time we discussed this area of concern?”
- “You mentioned that your family does a lot of different things to accommodate your symptoms. Have they reduced accommodations if you attempt to get them to comply with symptom-related requests?”
- “Last week you rated listening to your dad chew as a seven on a zero-to-ten scale of distress. How upsetting this sound now?”

These questions, along with standardized measures, allow providers to monitor progress both in terms of patient symptoms and functioning. When progress appears to stall, and misophonic symptoms do not improve, it is important for patients and providers to collaboratively develop a plan to address barriers to improvement (e.g., improving between-session homework completion), modify the treatment approach (e.g., incorporate principles of mindfulness or relaxation techniques to improve coping), or even discuss the possibility of terminating treatment if no viable solutions can be identified. Ongoing and frequent assessment are paramount to patient care and the treatment of misophonia; without assessment, it is impossible to objectively determine progress.

Beginning Research on the Effectiveness of Treatment Approaches

Treatment approaches for misophonia are as varied as the many proposed models for the condition. Due to the lack of theoretical consensus, a variety of treatments have been proposed and used in clinical settings to varying levels of success (Taylor, 2017). Multiple case studies have been published, using a variety of treatments for misophonia which provide some information for clinicians (Johnson et al., 2013; McGuire et al., 2015; Bernstein et al., 2013). In addition to the case studies, there are an increasing number of treatment studies that implement transdiagnostic modalities for misophonia (Schröder et al., 2017; Zhou et al., 2017). However, there is still no consensus on empirically validated treatments for misophonia that have been supported through large-scale clinical trials (Brout et al., 2018).

Auditory Approaches

Historically, misophonia concerns have been treated by audiologists due to a history of auditory impairments, such as tinnitus, being treated through these means (Dozier, 2015). Initial theoretical models of misophonia lent themselves to support this intervention, specifically the use of tinnitus treatments (e.g., Tinnitus Retraining Therapy), which was intended to facilitate habituation to specific sounds (Brout et al., 2018). Schmidt and Henry (2018) described in detail the process and procedures of “progressive tinnitus management,” developed over 20 years of research. However, more recent studies have cautioned against over-generalizing these results due to problems with measurement of symptom reduction and development of new theories of misophonia, which include emotional and cognitive components (Jastreboff and Jastreboff, 2014).

Cognitive Behavior Therapies

Psychological treatments for misophonia have focused on applying transdiagnostic empirically validated treatments for anxiety and obsessive-compulsive disorder to misophonia (Bernstein et al., 2013; Dozier, 2015; Reid et al., 2016). Most of these studies have primarily focused on case study methods. One of the few treatment studies for misophonia used a group cognitive-behavioral (CBT) approach with positive results (Schröder et al., 2017). Approximately half of patients receiving a group CBT intervention showed reductions in misophonia symptoms following completion of treatment. More severe misophonia symptoms and feelings of disgust predicted positive response to treatment. Several case studies found a combination of additional support with traditional CBT interventions such as cognitive restructuring, exposure and response prevention, and assertiveness training to be effective (Reid et al., 2016). A recent treatment study proposed implementing cognitive interventions (e.g., schema therapy) in treatment for misophonia to address the negative cognitive appraisals commonly found in this population (Natalini et al., 2020).

Behavioral Interventions

There have been several theoretical and case studies published proposing a conditioned aversive reflex disorder model and treatment for misophonia (Dozier, 2017; Dozier et al., 2017). Drawing from counterconditioning models of behavior change, this treatment proposes to weaken the physical response to misophonia triggers by pairing the trigger with positive stimuli. In case studies using these behavioral interventions, results show reductions in reactivity to misophonia triggers post-treatment and at 10-month follow-up (Dozier, 2017). However, this intervention does not seek to change or

address any emotional response elicited by misophonia triggers, which runs in opposition to other models of misophonia, which include the emotional reaction (Dozier, 2015; Jager et al., 2020). This may indicate the addition of mindfulness or dialectical behavior therapy interventions to reduce emotion dysregulation (e.g., intense anger) commonly experienced by individuals with misophonia (Schneider & Arch, 2017; Kamody & Del Conte, 2017). However, there has been minimal research into the use of mindfulness or DBT approaches for misophonia, and none that used large-scale clinical studies.

Steps for Intervention

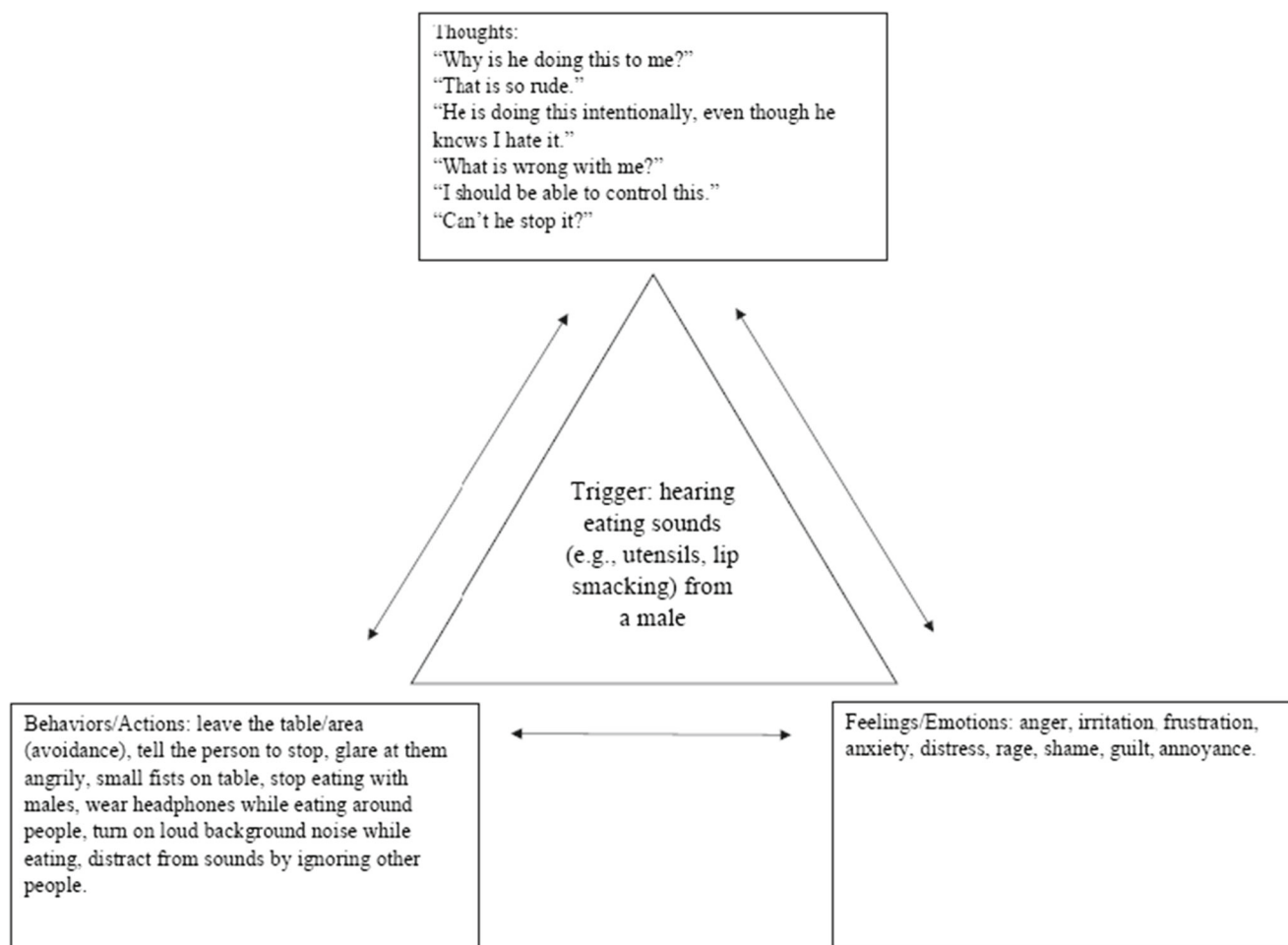
Rapport Development and Psychoeducation

At the start of treatment, initial sessions should focus on developing rapport between clinician and patient in order to facilitate patient engagement. As part of this process, the clinician should work to provide psychoeducation about the model of misophonia. Most theories of misophonia lend themselves to a CBT model, so building upon traditional psychoeducational models of CBT, a clinician should describe the process in which sound sensitivities occur. The use of diagrams and models may be useful in demonstrating this to the patient. Through psychoeducation, a clinician can also explain the nuance of treatment for misophonia compared with anxiety-related phobias or aversions (e.g., obsessive compulsive disorder). Specifically, focusing on moving from an exposure-anxiety reduction model to an exposure-distress tolerance model of treatment.

Through collaboration with the patient, psychoeducation should allow further assessment of misophonia symptoms and areas of avoidance. By linking their experience to a model of misophonia, the clinician works to provide real-world examples for the patient and identify how avoidant behaviors and distraction techniques may be perpetuating symptoms. Based on the vignette example, a clinician could use the patient’s aversive reaction to the sound of males eating and apply it to a CBT model (see Fig. 1). The psychoeducation and rapport process will continue throughout treatment but is necessary before applying behavioral or cognitive intervention strategies to symptoms.

The following are examples of statements designed to provide psychoeducation about the CBT model, as applied to misophonia:

- “Based on what you told me during our initial assessment, the main trigger sound is males eating. Would that be an appropriate example to use in our model?”
- “After the initial sound of chewing, what emotions do you notice?”



Note. Figure displays CBT model as applied to misophonia. Arrows represent bidirectional relationships between thoughts, feelings, and behaviors.

Fig. 1 Application of the CBT Model to Alexis' Misophonic Presentation

- “When you hear your brother eating, what are the automatic thoughts that come to mind?”
- “How do you react to the feelings of anger and disgust?”

Behavioral Intervention Strategies

Behavioral interventions have multiple purposes in the treatment for misophonia. Initially, it is important to teach patients to develop helpful distress tolerance skills for situations that trigger misophonia. Most patients will come in with a list of ways they have previously avoided the sounds (e.g., wearing headphones or ear plugs, listening to music, leaving the room). Therapists should assess the usefulness of these strategies and assess which are helpful for the patient to maintain. Counterproductive behaviors should be reduced and replaced with more functional skills. Distress tolerance skills, such as those from DBT (e.g., T.I.P.P. Skills, mindfulness) can be

substituted for unhelpful coping skills. Patients are trained in these skills and then encouraged to practice them in real-world situations between sessions. As patients become more confident in their ability to tolerate situations in healthy ways, exposure-based interventions can then be initiated.

Exposures for misophonia are designed to demonstrate to the patient that they are able to tolerate distress (e.g., anxiety, disgust, anger) triggered by aversive sounds. Patients and therapists should work collaboratively to create a hierarchy of situations in which they are confronted by aversive sounds and rate their subjective units of distress. It can be helpful to disentangle emotions of anxiety and anger during this process. Then, with a combination of *in vivo* and imaginal exposures, patients are slowly exposed to the sounds and situations.

The goal of engaging in exposure is to facilitate habituation to the triggered distress and increase inhibitory learning. With more difficult exposures, patients can be encouraged to use various distress tolerance skills as adaptive

forms of coping. With the common experience of anger in misophonia, full habituation may not be possible and a patient can be coached on using appropriate coping skills in those situations. The goal is for the patient to fully engage in value-directed activities in life through a combination of anxiety-reduction and adaptive coping.

The following are examples of statements that may be used in creating a misophonia exposure hierarchy:

- “You’ve told me that the distress is different depending on who is chewing. How much distress do you feel when it is your mom? Your dad? Your brother?”
- “How does the level of distress change when you have one ear plug in versus none?”

Cognitive Intervention Strategies

Cognitive restructuring can be used to address cognitive appraisals of the triggering sounds. Through this intervention, the patient and therapist better understand the thought process behind the distressing emotions. For a patient similar to the example provided, a therapist would help the patient identify the misophonia trigger (“*my boyfriend eating chips*”) and then identify the misophonia unhelpful thought (“*No one cares that the sound bothers me*”). By understanding these thoughts, cognitive challenging interventions can be applied to find a more realistic appraisal of the situation.

Identification of cognitive distortions can increase awareness of thinking patterns that may increase misophonia-related distress. Recent literature (Natalini et al., 2020) has supported the role of maladaptive appraisals in misophonia, which suggest there is a need for processing and restructuring of these beliefs. Through this process, family and other important supports in the patient’s life can be brought into therapy. If a patient chooses, they may have conversations with family and support people following cognitive restructuring as a way to further confirm the more realistic beliefs. For example, a patient may speak with someone who triggers their misophonia and ask them what they are thinking or feeling in the moment. Behavioral experiments may also be used following cognitive restructuring to continue to challenge these beliefs.

The following are examples of statements that may be used when engaging in cognitive restructuring:

- “Tell me about the negative automatic thoughts you have when your brother starts chewing.”
- “How much do you believe that your brother continues to chew loudly because he doesn’t care that it bothers you? Please rate that belief from 0-100%.”

Wrapping Up—Clinical Tips to Remember

Misophonia is not currently a diagnosable DSM-5 psychiatric condition, despite ample evidence of functional impairment associated with this presentation. The assessment of symptoms, misophonic triggers, and related symptoms are imperative for determining how to proceed with treatment. There is no consensus on empirically supported treatments for misophonia. However, there are positive results for the use of cognitive-behavioral and third wave-behavioral interventions (e.g., DBT, ACT). Treatment modalities that draw from a variety of theories appear to have positive results when they serve to reduce the behavioral, cognitive, and emotional components of misophonia:

- Individuals with misophonia exhibit marked distress from real sounds, which results in functional impairment.
- Assessment of misophonia should include the use of a clinical interview, along with objective self-report measures.
- Ongoing assessment of misophonic symptoms is critical to treatment success and should include re-administration of self-report measures, as well as assessment of progress toward treatment goals.
- Initial evidence does support CBT interventions for misophonia, including psychoeducation, exposure, and cognitive restructuring interventions. The addition of third-wave interventions, such as mindfulness and distress tolerance skills, may provide further help and support.
- Therapists should be prepared to take a nonlinear approach to treatment as empirical evidence shows conflicting accounts of treatment success. A flexible, open approach to discussing patient concerns will be critical for rapport and successful symptom reduction.

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