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Clinician's Guide to Misophonia

"Shut Your Mouth!" – Sound Induced Rage

Jenna M. Pellicori-Curry, Au.D., CCC-A
Nemours Children's Health System

Disclosures

- **Presenter Disclosure:** Financial: Jenna M Pellicori is employed by Nemours/Alfred I DuPont Hospital for Children. She received an honorarium for this course. Non-financial: Jenna M Pellicori has no non-financial disclosures.
- **Content Disclosure:** This learning event does not focus exclusively on any specific product or service.
- **Sponsor Disclosure:** This course is presented by AudiologyOnline.

Learning Outcomes

After this course, participants will be able to

- Identify associated risk factors, pathophysiology and characteristics consistent with a clinical diagnosis of misophonia.
- Differentiate between other decreased sound tolerance and psychoacoustic disorders such as hyperacusis, phonophobia, recruitment, tinnitus, and central auditory processing disorder.
- Determine clinically significant misophonia based on qualitative/quantitative characteristics and assessment measures.

What is Misophonia?

- Misophonia” literally translates to “hatred of sound”
 - Selective Sound Sensitivity Syndrome (Johnson, 1999)
- Neurophysiological and behavioral syndrome
 - Characterized by an immediate aversive emotional and physical response to soft-repetitive pattern based sounds, which ultimately leads to maladaptive behaviors and nervous system arousal
- Effects can lead to a life of psychosocial implications:
 - - Isolation - Social Dysfunction
 - - Depression - Anxiety
 - - Intense Suffering - Reduced Quality of Life
- Mean age of onset is approximately 12 years of age
(Kumar, 2016)

Auditory & Visual Triggers

- Auditory “triggers” or acoustic stimuli characteristics:
 - Often soft-repetitive pattern based sounds
 - Common auditory triggers include:
 - - Chewing - Pen Clicking - Throat Clearing
 - - Keyboard Typing - Slurping - Breathing
- Non-auditory “triggers” or visual stimuli characteristics:
 - Schröder proposed the term “misokinesia”
 - Repetitive movements which elicit an aversive response
 - Visual triggers often occur when auditory triggers are paired with repetitive visual stimuli
 - Common visual triggers include:
 - - Tapping hands - Swinging Legs - Jaw movements

Q7

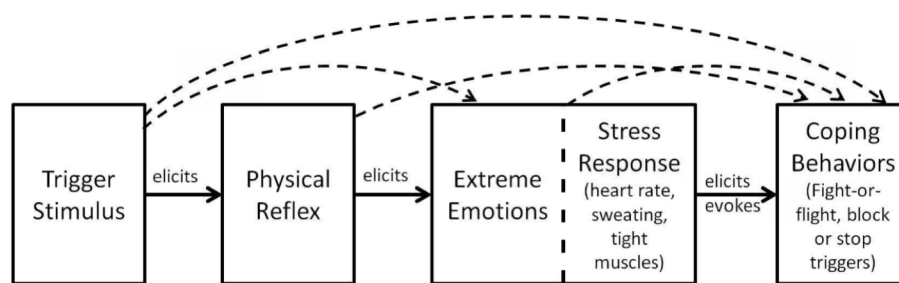
Auditory Brain & Nervous System

- Studies suggest enhanced reactivity of the “salience network”
- Unconscious brain centers work to assign meaning to sounds:
 - Non-salient (i.e. non-meaningful) or non-threatening stimuli are often pushed to the background via a mechanism known as auditory gating
 - Salient (i.e. meaningful) or threatening sounds allow us to either attend to stimuli or activate an acute fight-or-flight response
- Patients misinterpret sounds and perceive them as threatening, in turn activating the fight/flight response (i.e., sympathetic nervous system)
 - Fight/flight: An acute stress response where the brain processes signals or events in the amygdala and hypothalamus as harmful or threatening
- Physiological changes occur including but not limited to:
 - - Hormonal changes - Flushing - Increased heart rate
- Fosters overt emotional responses (i.e., anxiety, disgust, anger, rage)

Q2

Misophonic Response

Hypothetical Misophonic Response Chain by Tom Dozier



file:///C:/Users/jp0030/Downloads/Dozier2015TreatingtheInitialReflexofMisophonia%20(1).pdf



Literature Review

- Misophonia: Physiological Investigations and Case Descriptions (Edelstein et al., 2013)
 - Experiment I
 - Most trigger sounds are often related to other people's behavior
 - Patients were unbothered when trigger sounds were self-produced
 - Experiment II
 - Elevated subjective ratings towards auditory stimuli and skin conductance responses (SCRs) were congruent
 - No significant differences observed for visual-only stimuli reported
 - These findings support that misophonia is an organic disorder that elicits specific autonomic and physiological arousal

Literature Review

- A Large-Scale Study of Misophonia (Rouw & Erfanian, 2017)
 - Misophonia Physiological Response Scale (MPRS)

Clenched/tightened/tense muscles	90.0%
Increased body temperature, blood pressure, & heart rate	59.8%
Pressure in chest, arms, head or whole body	40.5%

- How trigger sounds affect the patient's life?

Tried not to be around people making trigger sounds	88.7%
Can't pay attention at a movie or in class with triggers	87.0%
Hyper focused on noises that should be in background	74.4%

- Misophonia symptom progression over time?
 - 77% indicated their symptoms worsened over time
- Does misophonia run in families?
 - 22% indicated "yes"; 33% indicated "no"; 45% indicated "unknown"

Literature Review

- The mystery of autonomous sensory meridian response (ASMR) -
 - Experience feelings of relaxation and euphoria to specific auditory stimuli
- Craig Richard presented preliminary data from his ongoing study at the Shenandoah University Scholarship & Research Conference (2016)
 - ASMR affected ~62% females and ~34% males based upon data collection
 - 93% experienced relaxation; 82% calming effects; and 65% sleepiness
- Neural correlates underlying ASMR (Lochte et al., 2018):
 - Functional brain differences in those identified with ASMR vs. control group:
 - Nucleus accumbens (NAcc) – reward center
 - Dorsal anterior cingulate cortex (daCC) - emotional arousal
 - Inferior frontal gyrus (IFG) - emotional arousal

Literature Review

- The Brain Basis of Misophonia (Kumar, 2017)
 - Research supports functional brain differences in patients:
 - Increased blood-oxygen-level-dependent responses in the anterior insular cortex (AIC), bilaterally
 - Increased myelination in ventromedial prefrontal cortex (vmPFC)
 - Aberrant functional connectivity between AIC and various regions responsible for emotional processing and regulation (i.e., vmPFC, amygdala, hippocampus)
 - Autonomic nervous system arousal and physiological responsivity
 - Study suggests atypical brain networking causes patients to misinterpret trigger sounds as threatening or toxic (i.e. flight/fight) due to aberrant connectivity and abnormal salience assignment

Q3

Literature Review

- Diminished N1 auditory evoked potentials to oddball stimuli in misophonia patients (Schroder et al, 2014)
 - Found a smaller N1 amplitude response for deviant tones
 - N1 & P2 are the belt and para-belt of the auditory cortex within the temporal lobe (i.e. posterior superior temporal gyrus) – (Hall, 2007)
 - N1 specifically represents the patient's sub-attentive ability for auditory detection and rudimentary discrimination.
 - Findings suggest a possible basic impairment in auditory processing
 - The authors also conclude that additional research is required; however, this finding may lend to a neurophysiological marker for diagnosing and/or identifying the condition in the future

Literature Review

- Misophonia is associated with altered brain activity in the auditory cortex and salience network (Schroder et al., 2019)
 - Methods and Materials
 - fMRI utilized to measure brain activity and changes with blood flow
 - Electrocardiography was utilized to monitor physiological changes
 - Self-report measures were utilized to evaluate emotional changes
 - Results
 - Misophonic video clips elicited anger, disgust and sadness
 - fMRI suggests increased activity in the right insula, right anterior cingulate cortex, and right superior temporal cortex
 - Discussion
 - “Audiovisual stimuli trigger anger, disgust, sadness, and physiological arousal in patients with misophonia, associated with activation of the auditory cortex and salience network.”

Literature Review

- Misophonia Diagnostic Criteria for New Psychiatric Disorder (Schroder & Vulnick, 2013)
 - Most common auditory trigger stimuli:
 - Eating sounds, loud breathing or nasal sounds, and finger/hand sounds
 - Symptom pattern may be related to various forms of psychopathology
 - Proposed Diagnostic Criteria:
 - Aversive and angry feelings evoked by particular sounds
 - Rare potentially aggressive outbursts
 - Recognition by the individual that behavior is excessive
 - Avoidance behaviors
 - Significant distress interferences with daily life
 - Lack of another condition to account for all symptoms

Auditory Conditions

- Audiologic differential diagnosis:
 - Decreased Sound Tolerance Disorders (DST)
 - Misophonia
 - Hyperacusis
 - Phonophobia
 - Recruitment
 - Tinnitus
 - Central Auditory Processing Disorder (CAPD)
 - Sound Intolerance
- Misophonia is primarily a diagnosis of exclusion at this time
- Not included in Diagnostic and Statistical Manual - 5th Edition (DSM-5)

Differential Diagnosis

MISOPHONIA

Conditioned reflex response
 Auditory & visual stimuli
 Sound-induced Rage
 Physical parameters of stimulus are irrelevant
 Sound Source / Environment dependent
 Normal dynamic range

HYPERACUSIS

Central Gain Theory
 Auditory stimuli
 Sound-induced Pain
 Highly dependent on physical parameters
 Sound Source / Environment independent
 Reduced dynamic range

DST
 Normal Hearing
 Withdrawal & Avoidance Tendencies (i.e., ear protection)
 Phonophobia
 Anxiety

Q5

continued

Differential Diagnosis

- Phonophobia
 - “Fear of sound”
 - Psychological condition
 - Common consequence of decreased sound tolerance disorders
 - The recollection of the sound source and the patient’s psychological state can elicit and alter the emotional response
- Recommendations for treatment commonly include:
 - Cognitive behavioral therapy (CBT)
 - Exposure therapy
 - Desensitization exercises

Q10

continued

Differential Diagnosis

- Recruitment
 - Observed in individuals with known hearing loss secondary to outer hair cell damage within the cochlea / organ of hearing
 - Always accompanied by hearing loss / peripheral damage
 - Primarily the result of sensorineural hearing loss
 - Abnormal growth perception of loud sounds resulting in discomfort
 - Reduced dynamic range effects perception of sound level
 - Schroder (2014) suggested that majority of patients diagnosed with misophonia had normal peripheral hearing
 - No direct correlation between misophonia and hearing loss; however, the two conditions may co-exist

Differential Diagnosis

- Tinnitus
 - Phantom perception of sound in the absence of an external sound source
 - Research suggests tinnitus is the reaction of the auditory cortex trying to compensate for damage originating in the inner ear or auditory pathway
- Tinnitus and Misophonia –
 - Both conditions may lead to behavioral & psychological implications
 - Limbic system involvement plays a crucial role in both conditions
 - Jastreboff (2002) reported that misophonia is reported to co-occur in ~60% of patients with tinnitus
 - Modified Tinnitus Retraining Therapy shows promise as a treatment strategy (Jastreboff, 2013)

Q5

Differential Diagnosis

- Central Auditory Processing Disorder (CAPD)
 - Ears and brain don't fully coordinate and something adversely affects how the brain recognizes and interprets speech sounds and contours
 - Is there a link between CAPD and misophonia?
 - Auditory Figure Ground Performance (filtering noise vs. triggers)
 - Differences between misophonia and CAPD
 - No autonomic nervous system arousal in patients with CAPD
 - Misophonia patients appear hyper focused and have difficulty filtering out a specific sound rather than background noise
 - Diminished N1 Auditory Evoked Potentials to Oddball Stimuli in Misophonia Patients (Schröder et al., 2014)
 - Authors suggest possible impairment in early auditory processing abilities

continued

Differential Diagnosis

- Sound Intolerance
 - Health conditions associated with sound sensitivity and aversion:
 - - Anxiety - Recurrent ear infections - Migraines
 - - PTSD - Developmental Disorders - Seizure disorders
 - Refer and rule-out sensory integration disorder when concerns arise
 - In the case of SPD, sound sensitivity concerns may be secondary to the child's overall sensory profile rather than indicate a true decreased sound tolerance disorder (i.e., sensory-over responsivity)
 - Management approaches often include:
 - - Desensitization exercises - Exposure therapy
 - - Relaxation techniques - Auditory integration therapy
 - - Cognitive Behavioral Therapy - Positive reinforcement

continued

Alternative Conditions

- Differential diagnosis of the following conditions is recommended:
 - Sensory Processing Disorder (SPD)
 - Oppositional Defiant Disorder (ODD)
 - Obsessive Compulsive Disorder and Related Disorders (OCD)
 - Neurodevelopmental Disorders (i.e., ASD)
 - Generalized Anxiety Disorder (GAD)
 - Attention Deficit Hyperactivity Disorder (ADHD)
 - Post Traumatic Stress Disorder (PTSD)

Subjective Assessment

- Case History Reports
 - Medical history (i.e., birth, genetics, surgical, medications)
 - Developmental, social, educational, and therapeutic history
 - Otologic and audiologic history (auditory concerns)
 - Sound sensitivity behaviors, onset, management
 - Psychological health
- Psychological Screener Scales
 - Generalized Anxiety Disorder (GAD-7)
 - Personal Health Questionnaire Assessment Scale (PHQ-8)
- Assessment Questionnaires
 - Sound Sensitivity Questionnaire (SSQ)
 - Misophonia Assessment Questionnaire (MAQ)
 - Amsterdam Misophonia Scale Questionnaire ("A-MISO-S")
 - Modified Khalfa Hyperacusis Questionnaire (provider discretion)

Generalized Anxiety Disorder 7-item (GAD-7) scale

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all sure	Several days	Over half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	<input checked="" type="radio"/> 0	1	2	3
2. Not being able to stop or control worrying	<input checked="" type="radio"/> 0	1	2	3
3. Worrying too much about different things	0	<input checked="" type="radio"/> 1	2	3
4. Trouble relaxing	0	1	<input checked="" type="radio"/> 2	3
5. Being so restless that it's hard to sit still	<input checked="" type="radio"/> 0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	<input checked="" type="radio"/> 3
7. Feeling afraid as if something awful might happen	0	1	<input checked="" type="radio"/> 2	3
Add the score for each column	0 +	1 +	4 +	3
Total Score (add your column scores) =	8			

If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all _____
 Somewhat difficult X
 Very difficult _____
 Extremely difficult _____

CUT POINTS:

5 = mild
 10 = moderate
 15 = severe

Source: Spitzer RL, Kroenke K, Williams JBW, Lowe B. A brief measure for assessing generalized anxiety disorder. *Arch Intern Med.* 2006;166:1092-1097.

<https://www.integration.samhsa.gov/clinical-practice/gad708.19.08cartwright.pdf>



continued

Personal Health Questionnaire Scale - 8

Over the **last 2 weeks**, how often have you been bothered by any of the following problems?
(circle **one** number on each line)

How often during the past 2 weeks were you bothered by...	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	①	1	2	3
2. Feeling down, depressed, or hopeless.....	①	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	①	2	3
4. Feeling tired or having little energy.....	0	1	②	3
5. Poor appetite or overeating	0	1	2	③
6. Feeling bad about yourself, or that you are a failure, or have let yourself or your family down.....	0	①	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television.....	0	1	2	③
8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	③

CUT POINTS:

5 = mild

10 = moderate

15 = moderately-severe

20 = severe

https://www.selfmanagementresource.com/docs/pdfs/English_-_phq.pdf



continued

Sound Sensitivity Questionnaire Assessment (SSQ-A)

Sound Sensitivity Questionnaire

Medical History:

1. Have any family members been diagnosed with or present with behaviors consistent with misophonia?
Explain _____ Yes ___ No ___
2. Have any immediate family members been diagnosed with an auditory processing disorder or hearing loss?
Explain _____ Yes ___ No ___
3. Has your child ever been diagnosed with sensory integration/sensory processing dysfunction?
Explain _____ Yes ___ No ___
4. Has your child ever been diagnosed with hearing loss and/or required surgery on their head, neck, or ears?
Explain _____ Yes ___ No ___
5. In the past 12 months has your child experienced a concussion, traumatic brain injury, recent fall, or head trauma?
Explain _____ Yes ___ No ___

Sound Sensitivity History:

1. Does your child report bothersome ringing, buzzing, hissing, or thumping sounds in their ears or head?
Explain _____ Yes ___ No ___
2. Is your child afraid or scared of certain sounds? (e.g. fireworks, toilet flushing, & traffic noise)
Explain _____ Yes ___ No ___
3. Do louder sounds hurt your child's ears or do they impulsively attempt to cover their ears? (e.g. fire-alarm, & vacuum)
Explain _____ Yes ___ No ___
4. Does your child become enraged or anxious towards soft-repetitive pattern based sounds? (e.g. chewing & pen-tapping)
Explain _____ Yes ___ No ___
5. Are there specific repetitive sounds that your child cannot tolerate, even if the sound is soft? (e.g. sniffing & typing)
Explain _____ Yes ___ No ___

Auditory Behaviors and Characteristics:

Rate and circle from 0 to 2 with the following scale and please check box if applicable:
0 = Does not exhibit 1 = Exhibits occasionally 2 = Exhibits regularly 3 = Interferes with everyday function

Behaviors/Characteristics:

Difficulty with phonics, spelling, or writing	0	1	2	3
Difficulty following written directions	0	1	2	3
Difficulty following television programs	0	1	2	3
Says "huh" or "what"	0	1	2	3
Asks for repetition of verbal information	0	1	2	3
Sensitivity to loud sounds	0	1	2	3
Appears to be confused in noisy places	0	1	2	3
Distracted by background sounds	0	1	2	3
Difficulty following a verbal sequence	0	1	2	3
Difficulty following verbal directions	0	1	2	3
Difficulty following multi-step directions	0	1	2	3

Property of Nemours

continued


SEVERITY SCALE:

0-11 = Subclinical

12-24 = Mild

25-37 = Moderate

38-50 = Severe

51-63 = Extreme

MISOPHONIA ASSESSMENT QUESTIONNAIRE (MAQ)

If a parent or caregiver, please answer for the child as best you are able, or substitute the words, "I feel that my child's sound issues" for the words "my sound issues".

RATING SCALE:	0	1	2	3
0 = not at all, 1 = a little of the time, 2 = a good deal of the time, 3 = almost all the time				
1. My sound issues currently make me unhappy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. My sound issues currently create problems for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. My sound issues have recently made me feel angry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I feel that no one understands my problems with certain sounds.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. My sound issues do not seem to have a known cause.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. My sound issues currently make me feel helpless.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. My sound issues currently interfere with my social life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. My sound issues currently make me feel isolated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. My sound issues have recently created problems for me in groups.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. My sound issues negatively affect my work/school life (currently or recently).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. My sound issues currently make me feel frustrated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. My sound issues currently impact my entire life negatively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. My sound issues have recently made me feel guilty.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. My sound issues are classified as 'crazy'.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I feel that no one can help me with my sound issues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. My sound issues currently make me feel hopeless.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I feel that my sound issues will only get worse with time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. My sound issues currently impact my family relationships.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. My sound issues have recently affected my ability to be with other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. My sound issues have not been recognized as legitimate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I am worried that my whole life will be affected by sound issues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<https://misophoniatreatment.com/wp-content/uploads/2014/06/MAQ-2.pdf>

Q6

Amsterdam Misophonia Scale (A-MISO-S)

Rate the characteristics of each item during the prior week up until and including the time you fill out this survey. Scores should reflect the average (mean) occurrence of each item for the entire week. "Sounds" can mean any misophonic trigger (sound, sight, touch, motion, etc.)

1. How much of your time is occupied by misophonic sounds? (How frequently do the thoughts about the misophonic sounds occur?)

None	<input type="radio"/>	0
Mild, less than 1 hr/day or occasionally (thoughts about) sounds (no more than 5 times a day)	<input type="radio"/>	1
Moderate, 1 to 3 hrs/day, or frequent (thoughts about) sounds (no more than 8 times a day, most of the hours are unaffected)	<input type="radio"/>	2
Severe, greater than 3 hrs and up to 8 hrs/day or very frequent (thoughts about) sounds.	<input type="radio"/>	3
Extreme, greater than 8 hrs/day or near constant (thoughts about) sounds.	<input type="radio"/>	4

2. How much do these misophonic sounds interfere with your social, work or role functioning? (Is there anything that you don't do because of them? If currently not working determine how much performance would be affected if you were employed.)

None	<input type="radio"/>	0
Mild, slight interference with social or occupational/school activities, but overall performance not impaired.	<input type="radio"/>	1
Moderate, definite interference with social or occupational performance, but still manageable.	<input type="radio"/>	2
Severe, causes substantial impairment in social or occupational performance.	<input type="radio"/>	3
Extreme, incapacitating.	<input type="radio"/>	4

3. How much distress do the misophonic sounds cause you? (In most cases, distress is equated with irritation, anger, or disgust. Only rate the emotion that seems triggered by misophonic sounds, not generalized irritation or irritation associated with other conditions.)

None	<input type="radio"/>	0
Mild, occasional irritation/distress.	<input type="radio"/>	1
Moderate, disturbing irritation/anger/disgust, but still manageable.	<input type="radio"/>	2
Severe, very disturbing irritation/anger/disgust.	<input type="radio"/>	3
Extreme, near constant and disturbing anger/disgust.	<input type="radio"/>	4

4. How much effort do you make to resist the (thoughts about the) misophonic sounds? (How often do you try to disregard or turn your attention away from these sounds? Only rate effort made to resist, not success or failure in actually controlling the thought or sound.)

Makes an effort to always resist, or symptoms so minimal, doesn't need to actively resist.	<input type="radio"/>	0
Tries to resist most of the time.	<input type="radio"/>	1
Makes some effort to resist.	<input type="radio"/>	2
Yields to all (thoughts about) misophonic sounds without attempting to control them, but does so with some reluctance.	<input type="radio"/>	3
Completely and willingly yields to all obsessions.	<input type="radio"/>	4

5. How much control do you have over your thoughts about the misophonic sounds? How successful are you in stopping or diverting your thinking about the misophonic sounds? Can you dismiss them?

Complete control.	<input type="radio"/>	0
Much control, usually able to stop or divert thoughts about misophonic sounds.	<input type="radio"/>	1
Moderate control, sometimes able to stop or divert thoughts about misophonic sounds.	<input type="radio"/>	2
Little control, rarely successful in stopping or dismissing thoughts about misophonic sounds, can only divert attention with difficulty.	<input type="radio"/>	3
No control, experience thoughts as completely involuntary, rarely able to alter thinking about misophonic sounds.	<input type="radio"/>	4

6. Have you been avoiding doing anything, going any place, or being with anyone because of your misophonia? (How much do you avoid, for example, by using other loud sounds, such as music?)

No deliberate avoidance.	<input type="radio"/>	0
Mild, minimal avoidance, Less than an hour/day or occasional avoidance.	<input type="radio"/>	1
Moderate, some avoidance, 1 to 3 hr/day or frequent avoidance.	<input type="radio"/>	2
Severe, much avoidance, Greater than 3 up to 8 hr/day. Very frequent avoidance.	<input type="radio"/>	3
Extreme very extensive avoidance, Greater than 8 hr/day. Doing almost everything you can to avoid triggering symptoms.	<input type="radio"/>	4

Finally:

What would be the worst thing that could happen (to you) if you were not able to avoid the misophonic sounds?

0-4 = Subclinical

5-9 = Mild

10-14 = Moderate

15-19 = Severe

20-24 = Extreme

SEVERITY SCALE:

<https://misophoniatreatment.com/wp-content/uploads/2014/06/A-MISO-S.pdf>



Audiological Assessment

- Otoscopy
- Tympanometry (226 Hz)
- Ipsilateral & Contralateral Acoustic Reflex Testing
- Distortion Product Otoacoustic Emissions (DPOAE(s))
- Pure-tone air audiometric testing from 250-8,000Hz
 - Ultra-high frequency assessment from 9,000-20,000 Hz
- Loudness Discomfort Level (LDL) Testing
 - Positive for Hyperacusis Criterion (Goldstein & Shulman, 1996):
 - LDL is 90 dB or less at two or more frequencies
 - Dynamic range is 55 dB or less at any frequency
 - Subjective complaints for sound sensitivity as evidenced by the Modified Khalfa and/or case history reports
- Bamford-Kowal-Bench – Speech-in-noise Test (BKB-SIN)

Self-Assessment Tools

- Misophonia Assessment Questionnaire (MAQ) *
- Amsterdam Misophonia Scale (A-MISO-S) *
- Misophonia Coping Responses
- Misophonia Emotional Responses
- Misophonia Physiological Response Scale (MPRS)
- Misophonia Activation Scale (MAS-1)
- Misophonia Questionnaire (MQ)
- Misophonia Impact Survey (MIS)
- Misophonia Family/Significant Other Assessment Questionnaire



Misophonia Coping Responses

Please rate your use of the following coping responses to your trigger sounds.

RATING SCALE:
0 = not at all, 1 = a little of the time, 2 = a good deal of the time, 3 = almost all the time

	0	1	2	3
1. You hear a known trigger sound. You may dislike the sound but you feel no physical sensation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. You hear a trigger sound and feel annoyed or upset, but no coping response.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Facial or bodily responses that show you are annoyed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Facial or bodily responses that show you are upset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. You turn away or cover your eyes so you don't see the person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Put on headphones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Calmly move away from the sound	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Discreetly cover one or both ears	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Mimic the person who makes the trigger sound	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Repeat words or sounds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Overtly cover your ears	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Nicely ask the person to stop making the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Sternly or harshly ask the person to stop making the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Tell/order the person to stop making the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. You push, poke, shove, etc. the person making the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. You verbally snap at the person making the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Leave the room after attempting to tolerate the sound	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Immediately leave the room to escape the sound	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Verbal assault of the person making the noise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Scream or cry loudly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Actual use of physical violence on another person, animal, or self.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<https://misophoniatreatment.com/wp-content/uploads/2014/06/MCR-2.pdf>



Misophonia Emotional Responses

Please rate how often you feel the following emotional responses to your trigger sounds. This is what you feel, not what you actually do.

RATING SCALE:
0 = not at all, 1 = a little of the time, 2 = a good deal of the time, 3 = almost all the time

	0	1	2	3
1. You hear a known trigger sound. You may dislike the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. You hear a trigger sound and feel annoyed or upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. You want the other person to know how upset you are.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. You want the person to stop making the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. You want to force the other person to stop making the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. You feel you must see that the person is actually making the sound or doing what you think they are doing. You want to keep looking or stare.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. You want to hear something else, so you don't hear the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. You want to be physically far away from the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. You wish you were deaf.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. You are afraid that if you do something, you will hurt others feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. You want to get away from the sound, but do not want to make a scene.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. You want to get away from the sound as quickly as possible, even if it would be embarrassing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. You want to push, poke, shove, etc. the person making the sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. You want to verbally assault of the person making the noise.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. You want to physically assault the person making the noise.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. You want to physically hurt or harm the other person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. You want to scream or cry loudly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. You feel anger.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. You feel rage.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. You hate the person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. You feel disgust.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. You feel resentment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. You feel you need to escape, flee, or run away.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. You want to get revenge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. You feel offended by the person making the noise.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. You feel despair or hopeless.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Describe other emotions and feelings you experience when triggered.

<https://misophoniatreatment.com/wp-content/uploads/2014/06/MER-2.pdf>



continued[®] Misophonia Physiological Response Scale

Misophonia Physiological Response Scale (MPRS)

by Natan Bauman, revised by Tom Dozier

Please select the most correct descriptions of your reaction to your misophonia trigger sounds.

(Select all levels that apply)

Level	Physical Sensation to Trigger Sounds
0 <input type="checkbox"/>	I feel no physical sensation and can ignore it.
1 <input type="checkbox"/>	I feel minimal physical sensation and can ignore it.
2 <input type="checkbox"/>	I feel some physical sensation but can often/always ignore it.
3 <input type="checkbox"/>	I feel some physical sensation but have difficulty or cannot ignore it.
4 <input type="checkbox"/>	I feel elevated physical sensation and usually cannot ignore it.
5 <input type="checkbox"/>	I feel elevated physical sensation and definitely cannot ignore it.
6 <input type="checkbox"/>	I feel elevated physical sensation, cannot ignore it, and have negative emotions.
7 <input type="checkbox"/>	I feel elevated physical sensation, cannot cope with it, and have strong negative emotions.
8 <input type="checkbox"/>	I feel physical sensation which can be best described as emotional pain and causes very strong emotions.
9 <input type="checkbox"/>	I feel physical sensation which can be best described as physical pain and causes extreme emotions.
10 <input type="checkbox"/>	I feel physical sensation which can be best described as severe physical pain and overpowering emotions.
11 <input type="checkbox"/>	I have no physical sensation but immediately get angry at the person making the sound.
12 <input type="checkbox"/>	I have no physical sensation but immediately have rage at the person making the sound.

<https://misophoniatreatment.com/wp-content/uploads/2014/06/MPRS.pdf>



continued[®] Misophonia Family/Significant Other Assessment

Misophonia Family/Significant Other Assessment Questionnaire

The F-MAQ, 2014, Dr. Marsha Johnson, AuD, can be used with permission.

RATING SCALE:

0 = not at all, 1 = a little of the time, 2 = a good deal of the time, 3 = almost all of the time
N/A = Not applicable/unable to answer

- | | | | | |
|--|---|---|---|---|
| 1. Sound sensitivity issues significantly impact our family happiness. | 0 | 1 | 2 | 3 |
| 2. Sound sensitivity issues have significantly changed our regular family lifestyle. | 0 | 1 | 2 | 3 |
| 3. Sound sensitivity issues negatively impact our family's regular routines or habits. | 0 | 1 | 2 | 3 |
| 4. Sound sensitivity issues and negative impact are greater at home. | 0 | 1 | 2 | 3 |
| 5. Sound sensitivity issues and negative impact are greater outside the home. | 0 | 1 | 2 | 3 |
| 6. Sound sensitivity issues have impacted my marital life (routine habits and behaviors). | 0 | 1 | 2 | 3 |
| 7. Sound sensitivity issues have created significant stress between parents or adult members of the family. | 0 | 1 | 2 | 3 |
| 8. Sound sensitivity issues have created significant stress between siblings. | 0 | 1 | 2 | 3 |
| 9. Sound sensitivity issues have resulted in verbal arguments. | 0 | 1 | 2 | 3 |
| 10. Sound sensitivity issues have resulted in physical violence or attempted violence or threats of violence. | 0 | 1 | 2 | 3 |
| 11. Sound sensitivity issues disrupt our normal routine at home. | 0 | 1 | 2 | 3 |
| 12. Sound sensitivity issues disrupt out of the home activities, plans, travel, recreation, social, or other activities. | 0 | 1 | 2 | 3 |
| 13. I am one of the main triggers for the affected person. | 0 | 1 | 2 | 3 |
| 14. I am being asked to vary my own normal behaviors or actions to avoid triggering someone else. | 0 | 1 | 2 | 3 |
| 15. I feel that the sound sensitive person could control their negative reactions if they wanted. | 0 | 1 | 2 | 3 |
| 16. When I try to reach out and try to help, I feel that I am shut out and my approach is rejected. | 0 | 1 | 2 | 3 |
| 17. We have been unable to locate appropriate and effective treatment for our family member. | 0 | 1 | 2 | 3 |
| 18. I am worried or anxious about the future of our family life and the impact this condition will have. | 0 | 1 | 2 | 3 |

Total Score

<http://csd.wp.uncg.edu/wp-content/uploads/sites/6/2012/11/F-MAQ-Misophonia-Family-Questionnaire.pdf>



Misophonia Impact Survey

<https://misophonia.treatment.com/wp-content/uploads/2016/02/MIS-1.0.pdf>



Misophonia Impact Survey

1. Rate how misophonia has interfered with family life in the past 2 weeks. (If you have avoided these activities because of misophonia, include that factor in your rating.)

None Mildly Moderately Severely Extremely Not-applicable
0 1 2 3 4 5 6 7 8 9 10 N/A

2. Rate how misophonia has interfered with intimate relationships in the past 2 weeks. (If you have avoided this because of misophonia, include that factor in your rating.)

None Mildly Moderately Severely Extremely Not-applicable
0 1 2 3 4 5 6 7 8 9 10 N/A

3. Rate how misophonia has interfered with your social life and leisure activities with others in the past 2 weeks. (If you avoid these activities because of misophonia include that factor in your rating.)

None Mildly Moderately Severely Extremely Not-applicable
0 1 2 3 4 5 6 7 8 9 10 N/A

4. Rate how misophonia has interfered with your work / school work, including unpaid volunteer work, training, or similar activities in the past 2 weeks. (If you avoid these activities because of misophonia include that factor in your rating.)

None Mildly Moderately Severely Extremely Not-applicable
0 1 2 3 4 5 6 7 8 9 10 N/A

5. Rate how misophonia has interfered with your individual activities and alone time in the past 2 weeks. (If you avoid certain activities because of misophonia include that factor in your rating.)

None Mildly Moderately Severely Extremely Not-applicable
0 1 2 3 4 5 6 7 8 9 10 N/A

Misophonia Questionnaire

Misophonia Questionnaire

Directions: Please rate how much the following statements describe you on a scale from 0 to 4, 0 being "Not at all true" and 4 being "Always true."

0 Not at all True 1 Rarely True 2 Sometimes True 3 Often True 4 Always True

In comparison to other people, I am sensitive to the sound of:

- 1. People eating (e.g. chewing, swallowing, lips smacking, slurping, etc.).
- 2. Repetitive tapping (e.g. pen on table, foot on floor, etc.).
- 3. Rustling (e.g. plastic, paper, etc.).
- 4. People making nasal sounds (e.g. inhale, exhale, sniffing, etc.).
- 5. People making throat sounds (e.g. throat-clearing, coughing, etc.).
- 6. Certain consonants and/or vowels (e.g. "k" sounds, etc.).
- 7. Environmental sounds (e.g. clock ticking, refrigerator humming, etc.).
- 8. Other: _____

Directions: If any of the aforementioned statements were given a value of "1 - Rarely True" or higher, please continue onto the following section and rate how often the subsequent statements occur, 0 being "Never" and 4 being "Always."

0 Never 1 Rarely 2 Sometimes 3 Often 4 Always

Once you are aware of the sound(s), because of the sound(s), how often do you:

- 1. Leave the environment to a place where the sound(s) cannot be heard anymore?
- 2. Actively avoid certain situations, places, things, and/or people in anticipation of the sound(s)?
- 3. Cover your ears?
- 4. Become anxious or distressed?
- 5. Become sad or depressed?
- 6. Become annoyed?
- 7. Have violent thoughts?
- 8. Become angry?
- 9. Become physically aggressive?
- 10. Become verbally aggressive?
- 11. Other: _____

Directions: Please circle the severity of your sound sensitivity on the following scale from 1 (minimal) to 15 (very severe). Please consider the number of sounds that you are sensitive to, the degree of distress, and the impairment in your life due to your sound sensitivities.

If you do not have any sound sensitivities, please check here: _____

- 1 **Minimal within range of normal or very mild sound sensitivities.** I spend little time resisting or being affected by my sound sensitivities. Almost no or no interference in daily activity
- 2
- 3
- 4 **Mild sound sensitivities.** Mild sound sensitivities that are noticeable to me and to an observer, cause mild interference in my life and which I may resist or be affected for a minimal period of time. Easily tolerated by others.
- 5
- 6
- 7 **Moderate sound sensitivities.** Sound sensitivities that cause significant interference in my life and which I spend a great deal of conscious energy resisting or being affected by. Require some help from others to function in daily activity.
- 8
- 9
- 10 **Severe sound sensitivities.** Sound sensitivities that are crippling to me, interfering so that daily activity is "an active struggle." I may spend full time resisting my sound sensitivities or being affected by them. Require much help from others to function.
- 11
- 12
- 13 **Very severe sound sensitivities.** Sound sensitivities that completely cripple me so that I require close supervision over eating, sleeping, and so forth. It is hard to function on a day-to-day basis because of this.
- 14
- 15

<http://csd.wp.uncg.edu/wp-content/uploads/sites/6/2013/04/Misophonia-Questionnaire.pdf>



Misophonia Activation Scale

<https://misophoniatreatment.com/wp-content/uploads/2014/06/Misophonia-Activation-Scale-2.pdf>



Misophonia Activation Scale

(MAS-1) from www.misophonia-uk.org

Name: _____ Date: _____

Please select the level that best describes what you experience.

Part A: Emotional Response

0	<input type="checkbox"/> I hear a known trigger sound but feel no discomfort.
1	<input type="checkbox"/> I am aware of the presence of a known trigger person but feel no, or minimal, anticipatory anxiety.
2	<input type="checkbox"/> Known trigger sounds elicit minimal psychic discomfort, irritation, or annoyance. No symptoms of panic or fight or flight response.
3	<input type="checkbox"/> I feel increasing levels of psychic discomfort but do not engage in any physical response. I may be hyper-vigilant to audio-visual stimuli.
4	<input type="checkbox"/> I engage in a minimal physical response – non-confrontational coping behaviors, such as asking the trigger person to stop making the noise, discreetly covering one ear, or by calmly moving away from the noise. No panic or fight or flight symptoms exhibited.
5	<input type="checkbox"/> I adopt more confrontational coping mechanisms, such as overtly covering my ears, mimicking the trigger person, make requested sounds, or display overt irritation.
6	<input type="checkbox"/> I experience substantial psychic discomfort. Symptoms of panic and a fight or flight response begin to engage.
7	<input type="checkbox"/> I experience substantial psychic discomfort. Increasing use (louder, more frequent) use of confrontational coping mechanisms. I may re-imagine the trigger sound and visual cues over and over again. Irritations for weeks, months or even years after the event.
8	<input type="checkbox"/> I experience substantial psychic discomfort and some violence thoughts.
9	<input type="checkbox"/> Panic/rage reaction in full swing. Conscious decision not to use violence on trigger person. Actual flight from vicinity of noise and/or use of physical violence on an inanimate object. Panic, anger or severe irritation may be manifest in my demeanor.
10	<input type="checkbox"/> Actual use of physical violence on a person or animal (i.e., a household pet). Violence may be inflicted on self (past harm).

Part B: Physical Sensation

0	<input type="checkbox"/> I feel no physical sensation.
1	<input type="checkbox"/> I feel minimal physical sensation and can ignore it.
2	<input type="checkbox"/> I feel some physical sensation but can often/always ignore it.
3	<input type="checkbox"/> I feel some physical sensation but have difficulty or cannot ignore it.
4	<input type="checkbox"/> I feel elevated physical sensation and usually cannot ignore it.
5	<input type="checkbox"/> I feel elevated physical sensation, definitely cannot ignore it.
6	<input type="checkbox"/> I feel elevated physical sensation, cannot ignore it and each incidence has an impact on my life.
7	<input type="checkbox"/> I feel physical sensation as described above and cannot cope with it.
8	<input type="checkbox"/> I feel physical sensation which can be best described as emotional pain.
9	<input type="checkbox"/> I feel physical sensation which can be best described as physical pain.
10	<input type="checkbox"/> I feel physical sensation which is overpowering and is causing physical pain.

Version: 06-15-14

Management Strategies

▪ Referrals / Multidisciplinary Team:

Audiology	Occupational Therapy	Psychology/Psychiatry	Primary Care Physician
Differential diagnosis between alternative auditory conditions	Rule out underlying sensory processing (SPD)	Stress reduction therapies and coping strategies	Assist in managing or treating co-occurring or co-existing conditions (i.e., anxiety & depression)
Misophonia Retraining Therapy (modified TRT) - - Directive and Informational Counseling - Sound therapy implementation (i.e., sound generators)	Auditory training therapies (anecdotal) - - Tomatis Method - iLS Safe & Sound Protocol - iLS Focus (Sensorimotor)	Behavioral Approaches - - Cognitive Behavioral Therapy - Exposure Therapy - Counter-Conditioning - Systematic Desensitization	Monitor health and encourage healthy lifestyle habits (i.e., diet & exercise)
Hearing protection (i.e. musician earplugs)	Self-regulation strategies - including implementation of a sensory diet	Biofeedback	

Q8

- Treatment for Decreased Sound Tolerance (Jastreboff, 2014)
 - Category 1
 - Patient controls selected stimulus and sound level
 - Select and attentively listen to a pleasant sound at a comfortable level and gradually increase the sound level over 3 weeks
 - Category 2
 - Patient controls selected stimulus but has only partial control of sound level
 - Someone else selects what is deemed to be an appropriate sound level and the patient provides feedback at the end of each session, so that the sound level can be adjusted for future sessions
 - Category 3
 - Patient has some control of selected stimulus but sound level is no longer in their control
 - Participate in enjoyable activities that expose patient to a variety of additional sounds - Patient may leave environments causing discomfort but should re-enter following a break
 - Category 4
 - Patient has no control over selected stimulus or sound level – this phase directly targets offensive stimuli and combines trigger cues with positive/enjoyable auditory stimuli and experiences
 - Pleasurable sound will initially be set higher than the offensive sound; however, over time the enjoyable sound will be decreased as tolerance to the offensive sound increases, until eliminated

URL to article: <https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0034-1372527>

Behavioral Approaches

- Cognitive Behavioral Therapy
 - Change the negative thought processes, behaviors, or emotions
- Counter-Conditioning
 - Modify the negative emotional response to a stimulus into a more positive response – allowing triggers to be more bearable or less unpleasant
 - Neural Re-patterning Technique - Trigger Tamer application (Dozier, 2015)
- Systematic Desensitization
 - Relaxation techniques and controlled gradual exposure in order to foster a weakened or more neutral emotional response to the stimulus
- Exposure Therapy (Habituation)
 - Emotional arousal and physiological responsiveness decrease naturally in response to repeated exposure to auditory or visual triggers
 - Controversial treatment – no scientifically controlled validated research

Barriers to treatment

- No universally agreed upon diagnostic criteria
- Primarily a diagnosis of exclusion
- Not recognized by The Diagnostic and Statistical Manual – 5th Ed. (DSM-V)
- Not recognized by The American Psychology Association (APA)
- Not recognized as a billable condition
- Lack of awareness in medical profession and confusion regarding referrals
- No controlled studies regarding therapeutic management strategies
- No scientifically validated self-assessment tools

Further Research

- Identifying a diagnostic bio-marker for identifying the condition
- Epidemiologic studies regarding prevalence and incidence
- Could there be an underlying genetic or epigenetic predisposition?
- Could specific conditions increase susceptibility of misophonia or impact the severity of the condition? (Brout et al., 2018)
- Scientifically validated research regarding therapeutic treatments
- Should misophonia be classified as an independent condition or is it a symptom or phenomenon of an alternative disorder?
- Deconstructing acoustic patterns and properties of triggers
- Is there a correlation between ASMR and misophonia?
- Pharmacological intervention for managing symptomology

Resources

- International Misophonia Research Network (IMRN)
 - <https://misophonia-research.com/>
- Misophonia International
 - <https://www.misophonaiinternational.com/>
- Misophonia Kids
 - <https://misophoniakids.com/>
- Misophonia Provider Network
 - <https://www.misophoniaproviders.com/>
- Misophonia Institute
 - <https://misophonaiinstitute.org/>
- Milken Institute Giving Smarter Guide
 - <https://milkeninstitute.org/reports/misophonia-giving-smarter-guide>
- Allergic to Sound
 - <http://www.allergictosound.com>
- “Quiet Please” Documentary by Jeffrey Gould (2017)



Summary

- Research suggests a distinct difference in the characteristics associated with misophonia in comparison to alternative psychiatric disorders (Brout et al., 2018)
- Patients experience negative affective states including anger, rage, disgust, and anxiety
- Physiological measurements support increased sympathetic autonomic nervous system arousal (fight-or-flight) in response to specific stimuli (Edelstein et al., 2013)
- Functional brain changes, aberrant connectivity and salience have been documented, in parts of the brain responsible for emotional regulation, associative learning, and memory (Kumar et al., 2017)
- Studies suggest the possibility of central auditory processing impairments in patients with misophonia (Schroder et al., 2019)
- A collaborative team-based approach is recommended at this time until further scientifically validated research is established regarding treatment modalities



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Questions

