


Stop Making That Noise!
Misophonia and Low Tolerance for Sound

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Agenda

- Phenomenology
- Functional impact
- Neurobiology of hearing
- Theories of etiology
- Diagnosis and assessment
- Behavioral conceptualization
- Treatment



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What is misophonia?

- "Misophonia" is derived from Greek misos (hate) and phónē (voice)
- Misophonia typically onsets in childhood and is characterized by the experience of unusually intense and immediate responses to specific auditory, (visual, or kinesthetic stimuli)
 - Emotional reactions may include: irritation, anger, rage, discomfort, anxiety, and/or disgust
 - Autonomic nervous system activation symptoms may include increased heart rate, perspiration, etc.
 - Physical responses often include escape/avoidance behaviors, verbal/physical aggression
 - Significant impact on functioning



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Characteristics of the Stimuli

- Stimuli which cue these responses are often referred to as "triggers."
- Common triggers are vocal sounds such as chewing, slurping, gum-smacking, sniffing, coughing, breathing, and throat-clearing.
- Other non-vocal sounds may include noises such as pen clicking, leg bouncing, keyboard tapping, the metallic sound of utensils, the rustling sound of plastic, foot shuffling, or the cracking of joints.
- The quality of the sound does not appear to be related to the intensity of the reaction to it.
 - Hypothesis: individualized conditioning



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Characteristics of the Stimuli

- Like other sound sensitivities, the response is not elicited when the individuals themselves generate the sound.
- Some individuals report that they respond more strongly when the sound is generated by someone with whom they are emotionally close.
- Triggers are not necessarily limited to sounds themselves.
 - Seeing a visual cue that has been associated with the sound, without the sound itself, may also elicit the response.
- There is an obsessive quality to the process, in that the individual maintains a focused preoccupation with the sound.



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Behavioral Response to Trigger Sounds

- There is an impulsive quality to misophonia in that there is immediate and intense emotional response to the sound, prompting unwanted urges to engage in externalizing, aggressive behavioral responses.
- The listener typically finds the experiences so aversive that they begin to engage in avoidance behaviors.
 - This avoidance pattern is then reinforced through negative reinforcement.
 - Avoidance behaviors may negatively impact one's functioning.



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The Role of Response Inhibition

- Response inhibition is the concerted effort to suppress one's responses, typically due to perceived social inappropriateness.
- Those who struggle with misophonic reactions often report exerting a great deal of effort to control their behavioral responses, associated with their intense emotional reactions.
- This behavioral inhibition is often associated with feelings of sadness, frustration, and self-criticism and may further contribute to psychiatric comorbidity.



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Is this a psychiatric or auditory disorder?

- It is presently unknown; however,
 - No relationship has been found between misophonia and hearing thresholds
 - Generally, there is normal auditory sensitivity
 - The specific nature of individual triggers render it unlikely to be auditory dysfunction



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“*My heart starts to pound. I go one of two ways. I either start to cry or I get really intensely angry. It's really intense. I mean, it's like you're going to die.*”

- Ellie, 18 years old
on the sound of her family cheating their dinner, Puhla, A. 2009

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Who experiences misophonia?

- Prevalence rates are unknown
 - No agreed upon set of diagnostic criteria
 - May be co-occurring with or mistaken for other auditory or psychiatric disorders
 - Estimates vary, but suggest up to 20% of individuals experience symptoms
 - Up to 6% of individuals may experience functional impairment
 - No gender differences
 - Generally considered an under-diagnosed condition

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Onset and Course of Misophonia

- Often noted as first experienced in childhood or early adolescence
 - Many can identify an initial event, but no significant association with trauma
- Reported as a sudden, acute onset
- However, mean age of 37 years at diagnosis
- Considered chronic; however, often goes untreated
- Longitudinal study of course without treatment demonstrated 58% of cases worsened, 25% remained stable, 16% experienced spontaneous remission

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Psychiatric Comorbidity & Sensory Over-Responsivity

- Some research suggests increased comorbidity with anxiety disorders, OCD and related disorders, Tourette's disorder, ADHD, depression, and OCDP.
- Other studies suggest that this phenomenon may be more transdiagnostic in nature.
 - Small fMRI investigations indicate that those with misophonia may be over-responsive to auditory stimuli, including that which may be considered neutral, compared to controls.
 - This is also the case with tinnitus, hyperacusis, Tourette's disorder, OCD, anxiety, and ASD, which may suggest a shared underlying neuropathology.

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The Neurobiology of Audition

The Auditory pathways



- Audition is a complex process including mechanical structures of the ear as well as neural structures of the brain.
- The structures of the ear are responsible for the mechanics of receiving sound vibrations.
- The neural pathways and areas of the brain involved in audition receive signals and make meaning of the sound.



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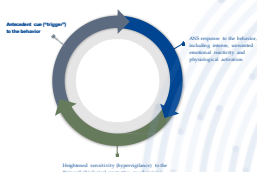
The Etiology of Misophonia

- The etiology of misophonia remains unclear.
- Proposed conceptual models include:
 - Genetic predisposition (family studies)
 - OCD/ OCD predisposition
 - Learned response through classical conditioning
 - Heightened interoception and sensory over-responsivity to specific stimuli
 - Alterations of the limbic system and autonomic nervous system



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Sensory Sensitization Theory and Misophonia



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Diagnosis of Misophonia

- It has been proposed that misophonia be included in the DSM's Obsessive Compulsive and Related Disorders category and may include the following criteria:
 - Hypersensitivity to the presence (or anticipation) of a specific sound that elicits a conditioned, immediate, reflexive response - physiological arousal.
 - Dysregulation of aggressive emotions and associated thoughts, recognizing them as illogical and negative.
 - Avoidance of sound triggers or stimuli associated with specific sounds.
 - The individual's sensitivity and autonomic/emotional experience and/or avoidance/behavioral response results in significant distress or impairment (e.g., tantrums, disrupted educational/occupational functioning, or significant family accommodation of symptoms).
 - Symptoms are not better explained by another psychiatric disorder.



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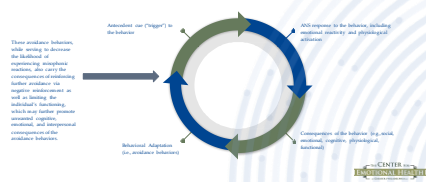
Assessment of Misophonia

- Self-report scales may be used to assess the presence and severity of the syndrome, although none to date have robust psychometrics.
- Those with suspected misophonia should also be evaluated by an audiologist and neurologist to rule out conditions that affect hearing and/or the nervous system.
- Thorough clinical interview is important for treatment planning
 - Comprehensive clinical diagnostic interview, functional analysis, including the specific triggers, the ways in which the individual attempts to cope, and the ways in which the pattern has been maintained



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The Reinforcement Cycle Misophonia



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Treatment of Misophonia

- There is no current evidence-based pharmacological, medical, or psychological treatment for misophonia (no RCTs) and prognosis is unknown.
 - Pharmacological treatment may be indicated for comorbid difficulties.
 - No FDA-approved medication for misophonia, but literature notes anxiolytics, antidepressants, methylphenidate, and propranolol cases
- The current standard of care is psychological in nature and is based upon case reports and clinical experience, focusing on:
 - Increasing distress tolerance (not necessarily desensitization/habituation)
 - Reducing emotional and behavioral reactivity
 - Reducing avoidance behaviors and accommodations
 - Increasing breadth of daily functioning
 - Contingency management to reinforce skills

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Treatment of Misophonia

- Cognitive Behavioral Therapy (CBT) including both cognitive and behavioral therapy strategies, may be useful in changing problematic patterns, reducing distress, and improving daily functioning.
 - Cognitive therapy includes identifying and challenging maladaptive thoughts and beliefs about sound perception and one's ability to tolerate sounds.
 - Behavioral therapy involves changing maladaptive behavioral patterns via habituation or inhibitory learning and reducing maintaining behavioral accommodations.
 - The therapeutic process most often involves exposure therapy, although it is noted that exposure therapy alone may not always lead to habituation, diminished sound sensitivity, or reduction in subjective distress; thus, inhibitory learning may be a more appropriate therapeutic goal.

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Treatment of Misophonia

- Acceptance and Commitment Therapy (ACT) may be useful to increase mindfulness, openness to experience, acceptance of one's experiences, and commitment to acting in accordance with one's values, even in the presence of unwanted internal experiences.
- Dialectical Behavioral Therapy (DBT) skill may focus on distress tolerance, mindfulness, emotion regulation, and interpersonal effectiveness.

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