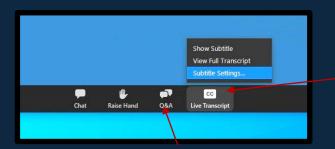


Misophonia: What is known, what is unknown, and where we go from here

Speaker: Blake Butler, Assistant Professor of Psychology, UWO, Investigator, National Centre for Audiology

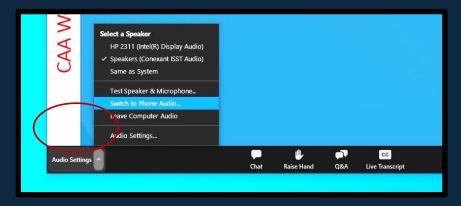
Moderator: Stephen G. Lomber, Ph.D, Professor of Physiology, McGill University

CAA Webinars Include Live Zoom Transcription



Select the 'Q@A' icon if you have questions or require technical assistance

Locate the 'Live Transcript' icon on the bottom of your Zoom screen. (You may need to place your cursor at the bottom of the PPT for this to appear.) You can also select a larger font for your Transcript by selecting 'Subtitle Settings'.



You have joined using <u>Computer Audio</u>' - if you wish to change to <u>Phone</u>, select the arrow besides '<u>Audio Settings</u>", and then switch to <u>"Phone Call'.</u> The dial in number will be displayed



Thanks to our Sponsor



Canadian Academy of Audiology is a professional association dedicated to enhancing the role of audiologists as primary hearing health care providers through advocacy, education and research.



Moderator: Stephen G. Lomber, Ph.D, Professor of Physiology, McGill University

Stephen G. Lomber, Ph.D. is a Professor of Physiology at McGill University and directs the Cerebral Systems Laboratory.

Work in the lab examines cortical plasticity in the presence and absence of acoustic input and following the initiation of auditory processing through the means of cochlear prosthetics.

Dr. Lomber is the Associate Editor of Hearing Research and Scientific Program Chair for the Annual Meeting of the Association for Research in Otolaryngology (ARO). He is a past chair of the Gordon Research Conference on the Auditory System and the International Conference on Auditory Cortex, and CAA board member.



Speaker: Blake Butler, Assistant Professor of Psychology, UWO, Investigator, National Centre for Audiology

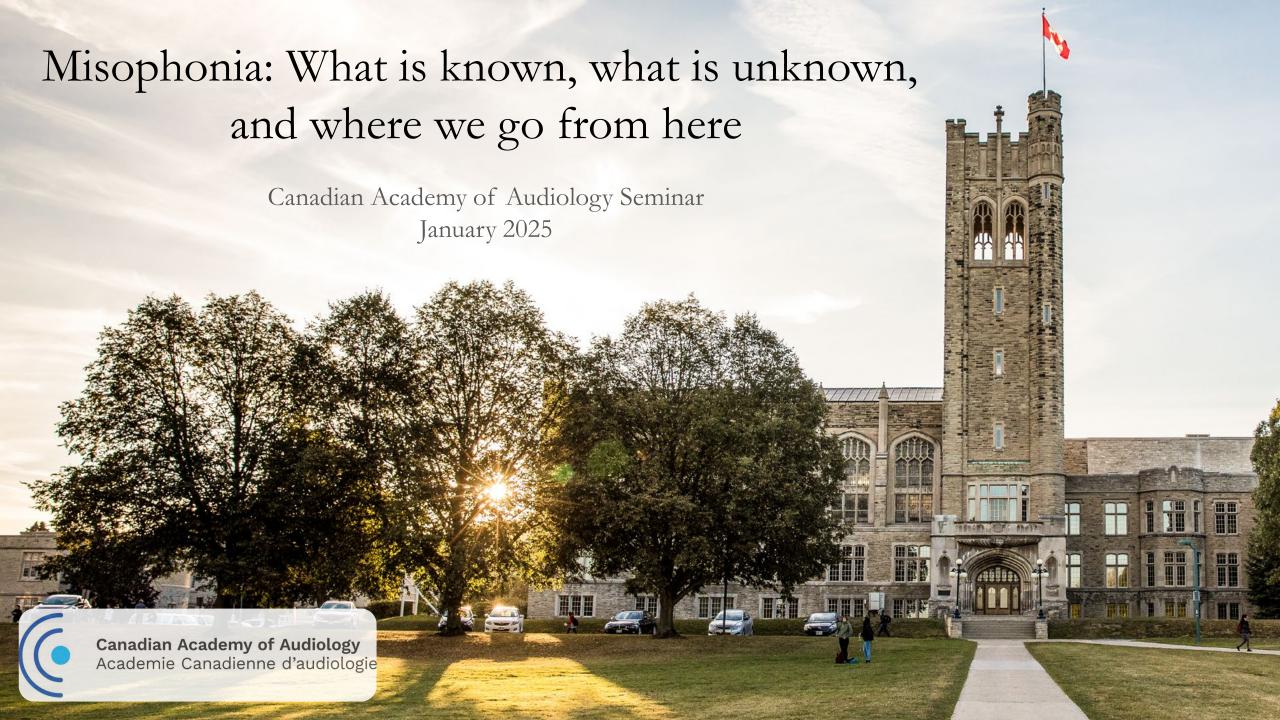
Dr. Blake Butler is an assistant professor in the Department of Psychology and the Centre for Brain and Mind, and an investigator at the National Centre for Audiology at the University of Western Ontario.

Dr. Butler and his research team are interested in the role of experience & plasticity in the typical and atypical development of sensory systems, with a focus on hearing loss and restoration.

Their program combines behavioural, neuroimaging, and histological approaches in humans and animal models to examine how the structure and function of sensory cortices are shaped by early development.







Orofacial Triggers

Non-orofacial Triggers

Brain?

Sound Intolerance Disorder





Objectives for today

- Describe the emergence of misophonia
 - Historical characterization
 - Impacts on everyday life
 - Consensus Definition
 - Remaining challenges
- Potential mechanisms
 - Neural correlates
 - Potential interventions



Misophonia – Still poorly understood



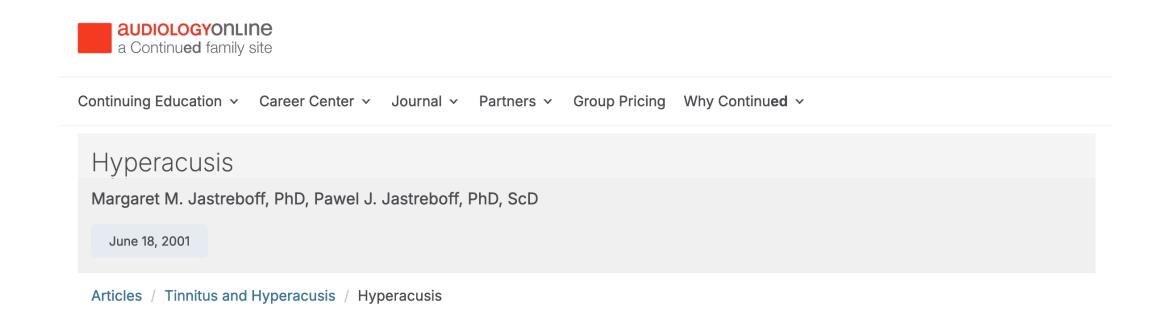
Not listed in the DSM



Unclear mechanisms



No evidencebased treatment



Misophonia can be defined as abnormally strong reactions of the autonomic and limbic systems resulting from enhanced connections between the auditory and limbic systems. At the behavioral level, patients have negative attitude to sound. The strength of the patient's reaction is only partially determined by the physical characteristics of the upsetting sound and is dependent as well on the patient's previous evaluation and recollection of the sound (e.g., sound as a potential threat, and/or the belief that the sound can be harmful).'

- Preoccupation with specific auditory cues, which are predominantly induced by another person
- Emotions trigger an impulsive physical reaction and the individual experiences a profound sense of loss of self control, which can include aggressive outbursts
- The individual actively avoids situations where triggers occur or endures triggers with intense discomfort, anger/disgust
- The anger, disgust, and/or avoidance causes significant distress and/or interference in the individual's day-to-day life

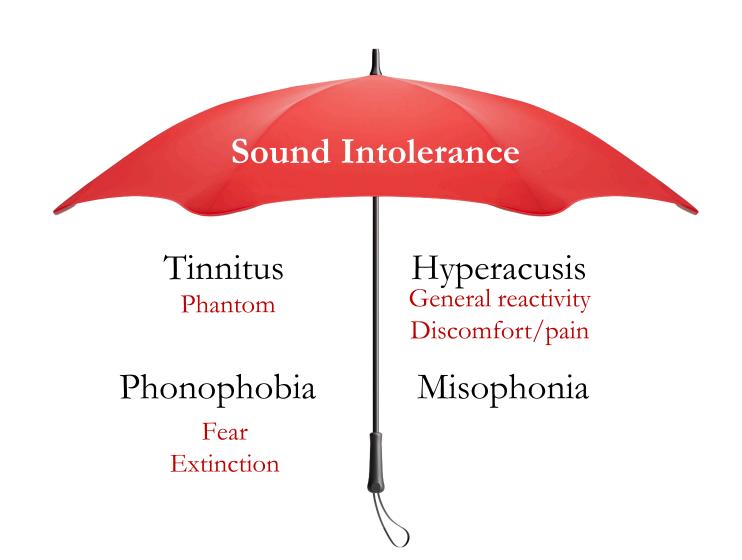




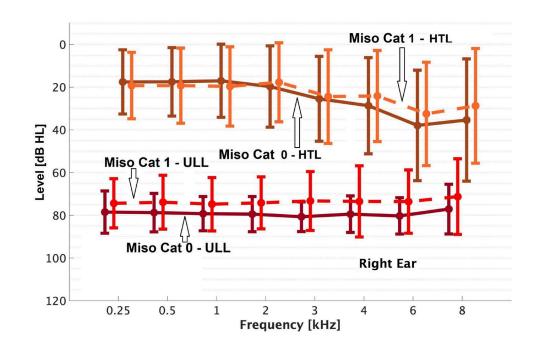








- 23% of patients seeking help for tinnitus/hyperacusis have misophonia
- Presence of misophonia is unrelated to audiometric thresholds
- Frequency of misophonia symptoms increases with decreasing ULL and increasing tinnitus impact



The strength of the patient's reaction is only partially determined by the physical characteristics of the upsetting sound and is **dependent as well on the patient's previous evaluation and recollection of the sound** (e.g., sound as a potential threat, and/or the belief that the sound can be harmful).'



OCD: Recurrent and persistent thoughts, urges or images that are experienced, at some time during the disturbance, as intrusive, unwanted, and that in most individuals cause marked anxiety or distress.

GAD: Excessive anxiety and worry occurring more days than not for at least 6 months, about a number of events or activities. Anxiety is associated with restlessness, fatigue, muscle tension, irritability, etc.



Amsterdam Misophonia Scale (A-Miso-S)

Adaptation of the Yale-Brown Obsessive-Compulsive Scale.

Q: How much effort do you make to resist triggers?

Q: How much control do you have over your thoughts?

Schröder et al., 2013

Misophonia Questionnaire (MQ)

3 subscales assessing trigger type, nature of typical response, and severity of symptoms.

Severity subscale comprises a single item adapter from NIMH Global Obsessive-Compulsive Scale.





N=575
72% No comorbid Axis I Diagnoses

10% Mood Disorders
9% Anxiety Disorders
5% ADHD
3% ASD
2% Substance Use Disorder

Consensus Definition

Misophonia is a disorder of decreased sound tolerance to specific sounds or stimuli associated with such sounds. These stimuli evoke strong negative emotional, physiological, and behavioural responses that are not seen in most other people. Responses do not seem to be elicited by the loudness of sounds, but by the specific pattern or meaning to an individual. Once detected, individuals may have difficult distracting themselves from the stimulus and may experience impairment in social, occupational, or academic functioning.

Swedo et al. 2022



Updated measures - MisoQuest

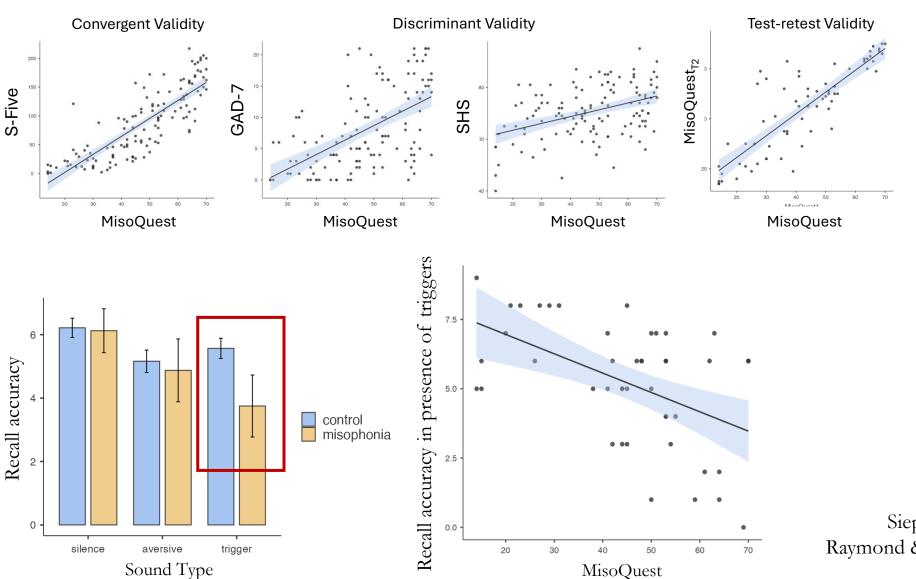
- Human produced sounds provoke impulsive, aversive physical reactions leading to anger
- Anger initiates a loss of self control with aggressive outbursts
- The individual recognizes these outbursts as unreasonable
- The individual takes actions to avoid triggering situations
- The individual's reactions cause significant distress/interference with ADLs
- The individual's symptoms are not better explained by another disorder

Schroder et al., 2013

- Developed a 14-question self-report measure
- Assesses a single factor misophonia severity
- Validated on independent sample

Updated measures - MisoQuest





Siepsiak et al., 2020 Raymond & Butler, Under Review

Updated measures – Duke Interview

The DMI is a 22-item semi-structured clinical interview used to assess an individual's experience of misophonia within the past month, as well as over their life more broadly. The DMI was developed to be administered in both research and clinical settings. For most people, the interview takes less than one hour to complete.

The structure of the DMI was primarily informed by several widely used and psychometrically validated clinical interviews, including the Clinician-Administered PTSD Scale for *DSM*-5¹ and the Anxiety Disorders Interview Schedule for *DSM*-5².



Updated measures – Comprehensive Battery

- Misophonia
- Hyperacusis
- Generalized Anxiety
- Autism Spectrum Disorder
- Obsessive Compulsive Disorder



Misophonia – Still poorly understood



Not listed in the DSM

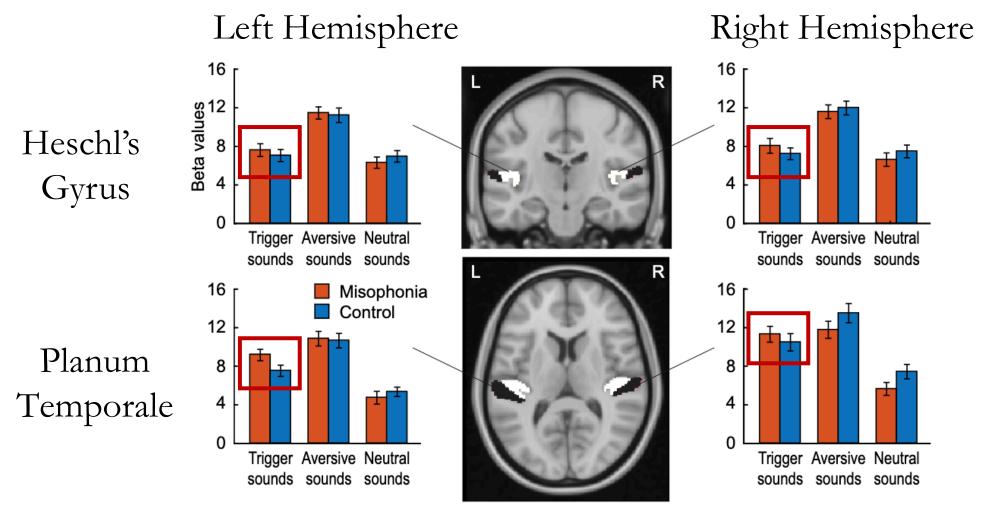


Unclear mechanisms

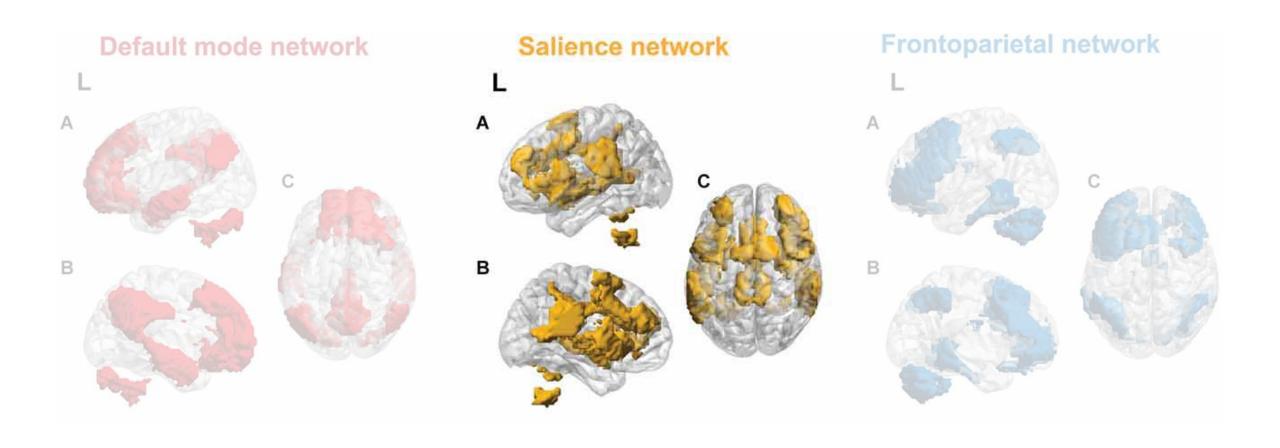


No evidencebased treatment

Trigger sounds evoke typical auditory cortical activity

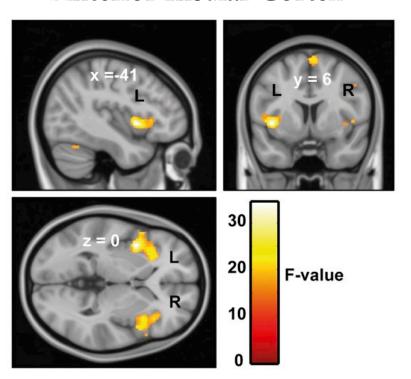


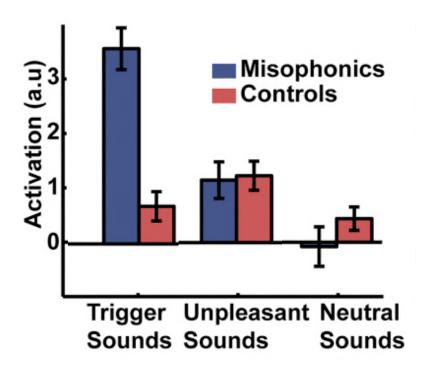
Atypical activity in the salience network



Atypical activity in the salience network

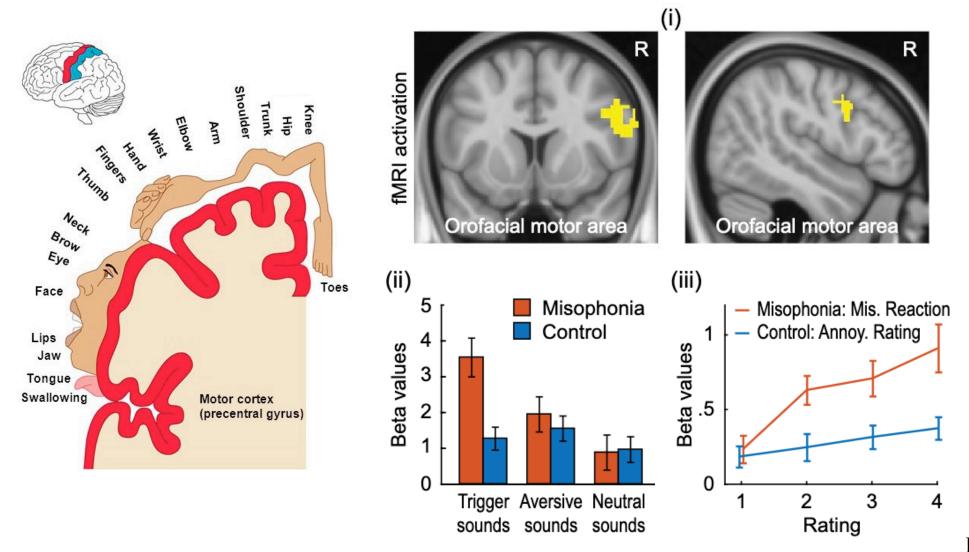
Anterior Insular Cortex



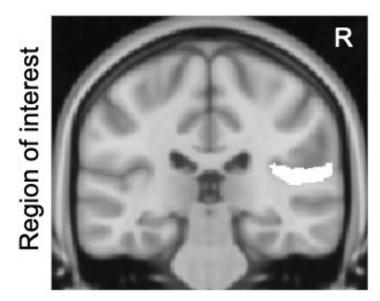


People with misophonia had increased functional connectivity between the anterior insula, auditory cortex, and regions of the limbic system

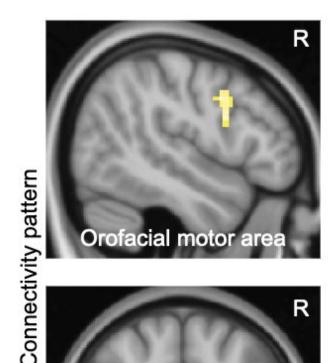
Atypical activity in motor cortex

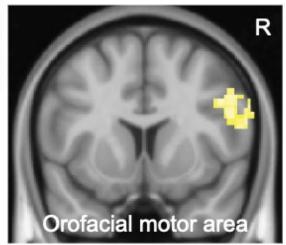


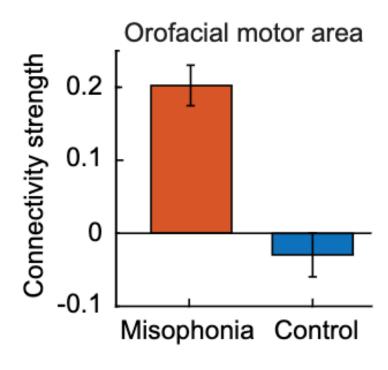
Atypical connectivity to motor cortex



Planum Temporale

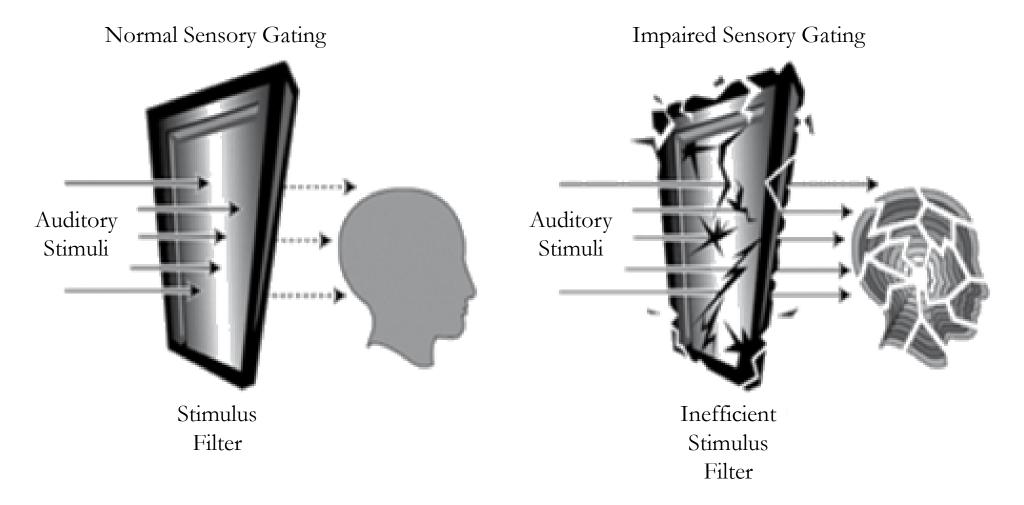






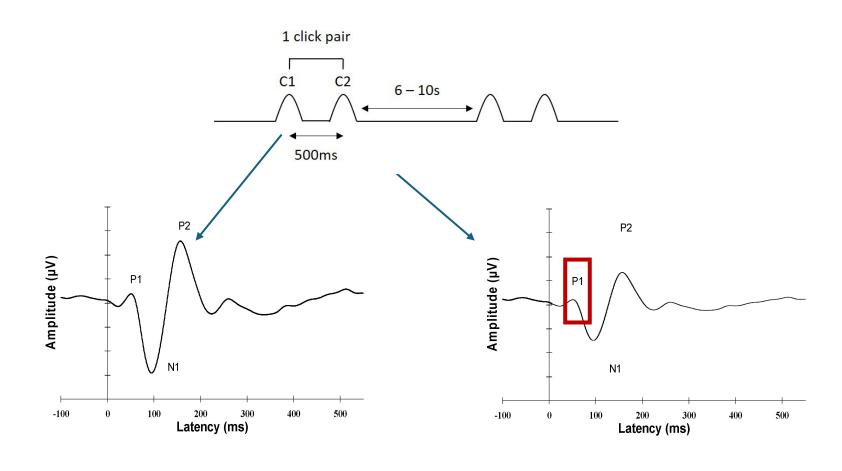
Kumar et al., 2021

Sensory gating in misophonia



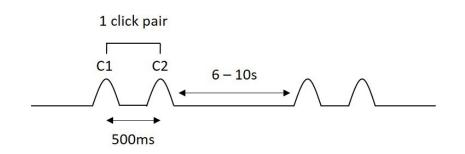
Repetition Suppression & Misophonia

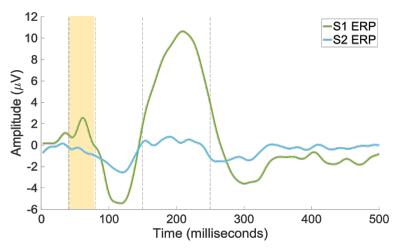




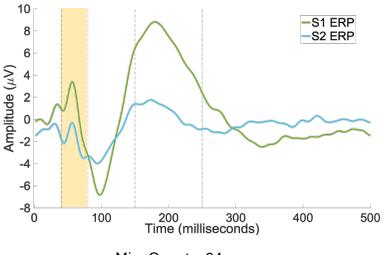
Repetition Suppression & Misophonia







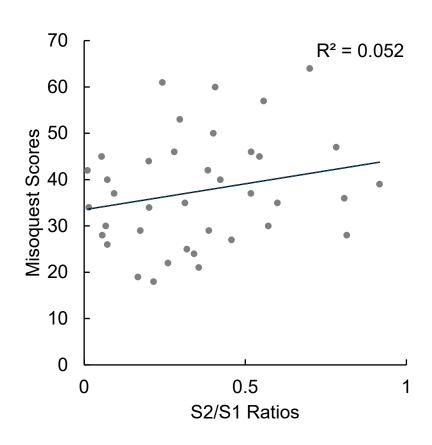
MisoQuest = 30 S2/S1 ratio = 0.067

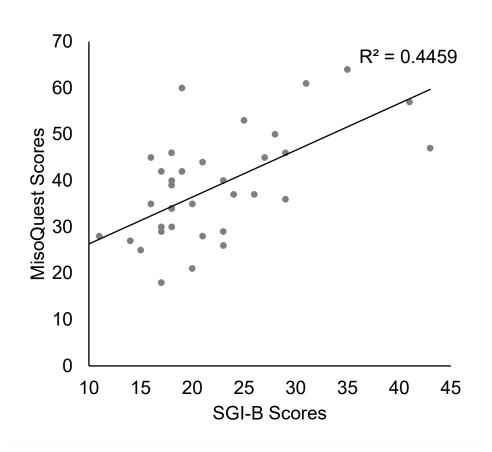


MisoQuest = 64 S2/S1 ratio = 0.700

Repetition Suppression & Misophonia







Misophonia – Still poorly understood



Not listed in the DSM



Unclear mechanisms



No evidencebased treatment

Interventions for Misophonia

- Modified Tinnitus Retraining
 - Counselling + sound therapy
 - Observational data from one group



Interventions for Misophonia

Cognitive Behavioural Therapy

• Reframe thoughts to reduce emotional intensity

• Mindfulness techniques to support emotional regulation

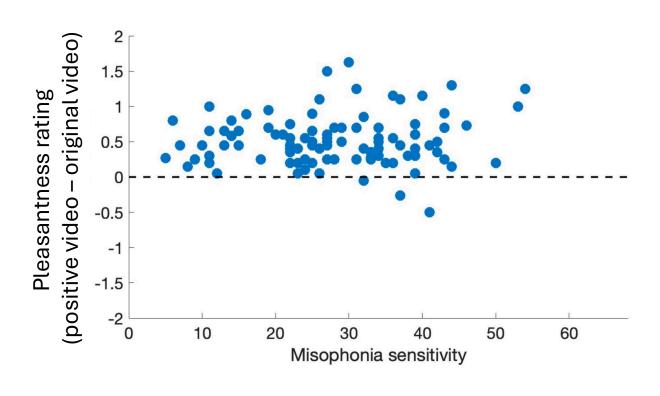
• Most well studied approach to date



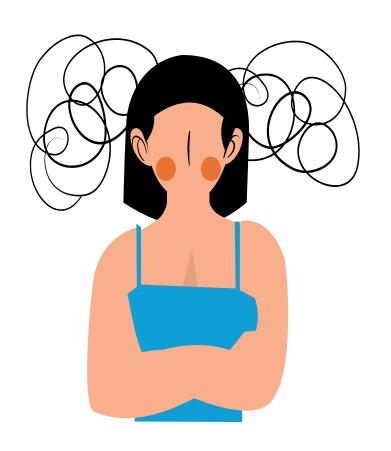
Interventions for Misophonia

• Positive Attributable Videos



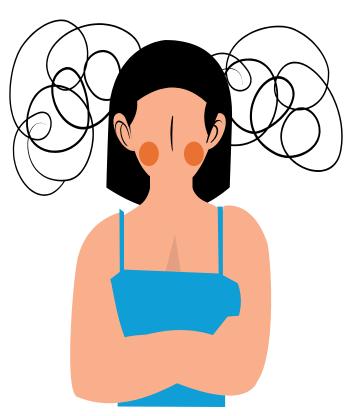


Clinical Suggestions



- 1. Be aware of the sounds you create!
- 2. Validation & education are very important
- 3. Exposure appears not to be helpful
- 4. Advocate for accommodations

Summary



- 1. Misophonia is a unique sound tolerance disorder in which trigger sounds elicit a negative emotional reaction that affects an individuals psychological, physiological, and social wellbeing
- 2. While not yet represented in diagnostic manuals, there is some consensus on potential hallmarks and measures that may be useful in assessment and care planning
- 3. The experience of misophonia has been associated with atypical neural activity and patterns of connectivity between auditory cortex and other regions of the brain
- 4. An improved understanding of both the experience of misophonia and its underlying pathology is necessary to inform improved (likely patient-centered) interventions

































Questions?

Contact - Contact@CanadianAudiology.ca

Webinar recording, and PDF will be posted to the CAA website within a few business days.

For those attending this session live you will receive a thank you for attending email. That is your record of attendance and CEU.



CAA Webinars Upcoming and On Demand

WEBINARS

Continuing Education Unit: each hour of CAA education equals 1 unit of continuing education (CEU)

UPCOMING WEBINAR: TOOLS TO HELP DETERMINE WHEN PATIENTS SHOULD BE REFERRED FOR A COCHLEAR IMPLANT CANDIDACY EVALUATION WITH TERRY ZWOLAN – MARCH 20, 2024 AT 1PM ET +

UPCOMING WEBINAR: MUSIC AND HEARING AIDS WITH MARSHALL CHASIN – APRIL 17, 2024 AT 1PM ET

UPCOMING WEBINAR: AUDITORY WELLNESS: WHAT IS IT? WHY IS IT IMPORTANT? HOW CAN IT BE SELF-MANAGED? WHAT IS THE ROLE OF AUDIOLOGISTS WITH LARRY E. HUMES – MAY 15, 2024 AT 1PM ET





Thank You

