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# Misophonia: A Review of the Literature and Its Implications for the Social Work Profession

Daniel Holohan, Kenneth Marfilius, and Carrie J. Smith

Misophonia is a chronic condition that describes aversion to specific auditory stimuli. Misophonia is characterized by physiological responsivity and negative emotional reactivity. Specific sounds, commonly referred to as "triggers," are often commonplace and sometimes repetitive. They include chewing, coughing, slurping, keyboard tapping, and pen clicking. Common emotional responses include rage, disgust, anxiety, and panic while physical responses include muscle constriction and increased heart rate. This literature review identifies research priorities, limitations, and new directions, examining the implications of misophonia for the social work profession. Misophonia is largely absent from the social work literature. However, the profession is uniquely equipped to understand, screen for, and effectively treat misophonia in direct practice or within interprofessional treatment teams. By conceptualizing misophonia as idiosyncratic and contextual, social workers would enhance the existing body of research by applying an ecological perspective which captures the interaction of individuals and environments in producing human experience. Such an approach would assist clients and clinicians in developing treatment plans that consider the roles of social and physical environments in the development and course of misophonia. A discussion of current limitations within the misophonia literature further emphasizes the need for new perspectives.

KEY WORDS: misophonia; social work

isophonia, literally "hatred of sound" (Jastreboff & Jastreboff, 2001), is a chronic condition that describes aversion to specific auditory stimuli. Misophonia is characterized by physiological responsivity and negative emotional reactivity (Brout et al., 2018). Specific sounds, commonly referred to as "triggers," are often commonplace and sometimes repetitive. They include chewing, coughing, slurping, keyboard tapping, and pen clicking. Common emotional responses include rage, disgust, anxiety, and panic while physical responses include muscle constriction and increased heart rate (Siepsiak & Dragan, 2019). Exposure to these trigger sounds increases sympathetic nervous system arousal, regardless of decibel level. However, trigger sounds and corresponding responses vary widely among individuals. Misophonia is idiosyncratic in both experience and presentation (Brout et al., 2018). It is also highly contextual and impacted by a number of factors including physical location and identity of the person inducing the trigger sound (Edelstein et al., 2013).

Misophonia is not listed in the DSM-5-TR. The existing body of research is small, and there is

no consensus on etiology or diagnostic criteria. Hansen et al. (2022), however, describe misophonia as "highly prevalent yet understudied." In a survey of 483 undergraduate students at the University of South Florida, almost 20 percent of respondents reported significant symptoms of misophonia (Wu et al., 2014). Cavanna and Seri (2015) describe misophonia as "common yet underinvestigated." Quek et al. (2018) write that it is imperative to increase awareness of misophonia among researchers and clinicians, while Schröder et al. (2017) describe misophonia as a potential "hidden epidemic." Siepsiak and Dragan (2019) add that misophonia "might be a significant social problem." Misophonia is shown to cause significant impairment in multiple domains of functioning, including academic, occupational, and social contexts (Cavanna & Seri,

Misophonia tends to worsen over time (Kluckow et al., 2014; Rouw & Erfanian, 2018). People with misophonia do not habituate to trigger sounds (Rouw & Erfanian, 2018), and mere exposure to such sounds is likely to increase symptom severity (Schröder et al., 2017). Though symptoms have been

reported in children as young as two years old (Sanchez & da Silva, 2018), onset typically occurs in early adolescence (Rouw & Erfanian, 2018; Schröder et al., 2013) and worsens into adulthood. However, misophonia has been shown to improve in some individuals after an intervention is introduced. Schröder et al. (2017) found that cognitive—behavioral therapy showed a significant reduction of misophonia symptoms in 48 percent of patients. In a case report, Alekri and Al Saif (2019) found that a combination of psychotherapy sessions, coping mechanisms, social interaction/activity, and increased awareness about misophonia significantly reduced symptoms.

Misophonia was first conceptualized by audiologists Jastreboff and Jastreboff in 2001 while working with tinnitus patients (Brout et al., 2018). In the years since, research has elucidated misophonia and its potential pathogens, though the condition remains mostly confined to the literature. Despite some notable exceptions (Alekri & Al Saif, 2019; Schröder et al., 2017), misophonia research rarely translates to direct practice with people with misophonia. Likewise, treatment interventions for misophonia that have been executed often fail to consider the individual's full context beyond the experience of misophonia. Additionally, the input of people with misophonia is not well integrated into research proposals or treatment interventions.

Misophonia is relatively absent from social work literature. However, the profession is uniquely equipped to understand and effectively treat misophonia. With a broad focus on individual wellbeing, as well as the environmental forces that create or contribute to problems (National Association of Social Workers, 2021), social workers can begin to explore the relationship between the individual and society in the experience of misophonia. Operating within an ecological perspective (Gitterman & Germain, 1976), social workers could consider social and physical environments, as well as the impacts of authority, privilege, and resources, incorporating these factors into treatment interventions. Social workers could strive to include clients in the treatment planning process, integrating the personal expertise of people with misophonia in developing treatment goals. Social workers can connect clients with resources while assisting in the development of new resource systems including psychoeducation, support groups, and education networks. Working in diverse settings such as schools, hospitals, and rehabilitation centers, social workers will be able to identify misophonia in clients, avoid misdiagnosis, and educate both the client and the client's support system. For instance, school social workers can assist parents and teachers in understanding unexpected emotional reactions and behaviors in children and young adults. With this understanding, social workers can enhance communication among parties and more effectively mobilize the client's support system in executing effective treatments. Social work has the additional opportunity of contributing to or spearheading innovative screening processes and treatment approaches. Brout et al. (2018) encourages using a team-based approach in treating misophonia from a multidisciplinary care management model. The inclusion of social workers within such interprofessional treatment teams would greatly enhance the efficacy of misophonia treatment by engaging in direct practice and treating each individual within their unique social and physical context. Likewise, social workers can incorporate a biopsychosocial perspective into the assessment and treatment of misophonia. Jager et al. (2022) present a biopsychosocial model of misophonia, which considers the complex interaction of personality and genetic disposition, environment and learning history, emotion, coping mechanisms, psychological factors, and trigger sounds. Though the model is used to describe a single clinical case, it provides an effective blueprint for early treatment of misophonia. The model can be used as a tool for psychoeducation, separating and analyzing component parts of the condition. Alternatively, it can be adapted into an assessment tool, providing the social worker with detailed information on each individual client.

The primary aim of this article is to review the misophonia literature and elucidate its implications for the social work profession. The aspects of misophonia that make it such a compelling disorder for social workers to understand are explored. This includes consideration of etiology, with a primary focus on the mirror neuron system; an exploration of functional consequences of misophonia from the perspective of people with misophonia; and a review of research limitations and priorities. The use of an ecological perspective to better understand and treat this disorder is encouraged.

#### **METHOD**

Social Work Abstracts and Social Services Abstracts were initially identified as core social work databases. However, no results were found in either database when searching "misophonia." Several multidisciplinary databases were then used, including ComDisDome, Applied Social Sciences Index & Abstracts, JSTOR, and ScienceDirect. A small body of misophonia literature was found within these databases, mostly confined to journals of psychology, psychiatry, and neurology. Three comprehensive reviews were identified (Brout et al., 2018; Potgieter et al., 2019; Siepsiak & Dragan, 2019). Based on findings in these reviews, as well as gaps in social work literature, the following descriptors were identified: incidence, awareness, etiology, phenomenology, diagnostic criteria, and comorbidity. These were used to discover, analyze, and select peerreviewed sources that contributed to an understanding of misophonia and its implications for social work. Many of the same authors showed up repeatedly within search results. A Google search of author names revealed the existence of the International Misophonia Research Network (IMRN). The IMRN advisory board was then used to identify other relevant authors and their works.

A snowball method was also used to find additional sources. Several articles were identified through reference lists within relevant articles, including the three reviews. Articles that focused primarily on related conditions such as hyperacusis were removed from consideration. The selection of articles was designed to provide the broadest and most comprehensive understanding of misophonia possible. Due to the limited body of misophonia research, however, a broad range of peer-reviewed journal articles were selected, comprising different disciplines and research methods. Articles were organized by descriptor. Among articles that focused on the same descriptor, more recent articles were typically chosen, unless those articles contained significant methodological flaws.

### **FINDINGS**

The results indicate the need to strengthen misophonia research by involving social workers in direct practice and by studying the relationship between individuals and society. Existing research elucidates salient characteristics of the disorder, as well as possible pathogens and functional consequences. In understanding characteristics of misophonia,

social workers should employ an ecological perspective, which captures the interaction of individuals and environments in producing human experience (Gitterman & Germain, 1976). Such an approach would assist clients and clinicians in developing treatment plans that consider the roles of social and physical environments in the development and course of misophonia. Qualitative research begins to highlight the functional consequences of misophonia and the need for more research. Additionally, an understanding of possible pathogens clarifies the need for interprofessional treatment teams.

# Misophonia as Idiosyncratic and Contextual

Two salient characteristics of misophonia, idiosyncrasy and contextuality, should compel social workers to engage in researching and treating this disorder. First, misophonia is idiosyncratic: Though it is broadly characterized by nervous system arousal and negative emotional reactivity in response to particular sounds (Brout et al., 2018), levels of severity as well as types of trigger sounds and emotional reactivity vary widely. Kluckow et al. (2014), for example, present three case reports. In the first report, a patient was triggered by the sound of high-pitched female voices. In the second, a patient was triggered by the sound of chewing. In the third, a patient was triggered by the sound of chewing and by the sound of a spoon hitting against a bowl while her mother and aunt ate cereal. Different individuals experience different triggers. However, misophonia does not describe a reaction based on the physical characteristics of a sound (i.e., frequency, intensity), as such a reaction would describe hyperacusis (Jastreboff & Jastreboff, 2001). Though oral/nasal sounds such as coughing and chewing are commonly cited by people with misophonia (Edelstein et al., 2013; Wu et al., 2014), recent research supports the existence of nonoral/nasal triggers such as finger tapping or keyboard typing (Hansen et al., 2022). Likewise, reactions vary among individuals. Jager et al. (2020) found that exposure to a trigger sound caused 93.8 percent of misophonia subjects to experience irritation, 81 percent to experience a perceived loss of control, and 5.9 percent to experience sadness. In a study by Rouw and Erfanian (2018), people with misophonia self-reported feelings of shame, guilt, and anxiety. People with misophonia may experience any number of these reactions. Overall severity and severity in response to a specific trigger

vary as well (Edelstein et al., 2013). The individual with misophonia may be severely distressed by one trigger sound but only mildly irritated by another trigger sound. Similarly, one sound may produce feelings of rage while another sound produces feelings of anxiety or sadness.

Second, misophonia is contextual: Features of this disorder—including trigger sounds, emotional reactivity, and behavioral responses—are modulated by context. Specifically, the identity of the person inducing the trigger sound and the physical location of the person with misophonia influence the experience of misophonia. Emotional reactivity is found to be more intense toward certain individuals inducing the trigger sound, including friends, coworkers, and family members (Edelstein et al., 2013; Jager et al., 2020; Sanchez & da Silva, 2018). Emotional reactivity is typically less intense when the trigger sound is induced by animals, babies/toddlers, or elderly people with dementia (Edelstein et al., 2013; Jager et al., 2020). In one case report, a person's reaction to a crunching sound vanished after realizing it was produced by a pigeon rather than a human (Natalini et al., 2020). People with misophonia typically report a smaller aversive response to self-induced trigger sounds (Edelstein et al., 2013). For example, a person who is triggered by the sound of chewing will typically have a significantly smaller response to hearing themselves chew. People with misophonia reported that their symptoms especially worsen in situations where they feel trapped and unable to escape (Edelstein et al., 2013), while Ferrer-Torres and Giménez-Llort (2021) found that confinement associated with the COVID-19 pandemic increased symptom severity. Rouw and Erfanian (2018) suggest that family settings may impact the development of misophonia. Edelstein et al. (2013) note that many trigger sounds such as loud chewing are considered socially inappropriate in Western society, and raise the question of whether cultural norms factor into the development of misophonia.

Taken together, these findings should compel social workers to engage in the research and treatment of misophonia. The idiosyncratic and contextual features of this disorder demand individualized treatment approaches in which the client is an active participant in the planning process. The vast differences in the experience of misophonia necessitate engaging each client in direct practice to develop appropriate goals and interventions. When operating from an

ecological framework, social workers can further elucidate the reciprocal relationship between the person with misophonia and their environment. Physical space and the ability to modify space have a clear impact on misophonia. Other factors such as cultural norms, family settings, and identity all appear to impact the development and course of this disorder. Misophonia cannot be understood without understanding the environment in which each person with misophonia exists. It is therefore essential to consider factors such as authority, privilege, and resources when treating misophonia. Does the client have the power or authority to modify their space? What role do age, gender, race, class, and other identities play in determining the client's social and physical environment? What privileges mitigate the development of misophonia? Exploring these questions will enrich the misophonia literature while better preparing social workers to comprehensively treat this disorder.

# **Etiology**

Much of the existing research seeks to determine whether misophonia is a distinct disorder or, rather, a symptom of another disorder. This has inspired several studies attempting to either identify physiological features of misophonia or discover a causal underlying mechanism. Kumar et al. (2017) found that exposure to trigger sounds in individuals with misophonia caused heightened heart rate, heightened galvanic skin response, greater myelination in the ventromedial prefrontal cortex, and greater blood-oxygen-level-dependent responses in the anterior insular cortex. This indicates a tangible, physical response to trigger sounds. Kumar et al. (2021) used the findings of Kumar et al. (2017) to explore whether the mirror neuron system related to orofacial movements underlies misophonia. They found that people with misophonia demonstrated increased activation of the orofacial motor area in response to trigger sounds, in proportion to the level of distress. They conclude that it is very likely that misophonia is the result of abnormal functioning of the mirror neuron system or of orofacial actions of others. If this is true, it suggests that this abnormal mirroring leads to automatic imitation of the person producing the action, which then leads to negative emotional reactivity. It is unknown why excessive mirroring may produce this negative emotional reactivity, though Kumar et al. (2021) suggest there may be a

perceived loss of control or a sense of invasion of personal space. Noting that "automatic mimicry of eating actions is common among family members," the authors suggest that this might explain why family members are so often an early and severe source of triggers.

Kumar et al. (2021) contend that their study provides a new framework for understanding misophonia, with consequences for treatment methods and new directions for future research. Mercedes Erfanian, an author of the study, suggests that this research supports a neurological basis for misophonia (Brout, 2022). Kumar et al. (2021) state that this study cannot determine whether misophonia is a discrete psychological disorder or a symptom of an existing disorder. However, Rouw and Erfanian (2018) suggest that it is an independent disorder that cannot be explained by another condition, such as common comorbid conditions including PTSD, obsessive-compulsive personality disorder, bulimia nervosa, or anorexia nervosa. Jager et al. (2020) assert that misophonia is a distinct disorder that must be considered from psychological and psychiatric perspectives, rather than an audiological perspective. Recent findings on the mirror neuron system support this move away from audiological explanations.

Abnormal functioning of the mirror neuron system provides support for the inclusion of social workers and the development of interprofessional treatment teams in the management of this disorder. Misophonia appears to be a complex biopsychosocial condition in which family dynamics, physical setting, and prior experience all play a role in determining its development and course. Through mirror neurons, motor programs in humans are facilitated by the observation of another person's actions (Keysers & Fadiga, 2008). Kumar and Erfanian explain that the mirror neuron system is thought to underlie empathy (Brout, 2021). Observing someone smile or yawn, for instance, causes the observer to involuntarily smile or yawn. The role of the mirror neuron system in empathy may explain why people with misophonia are less reactive toward certain populations such as animals, babies/toddlers, and elderly people with dementia. If people with misophonia are truly experiencing a perceived loss of control due to dysfunction in the mirror neuron system, as Kumar et al. (2021) propose, then this would help explain why symptoms are worse in situations where people with misophonia feel trapped or confined, such as during the COVID-19 pandemic. Alternatively, if this dysfunction is causing a sense of invasion of personal space, it may elucidate the reasons for different emotional reactions such as rage and anxiety. The automatic mimicry of eating actions must also be considered in the context of family dynamics. Unique dynamics might explain the variety of trigger sounds among people with misophonia. Informed by neurological findings, social workers can work with other professionals to further unravel the mystery of misophonia and develop individualized treatment interventions that account for the individual's history and present environment.

# **Functional Consequences**

The lived experiences and personal narratives of people with misophonia are often incidental to medical research. However, qualitative interviews reveal the psychosocial impact of misophonia. Shame, isolation, and self-hatred are recurring themes. Additionally, cultural differences appear to play a role in the experience and presentation of misophonia. While most research focuses on the specific moment when a trigger occurs, qualitative interviews provide essential information on experiences between triggers. This information reveals that misophonia has significant functional consequences that extend beyond the brief moments when a person is actively experiencing a misophonia trigger. Engaged in direct practice, social workers are more likely than those in other professions to encounter these functional consequences and experiences. As a result, social workers must be ready to address the psychosocial aspects of misophonia.

Qualitative interviews and surveys consistently reveal shame and self-hatred as psychosocial consequences of misophonia. One person reported that misophonia does not have a significant impact on her quality of life but that she would still like to be cured because "it seems ridiculous" (Edelstein et al., 2013, p. 4). Rouw and Erfanian (2018) asked participants about the effects of misophonia on their lives. One participant said, "I'm embarrassed and ashamed of being this way" (p. 465). Another participant responded, "I have no understanding of why I am like this. . . . I get very embarrassed at my reaction and find it hard to explain to others" (p. 466). Jager et al. (2020) reported that the majority of participants (among a sample of 575 people with

misophonia) expressed shame or guilt. In another case report (Natalini et al., 2020), a woman said that when she is triggered, she thinks, "I'm strange, nobody wants me, and I will not give [grandchildren] to my parents" (p. 32). She also described herself as "a cause of suffering."

Most case reports and qualitative interviews describe social and physical isolation as a coping mechanism (Siepsiak & Dragan, 2019). Isolation associated with misophonia is shown to limit social interaction with family and friends (Alekri & Al Saif, 2019) and negatively impact employment and interpersonal relationships (Jager et al., 2020). Given that confinement is shown to increase misophonia severity (Ferrer-Torres & Giménez-Llort, 2021), isolation as a coping mechanism may actually worsen the condition. This points to the need for increased awareness of misophonia and the application of treatments such as psychoeducation, providing people with misophonia with a better understanding of effective coping mechanisms.

Other findings raise significant questions related to living with misophonia. Rouw and Erfanian (2018) found that over one-third of participants in their study said that alcohol reduces the symptoms of misophonia. This raises the question of whether misophonia may contribute to alcohol use disorder and other substance use disorders. In treating people with misophonia, social workers must be aware of the potential for substance misuse and integrate this factor into treatment. Another important finding is related to culture and identity. In one case report, a teenage client who identified as Muslim mentioned increased reactivity during the holy month of Ramadan due to "the sound fasting Muslims make with their dry mouth" (Alekri & Al Saif, 2019, p. 233). In this case, family dynamics, religious traditions, and physical space interact to create the conditions for a misophonic response. This same client twice attempted suicide, highlighting potentially devastating consequences for individuals with severe misophonia, as well as the need for more research and greater awareness among clinicians. Social workers should explore these topics in greater depth, using early qualitative findings to inform quantitative experiments that will provide more information on the functional consequences of misophonia.

## **RESEARCH LIMITATIONS AND PRIORITIES**

Misophonia research is shaped by several limiting factors. First, there is a general lack of awareness among the public and within professions. A survey

of university instructors at six institutions in Florida found that just 18.4 percent of participants had knowledge of misophonia and only 2.3 percent of participants had a student request accommodations for misophonia (Porcaro et al., 2019). Many people with misophonia do not know they have misophonia, which makes sampling a challenge. In quantitative research, samples are often taken from nonrepresentative clinical populations or student populations. In qualitative research, samples are often taken from social media forums and online support groups. For example, Rouw and Erfanian (2018) recruited participants from the Yahoo group Selective Sound Sensitivity, which included patients from the Oregon Tinnitus and Hyperacusis Treatment Clinic. They also recruited participants from two Facebook misophonia support groups.

Another limiting factor is the lack of standardized diagnostic criteria. Though many researchers and clinicians have adopted proposed diagnostic criteria developed by Schröder et al. (2013), there remains variation. The criteria developed by Schröder et al. require that the trigger sound is produced by a human. Several studies challenge this strict criterion. Sanchez and da Silva (2018), for instance, found that several participants were triggered by the sound of a dog barking. More recently, Jager et al. (2020) proposed diagnostic criteria that require the existence of oral or nasal triggers produced by humans. They suggest that other sounds such as keyboard tapping may be part of misophonia but are not sufficient to warrant a diagnosis. Siepsiak and Dragan (2019) note that the lack of standardized diagnostic criteria makes it challenging to compare research results or make diagnoses in clinical settings. In light of findings from Alekri and Al Saif (2019) that a patient experienced a reduction in symptoms after developing awareness and self-acceptance of misophonia, there is reason to believe that the lack of standardized diagnostic criteria may be confusing for people with misophonia and tangibly impact quality of life.

A final limitation, related to the lack of standardized diagnostic criteria, is an over-reliance on self-report measures. While the lived experiences of people with misophonia should be centered in the literature, reliance on self-report may reduce credibility and limit generalizability (Siepsiak & Dragan, 2019). On a similar note, as of February 2019, case studies comprised more than half of the misophonia research. Potgieter et al. (2019) call

for more controlled studies and clinical trials to strengthen findings.

### CONCLUSION

Historically, misophonia research has been conducted by audiologists, psychologists, psychiatrists, and neurologists. Most authors cited in this review come from one or more of these fields. The professional demographics of researchers have informed research methods and priorities. As discussed, much of the existing research has centered on the question of whether misophonia is a distinct disorder. Potgieter et al. (2019) effectively summarized the research priorities that have been nominated in the literature. This includes the need to confirm phenomenology and prevalence, genetic and neurological mechanisms, investigation of hereditary factors, and comorbidities. Potgieter et al. add that there is a general consensus for the need to conduct randomized controlled trials of available treatments. Following his recent findings on the mirror neuron system, Kumar said in an interview with Brout (2021) that he wants to expand on these findings through the use of brain measurements, such as EEG, and the exploration of brain stimulation, such as transcranial magnetic stimulation, to elucidate the mirror neuron system's involvement and causal role in misophonia.

All of this work is crucial in understanding and effectively treating misophonia. However, a full understanding of misophonia will require an ecological perspective with special consideration of human diversity, including differences in authority, privilege, and resources. As professionals in a multidisciplinary field that engages in direct practice with clients, social workers are well positioned to contribute to research on and treatment for misophonia. A look through several major social work journals, however, reveals that the topic rarely, if ever, is mentioned. Social workers must understand misophonia and incorporate this knowledge into practice. Likewise, professionals in other fields who have thus far dominated misophonia research would benefit from seeking the expertise and inclusion of social workers in misophonia research. As the medical search for pathogens continues, it is necessary to understand and apply the facilities or modifications needed to improve the outcomes of those with poor prevalence at the present time. **SW** 

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