

Misophonia

Subjects: Psychology, Clinical

Contributor: Lydia Giménez-Llort, Antonia Ferrer, Antonia Ferrer-Torres

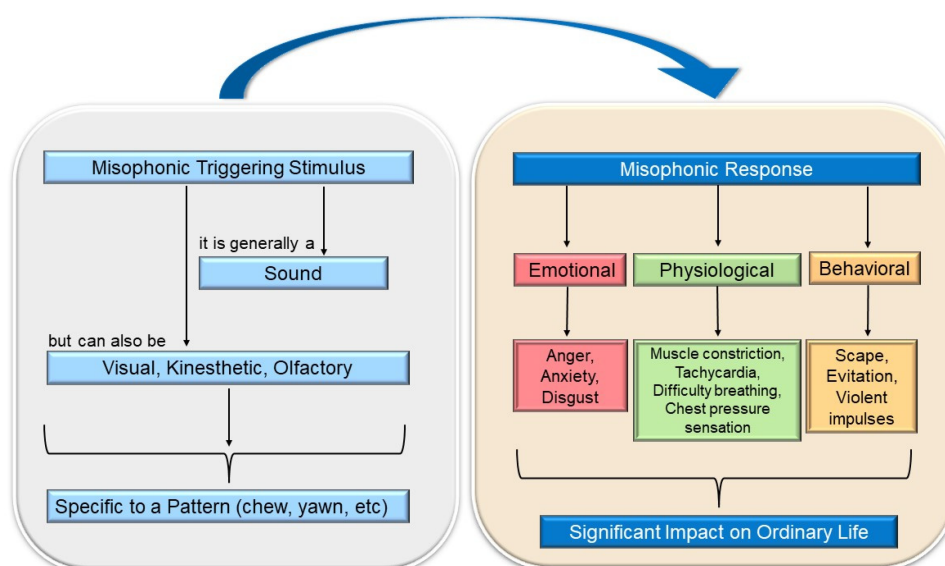
Misophonia is a complex neurophysiological and behavioral disorder of multifactorial origin and is characterized by an increased physiological and emotional response produced by intolerance to specific auditory stimuli.

Keywords: misophonia ; epidemiology ; etiology

1. Introduction

It has also been described as a form of sound intolerance, in which hyper-reactivity and selective aversion to one type of sound are present ^[1]. Additionally, misophonia has been considered a new mental disorder ^{[2][3]}. There is currently debate whether misophonia is an auditory or psychiatric disorder per se. The main reason for the reluctance to include misophonia among mental disorders is the danger of stigmatizing and “pathologizing” the medical picture ^[4]. On the other hand, it is considered that misophonia cannot be classified as an auditory disorder since no relationship has been found between it and hearing thresholds, as the disorder can occur in people with normal hearing, with hearing loss, or with some auditory pathology ^[4]. Furthermore, misophonia can develop in the absence of any peripheral or central auditory pathology ^[5]. Additionally, the specificity of the triggering stimuli suggests that the symptoms are unlikely to be caused by an alteration of the auditory system ^[6].

Although the prevalence of misophonia is not precisely known, the figure is estimated to be close to 20% of the population or 6% showing significant associated functional impairment as reported in clinical settings ^[7]. Misophonia may coexist with other hearing and psychiatric disorders, and it can be confused with other hearing conditions, so the percentage of affected individuals may be higher ^{[7][8][9]}, with it being considered an underdiagnosed disorder. Misophonia has a significant impact on the sufferer’s life, as their maladaptive and avoidant behaviors interfere with the performance of work or academic tasks and cause significant impairment in their interpersonal relationships ^[1]. In response to exposure to the triggering stimulus, the individual experiences a series of physical and emotional reactions of such intensity that they affect their functionality and well-being (see **Figure 1**). The intensity of the misophonic responses varies depending on the emitting source, being more intense when the sound is produced by family members or acquaintances ^{[4][10]}. Research and health care regarding misophonia are currently scarce but slowly increasing in recent years, and the first consensus definition has been published ^[11]. First, there is a lack of sufficient diagnostic criteria to aid in the correct classification of misophonia and its recognition as a distinct disorder. In addition, little is known about its etiology, and insufficient assessment tools are available to measure misophonic symptoms accurately. As expected, there are no protocols for its treatment that are scientifically supported through randomized clinical trials.



2. Triggering or Misophonic Stimulus and Symptomatology

The stimuli that trigger the aversive reaction are called “triggering sounds”, “misophonic stimuli”, or “misophonic sounds” and are characterized by sharing the same pattern, regardless of the decibel level ^[12]. The individual's responses following the exposure to the misophonic stimulus are referred to as “misophonic responses”. These can be physical and/or emotional in nature. The former is often muscle constriction and increased heart rate ^{[11][13]}; although one may also experience a feeling of pressure in the chest, arms, head, or throughout the body, as well as increased body temperature, physical pain, or shortness of breath. On the other hand, the emotional misophonic response may manifest with reactions such as anger, anxiety, disgust, avoidance behavior, escape, and/or feelings of being overwhelmed. The person suffering from misophonia recognizes that their responses are unwanted, uncontrolled, sometimes excessive, and unacceptable ^[14], but they still feel offended by those emitting the misophonic stimulus ^[4]. Despite this, too, they may have violent impulses toward the source of the misophonic sound ^[15]. In fact, anger is the primary emotional response to misophonia. One study reported that irritation (59.9%) was the most common misophonic response, and 28.6% of patients reported aggressive verbal behaviors. Even 16.7% admitted physical aggression towards objects ^[14].

The set of emotional reactions leads the individual to carry out maladaptive behaviors, such as asking the person emitting the misophonic stimulus to stop, arguing with them, or presenting an excessive desire to escape from the stimulus ^[16]. Avoidance behaviors are frequent, and although they provide the individual with momentary comfort, they worsen and maintain the symptomatology ^[17]. In addition, misophonia can contribute to the development of other health problems, such as behavioral disorders, emotional reactivity, difficulties in regulating emotions ^{[10][18]}, and impaired quality of life ^[19]. It also appears to be common for people with misophonia to suffer abuse from others due to their symptoms and maladaptive behaviors. For example, it has been noted that misophonic patients routinely share on internet forums that they are accused of being “crazy” or “troublemakers” by people in their immediate environment ^[1].

It has been defined that the stimuli that trigger the aversive reaction called “triggering sounds” or “misophonic sounds”, are characterized by sharing the same pattern, regardless of their physical properties such as intensity, frequency, harshness, or decibel level. Empirical studies have shown that misophonia is not limited to an aversion to loud, sharp, or harsh sounds; since even soft sounds can trigger the misophonic response (e.g., slurping sounds) ^[4]. In addition, misophonic sounds vary between people, so they are believed to be conditioned to individual, learning, and contextual differences. This indicates that the auditory stimulus does not produce the adverse reaction simply because of its sonic properties but is also significantly influenced by who or what elicits it. Initially, it was proposed that the patient's discomfort was elicited by the presence or anticipation of a specific sound produced by a person ^[14]. However, years later, it was found that the triggering sounds did not always come from human activities but were everyday sounds ^[1] influenced by the context and individual characteristics of the patient ^{[19][20]} as well as sounds emitted by animals or objects ^{[20][21]}.

The most frequent triggering stimuli for misophonic symptoms are sounds emitted while eating ^[23] (e.g., chewing, crunching food, slurping, etc.), nasal sounds (e.g., breathing, sniffing, sneezing), and sounds made with the throat (such as throat clearing) ^[24]. Machine-related sounds are also common, such as those emitted by the computer keyboard, the ticking of the clock, the coffee maker, the stapler, or hair dryers, among others ^[25]. These are some examples, but it should be noted that triggering sounds are very varied and, although they are usually everyday ^{[17][26]}, they are influenced by the context and the individual characteristics of the patient ^[20]. Recent research has found that the triggering stimulus can have different sensory modalities, not limited to sound alone ^{[21][27]}. That is, visual or kinesthetic stimuli related to the triggering auditory stimulus can also elicit the aversive response. For example, a person whose misophonic sound is the sound of chewing may generalize the aversive behavior to visual stimuli associated with the image of a particular food, e.g., fried food. In addition, another study has found that imagining a misophonic sound can trigger symptoms very similar to those experienced when hearing the actual sound ^[13].

Consequently, probably the best term to use is “triggering stimulus” or “misophonic stimulus”, since the concept of misophonic sound does not refer only to an auditory sensory modality. An unresolved unknown is whether the misophonic stimulus also produces aversive reactions when produced by the same patient. Although in a study with a sample of 92 misophonic patients, it was indicated that most do not experience symptoms when they themselves emit the triggering sound (e.g., chewing) ^[28].

3. The Evolution of the Study of Misophonia

Figure 2 illustrates the timeline of the outstanding studies related to misophonia. In the 1990s, Marsha Johnson, an American audiologist, described for the first time what she called ‘Sensitivity to Soft Sound or Selective Sound Sensitivity Syndrome’, abbreviated as 4S syndrome ^[15]. With this label, she described a syndrome characterized by an evident intolerance to specific sounds unique to each individual ^[29]. Johnson called the annoying sound a “trigger sound”, and emphasized that associated visual or olfactory stimuli could also provoke the misophonic response ^[15].

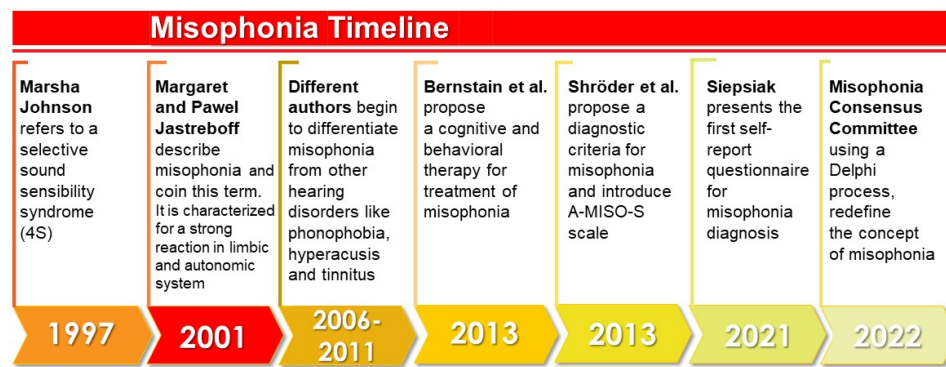


Figure 2. Timeline of outstanding studies related to misophonia (Own elaboration).

In 2001, the authors Margaret and Pawel Jastreboff first used the term misophonia to describe a series of negative limbic and autonomic system reactions resulting from perceiving specific sounds. It was suggested that this response was caused by increased functional connections between the auditory system and the limbic system. According to these authors, the auditory system functions normally, but at the behavioral level negative reactions are evoked. In other words, misophonia does not imply an increased activation of the auditory system, but the problem lies in the emotional response of the patients to the triggering sound.

In later years, findings made it possible to differentiate misophonia from other diagnoses such as hyperacusis or phonophobia. It was determined that misophonia was a separate disorder since, unlike hyperacusis (decreased tolerance to sound), the symptomatology was associated exclusively with one type of sound; and it was distinct from phonophobia (fear of sounds) because the primary emotional response differed ^[5]. Although misophonia can occur in conjunction with these pathologies, it is also seen in isolation ^[5].

With sufficient evidence to consider misophonia as an independent disorder, outreach efforts began in the medical community to publicize this condition and raise awareness of its impact on the individual's life ^[25]. In addition, work was done to understand the prevalence of misophonia ^[24] and to understand the experience of misophonic individuals through case studies ^{[29][30][31]}.

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