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***Misophonia: Coping Mechanisms and Impact on Daily Life***

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## Misophonia: Coping Mechanisms and Impact on Daily Life

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## **ABBREVIATIONS**

AIC - Anterior Insular Cortex

DSM - Diagnostic and Statistical Manual of Mental Disorders

ICD – International Classification of Diseases

A-MISO-S – Amsterdam Misophonia Scale

MAQ – Misophonia Assessment Questionnaire

MER – Misophonia Emotional Responses

MCR – Misophonia Coping Responses

MIS – Misophonia Impact Survey

SD – Standard Deviation

vmPFC - Ventromedial Prefrontal Cortex

Y-BOCS - Yale-Brown Obsessive-Compulsive Scale

## ABSTRACT

**Introduction:** Misophonia (“hatred of sound”) is a relatively unknown condition defined by an exaggerated aversive response to specific auditory stimuli that are usually repetitive and of human, animal or mechanical origin. Misophonics develop coping strategies to deal with their exaggerated reactions to the sound triggers and, in this study, we aim to report common coping mechanisms on patients with significant misophonic symptoms and to determine how much impact those mechanisms and symptoms have on the various aspects of life.

**Methods:** A structured clinical interview was conducted, based on the Amsterdam Misophonia Scale (A-MISO-S), the Misophonia Assessment Questionnaire (MAQ), the Misophonia Emotional Responses (MER) scale, The Misophonia Coping Responses (MCR) scale and on the Misophonia Impact Survey (MIS). They were translated and adapted. The sample consisted of 44 participants who attended consultation in primary or secondary (psychiatric) care.

**Results:** The patients with significant misophonic symptoms (25% of the sample) had A-MISO-S scores ranging from 5 (mild symptoms) to 10 (moderate symptoms) and the most commonly reported coping mechanisms were closing the eyes or turning away, calmly asking the person to stop, discreetly covering up one or both ears, calmly moving away and leaving the room after attempting to tolerate the sounds. For more than half of them, Misophonia interfered with work and daily life activities and they reported to avoid some things, places and people because of this condition. In general, the life impact was not very significant when asked about specific aspects of life, but some participants still reported an important impact, more pronounced on social life, leisure activities, individual activities and alone time. The severity of misophonic symptoms did not correlate with the impact on daily life.

**Discussion:** The most common coping mechanisms consisted of non-confrontational strategies, which might reveal a lack of self-affirmation in people with significant misophonic symptoms. The impact on daily life was more prominent when asked about general life instead of specific life aspects and it did not correlate with the severity of misophonic symptoms, since patients with the same severity score revealed different scores on life impact, which might be attributable to different personal experiences.

**Conclusion:** People with significant misophonic symptoms commonly need to develop coping mechanisms to deal with their trigger sounds and this apparently causes, in fact,

a significant degree of emotional suffering and of impact on daily life even in people with mild and moderate symptoms.

**Keywords:** Misophonia; Coping Mechanisms; Impact; Coping; Emotions

## RESUMO

**Introdução:** A misofonia (“ódio do som”) é um distúrbio relativamente desconhecido, definido por uma resposta adversa exagerada a estímulos auditivos específicos que geralmente são repetitivos e de origem humana, animal ou mecânica. Os misofônicos desenvolvem várias estratégias de *coping* para lidarem com as suas reações exageradas aos sons e, neste estudo, o nosso objetivo é determinar quais são os mecanismos de *coping* mais comuns em pessoas com sintomas misofônicos significativos e determinar que impacto têm esses mecanismos e sintomas em vários aspetos da vida.

**Métodos:** Foram realizadas entrevistas clínicas estruturadas, baseadas nas escalas A-MISO-S (*Amsterdam Misophonia Scale*), MAQ (*Misophonia Assessment Questionnaire*), MER (*Misophonia Emotional Responses*), MCR (*Misophonia Coping Responses*) e MIS (*Misophonia Impact Survey*). Estas foram traduzidas e modificadas. A amostra foi constituída por 44 participantes que recorreram a consultas de cuidados primários e secundários (psiquiátricos).

**Resultados:** Os participantes com níveis significativos de sintomas misofônicos encontrados (25% da amostra) tinham pontuações de A-MISO-S entre 5 (sintomas leves) a 10 (sintomas moderados) e os mecanismos de *coping* mais comumente referidos foram fechar os olhos ou virar-se de costas, perguntar calmamente à pessoa para parar, cobrir uma ou ambas as orelhas discretamente, afastar-se lentamente da fonte de som e abandonar o espaço após tentar tolerar os sons. Para mais de metade dos doentes, a Misofonia interferia com o trabalho e com as atividades de vida diária e referiram que evitavam certas coisas, lugares e pessoas devido a esta entidade. No geral, o impacto na vida não era muito significativo quando eram questionados acerca de aspetos específicos da vida, mas alguns dos participantes referiram mesmo assim um impacto significativo, mais pronunciado na vida social, atividades de lazer, atividades individuais e tempo passado sozinhos. A severidade dos sintomas misofônicos não se correlacionava com o impacto na vida diária.

**Discussão:** Os mecanismos de coping mais comuns consistiam em estratégias não-confrontativas, o que pode revelar uma falta de autoafirmação nos indivíduos com sintomas misofônicos significativos. O impacto na vida diária era mais proeminente quando questionados acerca da vida no geral do que quando questionados acerca de aspetos específicos da vida e não se correlacionava com a severidade dos sintomas,

pelo que participantes com o mesmo grau de severidade revelaram diferentes graus de impacto na vida, o que pode ser atribuível a experiências pessoais diferentes.

**Conclusão:** Pessoas com sintomas misofónicos significativos geralmente necessitam de desenvolver mecanismos de *coping* para lidar com os sons e estes aparentemente causam, de facto, um grau significativo de sofrimento emocional e de impacto na vida diária mesmo na existência de sintomas leves e moderados.

**Palavras-chave:** Misofonia; Mecanismos de Coping; Impacto; Coping; Emoções



## INTRODUCTION

Misophonia (“hatred of sound”) is a relatively unknown chronic condition<sup>1</sup>, still not contemplated on DSM or ICD<sup>2,3</sup>, that is defined by an exaggerated aversive response to specific auditory stimuli, later recognized as disproportionate and unreasonable<sup>3</sup>, that are usually repetitive and of human, animal or mechanical origin<sup>2</sup>. Pen clicking, loud chewing, sniffing and refrigerator humming<sup>4</sup> are some of the examples. Regardless of their volume (although the most common triggers are of minimal intensity), they are followed by a strong emotional reaction that varies from person to person<sup>4</sup>. The most occurring emotion is irritation, but anxiety, stress and desire to escape are also common<sup>4</sup>. Physical sensations are usually present too and they are a consequence of the sympathetic nervous system’s arousal. Muscular tension, tachycardia and sweating are frequently reported<sup>1,3</sup>. These factors usually contribute to a fight-or-flight response<sup>4</sup>. Although most patients can control the urge to escape or attack, in severe cases they can have rage outbursts and even use physical violence<sup>5</sup>. Misophonics, however, are not usually triggered when they produce these sounds themselves<sup>1</sup>.

Its prevalence is still not formally described, but Misophonia doesn’t seem to be a rare condition. In online survey amongst 483 students, nearly 20% reported significant misophonic symptoms<sup>6</sup>. It’s still not known if it is a neurological, audiological or psychiatric disorder and if it is a single entity or a constellation of signs and symptoms that is found on a variety of other conditions<sup>4</sup>. It has been suggested that Misophonia should be considered a separate psychiatric disorder<sup>12</sup>, although associations with obsessive-compulsive symptoms, depressive symptoms and anxiety have been proposed<sup>4, 7, 8</sup>. It has also been suggested that it might have a hereditary etiology<sup>9</sup> and that its onset is usually at childhood or at teenage years<sup>1,11</sup>.

The brain basis for Misophonia has already been an object of study and it was found that the trigger sounds were related to an abnormal functional connectivity between the anterior insular cortex (AIC) and a network of regions that process and regulate emotions, including the ventromedial prefrontal cortex (vmPFC), the posteromedial cortex, the hippocampus and the amygdala. On the same study, it was also found that misophonics had a higher score of interoceptive sensibility than controls and that brain structural measurements showed greater myelination within the vmPFC in those patients<sup>10</sup>.

Since there is not enough knowledge for the establishment of an efficient treatment yet, misophonics develop coping mechanisms to deal with their exaggerated reactions to the

auditory stimuli. They include the avoidance of the sounds (and, consequently, of the people or the situations responsible for them)<sup>3</sup>, mimicry<sup>2</sup> or of the use of objects that are able to “cancel” them out, such as earplugs or headphones<sup>1</sup>. Sometimes, they can ask others to stop making the trigger sounds<sup>1</sup>. These strategies can lead to a severe occupational impairment, since they can affect work or academic productivity, and can also damage personal relationships, daily activities and be responsible for isolation, which makes Misophonia a frankly debilitating condition<sup>3, 4</sup>. Therefore, it is important to define how these coping mechanisms affect the patients’ lives and to demonstrate the impact that Misophonia has on a daily basis, reinforcing the need to study this disorder, to find a treatment and to classify it as an individual condition or a syndrome.

In this study, the aim is to report common coping mechanisms in participants with significant misophonic symptoms and to determine how those mechanisms and symptoms have an impact on the various aspects of life, such as social life, work, individual activities, family and intimate relationships.

## **METHODS**

### **Misophonia's symptoms severity assessment**

Since this study's goal was to report common coping mechanisms and life impact, it was needed to define which individuals had significant levels of misophonic symptoms. To determine Misophonia's symptoms severity, the A-MISO-S scale was used. It is a non-validated 6-item scale, with a range that goes from 0 to 24, that addresses the time that the patients spend occupied by misophonic sounds, how much the sounds interfere with their work and daily life activities, the control that they have over their thoughts and feelings of anger and how much time they spend avoiding misophonic trigger situations. Scores from 0 to 4 are considered subclinical misophonic symptoms, 5 from 9 are considered mild symptoms, 10 to 14 moderate symptoms, 15 to 19 severe and 20 to 24 extreme symptoms. In this study, all the items referred to the last month.

In order to do this, the A-MISO-S scale was translated to Portuguese. Consent from the original authors was obtained. This scale is originally completed by the patients but, before the translation, it was transformed into an instrument to be filled by the interviewer. According to the standard adaptation procedures, the first step was to translate it into local language, followed by a back-translation performed by a different group of translators. Later, the researchers' team discussed the translation to correct any disputed items. Investigators applied this trial version to a group of people and noted their suggestions. Lastly, using the information gathered from all these stages, a final Portuguese version of the scale was obtained.

### **Coping mechanisms and life impact**

The coping mechanisms and life impact were assessed by four adapted scales: MAQ, MCR, MER and MIS. They were translated to Portuguese and, since some of the items on these scales were similar, some of them were removed for this study in order to avoid redundancy. Also, they were rearranged in an intelligible way, so that the interview could have a logical sequence. Consent from the author was obtained as well. These scales originally are completed by the patients, which was not the case in this study because the goal was for it to be completed by the researchers. Since the A-MISO-S items 2 and 6 were related to life's impact, they were also considered to study it. All the items referred to the last month.

The MAQ is a 21-item scale used to determine the patients' emotional responses and feelings about the misophonic sounds and about their condition itself. The original English MAQ has a rating scale for each item that goes from 0 ("not at all") to 3 ("all the time"), but in this study the participants were asked to pick the sentences that were applicable to their daily lives.

The MCR scale is used to understand which coping mechanisms the patients use and if they have physically noticeable responses to the sounds. The original MCR scale has 22 items and it includes a rating scale that goes from 0 ("not at all") to 3 ("most of the time") for each sentence, but the patients were told to choose the items that represented their personal experiences.

The MER scale has originally 32-items. Its questions are about the feelings that the patients have towards the person who is responsible for making the trigger sounds. The original scale also includes a rating scale that goes from 0 ("not at all") to 3 ("almost all the time") for each item, but once again in this study the patients were only asked to choose the sentences that translated their feelings.

Lastly, the MIS is used to establish how Misophonia has interfered with the patients' lives in what comes to family life, intimate relationships, social life, leisure activities, work/school, individual activities and alone time in the last two weeks, on a rating scale from 0 ("none") to 10 ("extremely"). For this study, since all of the items were about the last month, that time limit for the MIS survey was also applied.

### **Sample and recruitment**

The quasi-random sample consisted of patients who attended consultations in primary healthcare in Aveiro and secondary (psychiatric) healthcare in Coimbra, between October and November 2018. The consultations occurred from Mondays to Fridays in secondary healthcare and from Mondays to Thursdays on secondary healthcare. Since some studies suggest that Misophonia may be associated with obsessive-compulsive symptoms, depressive symptoms and anxiety<sup>4, 7, 8</sup>, primary and psychiatric healthcare were chosen in order to compare misophonic symptoms' prevalence in these consultations. Therefore, it was expected to find a higher prevalence of those symptoms in psychiatric care.

The inclusion criteria included being  $\geq 18$  years old and being Portuguese. The exclusion criteria were meant to exclude people who had severe cognitive impairment, inability to communicate or psychosis.

In the primary healthcare institution, patients were invited to participate in this study by their general practitioner. In psychiatric healthcare, the investigators themselves made the distribution before or after the participants' appointments. Every interview was performed in a doctor's office, to ensure the patients' privacy, and each form was attributed a number in order to guarantee their confidentiality.

### **The structured clinical interview**

The study consisted of a structured clinical interview (Appendix I), oriented towards the filling of a form that consisted of demographic data, of the application of the A-MISO-S scale<sup>12</sup> (*Amsterdam Misophonia Scale*) and of a series of items based on the MAQ<sup>13</sup> – *Misophonia Assessment Questionnaire*-, MCR<sup>14</sup> – *Misophonia Coping Responses*-, MER<sup>15</sup> – *Misophonia Emotional Responses*- and MIS<sup>16</sup> – *Misophonia Impact Survey* scales.

First, the patients were given an informed written consent (Appendix II) and were clarified about the concept of Misophonia and of the main goals of the study. After the consent was signed, the form was filled by the investigator while the patients answered the questions that were being orally asked. The mean estimated duration for each interview was of 30 minutes.

The interview was guided by a script, with instructions on how to ask each question. The first part of the form aimed to collect the demographic data (age, sex, marital status, academic qualification, employment situation, depression diagnosis and psychiatric medication) and to apply the A-MISO-S scale.

The interview could only proceed to the second part, which was about coping mechanisms and life impact, if the A-MISO-S score was  $\geq 5$  (therefore excluding subclinical misophonic symptoms). If a score  $\geq 5$  was obtained, the patients were asked what kind of sounds caused them distress and when did the adverse reactions to those sounds begun.

### **Analysis**

Data was digitally collected through Microsoft Office 365® Excel. Descriptive analysis, normality tests and inferential statistics, consisting of Spearman, Pearson, Mann-Whitney and Kruskal-Wallis correlations, were performed through IBM® SPSS® Statistics version 24, with a significance level of 0,05.

## **Ethics**

This study meets the ethical requirements and its project was approved by the Faculty of Medicine from the University of Coimbra.

## RESULTS

### Sample characterization

The study accounted for a total of 44 participants, of which 24 (54,5%) were interviewed in secondary care and 20 (45,5%) in primary healthcare. Concerning the demographic data (Table I), the mean age was 48 (with a range from 19 to 74) and the majority of patients was female (81,8%), married or in a civil partnership (68,2%). In terms of academic qualifications, a higher percentage of participants attended elementary school (31,8%). Most of them were retired or invalid (31,8%). The majority of participants did not have a depression diagnosis (52,3%) and most of them took psychiatric medication (63,6%). Out of those patients, 21 (75%) took antidepressants, 16 (57,1%) took benzodiazepines and 13 (46,4%) took antipsychotics.

**Table I** – Demographic data of the sample

Variable	Category	n	%
<b>Gender</b> (n=44)	Female	36	81,8
<b>Age</b> (n= 44)	Mean= 48,4*                      Range= 19-74		
<b>Marital status</b> (n= 44)	Single	7	15,9
	Married/Civil partnership	30	68,2
	Widowed	1	2,3
	Divorced/Separated	6	13,6
<b>Level of education</b> (n= 44)	Elementary school	14	31,8
	Middle school	12	27,3
	High school	9	20,5
	College education	9	20,4
<b>Employment situation</b> (n= 44)	Working	12	27,3
	Unemployed	9	20,4
	Sick leave	4	9,1
	Retired/ Invalid	14	31,8
	Student	5	11,4
<b>Depression diagnosis</b> (n= 44)	No	23	52,3
<b>Psychiatric medication</b> (n= 44)	Yes	28	63,6

\*SD=±16,9

## Misophonia's symptoms severity

Concerning the application of the A-MISO-S scale, since the presence of significant misophonic symptoms was only considered if the A-MISO-S score was  $\geq 5$  (therefore excluding subclinical misophonic symptoms), 11 patients with significant symptoms were found (25% of the sample). Most of them had mild misophonic symptoms (72,7%). No patients with severe or extreme misophonic symptoms were found. Negative reactions to certain sounds (scores  $>0$  and  $<5$ ) were found in 11 (25%) participants.

Among the patients with significant misophonic symptoms, the A-MISO-S scale mean score was 8,09 (SD $\pm$ 1,81) and the median score was 9, which corresponds to mild symptoms. For the general sample, the mean score was 2,80 and the median score was 1 (SD $\pm$ 3,48), which corresponds to subclinical misophonic symptoms (Table II).

**Table II** – Descriptive analysis of the A-MISO-S scores in the general sample and in patients with significant misophonic symptoms (A-MISO-S  $\geq 5$ )

General sample			Patients with significant symptoms		
Mean		2,80	Mean		8,09
Median		1,00	Median		9,00
Standard deviation		3,48	Standard deviation		1,81
Minimum		0	Minimum		5
Maximum		10	Maximum		10
Quartiles	25	0	Quartiles	25	6
	50	1		50	9
	75	4,75		75	10

In terms of significant misophonic symptoms in primary and secondary healthcare, 5 patients with significant symptoms were found in primary healthcare (25% of the primary healthcare patients) and 6 in secondary healthcare (25% of the secondary healthcare participants) (Table III).

**Table III** – A-MISO-S scores in primary and secondary healthcare

Primary healthcare			Secondary healthcare		
A-MISO-S scores	<i>n</i>	%	A-MISO-S scores	<i>n</i>	%
0-4 (subclinical)	15	34,1	0-4 (subclinical)	18	40,9
5-9 (mild)	3	6,8	5-9 (mild)	5	11,4
10-14 (moderate)	2	4,5	10-14 (moderate)	1	2,3
Total	20	45,4	Total	24	54,6



The demographic variables did not correlate with misophonic symptoms severity (A-MISO-S score) when A-MISO-S scores > 0 were considered, except for age (Appendix III).

The A-MISO-S Scale revealed a good internal consistency (Cronbach's alpha= 0,835) and the items were positively correlated to each other except for the item 2 and 6 (Appendix IV).

### **Sound triggers and onset of the adverse reactions**

In terms of misophonic sounds (Table IV), the majority of patients with significant misophonic symptoms had more than one trigger sound. The most commonly reported sounds were of human origin (11 different human sounds) and of mechanical origin (9 different mechanical sounds).

The mean age of the beginning of the adverse reactions to misophonic sounds was 38 (the range went from 13 to 70). One of the patients with significant misophonic symptoms could not attribute a specific age to the onset of the reactions.

**Table IV – Reported misophonic sounds**

<b>Sounds</b>	<b><i>n</i></b>
<b>Human</b>	<b>11</b>
Loud chewing	3
Nasal sounds	3
Neighbours	3
Snapping fingers	1
Snoring	1
<b>Animal</b>	<b>1</b>
Dogs barking	1
<b>Mechanical</b>	<b>9</b>
Construction machines	2
Alarms	2
Hair dryer	1
Vacuum cleaner	1
Exhaust fan	1
Wind	1
Ambulances	1

### **Coping mechanisms and impact on daily life**

In terms of the MAQ, MCR, MER and MIS modified scales, only the items with ≥5 positive answers were considered, because they reflected the patients' most shared experiences since there were 11 participants with significant symptoms in total (Table V).

The most commonly reported emotions were anxiety, anger, incomprehension (by others and about the condition itself) and helplessness. Almost half of the patients (45,4%) reported that misophonic symptoms affect their ability to be with other people. A desire for the sound source to stop making the sounds (90,9%), to be physically far away from the sound (90,9%) and to get away from the sound source but without making a scene (90,9%) were practically universal.

**Table V – Most commonly reported coping mechanisms, emotions and impact on daily life**

Item	<i>n</i>	%
<b>Emotions about self</b>		
A2. I feel anxiety when I hear a misophonic sound	6	54,5
A5. Being like this makes me feel angry	5	45,5
A7. I feel that no one understands the problems caused by this	5	45,5
A8. My response to certain sounds does not seem to have a known cause	5	45,5
A10. I feel that no one can help me with this problem	5	45,5
<b>Impact on daily life</b>		
B8. This problem has recently affected my ability to be with other people	5	45,5
<b>Coping mechanisms</b>		
C2. I feel annoyed or upset but have no observable response	7	63,6
C4. I turn away or close my eyes so that I don't see the sound source	6	54,5
C6. I calmly move away from the sound source	7	63,6
C7. I discreetly cover one or both ears, close my eyes or otherwise try to avoid it	5	45,5
C11. I calmly ask the person to stop making the sound	5	45,5
C16. I leave the room after attempting to tolerate the sound	7	63,6
<b>Emotions about the sound source</b>		
D2. I want the person/source to stop making the sound	10	90,9
D5. I want to be physically far away from the sound	10	90,9
D7. I am afraid that if I do something, I will hurt other people's feelings	8	72,7
D8. I want to get away from the sound but do not want to make a scene	10	90,9
D12. I feel angry with the person responsible for making the sound	5	45,5

The second part of the interview did not reveal much impact on patients' daily lives (Table VI). The most common rate of impact on every item was 0 (none). The G item (social life and leisure activities) and the I item (individual activities and alone time) got the lower number of 0 ratings. The I item was the only one who got a rating of 10 (extreme impact) by one patient. On the E (family), F (intimate relationships), G and I items there was always one rating score between 7 and 9 (severe life impact).

**Table VI – Misophonic symptoms' impact on various aspects of life**

Item	<i>n</i>	%
<b>E. How has Misophonia interfered with your family in the past month?</b>		
0 (none)	9	81,8
1 to 3 (mildly)	1	9,1
7 to 9 (severely)	1	9,1
<b>F. How has Misophonia interfered with intimate relationships in the past month?</b>		
0 (none)	8	72,7
1 to 3 (mildly)	2	18,2
7 to 9 (severely)	1	9,1
<b>G. How has Misophonia interfered with your social life and leisure activities in the past month?</b>		
0 (none)	7	63,6
1 to 3 (mildly)	2	18,2
4 to 6 (moderately)	1	9,1
7 to 9 (severely)	1	9,1
<b>H. How has Misophonia interfered with your work/studies in the past month?</b>		
0 (none)	9	81,8
1 to 3 (mildly)	2	18,2
<b>I. How has Misophonia interfered with your individual activities and alone time in the past month?</b>		
0 (none)	7	63,6
1 to 3 (mildly)	1	9,1
4 to 6 (moderately)	1	9,1
7 to 9 (severely)	1	9,1
10 (extremely)	1	9,1

However, more than half of patients (63,7%) reported some degree of life impact (score > 0) on the 2<sup>nd</sup> item of the A-MISO-S scale (interference with work and daily life activities, not doing something because of the misophonic sounds), similarly to what was found for the 6<sup>th</sup> item (avoiding doing anything, going any place, or being with anyone), in which 54,6% of the patients had scores > 0 (Table VII).

**Table VII – A-MISO-S scores on items 2 and 6**

<b>Item 2 – How do misophonic sounds interfere with your work or daily life activities? Is there anything you no longer do because of those sounds?</b>		
<b>Scores</b>	<b><i>n</i></b>	<b>%</b>
0 (no interference)	4	36,4
1 (mild; overall performance not impaired)	4	36,4
2 (moderate; slight interference with work/daily life activities but still manageable)	2	18,2
3 (severe; substantial impairment with work/daily life activities)	1	9,1
<b>Item 6 – Do you avoid doing anything, being with anyone or going any place because of the sounds that bother you?</b>		
<b>Scores</b>	<b><i>n</i></b>	<b>%</b>
0 (no avoidance)	5	45,5
1 (occasional avoidance)	1	9,1
2 (some avoidance)	4	36,4
3 (frequent avoidance)	1	9,1

The items E, F, G, H and I do not follow a normal distribution according to the Shapiro-Wilk normality test (a p value of 0 was found for all of them). Therefore, a Spearman correlation between those items and the A-MISO-S scores was conducted. The severity of misophonic symptoms (measured by the A-MISO-S scale) did not correlate with the impact on the various aspects of patients' lives (Table VIII).

**Table VIII** – Spearman correlation between A-MISO-S scores and the impact on the patients' daily lives (items E, F, G, H and I)

		<b>E. Family</b>	<b>F. Intimate relationships</b>	<b>G. Social life and leisure activities</b>	<b>H. Work/ studies</b>	<b>I. Individual activities and alone time</b>
<b>A-MISO-S scores</b>	Correlation coefficient	-0,158	0,549	0,366	0,262	-0,183
	Significance	0,642	0,080	0,269	0,437	0,591

According to the Shapiro-Wilk test, the 2<sup>nd</sup> item of the A-MISO-S scale follows a normal distribution for the patients with significant misophonic symptoms ( $p=0,064$ ), whereas the 6<sup>th</sup> item does not ( $p=0,011$ ). Therefore, a Pearson correlation test was conducted for the 2<sup>nd</sup> item and a Spearman correlation test for the 6<sup>th</sup> item. The severity of misophonic symptoms (A-MISO-S scores) did not have a statistically significant correlation with the impact on A-MISO-S items 2 and 6 (Table IX).

**Table IX** – Correlation between A-MISO-S scores and the impact reported on the items 2 and 6 of the A-MISO-S scales

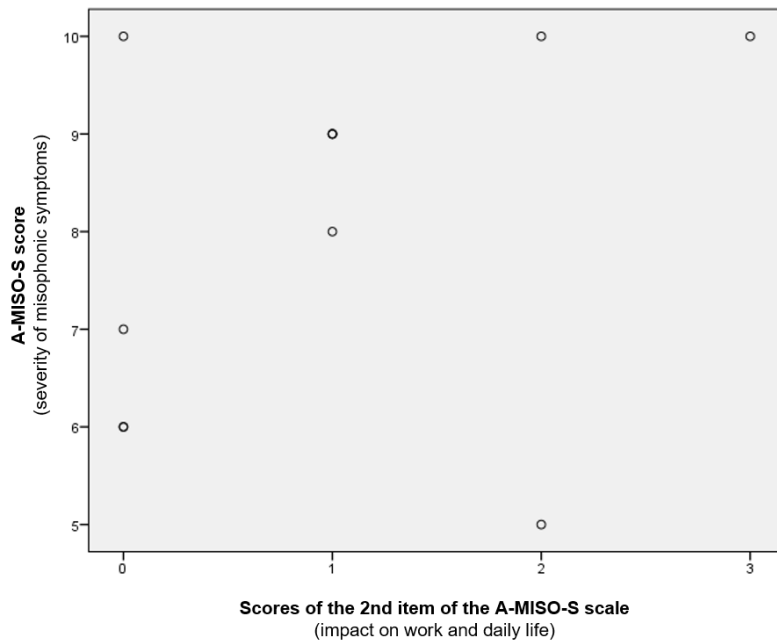
		<b>2 - Interference with work or daily life activities*</b>	<b>6 - Avoiding doing anything, being with anyone or going any place**</b>
<b>A-MISO-S scores</b>	Correlation coefficient	0,331	0,435
	Significance	0,320	0,182

\*Pearson correlation

\*\*Spearman correlation

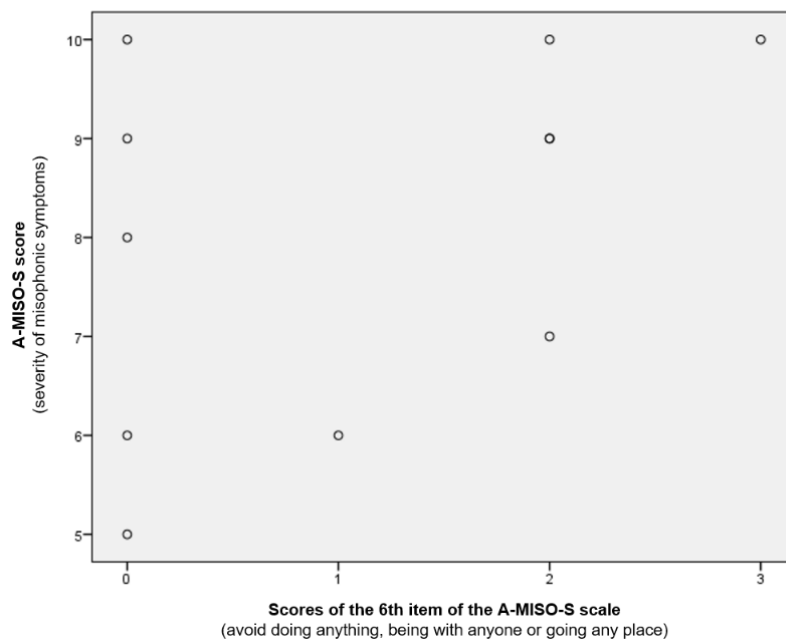
However, one patient with the maximum A-MISO-S score of 10 (moderate misophonic symptoms), reported no impact on work and daily life on the 2<sup>nd</sup> item of the A-MISO-S scale (rating it as 0), whereas other patients with the same A-MISO-S scores of 10 reported severe and moderate impact (the 2<sup>nd</sup> item on the A-MISO-S scale was rated as 2 and 3) (Figure 1).

**Figure 1 – Scatter plot: A-MISO-S scores and the scores on the 2<sup>nd</sup> item of the A-MISO-S scale**



Participants who reported not to avoid doing anything, being with anyone or going any place because of trigger sounds (scoring 0 on the 6<sup>th</sup> A-MISO-S item), had a range of A-MISO-S scores between 5 and 10. However, one of the patients with an A-MISO-S score of 10 reported some avoidance (scoring 2) and another one reported frequent avoidance (scoring 3) (Figure 2).

**Figure 2 - Scatter plot: A-MISO-S scores and the scores on the 6<sup>th</sup> item of the A-MISO-S scale**



## DISCUSSION

Contrary to what was expected, in secondary (psychiatric) healthcare the prevalence of significant misophonic symptoms was the same as in primary healthcare (Table III). It was expectable to find a higher number of patients with significant misophonic symptoms in psychiatric consultations since, according to some studies, Misophonia appears to be associated with obsessive-compulsive symptoms, depressive symptoms and anxiety<sup>4,7,8</sup>.

In this population, the prevalence of significant misophonic symptoms was of 25%, which is not very different from the clinically significant misophonic symptoms' prevalence of 20% found in another study, consisting of an online survey amongst 483 students<sup>6</sup>. Also, the mean age of the beginning of the adverse reactions to misophonic sounds in this sample was of 38. According to previous studies, the onset of symptoms is often in childhood or in teenage years<sup>1,11</sup>. One of the explanations might be the fact that Misophonia's symptoms usually increase over time<sup>11</sup> and that, therefore, in an early stage it can go unnoticed.

The demographic variables did not correlate with misophonic symptoms severity (A-MISO-S score) when A-MISO-S scores > 0 were considered, except for age (Appendix III). However, some studies found that<sup>6,8</sup>, in their samples, misophonic symptoms severity did not seem to correlate with age. Nonetheless, the fact that Misophonia's symptoms usually increase over time<sup>11</sup> might also be an explanation for this study's finding. The same studies<sup>6,8</sup> found no correlation with gender as well, which is consistent with this study.

The majority of trigger sounds were of human and mechanical nature (Table IV), with human sounds being the most common ones. There is a proposed set of diagnostic criteria for Misophonia that only admits human-generated sounds<sup>12</sup>, but more recent studies are arguing that those criteria should also include mechanical and animal sounds<sup>2</sup>.

Emotions such as anxiety, anger, incomprehension and helplessness were common (Table V), which demonstrates that misophonic symptoms cause a significant psychological distress. The desire to escape the trigger situation and to be physically far away from it was almost universal among the participants (90,9%).

The most common coping mechanisms related by this sample's patients with significant misophonic symptoms were mostly non-confrontational (Table V), which means that before asking people to stop making the sounds or leaving the space, the patients tried

to deal with the sound triggers without being noticed, using strategies such as covering both ears or closing their eyes. However, some still reported to calmly ask the person to stop making the sound and leaving the spaces after attempting to tolerate the sounds, which are more confrontational coping strategies. According to their fear of hurting other peoples' feelings (Table V), it is therefore understandable that those patients preferred a more discrete way of dealing with the trigger situation. This is consistent with the results of a study, with a sample of 301 patients who answered an online survey, in which the non-confrontational coping mechanisms were more common than the confrontational ones. Non-confrontational behaviours were present in 15,3% of the sample, whereas slightly more confrontational ones were used by 10,3 % of the patients and frankly confrontational strategies were reported by 8,3% of them<sup>11</sup>. These coping mechanisms can have an impact on daily life themselves, since some of them consist of being away from certain people and certain situations, which can be debilitating.

This fact might indicate that Misophonia can be related to a personality trait associated with psychological suffering: lack of self-affirmation. Self-affirmation, when present, minimizes defensive reactions (such as choosing not to do anything to change the threatening situation) and encourages adaptive behaviours after exposure potential threats<sup>18</sup>. In this study, individuals with significant misophonic symptoms tended to have defensive reactions, avoiding confrontational coping mechanisms in order not to hurt people's feelings. Besides that, they reported to avoid showing their anger or anxiety, since they did not want to look inadequate (they reported that they felt the desire to escape but without making a scene and also that, although they felt anger, they didn't have an observable reaction to the sounds). With this avoidance and disguised reactions, they lack the ability to effectively deal with the trigger situations, which causes even more distress.

Furthermore, almost half of the patients (45,5%) reported that misophonic symptoms affected their ability to be with other people. However, the impact in daily life was not very significant in terms of specific life aspects, with the majority of patients reporting no impact on each one of them (Table VI). Although most participants did not report much impact, social life and leisure activities, as well as individual activities and alone time, were the most commonly reported life aspects with higher levels of impairment (Table VI). In fact, social life is usually strongly correlated with Misophonia's symptoms life impact<sup>6,11</sup>. This is not consistent with the answers on the 2<sup>nd</sup> and 6<sup>th</sup> items on the A-MISO-S scale (Table VII), which correspond to a general life impact, where 54,6% of the patients reported to avoid doing certain things, going to some places or being with

someone because of their symptoms, and 63,7% of them reported interference with work and daily life activities. This might be due to a recall bias.

Both the impact in the specific aspects of life and in general life did not seem to correlate with the severity of misophonic symptoms (Table VIII and Table IX), contrary to what was found for work, social and overall impairment in a study with an undergraduate student sample<sup>6</sup>. Participants with the same score on the A-MISO-S scale revealed significantly different levels of impact in terms of general life (Figure 1 and Figure 2). This supports the fact that the severity of symptoms and life impact do not seem to correlate, which might mean that even the presence of mild symptoms can cause a significant life impact and that more severe symptoms do not necessarily mean a higher life impact. The impact is a subjective concept and it depends on each person's life experiences and ability to cope with the symptoms. Maybe the patients with the same severity of symptoms have a different life impact because of their coping mechanisms or because they might be exposed to trigger situations less often, for example.

In terms of the A-MISO-S scale, it revealed a good internal consistency and significant correlations between each item, except for the 2<sup>nd</sup> (work or daily life activities impact) and the 6<sup>th</sup> items (avoiding doing anything, being with anyone or going any place) (Appendix IV), which are the items that were also analysed in terms of general life impact. One of the possible reasons for the fact that they do not seem to correlate might be the fact that maybe those patients use other coping mechanisms other than avoidance, since the 6<sup>th</sup> item not only reflects life impact but also a coping strategy.

## **Limitations**

This study has several limitations. First, the sample size was small, mostly composed of women and of participants from only two health institutions. An error type II might have been committed, since this study might have failed to assert something that is present (a correlation between misophonic symptoms and their life impact), which decreases its statistical power. Therefore, it might be a mistake to generalize the results, since they might not be extrapolatable to the entire population. However, in this study the correlations were only tested for linear relationships, which might not be the case.

Furthermore, the instrument that was used for the assessment of misophonic symptoms severity – the A-MISO-S scale - is not a validated scale and one of the most common critics is that it was developed as an adapted version of the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS)<sup>12</sup>, therefore assuming that Misophonia might be included on the spectrum of Obsessive-Compulsive disorders. The construct validity is also doubtful, since the scale's purpose is to access misophonic symptoms severity and that not all of its items refer to those symptoms. Misophonia's symptoms of anger and distress are asked but, for example, physical discomfort is not displayed on any of its items. Some of the items seem to refer to life impairment and to the coping mechanism



of avoidance, as well. Besides that, its cut-off for significant misophonic symptoms might also not be a reliable measure.

Lastly, the patients' recall bias is also a limitation, since the items referred to the last month and that participants do not always report past experiences accurately. The interviewer bias might also have been present, since the interviews were made by two investigators, although they were guided by a script in order to minimize differences.

### **Future directions**

In future studies it would be important to report the coping mechanisms and the life impact in a sample with a wider range of misophonic symptoms severity, since the presence of more severe symptoms would be of great interest. In a Portuguese population, with a margin of error of 5% and considering a Misophonia's prevalence of 20%, a sample of 246 participants would be the minimum recommended size.

Furthermore, it is important to continue to contribute to Misophonia's construct in order to develop accurate diagnostic criteria, which would be fundamental for healthcare professionals to recognize this condition.

## **CONCLUSION**

Misophonic symptoms apparently cause, in fact, a significant degree of emotional suffering and impact even in individuals with mild and moderate symptoms. The desire for the sounds to stop and to escape is practically universal, so most patients invariably end up having to develop coping mechanisms to try to avoid them. Usually they use non-confrontational strategies. In terms of life impact, most patients seem to avoid doing some things, going some places or being with some people because of their misophonic symptoms and report, more frequently, an interference with work and daily life activities. The severity of misophonic symptoms does not seem to correlate to the impact on the patients' daily lives.

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## APPENDIXES

### Appendix I – Structured clinical interview

#### **Estudo: Misofonia - a relação com sintomas depressivos, mecanismos de coping e impacto na vida diária (estudo observacional)**

A Misofonia é um desconforto perante sons de padrão específico (ex.: mascar, datilografar, latir), acompanhado de reações emocionais (ex.: irritação, aversão) e/ou físicas negativas (ex.: palpitações, cefaleias). O presente inquérito integra um estudo que pretende clarificar a relação entre a Misofonia e sintomas depressivos, bem como o recurso a mecanismos de *coping* e o seu impacto na vida diária. Não existem respostas certas ou erradas, o importante é que seja o mais sincero(a) possível e que tente responder a todas as questões. As perguntas são relativas ao último mês, sempre que não tenha outra indicação. A entrevista tem uma duração média de 30 minutos.

<b>Crítérios inclusão</b>	<b>Crítérios exclusão</b>
<input type="checkbox"/> ≥ 18 anos <input type="checkbox"/> nacionalidade portuguesa	incapacidade de comunicação ( ) défices cognitivos severos ( ) psicose ( )

### GUIÃO PARA ENTREVISTA ESTRUTURADA

**Data de nascimento:** \_\_\_\_/\_\_\_\_/\_\_\_\_\_

**Sexo:** Feminino ( ) Masculino ( )

**Estado civil:** Solteiro(a) ( ) Casado(a)/União de facto ( ) Viúvo(a) ( ) Divorciado(a)/Separado(a) ( )

**Escolaridade:**

1º ciclo (até ao 4º ano) ( ) 2º ciclo (até ao 6º ano) ( ) 3º ciclo (até ao 9º ano) ( ) Secundário ( )

Licenciatura ( ) Mestrado ( ) Doutoramento ( )

**Situação profissional:** A trabalhar ( ) Desempregado(a) ( ) De baixa/atestado ( ) Reformado(a) ( )  
Invalidez ( ) A estudar ( )

**Diagnóstico de depressão:** Sim ( ) Não ( )

**Medicação psiquiátrica:** Sim ( ) Não ( ) Se sim, qual? \_\_\_\_\_

## ESCALA DA MISOFONIA DE AMESTERDÃO (A-MISO-S):

### 1) Ao longo seu dia, quantas vezes ouve ou pensa em sons misofónicos?

- 0 – Nunca.
- 1 – Poucas vezes; ocasionalmente ou até 5 vezes por dia (<1 hora/dia).
- 2 – Algumas vezes; frequentemente ou até 8 vezes por dia (1 a 3 horas/dia).
- 3 – Muitas vezes; muito frequentemente (3 a 8 horas/dia).
- 4 – Bastantes vezes; quase constantemente (>8 horas/dia).

### 2) Até que ponto os sons misofónicos interferem com a sua vida profissional ou atividades de vida diárias? Há alguma coisa que tenha deixado de fazer por causa dos sons que o(a) incomodam?

- 0 – Não interferem.
- 1 – Ligeiramente, mas o desempenho não é afetado.
- 2 – Moderadamente, interferem ligeiramente o meu trabalho/AVD, mas ainda é capaz de gerir a situação.
- 3 – Gravemente, interferem bastante com o trabalho/AVD.
- 4 – Extremamente, incapacitante.

### 3) Quão incomodado(a) fica ao ouvir sons misofónicos?

- 0 – Nada.
- 1 – Ligeiramente; fica apenas incomodado(a).
- 2 – Moderadamente; fica irritado(a).
- 3 – Severamente; fica muito irritado(a), podendo sentir raiva ou aversão.
- 4 – Extremamente; sente raiva e/ou aversão muito perturbadoras.

### 4) Quanto esforço faz para resistir e controlar sons que o(a) incomodam ou pensamentos sobre eles?

- 0 – Não tem necessidade de resistir porque não tem sintomas OU esforça-se sempre para resistir.
- 1 – A maioria das vezes esforça-se para resistir e controlá-los.
- 2 – Faz algum esforço para resistir, mas não na maioria das vezes.
- 3 – Rende-se aos sons, embora não tenha intenção de desistir.
- 4 – Desiste completamente e de livre vontade de tentar resistir ou controlar os sons.

### 5) Quanto controlo acha que tem sobre pensamentos relativos aos sons que o(a) incomodam?

- 0 – Controlo completo.
- 1 – Muito controlo, na maioria das vezes é capaz de parar ou desviar os seus pensamentos.
- 2 – Controlo moderado, às vezes é capaz de parar ou desviar os pensamentos.
- 3 – Pouco controlo, raramente consegue parar ou desviar os pensamentos.
- 4 – Sem controlo, os pensamentos aparecem de forma involuntária e não os consegue eliminar.

### 6) Evita fazer alguma atividade que gosta, de estar com alguém ou de ir a algum lugar por causa dos sons que o(a) incomodam?

- 0 – Não evita situações.
- 1 – Evita, mas raramente.
- 2 – Evita algumas vezes.

- ( ) 3 – Evita frequentemente.
- ( ) 4 – Evita qualquer situação em que acha que vai ouvir um som misofónico.

Score A-MISO-S: \_\_\_\_\_

**SCORE**

Sintomas subclínicos: 0-4

Sintomas leves: 5-9

Sintomas moderados: 10-14

Sintomas graves: 15-19

Sintomas severos: 20-24

Se score  $\geq 5$ , com que **idade** começou a reagir de forma negativa a sons misofónicos?

\_\_\_\_\_

Se A-MISO-S  $\geq 5$ , qual(is) o(s) **som(ns)** que mais o(a) incomoda(m)?

\_\_\_\_\_

**SELECIONE OS ITENS QUE SE VERIFICAM:**

**A) Sentimentos relativos ao próprio:**

- ( ) 1 – Sinto medo quando ouço um som misofónico.
- ( ) 2 – Sinto ansiedade quando ouço um som misofónico.
- ( ) 3 – Sinto tristeza quando ouço um som misofónico.
- ( ) 4 – Ter estes sentimentos e reações deixa-me infeliz.
- ( ) 5 – Ser assim faz-me sentir zangado(a).
- ( ) 6 – Os problemas que isto me causa fazem-me sentir frustrado(a).
- ( ) 7 – Sinto que ninguém percebe os problemas que isto me causa.
- ( ) 8 – A minha resposta a certos sons parece não ter uma causa.
- ( ) 9 – Sinto-me como se fosse um(a) “louco(a)”.
- ( ) 10 – Sinto que ninguém me pode ajudar com este problema.
- ( ) 11 – Sinto que isto só vai piorar com o tempo.
- ( ) 12 – Tenho receio de que toda a minha vida seja afetada por isto.
- ( ) 13 – Ninguém parece acreditar que os meus problemas sejam sérios.
- ( ) 14 – Sinto-me desesperado(a) e sem esperança.
- ( ) 15 – Sinto culpa em relação aos meus pensamentos.
- ( ) 16 – Sinto culpa em relação ao que fiz quando ouvi o som.
- ( ) 17 – Tenho receio de ouvir mais sons misofónicos.
- ( ) 18) –Insulto verbalmente a pessoa/fonte que está a fazer o som.
- ( ) 19 – Grito ou choro alto.
- ( ) 20 – Uso violência física em objetos inanimados.
- ( ) 21 – Uso violência física noutra pessoa, num animal ou em mim próprio(a).

**B) Impacto na vida diária:**

- ( ) 1 – A forma como reajo aos sons interfere com a minha vida social.
- ( ) 2 – Este problema faz-me sentir isolado(a).
- ( ) 3 – Ter estes sentimentos e reações cria-me problemas várias vezes.
- ( ) 4 – Isto já me causou problemas com outras pessoas.
- ( ) 5 – Este problema afeta negativamente o meu trabalho/sucesso escolar.



- ( ) 6 – Este problema afeta negativamente as relações com a minha família.
- ( ) 7 – Atualmente, estas reações afetam a minha vida negativamente.
- ( ) 8 – Este problema afetou recentemente a minha capacidade para estar com outras pessoas.

**C) Relativamente à manifestação física do desconforto que sinto e aos mecanismos de *coping* que utilizo para lidar com os sons, quando entro em contacto com um som misofónico:**

- ( ) 1 – Posso não gostar, mas não sinto desconforto físico.
- ( ) 2 – Sinto-me zangado(a) ou incomodado(a) mas não tenho nenhuma manifestação observável.
- ( ) 3 – Sinto-me zangado(a) ou incomodado(a) e é visível na forma como me comporto e nas expressões que faço.
- ( ) 4 – Viro-me ou fecho os olhos para não ver a fonte do som.
- ( ) 5 – Coloco fones, tampões nos ouvidos ou óculos escuros.
- ( ) 6 – Afasto-me calmamente da fonte do som.
- ( ) 7 – Cubro discretamente uma ou ambas as orelhas, fecho os olhos ou tento evitar de outra forma.
- ( ) 8 – Limito a pessoa/fonte que está a produzir o som.
- ( ) 9 – Repito os sons.
- ( ) 10 – Cubro abertamente as orelhas, fecho os olhos ou tenho uma resposta semelhante.
- ( ) 11 – Pergunto calmamente à pessoa se pode parar de fazer o som.
- ( ) 12 – Pergunto de forma um pouco dura à pessoa se pode parar de fazer o som.
- ( ) 13 – Obrigo a pessoa a parar de fazer o som.
- ( ) 14) Empurro ou toco na pessoa/fonte que está a fazer o som.
- ( ) 15 – Falo num tom zangado com a pessoa que está a fazer o som.
- ( ) 16 – Saio do espaço depois de tentar tolerar o som.
- ( ) 17 – Saio imediatamente do espaço para tentar evitar o som.

**D) Relativamente aos sentimentos relativos à fonte de som:**

- ( ) 1 – Desejo que a pessoa que faz o som saiba o quão irritado(a) estou.
- ( ) 2 – Desejo que a pessoa/fonte pare de fazer o som.
- ( ) 3 – Desejo poder forçar a outra pessoa/fonte a parar de fazer o som.
- ( ) 4 – Sinto que devo ver a pessoa/fonte a fazer o som e quero continuar a olhar.
- ( ) 5 – Desejo poder estar fisicamente longe do som.
- ( ) 6 – Desejo, por vezes, perder alguns dos meus sentidos para não sofrer (ser surdo(a), por exemplo).
- ( ) 7 – Tenho receio de que, se fizer algo, vou magoar os sentimentos das outras pessoas.
- ( ) 8 – Desejo afastar-me do som mas não quero fazer alarido.
- ( ) 9 – Desejo afastar-me do som o mais depressa possível, mesmo que seja embaraçoso.
- ( ) 10 – Desejava poder gritar ou chorar alto.
- ( ) 11 – Sinto a necessidade de fugir ou correr para longe.
- ( ) 12 – Sinto-me zangado(a) com a pessoa que faz o som.
- ( ) 13 – Sinto raiva pela pessoa que faz o som.
- ( ) 14 – Passo a detestar a pessoa/fonte que faz o som.
- ( ) 15 – Sinto nojo pela pessoa que faz o som.

- ( ) 16 – Sinto ressentimento pela pessoa que faz o som.
- ( ) 17 – Sinto desejos de vingança da pessoa que faz o som.
- ( ) 18 – Sinto-me ofendido(a) pela pessoa que faz o som.

**E) Escolha de 0-10 quanto é que a misofonia interferiu com a sua família?**

0 – Nada; 10 - Extremamente.

0 1 2 3 4 5 6 7 8 9 10

**F) Escolha de 0-10 quanto é que a misofonia interferiu com as suas relações próximas?**

0 – Nada; 10 - Extremamente.

0 1 2 3 4 5 6 7 8 9 10

**G) Escolha de 0-10 quanto é que a misofonia interferiu com a sua vida social e atividades de lazer?**

0 – Nada; 10 - Extremamente.

0 1 2 3 4 5 6 7 8 9 10

**H) Escolha de 0-10 quanto é que a misofonia interferiu com o seu trabalho/estudo?**

0 – Nada; 10 - Extremamente.

0 1 2 3 4 5 6 7 8 9 10

**I) Escolha de 0-10 quanto é que a misofonia interferiu com as suas atividades individuais e tempo passado sozinho(a)?**

0 – Nada; 10 - Extremamente.

0 1 2 3 4 5 6 7 8 9 10

## Appendix II – Informed consent

### INFORMAÇÃO PARA O PARTICIPANTE E FORMULÁRIO DE CONSENTIMENTO INFORMADO, ESCLARECIDO E LIVRE PARA PARTICIPAÇÃO EM ESTUDO DE INVESTIGAÇÃO (de acordo com a Declaração de Helsínquia e a Convenção de Oviedo)

**Título do Estudo:** Misofonia: a relação com sintomas depressivos, mecanismos de coping e impacto na vida diária – estudo observacional

**Investigadores Principais:** Cláudia Marina Cruz e Sandra Julieta Mota Assunção

**Co-Investigador:** Prof. Doutor Joaquim Cerejeira

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#### Por favor, leia cuidadosamente a seguinte informação:

Estamos a convidá-lo a participar num estudo de investigação. Antes de decidir participar neste estudo necessita de compreender a razão pela qual o mesmo está a ser realizado, assim como todas as implicações da sua participação. Os investigadores estarão disponíveis para esclarecer todas as dúvidas que tiver em qualquer fase do estudo. Demore o tempo que achar necessário para decidir se pretende ou não participar no estudo. Poderá discutir o mesmo com a sua família e outras pessoas que o poderão aconselhar na sua decisão.

#### Objetivo geral:

A Misofonia é um distúrbio caracterizado por fortes reações emocionais negativas a certos sons de padrão característico, habitualmente pouco intensos, repetitivos e realizados por pessoas, que se tornam intoleráveis. O estudo que se pretende realizar visa clarificar a relação entre Misofonia e sintomas depressivos. Além disso, pretende estudar os mecanismos de *coping* utilizados para lidar com as reações emocionais associadas à Misofonia e o impacto que estes têm na sua vida diária.

#### Procedimento:

Se fizer parte deste estudo ser-lhe-á feita uma entrevista estruturada, por um dos investigadores, com o objetivo de fornecer alguns dados de natureza clínica e demográfica, que terá a duração de aproximadamente 30 minutos. É-lhe pedido que responda a todas as questões, tendo sempre presente que não existem respostas certas ou erradas, devendo apenas responder de forma sincera.

#### Possíveis Riscos:

O estudo não acarreta riscos para a sua saúde nem interfere com a terapêutica que esteja a realizar. Não serão realizados quaisquer gestos clínicos.

#### Possíveis benefícios:

Ao participar neste estudo poderá partilhar a sua experiência e esclarecer as suas dúvidas em relação à Misofonia. Poderá, contudo, não obter qualquer benefício com a participação neste estudo. Julga-se ainda que o resultado desta investigação, em última análise, poderá trazer-nos novos dados sobre a Misofonia que motivem mais estudos, que levem a uma melhor compreensão deste distúrbio e, consequentemente, à criação de possibilidades terapêuticas.

#### Direito a desistir do estudo:

A sua participação neste estudo de investigação é voluntária. Poderá decidir não começar ou cessar a sua participação neste estudo em qualquer altura, não tendo necessidade de dar qualquer explicação por esse facto; se considerar que alguma pergunta viola a sua privacidade, pode não responder, se assim o desejar. No caso de o participante ser utente dos serviços de saúde e refuse participar ou desista do estudo, os cuidados de saúde prestados não serão afectados de alguma forma. Deverá notificar os investigadores principais deste estudo caso decida desistir de participar no estudo. Os investigadores poderão ainda decidir que seja retirado do estudo, em qualquer altura, sem que para isso seja necessário o seu consentimento. Esta decisão será tomada se não for possível obter o preenchimento total do questionário ou se o estudo for cancelado.

**Confidencialidade:**

A informação recolhida sobre si será utilizada para os objetivos do estudo. A informação será arquivada em papel e em computador. Para proteger a sua privacidade a informação será identificada de forma a não revelar a sua identidade, sendo-lhe atribuído um número de código. Todos os contatos necessários serão feitos em ambiente de privacidade. Se os resultados do estudo forem publicados, a sua identidade (por exemplo, nome, morada, etc...) será mantida confidencial. Os dados serão tratados coletivamente.

De acordo com a legislação em vigor e as Normas da Comissão Nacional de Proteção de Dados (Lei nº 67/98 e Deliberação nº 333/2007), os seus dados não serão tornados públicos. Poderá pedir ao investigador para verificar a informação recolhida sobre si, e pedir a correção de eventuais erros.

**Questões adicionais e esclarecimento de dúvidas:**

Se tiver alguma questão adicional sobre o estudo, por favor contacte os investigadores:

- Cláudia Marina Cruz para o número 912917909 ou e-mail cmarinacruz@gmail.com;
- Sandra Assunção para o número 937434455 ou e-mail uc.sandrajma@gmail.com.

**Consentimento informado:**

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**Se consentir participar, leia e assine o seguinte texto:**

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Este formulário de consentimento contém informação importante para o ajudar a decidir se deseja participar neste Estudo. Se ainda tiver dúvidas para as quais não tenha obtido esclarecimento, por favor esclareça-se junto do seu médico ou dos investigadores do estudo, antes de assinar este documento.

Acordo para participar no estudo:

- Li esta informação;
- Está escrita em linguagem que eu consigo ler e compreender;
- Explicaram-me este estudo;
- Todas as minhas questões sobre este estudo, riscos e benefícios possíveis e a forma de participar foram respondidas satisfatoriamente;
- Com base nesta informação, concordo em participar neste estudo.

Este documento com “Informação para o Participante e Formulário de Consentimento Informado, Esclarecido e Livre” é composto por 2 páginas e feito em duplicado: uma via para o investigador e outra para a pessoa que consente.

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Nome do investigador (maiúsculas) (preenchida pelo investigador)

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Assinatura do investigador

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Data (dd-mm-aaaa)

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Nome do doente (maiúsculas) (preenchida pelo doente)

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Assinatura do doente

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Data (dd-mm-aaaa)

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Nome do representante (maiúsculas) (preenchida pelo representante)

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Assinatura do representante

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Data (dd-mm-aaaa)

**Appendix III – Correlations between demographic variables and the severity of misophonic symptoms in patients with A-MISO-S scores > 0**

According to the Shapiro-Wilk normality test, none of the variables followed a normal distribution. Spearman, Mann-Whitney and Kruskal-Wallis correlation tests were conducted.

	<b>Age</b>	<b>Gender</b>	<b>Marital status</b>	<b>Level of education</b>
<b>A-MISO-S&gt;0</b>	$\rho=0,434^*$ ( $p=0,044$ )	U= 25 ( $p=0,735$ )	H= 1,015 $p= 0,798$	$\rho = 0,220$ $p= 0,325$

*\*Significant correlation*

	<b>Employment situation</b>	<b>Depression diagnosis</b>	<b>Psychiatric medication</b>
<b>A-MISO-S&gt;0</b>	H= 6,713 $p= 0,152$	U= 43 $p= 0,393$	U= 49 $p= 0,522$

**Appendix IV – A-MISO-S: correlation between each item and the A-MISO-S score in the general sample**

None of the items on the A-MISO-S scale for the general sample followed a normal distribution according to the Kolmogorov-Smirnov normality test ( $p < 0,05$  for every item). Therefore, Spearman correlation tests were conducted.

		<b>Time spent</b>	<b>Work and daily life</b>	<b>Distress</b>	<b>Effort to resist</b>	<b>Thought control</b>	<b>Avoidance</b>	<b>A-MISO-S score</b>
<b>Time spent</b>	Correlation coefficient	1	0,551*	0,903*	0,701*	0,618*	0,502*	0,943*
	Significance	-	0,000	0,000	0,000	0,000	0,001	0,000
<b>Work and daily life</b>	Correlation coefficient	0,551*	1	0,535*	0,419*	0,517*	0,285	0,661*
	Significance	0,005	.	0,000	0,005	0,000	0,061	0,000
<b>Distress</b>	Correlation coefficient	0,903*	0,535*	1	0,681*	0,564*	0,530*	0,955*
	Significance	0,000	0,000	-	,000	0,000	0,000	0,000
<b>Effort to resist</b>	Correlation coefficient	0,701*	0,419*	0,681*	1	0,489*	,520*	0,780*
	Significance	0,000	0,005	0,000	-	,001	0,000	0,000
<b>Thought control</b>	Correlation coefficient	0,618*	0,517*	0,564*	0,489*	1	0,387*	0,689*
	Significance	0,000	0,000	0,000	0,001	-	0,010	0,000
<b>Avoidance</b>	Correlation coefficient	0,502*	0,285	0,530*	0,520*	0,387*	1	0,581*
	Significance	0,001	0,061	0,000	0,000	0,010	-	0,000
<b>A-MISO-S score</b>	Correlation coefficient	0,943*	0,661*	0,955*	0,780*	0,689*	0,581*	1
	Significance	0,000	0,000	0,000	0,000	0,000	0,000	-

*\*Significant correlations*