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Research Article

Designing an Experiential Avoidance Model with Misophonia Disorder Through the Mediating Role of Cognitive Fusion and Emotion Dysregulation in University Students

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Abstract

Aim: People with Misophonia disorder are prone to suffering from other psychological problems, such as anxiety and mood disorders, due to avoidance of various situations. Therefore, the goal of this study is to assess an Experiential Avoidance model with Misophonia disorder through the mediating role of Cognitive Fusion and Emotion Dysregulation in university students.

Methods: The method of the present research is a descriptive-correlation study. The population included whole students of the Shahid Chamran University of Ahvaz in the academic year 2022-2023. 251 university students were selected using a random cluster sampling method. Data were collected with a demographic questionnaire, "Misophonia Questionnaire", "Brief Experiential Avoidance Questionnaire", "Cognitive Fusion Questionnaire" and "Difficulties in Emotion Regulation Scale".

Results: Experiential Avoidance is indirectly correlated with the symptoms of Misophonia disorder through Emotion Dysregulation.

Conclusion: Emotion Dysregulation plays a mediating role in the relationship between Experiential Avoidance and symptoms of Misophonia disorder, unlike Cognitive Fusion. It is suggested that approaches based on emotion regulation, such as transdiagnostic, be used in the development of preventive interventions and treatment for people with symptoms of Misophonia disorder.



1. Background

Misophonia is a disorder characterized by strong emotional reactions such as resentment, anger, disgust and anxiety due to specific auditory, visual or sensory stimuli, which are mainly caused by another person. This disorder causes arousal, mental preoccupation and avoidance. Misophonia can be referred to as hate certain sounds such as chewing sound, automatic clattering, slow tapping on a surface, and the sound of lip smacking, and is also called conditioned annoying reaction disorder or selective sound sensitivity syndrome (Jager et al., 2020). This term is not related to the loudness or lowness of the noise by the person's reactions to annoying sounds, but these reactions are related to non-auditory factors such as the person's evaluations of the sound and his belief about dangerous sounds (Jasterboff & Jasterboff 2002, 2015).

Cognitive emotion regulation (CER) strategy plays an important role in the clinical manifestations and severity of Misophonia symptoms (Guetta et al., 2022). Siepsiak and Dragan (2019) described that affected people show an emotional reaction (disgust) or a behavioral reaction (muscle changes and increased heart rate) to certain sounds. This term was first proposed by Pavel Jastreboff (2002), and included patients who disliked sound and showed high anxiety, but were not included in any audiometric or psychiatric classifications. Various statistics show that the prevalence of Misophonia in adults is reported as 12.8% (Kılıç et al., 2021) and 13.5% (Cash, 2015). In clinical populations, about 35% (Quek et al., 2018) and 66% (Ferrer-Torres & Giménez-Llort, 2021) of this disorder have been reported. A study in Iran on the prevalence of Misophonia in a non-clinical sample of $n = 390$ showed that 23.8% had symptoms of Misophonia (Yektatalab et al., 2020). Biological factors related to the auditory cortex and oral motor area of the brain play a role in Misophonia, and in affected people, this area has more brain activity than annoying sounds. In addition, annoying sounds affect the blood oxygen level in the frontal insular cortex, which is the center of emotion processing, and increases the heart rate (Kumar et al., 2016). In addition, psychological factors such as avoidance and cognitive fusion are related to Misophonia. Experiential avoidance is mental inflexibility to mental problems. These efforts to control internal experiences can exacerbate distress and restrict behavior. In extreme cases, experiential avoidance becomes a barrier to approaching valued behaviors, choices, and activities that may require experiencing unpleasant emotions (Leonidou & Panayiotou, 2022). In this disorder, a person always avoids experiencing anger, tension, and disgust from arousing situations (Jager et al., 2020). Therefore, experiential avoidance plays an important role in the continuation and exacerbation of the symptoms of this disorder (Potgieter et al., 2019). When affected people encounter noisy situations, they try to escape and avoid facing. The study results of McKay and Frank (2019) showed that stress management and exposure therapy to resolve the avoidance of sound can help reduce this disorder.

Cognitive fusion is another inefficient cognitive strategy in which a person considers his thoughts to be real and involves in the verbal content of his thoughts (Bolderston et al., 2019). Internal experiences facilitate painful psychological reactions that are natural avoidance or escape from external dangers. Imagining exposure to a threatening stimulus creates the same confusion as an actual exposure to the same stimulus (Cookson et al., 2020). Avoiding internal experiences can increase their occurrence and cognitive fusion, for example, if I go to my friend's house, the children are loud and I imagine that they are bothering me, so I don't go to their house (Wenzlaff & Wegner 2000; Berghoff et al., 2018).

Edelstein et al. showed that Misophonia is mainly caused when the person suffering from this disorder is with a person (such as a spouse or child). In this situation, when the affected person is next to another person, he believes that his voice is annoying, even if the person does not speak or is not loud. In such a case, cognitive fusion occurs.

Emotion dysregulation (difficulty in emotion regulation) is the exaggeration of emotions or the lack of coherence between emotional components, to which 85% of mental disorders included in DSM-5 are related (Kring & Sloan 2010). Emotion dysregulation is defined as the lack of skills necessary to regulate emotional reactions (Neacsiu et al., 2014). The five factors of reducing emotional awareness, inadequate emotional reaction, intense experience, expression of emotions, emotional difficulty, and cognitive assessment difficulty are the constituent factors of this variable (D'Agostino et al., 2017). In Misophonia, there are incompatible adaptive strategies in dealing with emotions. Also, according to the results, emotion regulation helps us understand risk factors of Misophonia (Cassiello-Robbins et al., 2020). The findings suggest that dysphoric individuals adjust the use of emotion regulation strategies differently from non-depressed individuals depending on the intensity level of happiness and sadness experienced (Joormann and siemer, 2011).

Comparing two groups with and without Misophonia when faced with intense emotions, affected people reacted to events with more emotional intensity and tried to suppress emotional memories (Palacio-Gonzalez & O'Toole, 2022). Bladeras et al. (2021) reported that people with Misophonia show a strong and intolerable emotional reaction to emotional experiences and cannot regulate their mind rumination. The present study is the first attempt to investigate the relationship between experiential avoidance and the mediation of cognitive fusion and emotion dysregulation in students with Misophonia.

2. Objectives

The objective of this study was to model the structural relationships between experiential avoidance and Misophonia; and the mediation of cognitive fusion and emotion dysregulation in students of Shahid Chamran University of Ahvaz.

3. Methods

3.1. Sample and procedure

The correlation research design is of Structural Equation Modeling type. The statistical population included all students of Shahid Chamran University of Ahvaz studying in the academic year of 2023. 3 faculties were selected randomly from different faculties of the university and then 251 people (175 girls and 76 boys) with an average age of 22.16 years answered the tools.

3.2. Research Tools

3.2.1. The Misophonia Questionnaire (MQ)

It was designed and developed by Wu et al. (2014) to measure the symptoms of Misophonia, the resulting emotions and behaviors, and the intensity of sound sensitivity. Misophonia questionnaire has 17 questions and 2 components of Misophonia symptoms and emotions caused by Misophonia, and it measures Misophonia based on the Likert scale with questions such as Do you leave the environment and go to a place where these sounds are no longer heard? The reliability was 0.90 in a study by Mehrabizadeh Honarmand and Roshani (2018) on a group of students by Cronbach's alpha. Convergent validity was 0.94

through the correlation between Misophonia score and subscales of Misophonia symptoms and emotions caused by Misophonia.

3.2.2. The Brief Experiential Avoidance Questionnaire (BEAQ)

The Brief Experiential Avoidance Questionnaire (BEAQ, Gámez et al., 2014) assesses a range of experiential avoidance (EA) content. Using items from the original 62-item Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gámez et al., 2011), a 15-item scale was created that tapped content from each of the MEAQ's six dimensions (Behavioral Avoidance, Distress Aversion, Procrastination, Distraction/Suppression, Repression/Denial, and Distress Endurance). Items were selected on the basis of their performance in 3 samples and then evaluated using 2 additional samples. Originally, the top 20 items displayed the highest loadings on the single factor. Five more items were dropped, leaving the 15-item measure. Items are rated on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). The resulting measure demonstrated good internal consistency (alpha values above .80). It also exhibited strong convergence with respect to each of the MEAQ's 6 dimensions.

3.2.3. Cognitive Fusion Questionnaire (CFQ)

This questionnaire has 7 items scored on a 7-point scale from one to seven. The total score of this questionnaire is in the range of 7-49. In Iran, Akbari, Mohammadkhani and Zarghami (2015) reported the reliability of this questionnaire using Cronbach's alpha to be 0.91 on a sample of students, and the retest reliability after 5 weeks was 0.86. The validity of Acceptance and Action Questionnaire (AAQ-2) and Southampton Mindfulness Questionnaire (SMQ) were 0.72 and 0.70, respectively.

3.2.4. Difficulties in Emotion Regulation Scale (DERS)

It is a measurement tool that includes 36 items designed to assess difficulty for regulating emotion. The results showed that it had high internal consistency of 0.93 (Gratz & Roemer 2004). In Iran, on a Persian-speaking population, Azizi, Mirzaei and Shams (2008) estimated its reliability to be 0.92 using Cronbach's alpha.

3.3. Ethical consideration

For the ethical considerations in this study, the ethical codes proposed by the Islamic Republic of Iran Organization of Psychology and the American Psychological Association were taken into consideration. Accordingly, the following points were observed about the subjects. Before completing the questionnaire, the objective of this study was explained for the participants and their questions were answered. In addition, the confidentiality and the possibility of withdrawal and non-cooperation were mentioned at each stage of the research.

3.4. Data analysis

Data were analyzed using structural equation modeling and SPSS-24 and AMOS-24 were used for data classification, processing and analysis.

4. Results

4.1. Results Tables

Table 1 shows the results of descriptive statistics analysis related to research variables.

Table 1. Mean, standard deviation and correlation matrix between research variables

variable	1	2	3	4	M	SD	min	max	No.
1. Misophonia	1				28.75	12.78	0	62	251
2. experiential avoidance	**0.19	1			53.60	10.63	8	46	251
3. cognitive fusion	**0.18	**0.33	1		27.20	7.16	21	84	251
4. emotion dysregulation	**0.24	**0.30	**0.59	1	97.55	19.70	52	158	251

Table 1 shows that all the variables of the present study have a significant correlation with each other at $P < 0.001$, and the highest correlation is between cognitive fusion and emotion dysregulation ($r = 0.59$) and the lowest correlation is between two pairs of variables of symptoms of Misophonia and cognitive fusion ($r = 0.18$).

Table 2. Fit of the proposed and final model based on fit indices

variable fit indices	χ^2	P	df	χ^2/df	GFI	AGFI	NFI	CFI	IFI	TLI	RMSEA
proposed model	185.004	≤ 0.001	50	3.700	0.896	0.837	0.839	0.875	0.877	0.835	0.104
final model	123.669	≤ 0.001	49	2.524	0.926	0.882	0.892	0.931	0.932	0.917	0.074

As shown in **Table 2**, the fit indices of the proposed model include chi-square χ^2 equal to 185.004, degree of freedom (df) equal to 50, chi-square to degree of freedom ratio of 3:700, incremental fit index (IFI) equal to 0.877, Root Mean Square Error of Approximation (RMSEA) equal to 0.104, Comparative Fit Index (CFI) equal to 875 0.0, Goodness of Fit Index (GFI) equal to 0.896, Adjusted Goodness of Fit Index (AGFI) equal to 0.837 and Tucker Lewis Index (TLI) equal to 0.835. RMSEA, GFI, TLI and AGFI show that the model to fit the data needs some modifications.

The test of the data fit in the modified model showed that in the latent variable of cognitive regulation of emotion, the model fit improves by covariance between positive and negative cognitive regulation. The evaluation construct of the model after modification shows a combination of fit indices, such as GFI including relative chi-square ($\chi^2/df = 2.524$), IFI=0.932, CFI=0.926, GFI=0.931, AGFI=0.882, TLI=0.917, NFI=0.892 and RMSEA=0.074, indicating reasonable fit of the proposed model with the data. Therefore, the modified or final model has desired fit.

Table 3. Direct coefficients between research variables in the modified model

pathway	β	C.R	Sig
experiential avoidance → cognitive fusion	0.36	3.27	0.001
experiential avoidance → emotion dysregulation	0.34	2.89	0.004
experiential avoidance → Misophonia	0.08	1.04	0.297
cognitive fusion → Misophonia	0.09	1.19	0.232
emotion dysregulation → Misophonia	0.19	1.93	0.022

Table 3 shows the parameters related to the direct effects of the variables on each other in the modified model. As shown in **Table 3**, the paths of experiential avoidance → cognitive fusion and emotion dysregulation were significant. Also, the path of emotion dysregulation → Misophonia was significant, but the path of cognitive fusion → Misophonia was not significant.

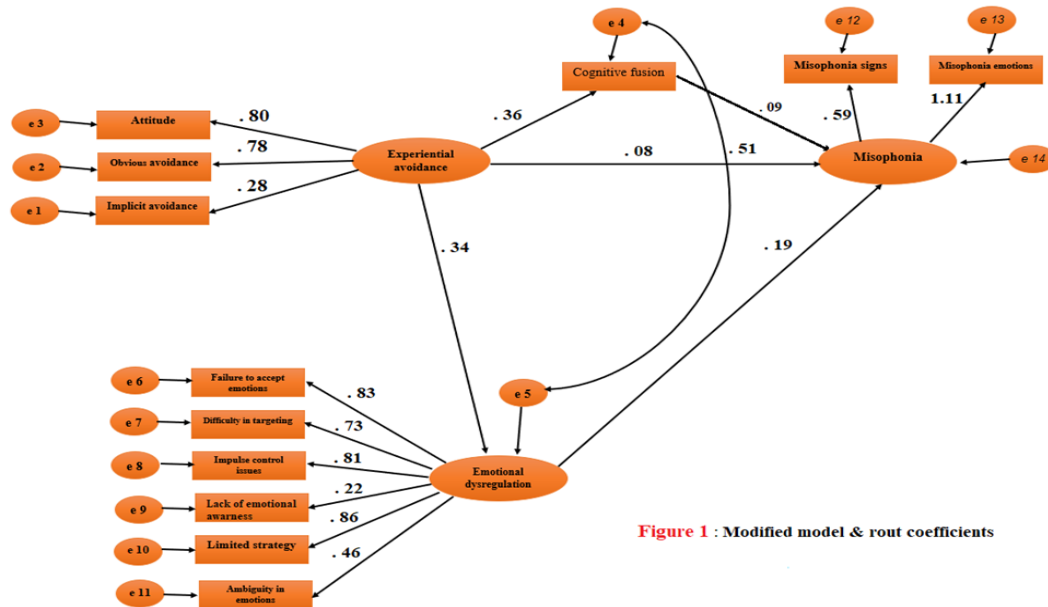


Figure 1 : Modified model & root coefficients

In order to analyze the model of the present study, the structural equation modeling was used by AMOS 24, and *bootstrapping* was used to determine the indirect statistical significance between the variables present in the model. The variables of experiential avoidance, emotion dysregulation, and Misophonia, whose construct validity was confirmed using confirmatory factor analysis (CFA) with 3, 6, and 2 factors, respectively, were drawn in the model. Also, the variable of cognitive fusion was clearly drawn in the model due to having a total score.

In the hypothesized model (Figure 1), the direct relationships between experiential avoidance, cognitive fusion and emotion dysregulation were significant ($B=0.36$ and $P=0.001$; and $B=0.34$ and $P=0.004$, respectively). Also, the relationship between emotion dysregulation and Misophonia was significant ($B=0.19$ and $P=0.022$). In addition, in this model, the correlation between cognitive fusion and Misophonia was not significant.

Results of indirect (mediating) relationships

Bootstrapping was used to determine the significance of indirect paths. Table 4 shows the results of the bootstrap.

Table 4. Results of *bootstrapping* for the mediating role of the variables

	pathway		standardized effect	upper limit	lower limit	significanc e level
experiential avoidance	cognitive fusion → Misophonia		0.79	-0.015	0.320	0.130
experiential avoidance	emotion dysregulation → Misophonia		0.121	0.015	0.436	0.032

The results of bootstrapping showed that the range for the mediating path of cognitive fusion to Misophonia is zero. So, this mediating path is not significant. On the other hand, the mediator path of emotion dysregulation to Misophonia is significant. Hence, it can be said that emotion dysregulation has been able to explain well the relationship between experiential avoidance variables and Misophonia.

5. Discussion

The objective of the present study was to design a model for experiential avoidance with Misophonia through the mediating role of cognitive fusion and emotion dysregulation in students. The results showed that experiential avoidance model with Misophonia has an acceptable fit with the data through the mediating role of cognitive fusion and emotion dysregulation. This finding is consistent with the results of Guetta et al, (2022), Calkins and Fox (2002), Polk et al. (2016), Cassiello-Robbins et al. (2020) and Cookson et al. (2020). Experiential avoidance is indirectly correlated with the symptoms of Misophonia through emotion dysregulation. Therefore, people who have higher experiential avoidance are more likely to have problems for regulating their emotions and show more symptoms of Misophonia. Experiential avoidance in interaction with cognitive fusion can strengthen and intensify a person's movement towards one situation or away from another situation. Avoidance of certain situations can be accompanied by a constant mental struggle to be free from disturbing feelings, unpleasant memories, and finally a repetitive cycle of being stuck in dysfunctional behaviors in a wide range of disorders.

Also, the study results showed that cognitive fusion played no mediating role. Experiential avoidance in interaction with cognitive fusion can strengthen and intensify a person's movement towards one situation or away from another situation. Avoidance of certain situations can be accompanied by a constant mental struggle to be free from disturbing feelings, unpleasant memories, and finally a repetitive cycle of being stuck in inefficient behaviors in a wide range of disorders. But it seems that the thoughts and memories that a person involves in some stimulating situations alone play no role in Misophonia, while experiential avoidance is related to emotion dysregulation and adopting ineffective strategies such as lack of emotional awareness, difficulty in trigger, ambiguity in emotions, non-acceptance of emotions, limited strategies and finally problems caused by impulse control plays a mediating role in the symptoms of Misophonia. The processes related to emotion regulation always include two reactive components and a control component, which modulate each other over time and at different levels. Hence, the continuous avoidance of a person with Misophonia from situations in which he feels arousal is more effective on dysregulation and suppression of the emotion control component than the reaction component (Calkins & Fox 2002). Experiential avoidance of situations that arouse emotions causes a person missing the opportunity to improve learning emotion regulation skills, and emotion dysregulation plays a mediating role between negative emotions and Misophonia.

One of the most important limitations of this study was the student sample group, which limits generalizability. The number of male participants was small and no separate statistical analysis was performed for them. It is suggested that in future research, researchers use personality variables in their research and conduct this study on male and female groups and the clinical sample.

Therapists and clinicians for the treatment of Misophonia need to be familiar with the concepts that play a role in the pathology of this disorder. By identifying emotions, the ability to inhibit impulsive behaviors and engage in efficient actions when experiencing negative emotions caused by Misophonia can suggest appropriate treatment for sufferers. Accordingly, these sufferers can be treated by improving emotion regulation and facing different patterns of avoidant behavior. Therefore, the pathological structure focused on experiential avoidance and emotion regulation plays a constructive role in the diagnosis of Misophonia.

8. Author Contributions

AmirMehdi Kadivarian and Bahram Peymannia were responsible for the design and study concept. Soodabeh Bassaknejad read the manuscript and was responsible for data analysis of the study data. AmirMehdi Kadivarian writes the paper.

9. Ethical moral code

This research was approved by the Ethics committee of Shahid Chamran University of Ahvaz (code: IR.SCU.REC.1402.007).

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11. Conflicts of interest

No conflicting interest.

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