

## Music therapy in generalized anxiety disorder



Enrique Octavio Flores Gutiérrez, M.D, Ph.D.<sup>1</sup>, Víctor Andrés Terán Camarena, B.A.\*

Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Calzada México Xochimilco No. 101, Col. San Lorenzo Huipulco, Del. Tlalpan, México, D.F., C.P. 14370, México

### ARTICLE INFO

#### Article history:

Available online 18 March 2015

#### Keywords:

Music therapy  
Generalized anxiety disorder  
Psychiatry  
Psychotherapy

### ABSTRACT

This study proposes music therapy as a novel approach in clinical psychiatry for generalized anxiety disorder (GAD), which is one of the most common and incapacitating mental disorders. In this study, we present the results of a pilot intervention with patients under clinical control and receiving pharmacotherapy. Music therapy was used to decrease the symptomatology of this disorder following a structured protocol. The pilot study group consisted of seven patients with no comorbidities. The patients were characterized by Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria and were diagnosed by psychiatrists at National Institute of Psychiatry Ramón de la Fuente Muñiz. The researchers programmed 12 × 2 h sessions for this group of patients. A pre-test/post-test design using the Beck Anxiety and Depression Inventory was used. The Wilcoxon statistical test for related groups in global scores demonstrated a significant reduction after the intervention. The results demonstrate that music therapy was effective in reducing anxiety and depression levels in GAD patients. Additional studies are required to corroborate these pilot data.

© 2015 Elsevier Ltd. All rights reserved.

### Introduction

The cross-cultural study conducted by the World Health Organization (WHO) in 14 countries demonstrates that a substantial proportion, that is, approximately 24% of all patients in primary care settings, have a mental disorder. Furthermore, anxiety is one of the three most common diagnoses in these settings (Goldberg & Lecrubier, 1995). The results of Mexico's 2001 National Psychiatric Epidemiology Survey (Medina-Mora et al., 2003) reveals that the most frequent disorders are of the anxiety type (14.3% at some moment in a person's lifetime) and that metropolitan areas have the highest prevalence (3.4%) of such disorders. Anxiety disorders (AD) are appearing at earlier ages, with an estimated mean of 15 years as reported in the bulletin of the WHO (2000). Of the different types of AD (i.e., specific phobias, social phobia, post-traumatic stress disorder, agoraphobia, panic disorder), generalized anxiety disorder (GAD) exhibits the highest incidence (7.9%) according to the results of a study with more than 25,000 patients who were assessed using the CIE-10 criteria WHO (2000). GAD in patients is associated with substantial reductions in quality of life and deteriorated

functionality. The National Comorbidity Survey administered in the United States found that GAD is always associated with a significant degree of deterioration (Hoge, Oppenheimer, & Simon, 2004).

With respect to the treatment of anxiety, in 2008, the World Federation of Societies of Biological Psychiatry (WFSBP) Guidelines included pharmacological treatment recommendations based on the quality of evidence for efficacy and risk/benefit assessment of GAD (Bandelow, Zohar, Hollander, Kasper, & Möller, 2008). The strongest evidence of clinical efficacy in the treatment of GAD was found for SSRIs—citalopram, paroxetine, sertraline; SNRIs—venlafaxine, duloxetine; the calcium channel modulator—pregabalin; and a second generation antipsychotic (SGA)—quetiapine (Bandelow et al., 2008; Allgulander, 2010).

In addition, many authors, citing strong evidence, have recommended the benzodiazepines – alprazolam and diazepam – for treatment-resistant cases (Lanouette & Stein, 2010). These guidelines specify that in treatment-refractory GAD patients, augmentation of SSRI treatment with risperidone or olanzapine (SGAs) may be used (Bandelow et al., 2008; Allgulander, 2010).

Another report indicates that the psychosocial first-line treatments such as cognitive behavioral therapy (CBT), short-term psychodynamic psychotherapy, and relaxation therapies such as mindfulness and meditation-based cognitive therapy are efficacious even in treatment-resistant cases, both on their own and when combined with medication (Lanouette & Stein, 2010).

\* Corresponding author. Tel.: +52 55 5514906791.

E-mail addresses: florese@imp.edu.mx (E.O.F. Gutiérrez), victor.teran@gmail.com (V.A.T. Camarena).

<sup>1</sup> Present Address: Calzada México Xochimilco No. 101, Col. San Lorenzo Huipulco, Del. Tlalpan, México D.F. C.P. 14370, Mexico. Tel. +52 55 41605381.

However, though many treatments exist, both pharmacological and non-pharmacological evidence suggests that at least 50% of patients with GAD remain symptomatic despite first-line treatments (Hoge et al., 2004; Ravindran & Stein, 2009).

Therefore, it is important to propose and explore new ways to improve the treatment of this disorder, and accordingly, music therapy is proposed as one such possible non-pharmacological treatment.

Music therapy (MT), broadly speaking, can be defined as the use of music for therapeutic ends, which is the focus of this pilot study. There are reports that music can induce favorable effects in individuals with different pathologies (Juslin, 2003; Loomba, Arora, Shah, Chandrasekar, & Molnar, 2012). For example, previous publications have demonstrated the effectiveness of music in temporarily relieving symptoms common among patients with medical problems such as asthma and cancer (Sliwka, Nowobilski, Polczyk, Nizankowska-Mogilnicka, & Szczeklik, 2012; Pothoulaki, MacDonald, & Flowers, 2012). It has also been used as an anxiolytic-like stimulus in treating osteoarthritis (Ottaviani, Bernard, Bardin, & Richette, 2012), in reducing pre-operative anxiety (Ni, Tsai, Lee, Kao, & Chen, 2012) and in assisting ventilation patients (Davis & Jones, 2012). Beyond the aforementioned applications, music has also been reported as an aid in the treatment and rehabilitation of some psychiatric conditions, including schizophrenia, sleep disorders, and prevalent problems, such as depressive disorder (Mössler, Chen, Heldal, & Gold, 2011; Chang, Lai, Chen, Hsieh, & Lee, 2012; Erkkilä et al., 2011). In the same way, it has been used to reduce anxiety and agitation in patients with dementia (Sung, Lee, Li, & Watson, 2012).

It is necessary to note that there is a difference between playing music in a clinical place to achieve a specific effect and the use of MT in that MT is a form of psychotherapy with an epistemological context, and as such, it requires a therapist be trained in specific psycho-music techniques.

There are several types of MT, each associated with specific psychological tendencies. In this pilot study, humanist MT of Mexico, which is based on Gestalt psychology (Muñoz, 2008), was applied with some variations as this is the direction in which the researchers have been prepared.

The use of MT for the treatment the GAD could confer the following advantages:

1. The capacity to induce deeper states of abstraction and concentration.
2. An improved ability to evoke positive or convenient memories that make possible cognitive recuperation in a new way.
3. The creation of controlled situations that simulate problematic experiences from daily life and the ability to initiate a new perspective on how to approach them.

The present pilot study used a group MT design and was conducted in the applied psychophysiology area of clinical services at the National Institute of Psychiatry Ramón de la Fuente Muñiz (INPRFM) in Mexico City. Among the most common reasons for inter-consultations regarding AD are poor responses to pharmacotherapy, prolonged treatment times, pregnant women on drug suspension and exacerbations and/or relapses. This specific department of clinical services usually receives GAD patients seeking psychotherapy, and the usual treatment in such instances is CBT due to its short-term effectiveness and its optimization of human resources. In the INPRFM, CBT is frequently administered in the form of group therapy. It was this approach that led us to adapt methods of MT for the optimization of human resources and the short-term treatment therapies such as CBT.

The aim of this pilot study was to explore whether the application of MT can reduce anxiety levels in patients with GAD, as

measured using the Beck Anxiety Inventory, and whether this treatment can reduce depression levels in patients with GAD, as measured using the Beck Depression Inventory. We determine that it is important to evaluate depression symptoms at the beginning and the end of the intervention as GAD is often found in association with varying degrees of depression (Hoge et al., 2004; Maser & Cloninger, 1990). Accordingly, the Beck Depression Inventory was administered even though the inclusion criteria for this study stated that patients with GAD had to be free of comorbidities.

Two questions drove this study. 1. Does the application of MT group sessions significantly reduce anxiety levels in patients with GAD? 2. Does the application of MT group sessions significantly reduce depression levels in patients with GAD?

## Methods

The recruitment process began with a detailed evaluation of medical records of eligible patients (elaborated by psychiatrists of INPRFM) who were channeled to the applied psychophysiology area due to persistent symptoms despite pharmacological treatment for a minimum of one year. The following inclusion criteria were applied GAD patients without comorbidities as diagnosed by psychiatrists using the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) norms; subjects currently undergoing pharmacotherapy; subjects are part of the psychiatric outpatient control group; subjects are free of medical illness; subjects exhibit healthy auditory and locomotor systems. Initially, 10 patients who were between the ages of 25 and 45 years were invited to participate. Interviews were then held in which subjects reported, on a musical-therapeutic sheet, the musical history of their families including sound-musical influences in different stages of development and current musical habits. This procedure was designed to explore whether they presented alterations such as musicogenic epilepsy, amusia probable, trauma associated to some type of music, or other music-related problems. Furthermore, this information was considered in determining the music that was to be used during the sessions. Before agreeing to join the group, all patients received detailed information, from the researchers, about the features of MT and their rights during treatment. By accepting, patients gave informed consent. The study was approved by the ethics committee of clinical services in accordance with the Declaration of Helsinki. While all patients initially accepted the invitation, 3 subjects left the group after the second session. Thus, the final pilot group was comprised of 7 people, 3 men and 4 women, who remained until the end of the treatment period, which totaled 12 sessions.

The therapist who led the music therapy intervention was certified as an Individual Professional Member by the World Federation of Music Therapy (WFMT) and by the Mexican Institute of Humanist Music Therapy (Instituto Mexicano de Musicoterapia Humanista, IMMh).

## Music therapy

The treatment process was conducted in two modalities - receptive and active MT. The receptive application used prerecorded music or was executed by the music therapist, without the active involvement of the patient in the psychotherapeutic process of the musical creation. The active application engaged both the music therapist and the patient in the creation of music. For example, they may have used their voices, bodies and/or musical instruments during the session (Muñoz, 2008). Our MT treatment, as in CBT, included breathing exercises, tension-relaxation techniques, psycho-education, and exercises for handling irrational thoughts and patterns of erroneous behaviors (Dobson & Dozois, 2010). By

incorporating all of these aspects, we developed and administered MT-based exercises.

The MT treatment consisted of 12 two-hour structured sessions that were held once a week on Thursdays, over a period of three months.

The 12 therapy sessions were structured according to a methodological curve (Fig. 1) and based on the procedures of humanist music therapy (HMT) (Muñoz, 2008), as described herein. This curve, which was used to program each group session and all treatment sessions consists of seven steps. The step include (1) Identification of the theme (T)—In this step the problem is identified, the course to be followed is plotted, and the appropriate tool/s is/are confirmed, such as recorded music, active engagement of voice, body, musical instruments, materials, etc.; (2) Preparation (P)—This step involves preparing the patients emotionally and physically before engaging them in the therapeutic experience; (3) Exploration (E)—In this step, the patients explore, identify and report their experiences, with no modifications; (4) Contact (C)—This step involves facilitating the commencement of the connection with the memories and emotions patients are experiencing; (5) Intensification (I)—This step involves the intensity of the patient's contact with memories and the expression of emotions; (6) Resolution (R)—This step serves as the conclusion of the connection with the memories and is confirmed by the expressed emotions. This step begins the preparation for finalizing the therapeutic experience; and (7) Processing (Ps)—This step represents the end of the curve, and as such, it involves facilitating the connection and/or therapeutic association with the patient's life (using verbal or written techniques, drawings, sculptures, among others). It also allows the patient to process the end of the group therapy.

To exemplify the use of the methodological curve, we briefly explain its use in the overall design of the 12 sessions (Table 1) as well as the development of one of the sessions (Table 2).

Regarding the overall design, the first 2 sessions were devoted to the 1st step of the methodology, (T). Both sessions were designed to identify the main theme. For example, we presented to the group an introduction to each of the treatment themes and a description of AD, while receptive MT exercises focused on stimulating in each patient the identification of their specific problematic symptom.

Session 3 focused on the 2nd step of the methodology, (P). In this session, we prepared the patients emotionally and physically through the use of emotional expression exercises with active MT, thus providing patients a management tool for their symptoms.

Sessions 4, 5 and 6 were structured around the 3rd step of the methodology, (E). In this phase of the treatment, patients explored their own problems through the use of receptive and active MT exercises focused on the exploration of their life history. They then engaged cognitive processes as they explained their emotions and physiology.

Sessions 7, 8 and 9 were designed according to the 4th and 5th steps of the methodology, (C) and (I). In this phase of the treatment, the psychotherapeutic intensity increases as we facilitated patients as they began to connect with the memories associated with their problems and identify the relationships they have with their emotional and behavioral processes. We used exercises focused on their emotional exploration and expression, principally with the use of active MT during this respective processing.

Sessions 10 and 11 were prepared according to the 6th step of the methodology, (R). This stage began by preparing the patient for the conclusion of treatment by using active MT exercises related to the expression of emotions, such as joy and affection, and addressing issues, such as self-esteem and assertiveness (Dobson & Dozois, 2010), as these tools to address anxiety were important for achieving this goal.

**Table 1**  
Music therapy sessions: treatment of GAD.

Session	Methodological step	Theme and activities
1	Identification of Theme	Introduction, presentation, interaction and rapport. Presentation of basic resources to address the disorder. Breathing exercises. Exploration of possible problems/issues using music.
2	Identification of Theme	Types, physiology and description of anxieties. Creativity exercises using music. Theoretical work with respect to emotions <sup>a</sup> ; Empathy exercise.
3	Preparation	Stress. Managing emotions using music.
4	Exploration	Emotions and their physiology (fear and anxiety). "Story with music" exercise. Tension-relaxation exercise.
5	Exploration	Irrational thoughts (IT). Behaviors and beliefs. Work on IT using music (history, acting and experience).
6	Exploration	Communication and assertiveness exercise using music.
7	Contact and Intensification	Theoretical work on personality <sup>b</sup> . Drawing of life with music. Emotional management of sadness with exercise on sadness using music.
8	Contact and Intensification	Physiology of fear and exercise on fear by using music.
9	Contact and Intensification	Physiology of anger and exercise on anger by using music.
10	Resolution	Explanation of medications. Exercise on joy.
11	Resolution	Self-esteem. Exercise on love with music.
12	Processing	Conclusions and resources. Video remembrance with music. Experiential work. Closing ceremony and festival.

<sup>a</sup> The theory of basic sentiments (MATEA): fear, joy, sadness, anger and affect, created by Myriam M. Polit.

<sup>b</sup> Pathwork: method of psychological work and personal development, created by Eva Pierrakos.

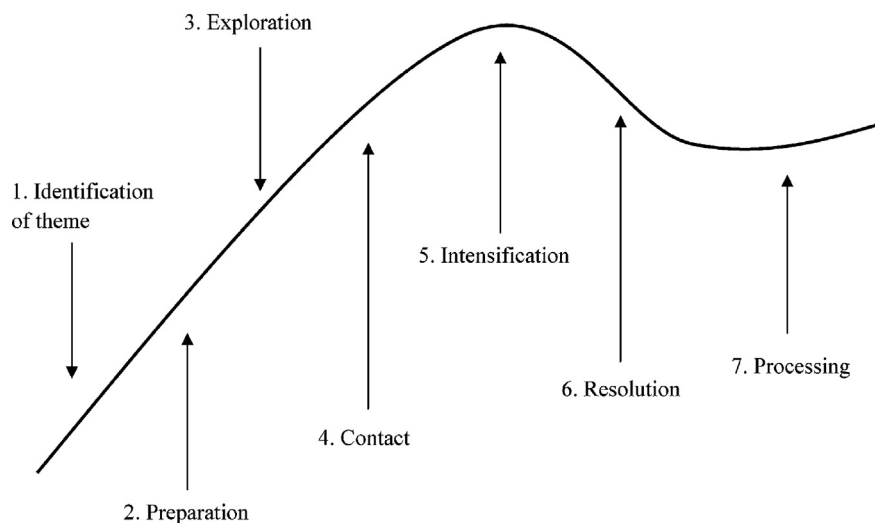
Finally, session 12 was designed according to the 7th step of the methodology, (Ps). In this session, verbal and creative processing of the general therapeutic experience was facilitated by presenting conclusions and summarizing the resources gained during the course of the treatment.

The use of the methodological curve in one session is presented in Table 2.

#### Evaluation instruments

The Beck Anxiety Inventory (BAI) was used to measure the anxiety levels that patients manifested at two moments—the pre- and post-treatment phases of the 12 sessions. Similarly, the Beck Depression Inventory (BDI) was applied to estimate levels of depression. The BAI and BDI are self-administered scales that are among the most frequently used in the last decade to assess anxiety and depression symptomatology.

We administered standard versions of the BAI to the Mexican population ( $\alpha = .83$ ). The original version contained 21 questions, each scored using a 4-point scale (Robles, Varela, Jurado, & Páez, 2001). The scores for symptom severity range from 0 to 63, with 63 representing maximum severity (Beltrán, Freyre, & Hernández-Guzmán, 2012). According to Robles et al. (2001), scale scores with



**Fig. 1.** Methodological curve of HMT. This figure presents the 7-step sequence of the humanist music therapy process. This sequence is adhered to by the humanist musical therapist in both the individual and group studies to lead the patient through a process that is adjusted to his/her personal experiences and to discover the key moments that will allow the individual to express these experiences.

**Table 2**  
The following table shows the structure of session 4. It includes topic, activity, description, aim, material, duration and step of the methodology for each exercise.

Topic	Activity	Description	Aim	Material	Time	Methodological Step
Emotions and Physiology—fear and anxiety	Slideshow	Physiological explanation of fear and anxiety.	Patients know the physiological mechanism of fear and anxiety.	Computer and Image Projector.	30 min	1. Identification of Theme
Story with music	Exercise involves listening and creating a story with music	Create individual story based on a musical piece. Track will extend into 3 fragments to facilitate the writing of patients. Processing: After completing exercise, each patient will share story and will explore relationship between story and personal life.	-This exercise is an exploratory activity. -Facilitates the use of music as a connection to ideas and perceptions. -As a projective exercise, addresses the ideas, fantasies, inspirations and imagination of patients. -Has clear perception of reality. -Finds relationships with patient's life story.	CD's, audio, pens and papers. Track: 1. Third movement: Allegro con fuoco of Piano Concerto No. 1 in B-flat minor, Op. 23 (P. I. Tchaikovsky).	60 min	2. Preparation 3. Exploration 4. Contact 5. Intensification
Tension and relaxation	Tension-relaxation exercise	Perform the exercise with music.	Practice this exercise as a tool for managing anxiety.	CD's & audio.	10 min	6. Resolution
Processing	Verbal processing exercise	Conduct verbal processing session.	-Facilitate verbal processing of the therapeutic experience. -Establish and verbalize conclusions. -Summarize experiences and results of session.		20 min	7. Processing

respect to the severity of anxiety are as follows: 0 to 21 denotes low anxiety; 22 to 35 denotes moderate anxiety; 35 and above denotes severe anxiety.

The BDI is one of the scales most often employed worldwide to measure the severity of depression symptoms (Jurado et al., 1998). The BDI, as standardized by Jurado et al. (1998) for the Mexican population ( $\alpha = .87$ ), is a self-reporting form with 21 items and four response options. The scale scores, following Jurado et al. (1998), establish the following ranges of depression severity: 0 to 9 denotes minimal depression; 10 to 16 denotes mild depression; 17 to 29 denotes moderate depression; and 30 and above denotes severe depression; and 63 represents maximum severity.

**Results**

The results obtained on the BAI, which was applied before and after treatment with MT, indicate that while the mean on the pre-test was 24.8, the score on the post-test had decreased significantly,

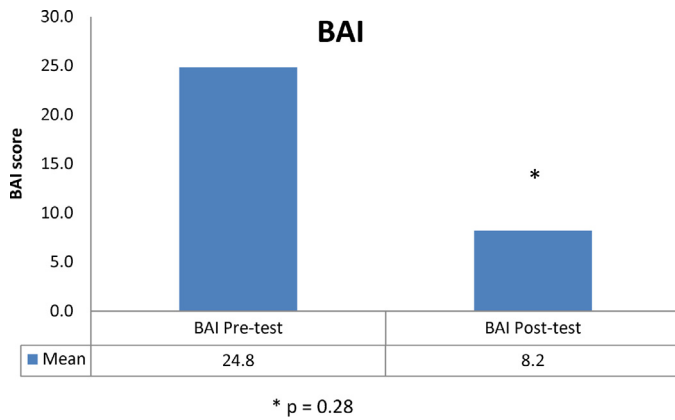
to just 8.2 (Fig. 2). Similarly, the results on the BDI, which was administered before and after treatment with MT, show that the mean on the pre-test was 14.5 and that the score on the post-test had decreased significantly, to just 6.2 (Fig. 3).

*Statistical analysis*

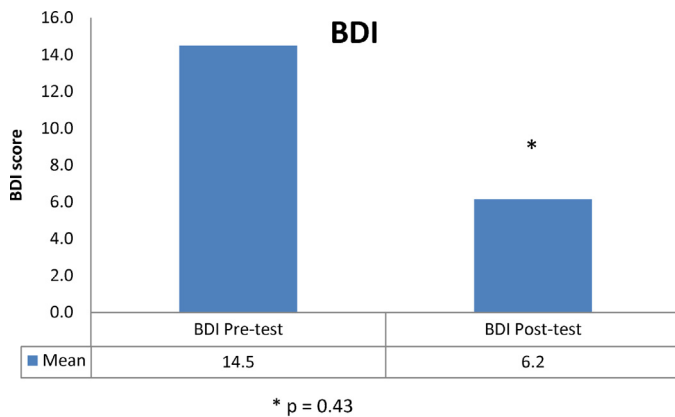
The study required an analysis of the results of the BAI and BDI scores. After mean scores were calculated using the data for each inventory, they were subjected to a Wilcoxon statistical test for related groups.

Statistics show that the difference between the pre-test and post-test results on the BAI is significant ( $Z = -2.201, p < .028$ ) (Fig. 2). The difference between the pre-test and post-test results on the BDI is also significant ( $Z = -2.023, p < .043$ ) (Fig. 3). Elaboration of the non-parametric statistics was conducted using the Wilcoxon test for repeat measures with the IBM SPSS Statistics program, version 21.





**Fig. 2.** Comparison of total averages on pre- and post-tests for anxiety. This figure indicates the total pre-test and post-test anxiety averages. The ordinate axes show the scale scores on the BAI. Adhering to Robles et al. (2001), the severity ranges with respect to anxiety are 0 to 21 denotes low anxiety; 22 to 35 denotes moderate anxiety; 35 and above denotes severe anxiety. The asterisk (\*) indicates that the difference between the pre-test and post-test results, using the Wilcoxon statistic on the BAI, is significant ( $Z = -2.201$ ,  $p < .028$ ).



**Fig. 3.** Comparison of total averages on pre- and post-tests scores for depression. This figure shows the total pre-test and post-test depression averages. The ordinates axis shows the scale scores on the BDI. With respect to Jurado et al. (1998), the severity ranges for depression are 0 to 9, which denotes minimal depression; 10 to 16, which denotes mild depression; 17 to 29, which denotes moderate depression; and 30 and above, which denotes severe depression. The asterisk (\*) indicates that the difference between the pre-test and the post-test results using the Wilcoxon statistic on the BDI is significant ( $Z = -2.023$ ,  $p < .043$ ).

## Discussion

The application of MT was effective in significantly reducing the scores on the BAI and the BDI in patients diagnosed with GAD who were receiving pharmacological treatment. However, although these results are promising, the results could possibly be more robust if future studies address the different threats to external validity, for example, with the inclusion of a control group.

Earlier studies of intervention using music had reported that active MT could reduce anxiety symptomatology. For example, Sung et al. (2012) used percussion instruments with familiar music and Park et al. (2012) used oriental medicinal music therapy to reduce anxiety symptomatology. In our study, we use active MT in patients with GAD as well as passive MT. However, a possible explanation of the positive effect of several active MT sessions is that when we use the intense movement of the body in creative form, we are promoting the release of physical and psychological tension. Furthermore, chronic stress is relieved as the sympathetic autonomic nervous system is regulated in the adrenal medulla, which reduces the circulation of adrenaline and noradrenaline, thus

benefitting the cardiovascular system, among others. Additionally, the hormonal regulation of the hypothalamic–pituitary–adrenal cortex axis decreases the circulating stress hormones such as cortisol, which benefits, among others, the immune system. The aforementioned are among the changes and beneficial effects in a complex physiological and immunological cascade, which, for most patients, can reduce somatic symptoms of anxiety such as tachycardia and high blood pressure, hypersensitivity to pain, gastrointestinal disorders, sleep disturbances, among others. As well, brain and mental functions, such as memory, attention, and the functioning of the affective system, are also, in most of cases, enhanced.

Understanding that music enhances the exploration of memories associated with problems related to life history, we used passive MT passive exercises to encourage and promote the expression of memories and emotions as processing these memories and emotions in the resolution step can facilitate cognitive changes and modify the irrational thoughts and beliefs. Such cognitive benefits may promote the individual's ability to manage conflict, which is perhaps what Dobson referred to as cognitive restructuring in CBT (Dobson & Dozois, 2010).

As mentioned in some relevant studies regarding the treatment of mental disorders such as GAD, it is important to facilitate a process that promotes empathy, self-esteem, and positive thoughts and feelings (Eslinger, 1998; Maddux, 2014; Hansson, Stjernswärd, & Svensson, 2014). The methodological curve and work program proposed in this research emphasizes the importance of the space that patients require to use verbalization as a means of exteriorization and processing. That is, the patients need to put what they have learned into perspective by reconsidering their personal histories and conflicts. This entails a conscious effort to identify what led them to seek treatment in the first place, what they have learned about themselves and their personality, and how their experiences have developed over the course of therapy (Ursano, Sonnenberg, & Lazar, 2004), all of which occurs as part of the dynamics associated with growth and respect. As a result of the MT program, during their final verbal processing, patients recognized that the psychotherapeutic process helped them to develop empathy, security, self-esteem and alternative tools to use in situations of anxiety or stress, thus allowing them to assertively manage conflict. This, in turn, may well lead to reduced levels of anxiety.

As GAD is so often found in association with varying degrees of depression (Hoge et al., 2004; Maser & Cloninger, 1990), we determined it was important to assess the patients' levels of depression. Regarding the results of the BDI, the pre-test scale showed that most participants exhibited mild indexes of depression. However, the post-test measures determined there were significant reductions in depression indexes ( $Z = -2.023$ ,  $p < .043$ ). In fact, in some cases, subjects' scores on the post-test indicated that they were "free" of depression. One individual who was assessed on the pre-test as severely depressed showed a marked reduction in depression on the post-BDI assessment, with a score indicating a depression index of "mild". In light of these data, we suggest that MT as a means to manage depression be further investigated.

It is important to emphasize that although this is a pilot study, this study has certain limitations, which may become threats to external validity, for example: A greater number of participants is desirable, so it is recommended that future studies select a representative sample of patients with GAD. Furthermore, there was no control group to provide comparative evidence from other experimental conditions for this music-therapeutic process, such as treating GAD's patients with drugs only or treating a group exclusively with CBT. If so, we also suggest randomization, a factor that would eliminate a threat to external validity. In the same way, considering testing the heterogeneity between different treatment groups would reduce the differences in demographic and clinical

variables. The use of only two instruments to measure anxiety levels (Beck Inventories) also limits the evidence that could strengthen the results. For example, the use of distinct measuring instruments would extend the evidence of the effects of treatment response. Moreover, the possible use of blind procedures can prevent and control the variable introduced by the researcher. Finally, it would have been beneficial to conduct a follow up of the effects of this treatment. Therefore, we consider important to take into account this limitations and recommendations in order to future replications can define and generalize more clearly the scope of MT in GAD.

## Conclusions

It appears that MT was an effective psychotherapeutic treatment in the psychiatric care of patients with GAD. The results of this pilot study demonstrate that MT was effective in reducing anxiety and depression levels in GAD patients, though it is necessary to conduct additional evaluations that consider the limitations of this study before considering this as a therapeutic option. However, the significant results of the application of MT in these cases of GAD encourage and allow us to affirm that MT could function as an effective adjuvant in treating GAD.

## References

- Allgulander, C. (2010). Novel approaches to treatment of generalized anxiety disorder. *Current Opinion in Psychiatry*, 23(1), 37–42. <http://dx.doi.org/10.1097/YCO.0b013e328333d574>
- Bandelow, B., Zohar, J., Hollander, E., Kasper, S., Möller, H. J., & WFSBP Task Force on Treatment Guidelines for Anxiety, Obsessive-Compulsive and Post-Traumatic Stress Disorders. (2008). World Federation of Societies of Biological Psychiatry (WFSBP) guidelines for the pharmacological treatment of anxiety, obsessive-compulsive and post-traumatic stress disorders—first revision. *The World Journal of Biological Psychiatry*, 9(4), 248–312. <http://dx.doi.org/10.1080/15622970802465807>
- Beltrán, M. C., Freyre, M. A., & Hernández-Guzmán, L. (2012). El Inventario de Depresión de Beck: Su validez en población adolescente. *Terapia Psicológica*, 30(1), 5–13. <http://dx.doi.org/10.4067/S0718-48082012000100001>
- Chang, E. T., Lai, H. L., Chen, P. W., Hsieh, Y. M., & Lee, L. H. (2012). The effects of music on the sleep quality of adults with chronic insomnia using evidence from polysomnographic and self-reported analysis: A randomized control trial. *International Journal of Nursing Studies*, 49(8), 921–930. <http://dx.doi.org/10.1016/j.ijnurstu.2012.02.019>
- Davis, T., & Jones, P. (2012). Music therapy: Decreasing anxiety in the ventilated patient a review of the literature. *Dimensions of Critical Care Nursing*, 31(3), 159–166. <http://dx.doi.org/10.1097/DCC.0b013e31824dffc6>
- Dobson, K. S., & Dozois, D. J. A. (2010). Historical and philosophical bases of the cognitive-behavioral therapies. In K. S. Dobson (Ed.), *Handbook of cognitive-behavioral therapies* (pp. 3–15). New York, NY: The Guilford Press.
- Erkkilä, J., Punkanen, M., Fachner, J., Ala-Ruona, E., Pöntiö, I., Tervaniemi, M., et al. (2011). Individual music therapy for depression: Randomised controlled trial. *The British Journal of Psychiatry*, 199(2), 132–139. <http://dx.doi.org/10.1192/bjp.bp.110.085431>
- Eslinger, P. J. (1998). Neurological and neuropsychological bases of empathy. *European Neurology*, 39(4), 193–199.
- Goldberg, D. P., & Lecrubier, Y. (1995). Form and frequency of mental disorders across centres. In T. B. Üstün, & N. Sartorius (Eds.), *Mental illness in general health care: An international study* (pp. 323–334). Chichester: John Wiley & Sons on behalf of WHO.
- Hansson, L., Stjernswärd, S., & Svensson, B. (2014). Perceived and anticipated discrimination in people with mental illness—An interview study. *Nordic Journal of Psychiatry*, 68(2), 100–106. <http://dx.doi.org/10.3109/08039488.2013.775339>
- Hoge, E. A., Oppenheimer, J. E., & Simon, N. M. (2004). Generalized anxiety disorder. *The Journal of Lifelong Learning in Psychiatry*, 2(3), 346–359.
- Jurado, S., Villegas, M. E., Méndez, L., Rodríguez, F., Loperena, V., & Varela, R. (1998). La estandarización del Inventario de Depresión de Beck para los residentes de la ciudad de México. *Salud Mental*, 21(3), 26–31.
- Juslin, P. N. (2003). Five Facets of musical expression: A psychologist's perspective on music performance. *Psychology of Music*, 31(3), 273–302. <http://dx.doi.org/10.1177/03057356030313003>
- Lanouette, N. M., & Stein, M. B. (2010). Advances in the management of treatment-resistant anxiety disorders. *FOCUS*, 8(4), 501–524.
- Loomba, R. S., Arora, R., Shah, P. H., Chandrasekar, S., & Molnar, J. (2012). Effects of music on systolic blood pressure, diastolic blood pressure, and heart rate: A meta-analysis. *Indian Heart Journal*, 64(3), 309–313. [http://dx.doi.org/10.1016/S0019-4832\(12\)60094-7](http://dx.doi.org/10.1016/S0019-4832(12)60094-7)
- Maddux, J. E. (2014). Mental health and self-esteem. In W. C. Cockerham, R. Dingwall, & S. Quah (Eds.), *The Wiley Blackwell encyclopedia of health, illness, behavior, and society* (pp. 1525–1528). New York, NY: Wiley-Blackwell.
- Maser, J. D., & Cloninger, C. R. (Eds.). (1990). Comorbidity of mood and a psychodynamic psychotherapy. In *Principles and techniques of brief, intermittent, and long-term psychodynamic psychotherapy anxiety disorders*. Washington, DC: American Psychiatric Press.
- Medina-Mora, M. E., Borges, G., Lara Muñoz, C., Benjet, C., Blanco, J. J., Fleiz Bautista, C., et al. (2003). Prevalencia de trastornos mentales y uso de servicios: Resultados de la Encuesta Nacional de Epidemiología Psiquiátrica en México. *Salud Mental*, 26(4), 1–16.
- Mössler, K., Chen, X., Heldal, T. O., & Gold, C. (2011). Music therapy for people with schizophrenia and schizophrenia-like disorders. *Cochrane Database of Systematic Reviews*, (12) <http://dx.doi.org/10.1002/14651858.CD004025.pub3> (Art. No.: CD004025)
- Muñoz, P. V. (2008). *Musicoterapia Humanista: Un Modelo de Psicoterapia Musical*. Ciudad de México: Ediciones Libra.
- Ni, C. H., Tsai, W. H., Lee, L. M., Kao, C. C., & Chen, Y. C. (2012). Minimising preoperative anxiety with music for day surgery patients—A randomised clinical trial. *Journal of Clinical Nursing*, 21(5–6), 620–625. <http://dx.doi.org/10.1111/j.1365-2702.2010.03466.x>
- Ottaviani, S., Bernard, J. L., Bardin, T., & Richette, P. (2012). Effect of music on anxiety and pain during joint lavage for knee osteoarthritis. *Clinical Rheumatology*, 31(3), 531–534. <http://dx.doi.org/10.1007/s10067-011-1925-9>
- Park, J. S., Park, S., Cheon, C. H., Jang, B. H., Lee, S. H., Chung, S. Y., et al. (2012). Effect of oriental medicine music therapy on patients with Hwa-byung: A study protocol for a randomized controlled trial. *Trials*, 13, 161. <http://dx.doi.org/10.1186/1745-6215-13-161>
- Pothoulaki, M., MacDonald, R., & Flowers, P. (2012). An interpretative phenomenological analysis of an improvisational music therapy program for cancer patients. *Journal of Music Therapy*, 49(1), 45–67.
- Ravindran, L. N., & Stein, M. B. (2009). Anxiety disorders: Somatic treatment. In B. J. Sadock, V. A. Sadock, & P. Ruiz (Eds.), *Kaplan and Sadock's comprehensive textbook of psychiatry* (pp. 1906–1914). Philadelphia, PA: Lippincott Williams & Wilkins.
- Robles, R., Varela, R., Jurado, S., & Páez, F. (2001). Versión Mexicana del Inventario de Ansiedad de Beck: Propiedades Psicométricas. *Revista Mexicana de Psicología*, 18(2), 211–218.
- Sliwka, A., Nowobilski, R., Polczyk, R., Nizankowska-Mogilnicka, E., & Szczeklik, A. (2012). Mild asthmatics benefit from music therapy. *The Journal of Asthma*, 49(4), 401–408. <http://dx.doi.org/10.3109/02770903.2012.663031>
- Sung, H. C., Lee, W. L., Li, T. L., & Watson, R. (2012). A group music intervention using percussion instruments with familiar music to reduce anxiety and agitation of institutionalized older adults with dementia. *International Journal of Geriatric Psychiatry*, 27(6), 621–627. <http://dx.doi.org/10.1002/gps.2761>
- Ursano, R. J., Sonnenberg, S. M., & Lazar, S. G. (2004). Psychodynamic psychotherapy. In *Principles and techniques of brief, intermittent and long-term psychodynamic psychotherapy* (3rd ed.). United States of America: American Psychiatric Publishing, Inc.
- WHO International Consortium in Psychiatric Epidemiology. (2000). Cross-national comparisons of the prevalences and correlates of mental disorders/WHO International Consortium in Psychiatric Epidemiology. *Bulletin of the World Health Organization: The International Journal of Public Health*, 78(4), 413–426.