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Music Therapy in Eighteenth-Century Spain: Perspectives and Critiques

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Introduction

From the perspective of the history of ideas, the first three decades of the eighteenth century in Spain marked the transition from traditional practices to the development of new perspectives and interpretative models. In the field of the theory of music, this period was noteworthy because of the proliferation of composers and theorists, particularly music treatise writers and physicians, who believed that music played a key therapeutic role in sickness and health, in accordance with ideas that linked the practice of music to aesthetic and technical theory. Studies on music, which until then had been theoretically associated with physics and mathematics, and, on a practical level, to religious worship, the upper classes or the expression of popular sentiments, began to focus on the pleasure and enjoyment music delivers. Moreover, issues discussed within the theory of music gradually shifted from a focus on the physical and mathematical sciences towards the liberal arts.

We might argue that historical research into the influence of music on humans was carried out in parallel in the area of musicology on the one hand and in the history of science and medicine on the other.¹ In this chapter, I will circumvent this duality by presenting some of the most representative musicology treatises from the first third of the eighteenth century in Spain, in the context of medical and other scientific studies. This chapter takes three approaches: first, to show how the treatises on music presented new scientific doctrines, particularly in physics; second, to examine pertinent medical questions, which will allow us to contrast the medical theories articulated in the music treatises with medical knowledge of the period. To do this, I will review the survival of Galenic doctrine and the introduction

of the fibrillar and fluid models, which associate the neurological system with music. Indeed, as Jessica Riskin points out, empirical knowledge in the eighteenth century did not involve a simple and impassive adherence to facts, but was an activity associated with sensitivity.² Third, to observe the continuity or change in the critiques of music therapy throughout the eighteenth century and the relationship between music and medicine.

Given the number and excellence of composers and music treatise writers at that time, and the impossibility of examining all of them, I will focus on the work of only three authors, all of whom played a key role in the development of modern science in Spain: Tomás Vicente Tosca i Mascó (1651–1723), who wrote the *Tratado de la música especulativa y práctica* (1710); Pedro de Ulloa (1663–1721), author of *Música universal* (1717); and Benito Jerónimo Feijoo y Montenegro (1676–1764), whose comments on music in his *Teatro crítico* (1726) gave rise to one of the most important controversies on the influence of music on health, which continued until the nineteenth century. All three were *novatores*, the word used to designate thinkers and scientists from the end of the seventeenth and beginning of the eighteenth centuries. The term *novator* was used to describe the supporters of new scientific ideas, particularly in the fields of physics, mathematics and medicine. The *novator* movement extended to other European countries and was decisive in leading Spain towards more enlightened attitudes in the mid-century.³ In the eighteenth century, a substantial amount of Spanish production in print was classified as 'controversial'. In medicine, the debates were based on the challenge to the Galenic medical system. Greater importance was given to experience than to speculation or the exegeses of the texts of classical authors, although in practice both arguments were liberally used.

Tomás Vicente Tosca (1651–1723), the son of the physician and professor of the Faculty of Medicine in Valencia, Dr Calixto Tosca de los Ares, was one of the most famous exponents of the *novator* movement in Valencia.⁴ He was awarded degrees of master in arts and doctor in theology at the University of Valencia, and in 1678, was accepted into the Congregation of the Oratory.⁵ There, he produced treatises on mathematics, architecture, theology and the theory of music. Outstanding among his works are the *Compendio matemático* (1707–1715) and the *Compendium philosophicum* (1721), both widely read in Italy, Germany and other European countries. His *Tratado de la música especulativa y práctica* (1710) was later included in the *Compendio matemático*. As we shall see, Tosca believed in the therapeutic effects of music when used as a supplement to drug prescriptions.

The distinguished mathematician and master cosmographer of the *Supremo Consejo de las Indias*, the Jesuit priest Pedro de Ulloa (1663–1721)⁶ was also an important music theoretician. In 1717, he published the treatise *Música universal* or *Principios universales de la música* (Imprenta de Música de Bernardo Peralta, Madrid). Ulloa applied mathematical methods to the study

of questions on the technique and practice of music, not solely to the evaluation of scales and intervals. However, his marked radicalism is compatible with openness to sensitivity.

The writings of the Benedictine Benito J. Feijoo (1676–1764) also influenced Spanish political and intellectual life in the first half of the eighteenth century.⁷ His work shifts between a cautious rejection of tradition and the Spanish Baroque, and a prudent acknowledgement of the values of modern European culture. Feijoo dealt with medical matters and contributed in his writing to the disputes of the physicians of the period. For example, in Oviedo in 1725, he published for a general readership the *Aprobación apologética del escepticismo médico del Doctor Martínez* in which he claimed that science did not need the works of Aristotle, but should be based on attentive observation and repeated practice.

A year later, Feijoo explained his ideas on music in the first volume of his *Teatro crítico* (1726–1740, 9 vols.) and, in 1742, *Cartas eruditas y curiosas* (1742–1760, 5 vols.) (Discurso XIV: *Sobre la música en los templos*;⁸ *Carta: 'En respuesta a una objeción musical'*).⁹ One of his fundamental points was his recognition of the expressive capacity and moral influence of music. His sensitivity allowed him to recognise the expressive capacity and the influence, also moral, of music. Though not highly original, Feijoo's work was valuable because of its 'capacity to shake sleepy Spain with just the right amount of energy permitted by the intellectual climate of the reign of Philip V, and, very tactfully and realistically, invite it to live in European time, without renouncing its past, but by distancing itself without a sense of inferiority'.¹⁰ Feijoo lived most of his life during the zenith of Baroque culture but, as he died in 1764, he did see the stylistic evolution that led to the formulation of Classicism.

Tosca, Ulloa and Feijoo are leading figures in early eighteenth-century culture. They strove to destroy invalid social myths and defeat scientific inertia, opening the way to innovative tendencies. They wrote at a time of a troubled intertwining of theories, a time when definitions and theoretical proposals were being revised, when medicine and philosophy still converged.¹¹ In addition to these writers, we have to consider that, as I point out elsewhere, in Spain in the eighteenth century there were numerous physicians and scientists who were writing on melotherapy and tarantism.¹² These works reveal the application of music to ailments supposedly of nervous origin, such as choreas and those caused by a tarantula bite. These studies were produced in the second half of the eighteenth century, so it is interesting to explore continuities and discontinuities with reference to these sources.

A physical definition of music

The writings of Tomás Vicente Tosca and Pedro de Ulloa highlight the shift in emphasis from mathematical acoustics to physics. Tosca defines music

as a 'physical-mathematical science that deals with harmonic sounds'.¹³ For Ulloa, music is the 'faculty that, comparing the geometric reason of a sound with that of another heard successively and the harmonic reason of sounds heard simultaneously, prescribes certain determined precepts to arrange and practice them'.¹⁴ However, Tosca and Ulloa are open to contemporary directives, as seen in the fact that their acoustics are not mathematical, but physical. The former explains hearing as the vibration of the eardrum caused by the surrounding air: 'Air moved with a tremulous motion impels and moves the eardrum with such a movement'.¹⁵ He differentiates in the sound an active part, which corresponds to what the sound produces, and a passive part, identified with its reception:

Sound, considered actively, is the sound when it is born from the sonorous body which becomes passive when it is received in the hearing organ [...] what I am saying, then, is that, considered actively, it is the tremulous movement of the air; and passively it is the tremulous movement of the eardrum.¹⁶

All of this suggests that Tosca contributed to the theory of music and its effects with a conception of the objective and subjective aspects of hearing.

Tosca was aware of the vibratory basics of intensity and tone, an issue related to medical theory. Regarding this quality, he notes that 'the sharp or high sound comes from the fact that the vibrations of the air are more frequent [...] and, on the contrary, the low sound means that the vibrations are less frequent, and that there is more time between one and another'.¹⁷ Consequently, Tosca points out that tone cannot be confused with the speed of transmission ('the low sound arrives at the ear at the same speed as the sharp, as experience shows'), nor with intensity.¹⁸ Both Tosca and Ulloa link the phenomenon of resonance with vibratory movement.¹⁹ Ulloa refers to it as the influence of music on the human body: 'it is undeniable that by tuning two strings of a guitar to the same sound, even though not immediate, playing one is echoed by the other [...] the shiver felt in all parts of our body on hearing one sound or another may be reduced to this type of movement'.²⁰

From a medical perspective, it is interesting to observe that Tosca applies undulatory movement to sound, deploying the analogy of the movement of ripples produced in the water when a stone is thrown into a pond. He signals that the perception of the distance of the source of a sound is related to the circular trajectory of the activating movement, which weakens the intensity of the wave with an increase in the radius:

The first is perceived because the sound formed at a distance is slower when it reaches the ear: we perceive the distance from the sounding body through its speed; the second because the vibrations are formed in the

air in a circle at the centre of which is the sounding body which forms them, and there is no doubt that the further these vibrations go from the centre the greater they are, and consequently a smaller portion of the circle affects the sense that is furthest and a greater portion to that which is closer.²¹

In general, we can conclude that the explanation of the phenomenon of sound based on the concept of vibration and undulatory movement, together with the phenomenon of resonance will facilitate the mechanical explanation of the perception of music and the assimilation of the action of music on fluids, following the fibrillar model.

Theory of the action of music on the human body

When they explain the effects of music on human beings, these authors, despite their rationalism, support the empirical as the basis for truth, although they do differ in their justification of the expressive capacity and general influence of music. For example, Tosca sees no need to appeal to classical legends, 'as when examined they seem unbelievable',²² in order to acknowledge the diverse expressive capacity of each modal scale. He finds auditory experience to be enough: 'Some tones cause sadness, others happiness; some move us to devotion, others to anger and others like passions.'²³ He thus proposes an acoustic and physiological basis to explain tonal influence and diverse sensorial impressions brought about by melodies. In agreement with the acoustic theory we have seen, Tosca states that 'there is no doubt that the movement of the most subtle fibres of which the brain is composed cause different movements in the animal spirits, and among these, different passions and ailments of the soul'.²⁴

Moreover, he believed that sound vibrations could excite the nerves or cerebral fibres, in relation to the music's tone:

When a tone is played or sung, the fibres of the brain move with the tiniest quiver, which is transmitted by the organ of hearing. Those that move most sensitively are those which, due to their tension and arrangement are most fitted to the tone heard, and some tones especially move some and others. Those that move the fibres, upon which the spirits depend, cause happiness and make for happiness; those which excite the movement of the fibres which move sad and melancholy spirits, cause sadness.²⁵

This explanation coincides with the approaches of physicians such as Martín Martínez (1684–1734), one of the most important anatomists of the early eighteenth century, Martínez innovative medical ideas were defended

by Feijoo. This physician, in his book *Anatomia Completa del Hombre* (1728), explains that the vibration of the fibres in the membranous tunics altered their 'tension' and, consequently, was 'sufficient to lead the impulses of sensitive objects'.²⁶ As Martínez Vidal points out,²⁷ the network of peripheral nerves was like a spider's web which, on the slightest contact, transmitted any impulse it felt by means of the vibration of its fibres, from one extreme to the other, and neither the distance nor the 'obliquities, deviations and colligations' that the nerves have in their itineraries were obstacles to this action.²⁸ The vibratory model was described by iatromechanic authors such as Borelli or Baglivi, who believed in a fibrillar model: the nerves, sensitive fibres, which were easily irritated, communicate to the brain those jolts caused by any turbulence.

The Italian physicians Giovanni Alfonso Borelli (1608–1679) and Giorgio Baglivi (1668–1707) also influenced Spanish theories and practice. Baglivi, a leading iatrophysicist, markedly influenced the Spanish physicians who wrote about music therapy in the eighteenth century.²⁹ He attributed an important physiological role to solids: he was the first to attribute equal or greater relevance to solids than to fluids in all organic functions. Life consisted, in his opinion, of movements between the solid and liquid parts of the body, which should be 'continuous, regular and balanced'.³⁰ He ascribed to solids the properties of contraction and elasticity that are related to irritability. He also acknowledged, but to a lesser degree, the elasticity of liquids.³¹ This concept is of radical importance in understanding the effects that music produces. The structures of the organism would be affected, mechanically, by the impulse of musical vibrations which then modify the elasticity of its fibres.

Baglivi differentiates between two types of fibres: the fleshy fibres which make up muscle tissue and the membrane fibres which form the membranous parts. Like other Baroque treatise writers and as a result of the dynamism typical of the period, Baglivi focused mainly on the study of muscle function, the nervous system and the circulatory system. Importantly for our purposes, he carried out a broad study of the nervous system's dura mater, whose role was to expel the 'nervous fluid' produced by the 'cortical glands in the brain' so that it would spread all over the body through the marrow fibres. This fluid was very delicate and elastic.³² The undulatory theory of music proposed by Tosca connects with the idea of the neural circulation, the so-called *suco nérveo* or fluid which runs through the nerves, one of the theories developed in the early seventeenth century to understand nervous transmission through the human body. The Spanish author who best defined this doctrine was the above-mentioned Martín Martínez.³³

The vibration of music, by varying the elasticity of the fibres, causes 'irritation' that is transmitted from fibre to fibre in a wave-like way. This

explanation of the actions of music lasted throughout the eighteenth century.³⁴ Thus, the Sevillian physician Bonifacio Juan Ximénez de Lorite (-1794),³⁵ states in 1776 that 'the sound of music [is] a vibration, which the plucked strings excite in the intermediate air, and gives the organ of hearing such an impulse that, spreading throughout the system of nerves, can agitate them at the same speed of the sonata'.³⁶ At the end of the century, Francisco Xavier Cid (c. second half of the eighteenth century, and one of the most important physicians in the study of tarantism) and Pedro F. Doménech y Amaya (1755-1833) justified the transmission of the nervous impulse produced by sound to the entire body.³⁷ Indeed, Dr Doménech, in a message sent to the Real Academia de Madrid, claims that 'the tremulous and vibratory movement communicated by our chest to the vocal instrument, which, by immediately touching the eardrum, extends its movement to the brain by means of the auditory nerve, so that the perception of sound can excite that part where the common sensory system is situated'.³⁸ This explanation differs very little from that formulated by Tosca at the beginning of the century.

The influence of sensibility and of music aesthetics

Music treatises from the beginning of the eighteenth century offer variations on the classical theories which attributed to musical modes the power to induce sentiments or states of mind. But, in general, they err when giving a physiological explanation of these effects. Referring to the aesthetic pleasure drawn from music, Tosca says:

In music, natural philosophy and mathematics are joined and together give a pleasing example to the understanding and delicious recreation to the senses: by reducing different conflicting voices to harmony it makes a chain which sweetly imprisons the senses and, with the tasteful mixture of its harmonies, makes the bland savoury, and the bitter sweet.³⁹

Tosca drew a precise correlation between the different modes and the sentiments that would be produced by the melodies corresponding to each tone.⁴⁰

The first tone is appropriate to express happy, pious and modest affairs. The second is fitting for lyrical verse. The third moves harshly and is proper to complaints and difficult things. The fourth is sad, suitable for tears. The fifth is lively and appropriate for festive matters. The sixth is also lively and sweet and useful for expressing states of gladness and devotion. The seventh is irate and moves to like passions. The eighth is solemn, for grave and serious matters. The ninth is for gentleness. The

tenth is for onerous things. The eleventh for dancing and the like. The twelfth moves to anger and indignation and is proper to warlike issues.⁴¹

In contrast, Ulloa, quite imaginatively, instead of referring to the modes, attributes precise characteristics to the intervals; he connects the expressive properties of the music to the rising or falling relationship between two sounds. For the major third, he claims that 'when rising it is pleasing, when falling it causes some sadness'. The contrary happens with the minor. The fourth has different properties depending on the placing of its semi-tone: 'If it has a major semi-tone at the start, rising, it weeps; if in the middle it is cheerful; and if at the end, it dances'; the opposite occurs if the tone falls. The perfect fifth in all its types would present 'beauty and gala, but when falling they all show some sadness'. The major sixth would, in his opinion, be a harsh interval, the minor gentle.⁴² Ulloa explains the influence of music on affections through the notion of a resonant harmony that 'stirs up the outer air and gives it harmonious movements', thus impressing the imagination, which, in turn, 'stirs up the humours which, mixed with the inner air, finally leads man to where he is meant to go. It is in this way and not in any other that harmony immediately and decisively moves the affections'.⁴³ As each sound produces in the listener its own vibration, deriving from a different acoustic frequency, Ulloa believes that the influence of music is exquisitely individual.

He argues further that the figures, tones and rhythms are at the service of delight and pleasure. In one style or another, diverse expressive intentions motivate the choice of modal tones (as the composers of plainchant had always claimed), the different sounds and their rhythmic order: 'Having chosen the most proportionate tone, discussions would become more animated, noting that as the states of sadness, weeping, tiredness and the like demand slow notes, on the contrary, those of delight, happiness, indignation, etc., demand swift ones'.⁴⁴

These physicians point out that sounds do not have the same effect on everyone and that the action of music on human beings is twofold: on the one hand, it has a direct influence on the whole body (humours and tissues) which is involuntary and mechanical, the effect of vibrations; and, on the other, it acts through the soul which receives the sounds through the ear and moves the passions. As I have argued elsewhere,⁴⁵ Cid explains that music acts on three levels in the organism. The first would be 'a pure and simple mechanical effect'; 'the second effect of music on man is in the soul'. The soul perceives the sound and, if it is agreeable, is pleased, and if it is not, 'it communicates to the body the sad effects of the species that displease it'. 'The third effect of music on man is to move the passions and agitate the parts where they are rooted'.⁴⁶ Thus we see that musicians and physicians do not clearly define the separation between the body and soul. However, 'harmony or modulated sound have a great power and rule in man, both to

move the affections and to impress a certain virtue on his organs by moving or affecting them in some way, thus reproducing the feelings conveyed or immediately conserving and increasing them'.⁴⁷

Everyone feels the effect of music, not merely those who are ill. For Domínguez Rosains,⁴⁸ for example, the command of music on passions

is shown in the emotional effects in temples and theatres, as the same system of humours and solids are found in one and the others: the same movements of the fibres are to be found in the healthy and the frail, the diverse postures we see in one, in proportion to the passions, should also be seen in the others, as I see no reason to believe the contrary, when the same humours, the same mechanical order of the parts, and the same way of behaviour and wounding depend on music.⁴⁹

Music is a true means of communication. Ulloa associates musical figures with the expression of states of mind and of passions.⁵⁰ But he gives each of them a specific meaningful quality. He believed, for example, that pauses were particularly effective in transmitting questions and answers as well as states of mind, resolved in affective sighs: 'Sighs can be reduced to this figure, when the quavers and semiquavers, whose pauses are therefore called sighs, express tearful states.' The rise in melody 'expresses the exaltation or high-places or sublime things', while the descent transmits 'servitude, humility, depression, etc.'.⁵¹

Feijoo brings up an innovative point when he questions the traditional relationship between modes and sentiments because, as he notes, 'the greatest musicians are very much in disagreement on designating the tones that produce specific sentiments'.⁵² However, he does acknowledge the influence of the *tessitura* or tonal transposition, 'because the same music in lower voices is more religious and serious and transported to higher ones, losing some of its majesty, gains a touch of gay vivacity'.⁵³ 'Music' – he says elsewhere –

according to the variations of the melody, induces several different feelings in the soul, some good and some bad. With one we feel moved to sadness, with another to joy, with another to clemency, with another to cruelty, with one to strength, with another to pusillanimity, and so with all the other inclinations.⁵⁴

For him, therefore, sensitivity requires both physical and moral appreciation.

In the times of the *Teatro crítico*, the introduction of chromatism to the so-called altered notes allowed for greater possibilities of expression. Feijoo, however, opposed the subtleties of the new scale. This was an issue on which the thinkers of antiquity, especially Plato, agreed. They also believed that the

use of the subtle intervals of the chromatic and enharmonic genres was pernicious. Feijoo dissented from this opinion because he believed that 'the changes the voice makes in singing in tiny intervals, as they have some sort of effeminate softness, that leads to vices and immorality, also produce a similar feeling in the spirit of the audience, producing confusing images on their imagination which represent no good thing'.⁵⁵ For Feijoo, musical sensitivity is allied to the intellectual function, so he privileges the effect of the literary text in its musical expression on the listener. Thus he considers as a primordial aesthetical norm that 'the singing be appropriate to the meaning of the lyrics'.⁵⁶ But he also points out that 'musicians of all genres of compositions often sin by defect or by excess against this, one of the most cardinal rules'.⁵⁷

Following a secular tradition, Feijoo observes the influence of music on both, the individual, and social affective and moral spheres, a key issue in understanding the controversies he provoked. For him, 'the most pleasant and delightful music of all is that which induces sweet tranquillity in the Soul, gathering it into itself, and raising it, let us say, with an ecstatic rapture above its own body, so that thoughts can take flight towards divine things'.⁵⁸ Feijoo, backed by testimonies from antiquity,⁵⁹ directed more than one diatribe against the influence of profane, theatrical and dance music on religious music. This situation, in his opinion, was a grave problem in his time because 'not only was the music of the theatre conserved in the theatre, but also the music proper to the theatre moved to the temple'.⁶⁰ His complaints were profound and reiterated. On the one hand, he claimed that 'the cantatas which are now heard in the church are, in their form, the same as those on the stage. They are all composed of minuets, recitals, little arias, allegros and finally a type they call grave, and very little of that so as not to be bothersome'.⁶¹ On the other, he pointed to their harmful effects: 'What well-conditioned ears could, in sacred songs, bear those love trills, those lascivious inflections against the rules of decency and even of music, which the demon taught to players and they to other singers?'⁶² Multiplying the examples, he wonders

what can he who hears on the organ the same minuet he had heard in the Sarao do but recall the lady with whom he danced the previous night? Thus the music, which should carry the spirit of the listener away from the earthly temple to the heavens, moves him from the church to the feast. If he who hears is ill disposed, either by temperament or by habit, then his imagination will not stop there.⁶³

The monk correctly considers that an opera aria accentuates individual pathos and opens more intimate and subjective paths to musical expressivism.

In the same way that Plato complained about the influence of oriental music in Greece and saw in stylistic change the risk of a psychological change in the people, Feijoo lamented the spread of Italian music among the people of Spain.⁶⁴ He thus declared: 'When I remember the ancient seriousness of Spain, I have to admit that it has decreased so much that we now only like *tararira* music; it seems that the acknowledged gravity of the Spaniards has been reduced to merely walking stiffly in the streets.'⁶⁵ However, Feijoo thought that the use of certain musical instrumentals (the organ, the harp, the spinet virginal, among others) was appropriate in temples.⁶⁶ But, in contrast, he disapproved of the introduction of the violin, because it seemed to him that 'its squeals, although harmonious, are squeals, and excite a childish vivacity in our spirits [...] especially at this time, when those who compose for violins study to make the compositions so high that the player almost hits the bridge with his fingers'.⁶⁷ This criticism is essentially a result of his attitude towards contemporary music, as the violin had become extremely popular at the time. His denunciation of the violin led to a very public controversy with the musician from Salamanca, Juan Francisco Corominas.⁶⁸

To assess Feijoo's position, two assumptions must be taken into account: the expressive capacity of the art of music and the evolution of musical styles. His opposition to these practices was, as we have seen, well argued, but his points were weaker when he tried to make a generalised criticism of the musical art of the time, as art implies stylistic evolution. His writings provoked the reactions of a series of maestros who were legitimately striving to express their religious sentiments using different stylistic criteria, as was the case of the above-mentioned Corominas.

The music therapy theory

Ideas about music therapy are present in the works we are analysing, although none of the authors proposed any innovations to current practice. Tosca's 'modern' approach is limited to claiming proof of the therapeutic effects of music: 'to proceed with this with success it is necessary to study repeatedly what effect is created by what tone in different ailments and to observe in each genre of music what humour it moves with more singularity and what effects it causes in men according to their different temperaments'.⁶⁹ Moreover, as noted above, his good sense limited the musical remedy to a mere supporting action for drugs. Tosca, Ulloa and Feijoo follow tradition when they recall the effects of dance against the bite of the tarantula, or tarantism, one of the main ailments for which music has been used since antiquity. Tosca considers the practice 'quite vulgar and well-known', attesting to its widespread use. The description of the doctrine on tarantism faithfully follows the rule established in earlier works: 'when those who are infected by this venom hear the music, they feel the need to jump

and dance and, with the agitation of the unaccustomed and violent movements they make, the pestilent venom which otherwise would end their lives evaporates in sweat'.⁷⁰

However, it is surprising that, despite the painstaking fibrillar explanation offered by Tosca on the action of music on the body and the wave-like transmission of sound, he refers to a humoral Galenic theory when he speaks of the healing mechanisms of music. He insists that music is good in the case of illness,

first because, as illness is the confusion and perturbation of the humours and as some sounds move a humour more than others, there is no doubt that said sounds can but move him and incite a contrary movement to that which was the cause of the damage. Second, because the bad humours will be easier to expel with the movement that music extrinsically communicates to them, assisting the faculty of the medicine with the supplied drug.⁷¹

This description contrasts with other medical theories of the period. Baglivi, for example, sustains his iatromechanical concept when he explains that music acts on the organism by means of the 'waves' that move from the ear to the brain and then to the blood and other tissues:

music reaches the liquid bodies and the solids, and so, in a very intense way and through percussion also reaches the subtle fibres of the brain and the liquid of the nerves and passes the separation of the spirit and produces an momentary explosion and agitation which can hardly be attributed to drugs.⁷²

This explanation was reiterated by most Spanish physicians in the eighteenth century. Several differences may be observed, however. One is that Baglivi limits his experience of the therapeutic application of music to Tarantula victims, whereas the Spanish physicians of the later eighteenth century generalised the recommendation of music therapy, which led to the development of a music therapy theory.⁷³

Interestingly, physicians who speculate on music therapy frequently quote from Feijoo.⁷⁴ This is perhaps due to the fact that, together with his reservations about and criticism he directed towards the curative examples attributed to ancient music that he believed 'to be mostly and principally fables',⁷⁵ he accepted the truth of two well-known stories that occurred in France, where music was used as a therapy for victims of fevers, because the practice were endorsed by the Academy of the Sciences in Paris.⁷⁶ In addition, he believed that music was a useful sedative: the patient 'perhaps will like music and perhaps music will allow him to get to sleep better than all the pharmaceutical sleeping pills'.⁷⁷ Both possibilities for the use of music

(fever-reducing and hypnotic) were supported by Spanish physicians who put forward music as one of the so-called 'universal remedies', that is, among those which could be applied in a general way with good results and without side effects.⁷⁸ Music, Doménech claims, 'is a proper and real medicine' because 'medicine' may be defined as 'anything that alters or may alter our nature'.⁷⁹

At this point, I would like to comment briefly on the technical explanation of the use of music in ailments that affect the 'nerves', one of the most effective uses of music therapy. In 1776, Ximénez de Lorite commented that 'music has the power to cure many illnesses, particularly those which affect the moving and sensitive parts of the machine: that is, the nervous system'.⁸⁰ The justification for this medical practice is based on Baglivi's pathological theory. For him, illness was the result of an imbalance between the movement of liquids and solids in the body. Music helps restore the proportion because it manages 'to remove atony and moderate spasms'.⁸¹ Let us look at this in more detail: Cid considers that the positive effects of music arise from the action of the vibration on 'the thickness of the humours and the weakness of the fibre' which would lead to paralysis, of 'weakness in certain parts', of 'drowsiness due to the obstruction of vessels', of 'cachexia', etc. The relief achieved 'will be very certain, even more so if some movements or dance appeared'.⁸² The mechanical influence deriving from the vibratory movement of the music induces 'the strength that communicates with the nerves'.⁸³

This mechanism for action also applies to other cases, such as tarantism or gout, for which earlier literature also recommended music.⁸⁴ In the case of gout, Cid explains that the stiffness and pain in the joints is produced 'when the nerves are debilitated by long inactivity as occurs in fearful pain, or by instillation of the gouty humour into the sheaths of the tendons, and into the joints, which thickens to such a degree that it cannot be resolved by ordinary drugs'.⁸⁵ Music would reverse this situation because it can lessen the density of the gouty humour, in the same way that it acts against the venom of the tarantula, as the venom is a coagulant.

At the end of the seventeenth century, the mechanistic theory also explains the influence of music on passions and feelings. The mechanical action of music would act systematically on the whole body, specifically on the ear. As Doménech and Amaya explain, 'it is evident and well-known that sound is communicated by means of sounding or sounded particles that float in the atmosphere'.⁸⁶ As these particles spread, they create a vibratory movement like that seen in water and are 'subject to the laws of reflection and refraction'. In this manner, they transmit 'the mechanical movement of the fibres, which the soul, between entrancement and distraction, focuses upon, thus erasing the feeling of pain, filling the place of sadness with a soft vibratory undulation, communicated from the ear to the brain'.⁸⁷ In other

words, it acts through the brain, 'immediately on the soul' which is 'what suffers the principal attack of sensations: in pain, in sadness, in afflictions and distressing sighs' produced by diverse ailments.

Conclusion

In the early years of the eighteenth century, the assessment of physicians' experience led to a reconsideration of the classical theories on the action of music. Thus the authors discussed here considered the traditional relationships between states of mind and musical modes as stereotypes. The music treatises of the early eighteenth century contributed to the assimilation of new medical-scientific doctrines in Spain. The writings of Tomás Vicente Tosca and Pedro de Ulloa show the evolution from mathematical to physical acoustics. In both cases, the sound phenomenon is based on the concept of vibrations that affect fluids and, above all, a fibrillar model – an explanation that overlaps with the iatromechanical approaches of contemporary physicians.

The medical references in music treatises serve to highlight the influence of the expressive capacity of music on the human body. There were numerous explanations of the theory of the influence of music. However, I focus on an idea common to musicians and physicians, developed in the professionals' treatises. We must not forget that the continuity of the theory of the action of music was influenced by the scientific academies and societies because of the circulation of medical reports around Europe.⁸⁸ Over time, the majority of physicians who recommended melotherapy agreed with the mechanistic explanation. But, together with this response, we find a psychological interpretation of the expressive capacity of the intervals, chords, rhythms and other musical elements. The treatise writers explained their individual perspectives on music and its influence on the affections and passions, although they did not fully formulate a clear distinction between its physical and psychological actions.

In the case of Feijoo, his doctrine supports the theory of the expressive power of the art. In it, he found arguments on which he based his ideas on the differences between religious and secular music. Echoing classical thinkers, principally Plato, he associates musical chromatics and its subdivision into tones and semitones, typical of the period, with passions and states of mind and characters. This period of controversy would, on a speculative plane, challenge instrumental music, which was gaining strength in temples and concert halls with a defence of plainchant, described as 'the diatonic procedure, more proper and suitable than any other to calm the soul [...] and induce tranquillity and peace'.⁸⁹ We have seen the most characteristic points of theoretical studies in music therapy in these eighteenth-century authors: on the one hand, the tendency to form systems, and, on the other,

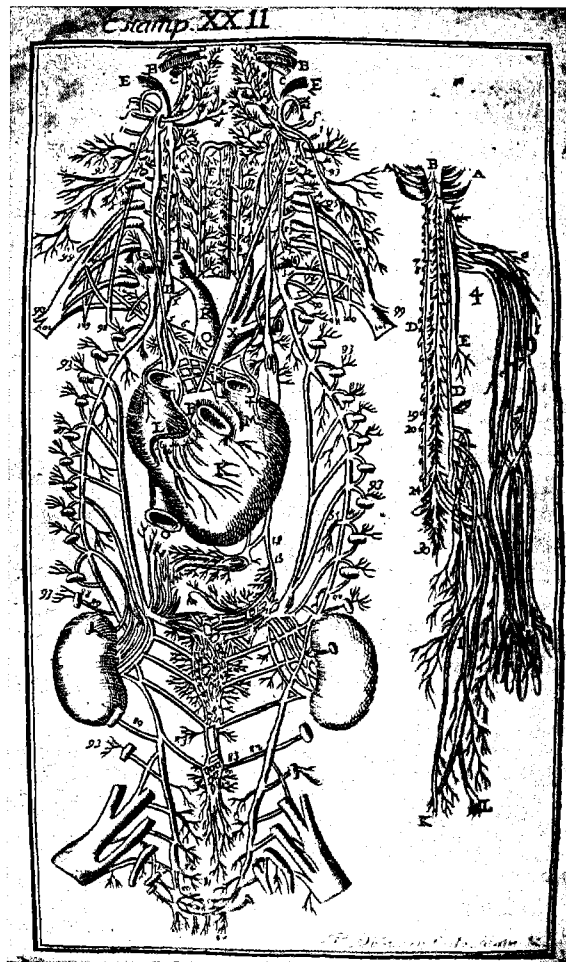
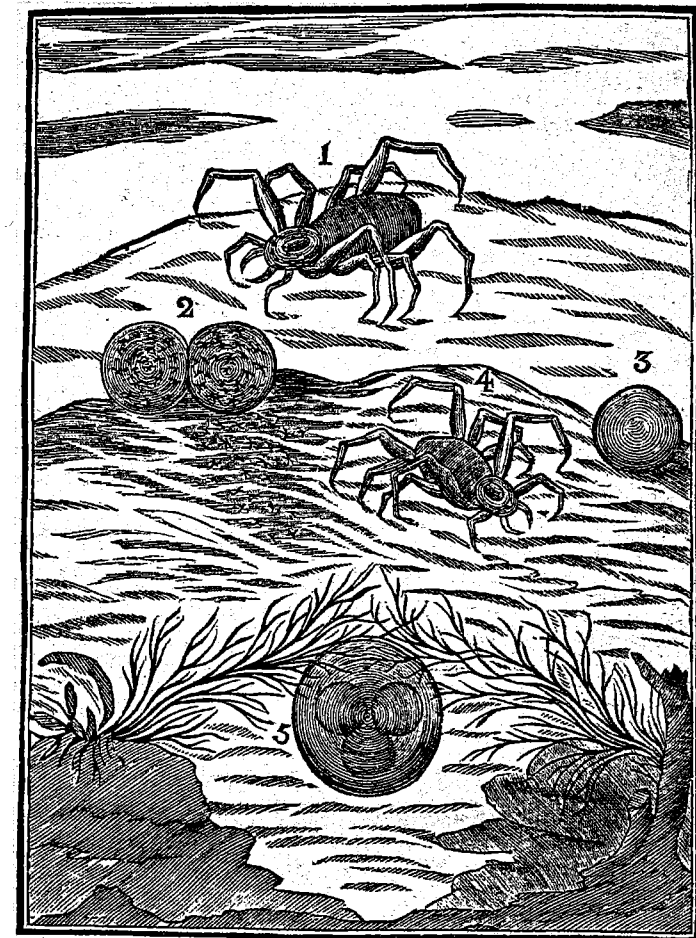


Figure 5.1 M. Martínez *Anatomía completa del hombre* (1764)

The anatomists of the early eighteenth century explained that the network of peripheral nerves was like a spider's web which, on the slightest contact, transmitted any impulse it felt by means of the vibration of its fibres. The picture shows 'the eighth pair of nerves in the brain, the intercostal and the main spinal cord' by M. Martínez (1764) *Anatomía completa del hombre, con todos los hallazgos, nuevas doctrinas y observaciones raras hasta el tiempo presente, y muchas advertencias necesarias para la cirugía: según el método con que se explica en nuestro Theatro de Madrid* (Madrid: Imprenta de la Viuda de Manuel Fernández), p. 588–9.

their determination to 'experiment', try out and thus to measure and evaluate the forces of nature. In this way, the Age of Enlightenment became a period of trial and error and, at the same time, one of fundamental and decisive construction (Figure 5.1 and Figure 5.2).



- 1.º Tarántula Hembra.
- 2.º Vista interior de los Obarios y Tarantulillas que salen de ellos.
- 3.º Vista exterior de los Obarios.
- 4.º Tarántula Macho.
- 5.º Vista del Capullo ó nido que fabrican, de tres Obarios dentro del Capullo, y del Terrazo donde suelen fabricar.

Figure 5.2 F. X. Cid, *Tarantismo observado en España* (1787)

In Spain in the eighteenth century there were numerous physicians and scientists who were writing on melotherapy and tarantism. The picture is included in the book F. X. Cid (1787) *Tarantismo observado en España ... y su curación por la música con el modo de obrar de esta, y su aplicación como remedio de varias enfermedades*. (Madrid: Imprenta de González, 1787).

Notes

1. Penelope Gouk, 'Music's Pathological and Therapeutic Effects on the Body Politic: Doctor John Gregory's Views', in P. Gouk and H. Hills, eds., *Representing Emotions: New Connections in the Histories of Art, Music, and Medicine* (Aldershot, Hants, England; Burlington, VT: Ashgate, 2005), 192.
2. Jessica Riskin, *Science in the Age of Sensibility: the Sentimental Empiricists of the French Enlightenment* (Chicago: University of Chicago Press, 2002), 1.
3. Information on novator movement, see J.M. López Piñero, *Joan de Cabriada i la introducció de la ciència mèdica moderna a Espanya* (València, Consell Valencià de Cultura, 1994).
4. For more information on this author, see F.J. León Tello, *La teoría española de la música en los siglos XVII y XVIII* (Madrid: Consejo Superior de Investigaciones Científicas, 1974), 45–73, V. Navarro, 'Tosca, Tomás Vicente', in J.M. López Piñero et al., *Diccionario histórico de la ciencia moderna en España* (Barcelona, Península, 1983), 368–371. There is a contemporary biography written by G. Mayans y Siscar, *Vita Thomae Vicenti Toscae* (1754).
5. The Oratory was founded in Rome in 1575 by St Philip Neri as a society of apostolic life of Catholic priests and lay brothers who lived together in a community bound together by no formal vows but only by the bond of charity.
6. For more information on this author, see F.J. León Tello, *La teoría española de la música en los siglos XVII y XVIII* (Madrid: Consejo Superior de Investigaciones Científicas, 1974), 74–88, V. Navarro, 'Ulloa, Pedro', in J.M. López Piñero et al., *Diccionario histórico de la ciencia moderna en España* (Barcelona, Península, 1983), 382.
7. There is substantial literature on Benito J. Feijoo's ideas regarding musical issues. See A.M. Moreno, *El Padre Feijoo y las ideologías musicales del XVIII en España* (Orense: Instituto de Estudios Orensanos Padre Feijoo, 1976), F.J. León Tello, *La teoría española de la música en los siglos XVII y XVIII* (Madrid: Consejo Superior de Investigaciones Científicas, 1974), 162–190.
8. B.J. Feijoo, *Teatro crítico universal* (Madrid: D. Joaquín Ibarra, Real Compañía de Impresores y Libreros, 1726, 1778), 1, 1–52, 285–309. There is an eighteenth-century English translation of part of these texts: B.J. Feijoo, *Three Essays or Discourses on the Following Subjects, a Defence or Vindication of the Women, Church Music, a Comparison Between Antient and Modern Music*, trans. J. Brett (London: T. Becket, 1778).
9. B.J. Feijoo, 'In Response to a Musical Objection', in *Cartas eruditas y curiosas, Carta I* (Madrid: Imprenta Real de la Gazeta, 1742 and 1777), 1, 193–195.
10. G. Stiffoni, 'Introducción', in B.J. Feijoo, ed., *Teatro crítico universal o Discursos varios en todo género de materias, para desengaño de errores comunes* (Madrid: Castalia, 1986), 39. Trans. mine.
11. A general vision of this Spanish period, from the historical science point of view: J.L. Barona, J. Moscoso, J. Pimentel, eds., *La Ilustración y las ciencias: Para una historia de la objetividad* (València: Universitat de València, 2003).
12. P. León-Sanz, *La Tarantola Spagnola. Empirismo e tradizione nel XVIII secolo* (Besa: Editrice Lècce, 2008), P. León-Sanz, 'Medical Theories of Tarantism in Eighteenth-Century Spain', in P. Horden, ed., *Music as Medicine* (London: Ashgate, 2000), 273–292, P. León-Sanz, 'Literatura médica española sobre musicoterapia en el siglo XVIII', *Nassarre* 7.2 (1991), 73–155.
13. T.V. Tosca, *Compendio mathematico: en que se contienen todas las materias mas principales de las ciencias, que tratan de la Cantidad*, 2nd ed. (Madrid: Impr. de A. Marin, 1727), 2, 338. About the Tosca's theory of music, see F.J. León Tello, *La teoría musical del padre Tosca* (Valencia: Sucesor de Vives Mora, 1971). A comprehensive analysis of this work in F.J. León Tello, *La teoría española de la música en los siglos XVII y XVIII* (Madrid: Consejo Superior de Investigaciones Científicas, 1974), 45–73. All translations from the primary sources are mine.
14. P. de Ulloa, *Musica universal, o Principios universales de la musica* (Madrid: Imprenta de musica, por B. Peralta, 1717), 1–2. A detailed analysis of this work is found in F.J. León Tello, *La teoría española de la música en los siglos XVII y XVIII* (Madrid: Consejo Superior de Investigaciones Científicas, 1974), 74–88.
15. Tosca, *Compendio matemático*, 2 vols, 12.
16. *Ibid.*, 342–343.
17. *Ibid.*, 345.
18. *Ibid.*, 349–352.
19. *Ibid.*, 375.
20. Ulloa, *Musica universal*, 45–46.
21. Tosca, *Compendio matemático*, 2 vols, 352.
22. *Ibid.*, 340.
23. *Ibid.*, 463.
24. *Ibid.*, 463.
25. *Ibid.*, 463–464.
26. M. Martínez, *Anatomía completa del hombre: con todos los hallazgos, nuevas doctrinas y observaciones raras hasta el tiempo presente, y muchas advertencias necesarias para la cirugía segun el methodo con que se explica en nuestro theatro de Madrid* (Madrid: Imprenta de Bernardo Peralta, 1728), 28.
27. A. Martínez Vidal, *Neurociencias y revolución científica en España: la circulación neural* (Madrid: Consejo Superior de Investigaciones Científicas, 1989), 105.
28. M. Martínez, *Anatomía completa del hombre*, 29. See also A. Martínez Vidal, 'Los supuestos conceptuales del pensamiento médico de Martín Martínez (1684–1734): la actitud antisistemática', in *Llull boletín de la Sociedad Española de Historia de las Ciencias* (1986), 9, 127–152.
29. León-Sanz, *La Tarantola Spagnola*, 33–34.
30. G. Baglivi, *Opera omnia*, 4th ed. (Venetiis: Apud Gasparum Girardi, 1738), 165. About this physician: J.J. Girona, 'La medicina de Baglivi', *Archivo Iberoamericano de historia de la Medicina* 6 (1954), 427–592. See also M.D. Gremek, 'Baglivi Georgius', in Ch. Coulston Gillispie, ed. *Dictionary of scientific biography* (New York: Scribner's Sons, 1970), vol. 1, 391–392.
31. J. Girona, *La Medicina de Baglivi*, 508.
32. *Ibid.*, 514–517.
33. A. Martínez Vidal, *Neurociencias y revolución científica en España*, 145.
34. The action of the sounds in the ear and its passage through nerves to the brain is described by several physicians. For example: B. Dominguez Rosains, *Disertación médico médico-práctica en que se demuestra la música ser remedio de muchas enfermedades* (Archive Real Academia de Medicina de Sevilla, 1766), 14, B. Kimenez de Lorite, *Historia natural de la tarántula. Los prodigiosos fenómenos de su puntura, la peculiar idea de la música con que se cura y el mecanismo con que obra* (Archive Academia de Medicina de Sevilla, 1776), 50, V. González y Centeno, 'Disertación Físico Médica. Oración inaugural. Sobre el influjo que tiene en la salud humana el ímpetu violento 23 de Octubre de 1788', in *Memorias de la Real Sociedad de Sevilla* 7 vols (Sevilla, 1798), 400–401, P.F. Domenech y Amaya, 'Observación de un picado por la tarántula', in *Memorias de la Real Academia Médico-práctica de Barcelona* (Madrid, 1798), 146.

35. For more information on this physician and his work, see León-Sanz, *Literatura médica española sobre musicoterapia en el siglo XVIII*, 73–155 and León Sanz, *La tarantola Spagnola*, 80–95.
36. Ximénez de Lorite, *Historia natural de la tarántula*, 50.
37. For more information on these physician and their work, see León-Sanz, *Literatura médica española sobre musicoterapia en el siglo XVIII*, 73–155 and León-Sanz, *La tarantola Spagnola*, 110–127, and 152–168.
38. Doménech y Amaya, *Observación de un picado por la tarántula*, 148.
39. Tosca, *Compendio matemático*, 2 vols, 337.
40. *Ibid.*, 67–69.
41. *Ibid.*, 464.
42. Ulloa, *Música universal*, 40.
43. *Ibid.*, 46.
44. *Ibid.*, 60.
45. P. León-Sanz, ed., 'Evolution of the Concept of Emotion in Medicine: A Music-Therapy Approach', in A.M. Gonzalez, ed., *The Emotions and Cultural Analysis* (Burlington, VT: Ashgate, 2013), 69–95.
46. F.X. Cid, *Tarantismo observado en España con que se prueba el de la Pulla, dudado de algunos y tratado de otros de fabuloso y memoria para escribir la Historia del insecto llamado Tarántula, efectos de su veneno en el cuerpo humano [...] y su aplicación como remedio de varias enfermedades* (Madrid: Imprenta de González, 1787), 259–265.
47. Cid, *Tarantismo observado en España*, 265.
48. For more information on this physician and his work, see León-Sanz, *Literatura médica española sobre musicoterapia en el siglo XVIII*, 73–155 and León Sanz, *La tarantola Spagnola*, 68–72.
49. Domínguez Rosains, *Disertación médico médico-práctica en que se demuestra la música ser remedio de muchas enfermedades*, 4–5.
50. Ulloa, *Musica Universal*, 61.
51. *Ibid.*, 62.
52. Feijoo, *Teatro crítico universal*, 40.
53. *Ibid.*, 439 and 41.
54. *Ibid.*, 11.
55. *Ibid.*
56. *Ibid.*, 34.
57. *Ibid.*, 35.
58. *Ibid.*, 19.
59. *Ibid.*, 1–2.
60. *Ibid.*, 4.
61. *Ibid.*, 6.
62. *Ibid.*, 10.
63. *Ibid.*, 5.
64. Feijoo agrees with other Spanish musicians such as Pablo Nassarre (1664–1724) on this point. Similar debates occurred in other places, as we see in D. Alsop, 'Strains of New Beauty: Haendel and the Pleasures of Italian Opera, 1711–1728', in R. Porter and M.M. Roberts, ed., *Pleasure in the Eighteenth Century* (Basingstoke: Macmillan, 1996), 133–163.
65. Feijoo, *Teatro crítico universal*, 24.
66. *Ibid.*, 44.
67. *Ibid.*, 43.
68. In 1726, the musician Juan Francisco Corominas wrote the *Aposento Anti-Crítico desde donde se ve representar la gran Comedia que en su Teatro Crítico regaló al Pueblo el RR. P.M. Feijoo, contra la Música Moderna y uso de los Violines en los Templos, o carta que en defensa de uno y otro escribió...* (Salamanca: Imprenta de la Santa Cruz). Martín Martínez supported Feijoo by writing the *Carta defensiva, que sobre el primer tomo del Teatro Crítico Universal, que dió a luz el Rmo. P.M. Fr. Benito Feijoo* (Madrid: Imprenta Real, 1726). In this manner, Martínez reciprocated the support he had received previously from Feijoo.
69. Tosca, *Compendio matemático*, 2 vols, 489.
70. *Ibid.*, 488.
71. *Ibid.*, 463.
72. Baglivi, *Opera Omnia*, 640.
73. P. León-Sanz, *Teoría de la acción terapéutica de la música en la medicina del siglo XVIII*, Nasarre, 9 vols (1993), 1, 79–117.
74. For example F.X. Cid quotes the *Cartas eruditas*: Cid, *Tarantismo observado en España*, 1 vol, 281–283, and also Doménech y Amaya, *Observación de un picado por la tarántula*, 146.
75. Feijoo, *Cartas eruditas y curiosas*, Carta XLIV, 1 vol, 375. However, Feijoo repeatedly discussed the Biblical story of David and Saul, 'Feijoo, Teatro crítico universal', *Discurso VI*, 110–111, 'Cartas eruditas', Carta I 4 vols, 16–17.
76. The two stories are well known because they are often quoted in the eighteenth-century music therapy books. In the first, a famous musician was ill with fever and he recovered only when he spent ten days listening to music by Bernier (Feijoo, *Cartas eruditas y curiosas* (1742–1777), 'Maravillas de la música y cotejo de la antigua con la moderna', Carta XLIV 1 vol, 8, 376). The other is about a dance teacher from Alés who, in the midst of a high fever, fell into a sleep and awoke 'with a terrible frenzy'. Only violin music calmed him, after which he fell asleep again and awoke cured (Feijoo, *Cartas eruditas y curiosas*, 'El deleite de la música', Carta I 4 vols, 49, 22.
77. Feijoo, *Teatro crítico universal*, Discurso X: 'Paradojas médicas', 8 vols, 251.
78. León-Sanz, *La tarantola Spagnola*, 57–58.
79. Doménech y Amaya, *Observación de un picado por la tarántula*, 146.
80. Ximénez de Lorite, *Historia natural de la tarántula*, 46. Most of the physicians discussed here supported this idea.
81. Doménech y Amaya, *Observación de un picado por la tarántula*, 161.
82. Cid, *Tarantismo observado en España*, 317–320.
83. *Ibid.*, 320.
84. León-Sanz, *Medical Theories of Tarantism in Eighteenth-Century Spain*, 273–292; León-Sanz, *Teoría de la acción terapéutica de la música en la medicina del siglo XVIII*, 79–117.
85. Cid, *Tarantismo observado en España*, 304.
86. Doménech y Amaya, *Observación de un picado por la tarántula*, 146.
87. *Ibid.*, 149.
88. León Sanz, *La tarantola Spagnola*, 21–23.
89. Marquis of Ureña (G. de Molina y Zaldívar, 1785) *Reflexiones sobre la arquitectura, Ornato y Música del Templo: Contra los procedimientos arbitrarios sin consulta de la Escritura Santa, de la disciplina rigurosa y de la crítica facultativa* (Madrid: Imp. de J. Ibarra), 398. This remark is part of a commentary on the work of Benito J. Feijoo written at the end of the eighteenth century.