

## Coping with academic stress in public university music students during the pandemic SARS-CoV-2

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### Abstract

The SARS-CoV-2 pandemic (COVID-19) caused a significant increase in academic stress in music students due to contextual factors. The objective of the research is to determine the relationship between instrumental practice as a means of coping with academic stress in music students of Peruvian public universities in times of pandemic. The methodological approach was quantitative, of non-experimental design of transversal type of descriptive and correlational level. The population consisted of music students of public universities in Peru, a random sample of 293 students who practice different musical instruments was obtained, to which two questionnaires on academic stress and its coping of Barraza were applied. Per the result of the study, at a "severe" academic stress level, the number of hours of instrumental practice stood out as a suitable means of coping with stress. In addition, the results of the research will contribute to the design of appropriate strategies based on music therapies for coping with academic stress in students.

**Keywords:** Academic stress; COVID-19; instrumental practice; music; pandemic; students.

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## 1. INTRODUCTION

The World Health Organization (WHO), on March 11, 2020, declared SARS-CoV-2 (COVID-19) as a pandemic (WHO, 2020). It originated in Wuhan, Hubei province, China, causing concern (Wang et al., 2020). Due to the rapid increase of positive cases and deaths governments began to implement drastic measures such as confinement, to prevent the spread of the virus, a fact that caused great psychological distress in the population (Zhang & Ma 2020; Malik & Javed 2021; Özdemir et al., 2022). In this context, studies were conducted on the psychological effects of COVID-19, where their results show that it generates emotions such as anguish, anxiety disorders, chronic stress, and depression, because of the lockdown (Sher, 2020; Soltan et al., 2021; Mesghina et al., 2021; Sverdlik et al., 2023).

After months of the city lockdown, some services had to be resumed, one of them was education service; but this sector had to change its usual way, from a face-to-face system to a virtual form, through the use of virtual platforms and the use of various technological resources (Brachtl et al., 2023). This meant that students and teachers had to have internet access to develop teaching-learning activities, as well as technological equipment (computers, laptops, cell phones, etc.); consequently, digital gaps and inequalities in the population to access the educational service was shown causing inequalities that affected the mental health of students, generating strong academic stress (Hossain et al., 2023).

These negative emotions that students feel need strategies and activities that help to overcome them. Music is one of the most effective remedies as the socioemotional use of musical behavior, (performing or listening to music) is the most used (because it helps to improve and affect, interpersonal relationships, entertainment, anxiety, and stress reduction (Dingle et al., 2017; Toyoshima et al., 2011; Schäfer et al., 2013; De Witte et al., 2020). Thus, Hargreaves cited in Martinez, Gutierrez, Spitz & Granot (2021), proposes the reciprocal feedback model of musical response, which depends on three components: the Music (genre, style, complexity, etc.), the Person (gender, age, experience, etc.) and the Context (social environments, activities, culture, etc.) which interact shaping preferences and tastes (music and person), which change musical behavior for the achievement of specific means (person and context). Therefore, the person and the context influence the musical behavior for emotional well-being.

### 1.1. *Purpose of study*

Music through instrumental practice helps to improve the quality of life, since the fact of practicing an instrument improves "self-esteem, makes them feel competent and independent, they have less sense of isolation and loneliness, it helps to not worry so much about their problems, it will make them happier, healthier and most able to adapt to this changing world" (Rosset, 2021). The research aims to evaluate instrumental practice as a means of coping with academic stress in music college students in times of COVID-19.

### 1.2. *Literature Review*

#### 1.2.1. *Instrumental practice*

Music is configured as part of a communication system, since composers codify their ideas through musical notation, notation that performers recode into acoustic signals and listeners recode the acoustic signals again, which end up transmitting the composer's ideas, thus transmitting different forms of communicative content in instrumental performance (Kendall & Carterette, 1990). Western musical notation represents a system of pitch and duration information, and only some approximations in terms of intensity or tonal quality, which are not specified or are specified implicitly so that they allow the performer freedom in deciding how to perform an interpretation of the content of the music (Palmer, 1997).

Therefore, the interest of researchers in instrumental practice has become an object of study, particularly on practice and its relation to the transition from initial levels to levels of excellence, given that, instrumental practice, is a systematic expression whose objective is to learn and generate knowledge to acquire, develop and maintain their technical ability (Barry & Hallam, 2002). Therefore, it is the most complex action produced by the human being (Palmer, 1997), since it involves the use of mental and physical skills, such as the creation of mental structures for the understanding of music and the strengthening of the body to mechanize the execution process so that it can achieve fluency and speed (Davidson, 2007).

On the other hand, there is research that argues that the achievement and growth in musical interpretation are not only related to the amount of time spent but on the contrary to the effectiveness (Bonneville-Roussy & Bouffard, 2014). The technical and interpretive work of a piece needs targeted knowledge, with a vision set to achieve goals, using appropriate strategies to learn, master, and memorize a piece, are accurate to achieve good interpretive results, therefore, performing an efficient practice does not only mean playing the instrument for hours (Hallam et al., 2012). For this, Bonneville-Roussy & Bouffard (2014), propose two approaches: "deliberate practice"(a deliberate effort to become an expert) and "self-regulation"(metacognitive, emotional, and behaviorally active participants in their learning process) (Zimmerman, 2008).

For Hallam (2001), musical achievement and growth depend on certain elements and conditions, which the author calls "effective practice", for Jorgensen (2004), effective practice occurs in three phases: The planning and preparation of the practice, (planning, organization and good time management in the practice session), the execution of the practice (practice in a pyramidal way, inverse, articulations, metronome, gradual speed, etc.), the observation and evaluation of the practice (monitoring the progress checking the efficiency of the procedures, strategies, and techniques applied). However, a large percentage of students who begin their studies in music, do not know the practice of their instrument, teachers often only care about evaluating the result and provide some indications, without monitoring the learning process, therefore, "it is up to the institutions, teachers and students to take an active role in the teaching-learning of practice strategies to complete an effective practice" (Capistrán, 2015).

These theories raised, are corroborated since, a set of strategies applied before starting to study a piece, helps students to overcome difficulties and implement new strategies for their learning (Carvalho et al., 2020). Students who perform instrumental practice with strategies, substantially improve their interpretation and increase their motivation for the achievement of the results obtained, however, there are individual differences at all levels, due to the strategies if they are appropriate, applicable, and effective (Tripiana, 2016). Now well, some psychoeducational interventions, have as a result that the self-regulation of learning, skills training, and mindfulness, have a positive result "for the numerous cognitive and motivational facets of the musician, helping to achieve an autonomous and efficient study practice" (López et al., 2021).

Now, the strategies that are developed in the instrumental group practice, depend on factors such as directive management, curricular management, and school coexistence, which are deployed in pedagogical strategies such as classroom problems, planning, instrumental teaching, collective interpretation and evaluation (Solis, 2021). Likewise, Palazón, (2018), states that the flipped classroom methodology is a strategy that helps to substantially improve performance, both in class and at home, since each student has resources that help him/her in self-learning and greater autonomy concerning the teacher, a space where the student takes responsibility for his/her learning by taking a leading role, while the teacher becomes a guide in the process.

In short, the instrumental practice is based on the understanding of the work, from the analysis phase, where instrumentalists and teachers must put it into practice, since a properly constructed analytical corpus is the coherent support for the interpretation of a work, beyond the subjectivity of the performer; Shifres (1994), states that:

*“Two types of relationships link analysis to interpretation: a global one, through which the performer obtains a mental representation of the work of a higher order. And another punctual one, which makes it possible to determine for each precise moment of the performance is what interpretative action to put into play.”* (Shifres, 1994)

For such reason, it is necessary to have a concept of the work as a starting point for the integral instrumental practice, based on cognitive elements, which will allow musicians to generate mental forms necessary to extract from the score a notion of the work to be projected, as well as to build motor signs to carry it out (Pérez, 2018). However, the instrumental practice requires interdisciplinary and transdisciplinary strategies, as they are built through the "conscious planning and regulation of actions, thoughts, behavioral patterns aimed at a musical goal, surpassing the plane of the merely academic and directly impacting the professional plane". Tripiana, (2017) as well as corroborated by Tripiana cited in Hernández (2020), proposes eight study strategies when approaching work (Fragmented practice, Practice with maximum concentration, Ergonomic adequacy, Self-oriented messages, Self-critical listening, Accurate reading, Indirect practice, Respect for the current limit).

### 1.2.2. Academic stress

The mental health and emotional well-being of educational actors (teachers and students) in universities, is a topic of concern in the research community. However, in the academic context, the acquisition of knowledge, personal fulfillment, good salaries, etc. are generated. Which involve a variety of stressors that compromise well-being and increase stress (Hill et al., 2022).

Stress is one of the most widespread public health problems today, resulting from the relationship between the person and the events of their environment (Román & Hernández, 2011). In that sense, Orlandini (1999), states that stress is excessive tension, therefore, "a person who is in a learning period, from preschool to graduate university education, experiences stress. This is called academic stress and occurs both in individual study and in the classroom" (Diaz, 2010); which are forged by the demands imposed by the educational environment, where both students and teachers are affected (Caldera et al., 2007).

Consequently, Barraza (2006) defines academic stress based on his systemic cognitivist model:

*“Academic stress is a systemic process, of an adaptive and essentially psychological nature, which occurs a) when the student is subjected, in school contexts, to a series of demands that, under the student's assessment, are considered stressors (input); b) when these stressors provoke a systemic imbalance (stressful situation) that manifests itself in a series of symptoms (indicators of the imbalance); c) when this imbalance forces the student to carry out coping actions (output) to restore the systemic balance.”* (Barraza, 2006).

"The systemic cognitivist model of academic stress is exposed as a succession of evaluative processes in the face of stressful stimuli from the environment, which aim to achieve a systemic balance of the person-environment relationship" (Berrio & Mazo, 2011).

In this sense, Barraza (2006) compiles the following group of stressors:

*“Group competition, task overload, excessive responsibility, work interruptions, unpleasant physical environment, lack of incentives, limited time for work, problems or conflicts with peers, evaluations, type of work you are asked to do; on the other hand,*

the systematic imbalance involved in academic stress is classified as physical, psychological and behavioral reactions.” (Berrio & Mazo, 2011).

Table 1 below exhibits the types and indicators of academic stress.

**Table 1**

*Types and indicators of academic stress*

Type	Indicator
Physical: bodily reactions	Headaches, insomnia, digestive problems, chronic fatigue, excessive sweating, etc.
Psychological: related to cognitive or emotional functions.	Lack of concentration, mental block, memory problems, anxiety, depression.
Behavioral: involving the behavior	Absenteeism from classes, unwillingness to perform academic work, isolation.

Likewise, Barraza (2008), states that "this set of indicators is articulated idiosyncratically in people, so that the systemic imbalance will be manifested differently, in quantity and variety, by each person".

## 2. METHOD AND MATERIALS

### 2.1. Study design

The research design is of a non-experimental cross-sectional descriptive and correlational nature, since, it aims to determine the extent to which two events are related (Hernández et al., 2014). A study that works with at least two variables that are associated, in this case, seeks the correlation between instrumental practice and academic stress.

The scope of the study was developed in Peruvian public universities where music education is taught, as in the case of Institution 1, its academic programs are a school, post-school, and higher section; in Institution 2, its training areas are music education and arts; music; Institution 3, its training area is: music. Institution 4, its training area being: music (Table 2).

The universe of the population consisted of 1,219 students from I to X academic cycles (Table 2), students of both sexes, from all instrumental specialties; inclusion criteria were taken into account, such as students enrolled in the year 2021, students who regularly attend class, students with informed consent; exclusion criteria: students' negativity, students who do not regularly attend class, students who do not attend class.

### 2.2. Participants

The universe population consisted of 1,219 students from I to X academic cycles (Table 2), of both sexes, of all instrumental specialties; For participation in the study, inclusion and exclusion criteria were taken into account. To define the universe population, students enrolled in 2021 and students who regularly attend music classes were taken into account. For the data collection stage, a stratified sample with proportional allocation was applied (n=293). All subjects gave informed consent for inclusion before participating in the study and anonymity was guaranteed at the time of data collection.

The sample was determined using the stratified random sampling method (SRS). The formula used to determine the sample size for the finite population used is detailed below:

$$n = \frac{Z^2_{\alpha/2} P Q N}{\epsilon^2 (N - 1) + Z^2 P Q}$$

Where:

$Z^2_{\alpha/2}$  = Confidence level at 95% (Z=1.96)

P = Proportion of favorable cases, assuming 50%.

Q = Proportion of unfavorable cases, assuming 50%.

E = Allowable sampling error of 5%.

For stratified random sampling, the EPIDAT 4.2 software was used, and the estimation procedure is presented below:

Data:

Proportion size 1,219

Expected proportion 50,000%.

Confidence level 95.0%.

Design effect 1.0

Result 293

Subsequently, we performed proportional allocation, based on the estimated sample n=293.

**Table 2**

*Number of students per institution (population and sample)*

N°	Institution	Population	Sample
1	National University Daniel Salimos Robles of Huanuco	600	146
2	National University of Music - Peru	115	26
3	National University of San Agustin -Arequipa	294	71
4	National University of the Altiplano-Puno	210	50
		1,219	293

### 2.3. Data Collection Tools

The survey technique was used because it made it possible to obtain and process data quickly and efficiently from the units of analysis (Barraza, 2007); thereby facilitating their organization and classification for the process of analyzing the results according to the study variables (Rodriguez, 1996).

To achieve the research objectives, the HPQ-9 psychological test was used, since the variables underlie psychology. The information was collected through an online questionnaire using the Google Forms format (Cerdeira, 1993).

The psychological test aims at the information of defined personality traits, conduct, or individual or collective characteristics and behaviors of human beings; they are experimental type instruments with scientific basis and statistical validity (Lotito, 2015).

The techniques and instruments according to objectives are explained in Table 3

**Table 3**

*Techniques and instruments according to objectives*

Objective	Techniques	instrument
<b>General objective:</b> To determine the degree of relationship between instrumental practice and academic stress levels of music college students in times of COVID-19.	Survey	Questionnaire
<b>Specific Objective 1:</b> To identify the levels of academic stress in music college students during COVID-19 time.	Survey	Questionnaire (HPQ-9)

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<b>Specific Objective 2:</b> To know the impact of instrumental practice as a means of coping with academic stress in music college students during COVID-19 time.	Survey	Questionnaire (HPQ-9)
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The instrument used to measure the impact of instrumental practice and the level of stress is the one proposed by Kroenke et al. (2001), which consists of 9 and 12 items, with 5 points of Likert-type alternatives in which 0 = never and 4 = always and is divided into four parts: physiological reactions, emotional reactions, cognitive reactions, and behavioral reactions, this instrument has been used in various national and international research, achieving satisfactory results since it has been subjected to statistical processing (Cronbach's Alpha, NA = 0.64 and NEA=0.96) and an expert judgment evaluation, in the same way, the researchers also carried out the validation through the process of expert judgment whose evaluation was the most appropriate (tables 4 and 5).

**Table 4**

*Levels and scores of instrumental practices as coping with academic stress according to HPQ-9.*

Levels of coping	Score
Instrumental practice as inadequate coping	0-12
Instrumental practice as a regular coping	13-24
Instrumental practice as appropriate coping	25-48

**Table 5**

*Academic stress levels and scores according to HPQ-9*

Academic stress levels	Score
Minimal Academic Stress	0-4
Medium Academic Stress	5-9
Moderate Academic Stress	10-14
Academic Stress Moderate Severe	15-19
Severe Academic Stress	20-36

#### 2.4. Data analysis

To determine the relationship of the study variables, the Pearson Correlation was used (Hernández et al., 2018). The stress values were estimated by adding the score of each one of the items (variables) for each student "i" ( $PHQ = \sum Z_i, i=1,2,\dots,9$ ) and for the reliability and validity of the instrument (PHQ- 9) Cronbach's Alpha was used. Likewise, to estimate the probability of coping with stress with instrumental practice, the probit regression method was used. Let  $Y_i = 1$  if student i perceive that her stress level has worsened during the pandemic and  $Y_i = 0$  otherwise. The following was considered for the formulation of hypotheses:

$H_0: p = 0$  There is no direct relationship between instrumental practice and academic stress in music college students.

$H_a: p \neq 0$  There is a level of direct relationship between instrumental practice and academic stress in music college students.

The significance level of  $\alpha = 0.05 = 5\%$  which is equivalent to a 95% confidence level, with the value of  $Z_t$  (normal table distribution) = 1.96.

$$r = \frac{\sum_{i=1}^n X_i Y_i - \frac{(\sum_{i=1}^n X_i)(\sum_{i=1}^n Y_i)}{n}}{\sqrt{\sum_{i=1}^n X_i^2 - \frac{(\sum_{i=1}^n X_i)^2}{n}} \sqrt{\sum_{i=1}^n Y_i^2 - \frac{(\sum_{i=1}^n Y_i)^2}{n}}}$$

Where:

Zc: Z calculated from the normal distribution.

n: Sample size

r: Correlation coefficient

Y: Dependent variable

X: Independent variable

## 2.5. Procedure

The research had three basic stages: The first stage refers to the adaptation and careful review of the instruments after a review of specialized literature in different sources and databases, then proceeded to make the psychometric justification of the instrument through the judgments of experts: a professional in the area of music and two psychologists, since these instruments have been used in various investigations at international and national level, the same as from psychometric procedure have come to meet the requirements of validity and reliability.

The second stage consisted of identifying the population to be intervened according to the characteristics of the objectives set out, and for this reason, the educational institutions were asked for authorization by letter to be able to apply the questionnaire to students enrolled in the 2021 academic year; to make the application of the instruments effective, communication was established with the teachers of the specialties and the reason for the research and the procedures to be followed in the development of the questionnaire were explained to them, and they proceeded to send the link of the survey to the students, which was worked on in Google Form.

In the third stage, the information generated in the Google Form was collected to be processed and to obtain the corresponding results. It is worth mentioning that at all times the personal data of each student participating in the research were protected, since the data entered into the platform were anonymous, only some characteristics of the population were considered, such as age, sex, whether they belonged to the COVID 19 risk group, family situation, musical instrument studied, and institution of origin.

## 3. RESULTS

### 3.1. Levels of academic stress in music college students in times of COVID-19

Since stress is one of the public health problems and, when reference is made to academic stress this is manifested as the excessive tension experienced by students, both individually or in the classroom as a product of the relationship between the person and the events of their environment (Roman & Hernandez, 2011; Orlandini 1999; Diaz, 2010). Due to the demands imposed by the educational environment, both students and teachers are affected (Caldera et al., 2007). Stress levels in the university populations of the music area are located between "severe" and "moderately severe" in the different academic cycles they have been studying, these events are manifested in the last days of each semester and the exam periods.

The results show that 58.4% of music students show a severe level of academic stress, 30.4% show moderate academic stress, and 10.9% show moderate to severe academic stress (Table 6); the frequent sources of stress are exams, exposures, reduced time to develop assignments, family members ill due to COVID, etc.



**Table 6**

*Levels of academic stress in music students in COVID-19 times.*

Stress levels	fi	%
Minimal Academic Stress	0	0.0%
Medium Academic Stress	1	0.3%
Moderate Academic Stress	89	30.4%
Academic Stress Moderate Severe	32	10.9%
Severe Academic Stress	171	58.4%
Total	293	100.00%

In general, the levels of academic stress change according to the hours of instrumental practice, thus we can observe that students who practice less than 3 hours during the day present 72.0% and those who practice more than 4 hours a day represent 28.0%. Consequently, the results show that those students who practice a musical instrument less than 3 hours during the day present a higher percentage (86.0%) of severe academic stress; however, those students who practice more than 4 hours of a musical instrument during the day present a lower percentage (14.0%) of severe academic stress. Similarly, those students who practice more hours of a musical instrument have a relatively lower level of stress and are generally in the moderate type of stress. Therefore, the high levels of stress presented by the students can be attributed to the few hours they practice a musical instrument, compared to those who dedicate more time to the practice of a musical instrument, the levels of academic stress are not significant (Table 7).

**Table 7**

*Levels of academic stress according to the hours of instrumental practice in students*

Result stress score by PHQ-9	Hours of practice of the musical instrument		Total
	From 1 to 3 hours	From 4 to more hours	
Minimum	0	0	0
%	0,0	0,0	0,0
Medium	1	0	1
%	100,0	0,0	100,0
Moderate	44	45	89
%	49,4	50,6	100,0
Moderate severe	19	13	32
%	59,4	40,6	100,0
Severo	147	24	171
%	86,0	14,0	100,0
Total	211	82	293
%	72,0	28,0	100,0

### 3.2. Instrumental practice as a means of coping with academic stress in music colleges in times of COVID-19

Next, we analyze in light of the results, how instrumental practice serves the students as a means of coping with academic stress. The results shown in Table 8 describe the levels of coping with the stressors that occur in their student life; in this regard, it can be seen that 68.60% of music students have an adequate level of coping with academic stress, 29.35% have a regular level of coping and 2.05% have an inadequate level of coping. The factors associated with low levels of coping are poor knowledge and the decision to resort to the resources, and psychological and cognitive mechanisms they have, thus resulting in students with greater

possibilities of denial and avoidance of stress, being this a bad predictor to be able to cope with the stressors they face in the university environment, since, denying or hiding the problem does not achieve the emotional stability that is required, on the contrary, it will decrease their immune system and will be more exposed to have anxiety and this will generate lower chances of success in their university life (Dueñas, 2017).

**Table 8**

*Levels of instrumental practice coping with students' academic stress.*

Levels of coping	fi	%
Inadequate coping	6	2.0%
Regular Coping	86	29.4%
Appropriate Coping	201	68.6%
Total	293	100.00%

In the results presented in Table No. 9 of the levels of coping of instrumental practice to academic stress, according to the musical instrument practiced, we can see that students of woodwind instruments have a regular level of coping with 15.7%, followed by plucked string students who have a regular level with 12.3%, this can be attributed to the management techniques applied by students in the case of wind instruments the work of air control for the production of sound and string instruments the development of psychomotor skills.

The results show the strategies used by the students as a means of coping with academic stress, for the analysis two main strategies were considered that stand out in the information provided, "the number of hours of practice" and "the type of instrument practiced". In light of the results, it can be inferred that for those students who practiced more hours on some musical instruments, their stress level decreased by 67.4%, while the type of instrument would not reveal significance by presenting 21.9%. This means that the hours of instrumental practice, regardless of the type of instrument, have greater relevance for coping with academic stress (Table 9).

**Table 9**

*Coping strategies according to the type of musical instrument and hours of instrumental practice during COVID-19*

Stress level	Coping strategies	
	Nº. of hours of practice	Type of instrument
Decreased (%)	67,4	21,9
Increased or stayed the same (%)	32,6	78,1
Total (%)	100,0	100,0
Total (fi)	293	293

### 3.3. Relationship: instrumental practice as a means of coping with academic stress.

Analyzing the relationship of the independent variables and the academic stress index using the PHQ-9 estimator, Table 10 shows the coefficients (s) estimated for the study variables, these were statistically significant with a significance level between ( $p < 0.000$  and  $p < 0.05$ ). Likewise, the values were found to show a good fit with a pseudo coefficient of determination of  $R^2 = 0.7085$  and with a predictive ability of 67% of the probability that instrumental practice as a coping strategy decreases a student's academic stress. Specifically, the variable "instrumental practice as a coping strategy" was statistically significant when related to the variable "academic stress" at the significance level ( $p < 0.001$ ). From what was found it can be inferred that the

greater the instrumental practice the academic stress decreases to 73%. In other words, students who practice a musical instrument on a sustained basis tend to reduce their levels of academic stress substantially.

**Table 10**

*Influence of instrumental practice as a coping strategy for academic stress in students.*

Predictor variables	Academic Stress (With HPQ-9)
Instrumental practice as coping strategies	-.73198*** (.1361)
Sex	-.3332** (.1054)
Age	-.1054** (.0608)
Belongs to any COVID risk group 19	.4312*** (.1723)
I was living alone during confinement.	.17507** (.1082)
Musical instrument studied or practiced	.02176* (.0262)
Hours of practice per day during confinement	-.31113** (.0335)
_ constant	5.322434 (.48237)
R-squared (R <sup>2</sup> )	0,7085
Adj R-squared (%)	0,6775
Number of observations (n)	293

Note: Standard errors are in parentheses.

\*, \*\*, \*\*\* Denotes significance at the 10 %, 5 % and 1 % level, respectively

On the other hand, for students belonging to a risk group for COVID-19, the level of academic stress tends to increase by 43% at a significance level of ( $p < 0.001$ ), followed by the variable "I was living alone during the confinement" the increase of academic stress is 17%, which means then, living alone is a factor that generates academic stress in students. However, the coefficients of the variables "Hours of practice per day during confinement" and "gender" were statistically significant at the significance level ( $p < 0.05$ ). In other words, the hours of instrumental practice per day during confinement resulted in a negative value, which implies that the more hours of instrumental practice the academic stress decreases to 31%, while the variable "sex" resulted in the same tendency, that is, the fact of being a woman and practicing a musical instrument, the academic stress decreases by 33%. From all this, it can be inferred that the students who practice fewer hours on some instruments are those who present a higher level of academic stress (Table 10).

#### 4. DISCUSSION

The study is relevant because it provides significant information on the relationship between the number of hours of practice of musical instruments and stress levels in students. Thus, 58.4% showed a "severe" level of academic stress and the number of hours of instrumental practice is significantly associated with an adequate means of coping with stress, i.e., there is a 73% probability that instrumental practice as a coping strategy decreases the student's academic stress. In light of the results, it can be inferred that those students who have fewer hours of practice of some musical instruments are those who present higher levels of academic stress, during the period of confinement due to the COVID-19 pandemic. These results agree with

Hallam et al. (2012), where instrumental practice approached with the appropriate criteria helps to improve students' motivation. In the same perspective, Marco et al., (2022), confirm that there are statistically significant differences between university students' stress levels as a function of gender and coping strategies. Likewise, for James et al. (2020), instrumental practice can cause important social impacts by reducing cognitive and perceptual-motor impairment as a function of functional plasticity and brain structure.

In the same way, Ortega et al., (2021), state that academic stress is manifested in five dimensions: Generating situation, Physical reactions, psychological reactions, achievement, and organizational climate. Likewise; the need to develop adequate study habits that promote more autonomous learning, more consciousness, and less dependence on feedback to make the most of the time invested with sustained attention (Bohdan, 2022). These results coincide with those found by Araos et al., (2021), so it can be argued that students were characterized by differences in the levels of academic stress, according to gender, age, and year of study (see Table 10). Therefore, the application of psychoeducational strategies is necessary to reduce the prevalence of academic stress in students, so that they can perform adequately and improve their quality of life, given that, tutor teachers provide cross-cutting strategies integrated into pedagogical practices, while peers provide emotional support and peer learning, and chaperones act as critical friends (Huang & Yu, 2022).

On the other hand, Varela et al., (2020), state that academic stress is related to the emotional and social behavior of the student; students when they perform their classical music practice perform it alone, while when they study folk music or jazz they perform it together, achieving positive experiences in the practice together (Sandgren, 2019).

## 5. CONCLUSIONS

The results allow us to conclude that the highest proportion (58.4%) of music students present a severe level of academic stress using the PHQ-9 estimator, due to stressors they encounter within their universities (exams, exposures, academic overload, little time to develop tasks, etc.) and the health emergency of COVID 19 (sick or deceased relatives, risk groups, living alone, etc.), which are reflected in episodes of headaches, feelings of gravity, anxiety, tension, concentration problems, etc. Likewise, the values found show a greater probability that instrumental practice as a coping strategy decreases a student's academic stress.

Specifically, the variable "instrumental practice as a coping strategy" was statistically significant when related to the variable "academic stress" at the significance level ( $p < 0.001$ ). From what was found it can be inferred that the greater the instrumental practice the academic stress decreases to 73%. That is to say, students who sustainably practice a musical instrument tend to decrease their academic stress levels substantially. Given that the instrumental practice as a means of coping used by the students is adequate (68.6), which means that the students know and put into practice established sequences of routine and practice time.

This study only focuses on the aspects of coping strategies based on instrumental practice, in a cross-sectional manner, emphasizing the hours of dedication and types of instruments. To apply other findings related to coping with academic stress, the study suggests designing a quasi-experimental type of study with two groups, which allows estimating counterfactual values to measure the impact of coping strategies based on instrumental practice of music.

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