



Predisposing Factors and Coping with Musical Performance Anxiety Among Professional Musicians

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Abstract

Musical performance anxiety (MPA) is a psychopathological condition with a notably high prevalence among both music students and professional musicians. Despite growing awareness of its impact, there is still a need to identify the specific predisposing factors and the most effective strategies for coping with this condition. The present study seeks to investigate the relationship between varying levels of musical performance anxiety and a range of attributive characteristics among musicians. Furthermore, it aims to examine the preventive and coping strategies employed by those affected. A quantitative study was conducted with a sample of 108 participants, from whom sociodemographic information was collected, along with self-reported perceptions of anxiety and responses to the K-MPAI-R questionnaire, a validated instrument for measuring MPA. The findings suggest that individuals professionally engaged in classical music report significantly higher levels of performance anxiety compared to those involved in other musical styles. Among the coping mechanisms reported, breathing exercises, self-motivation strategies, and distraction techniques emerged as the most frequently used. Interestingly, the use of meditation as a coping strategy was found to be positively associated with elevated levels of anxiety. These results carry important practical implications, particularly in guiding targeted interventions for the prevention and effective management of musical performance anxiety in both professional and educational settings.

Keywords: musical performance anxiety; musicians; predisposing factors; prevention; anxiety coping techniques

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INTRODUCTION

Musical Performance Anxiety (MPA hereafter) is one of the most limiting conditions for professional musicians, as well as one of the most common among this population (Kenny, 2011). The data shows concerning results regarding its prevalence. According to the research by Ballester-Martínez (Ballester-Martínez, 2015), which included 570 participants, one in three mu-

sicians suffers from MPA, data confirmed in more recent studies such as that of Herrera-Torres & Campoy-Barreiro (Herrera-Torres & Campoy-Barreiro, 2020). Additionally, Dalia (2014) states that between 60% and 80% of professional musicians suffer from the most debilitating forms of this condition, which involve more limiting symptoms due to their greater intensity and duration.

MPA manifests as an excessive fear

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that often prevents musicians from performing their instrumental skills (Cortés-Hernández, 2023; Osborne & Kenny, 2008). Since live performance is a crucial culmination in a musician's professional life, MPA can deeply affect their psychological and emotional stability (Díaz, 2018; Yoshie et al., 2009). The most severe forms of this type of anxiety are characterized by their great intensity and duration, significantly impacting the musician's performance (Cortés-Hernández et al., 2023) and causing notable effects on their mental health, according to the World Health Organization (Díaz, 2018). The Diagnostic and Statistical Manual of Mental Disorders (DSM-V, APA, 2013) classifies it as a form of social phobia characterized by intense anxiety during performances in front of an audience, generally developed through operant conditioning (Paliaukienė et al., 2018).

Regarding the classification of its symptoms, four dimensions of the different manifestations of MPA are distinguished (Barbeau, 2011; Rosset & Odam, 2017): (a) physiological symptoms, such as excessive sweating, increased respiratory or heart rate, or muscle tension (Barlow, 2020; Sharma et al., 2023), (b) cognitive symptoms, such as expectations of disastrous outcomes, setting unattainable goals, or distortions in the perception of one's abilities (Barlow, 2020), (c) behavioral symptoms, such as drug or medication abuse, avoidance or escape from the aversive stimulus, and (d) affective symptoms, characterized by tension and apprehension during public performances (Papageorgi, 2022; Londoño-López & Osorno-Cardona, 2019).

From a causal perspective, Barlow (2000) suggests a triple vulnerability model that includes biological aspects, general psychological aspects, and specific psychological aspects related to certain stimuli. Kenny (2011) later adapted this model to the musical field, redefining three concrete factors: early relationships, individual psychological vulnerability, and personal concerns about public performance (Cortés-Hernández et al., 2023;

Fernández-Granados, 2021).

According to this author (Kenny, 2023), MPA can be better understood as a typology composed of three subtypes that explain qualitative differences in clinical presentation, severity, and comorbidities. These subtypes are: (a) MPA as focal anxiety, without the presence of generalized or social anxiety, depression, or panic, and with anxiety specifically directed at a highly stressful performance, such as an audition or solo recital; (b) MPA coexisting with other anxiety disorders, especially social anxiety disorder; and (c) MPA accompanied by panic and depression (Kenny, 2011; Kenny, 2023).

However, given the wide range of factors that influence the appearance of MPA, it is necessary to conceptualize it as a multidimensional and transactional phenomenon (Sharma et al., 2023). Thusly, the individual should not bear all responsibility, but important influences from the social and educational system should also be considered (Altenmüller & Jabusch, 2010; Fernández-Morante et al., 2020).

The root of this problem is often found in academic centers where music students are professionally trained, mainly due to the lack of recognition and attention to the emotional dimension of students. The academic field of traditional teaching in our country has been limited to classical music until very recently, which restricts most existing data to this particular musical genre. Despite being considered one of the main impediments to the development of musical performers over the last 30 years, the Higher Art Education Centers in Spain do not offer any subject that specifically addresses the prevention or treatment of stage fright (Cernuda, 2018).

Young et al. (2003) identify a series of defining characteristics of this pedagogical system, known as the Conservatory Model. In this environment, conservatory life is extremely demanding and based on talent. The instrument teacher acts as the main evaluator of this talent, and performance is considered more important than teaching (Fernández-Morante, 2021). Ad-

ditionally, the educational methodology focuses on an approach where the student has a passive role, not intervening in interpretative decisions and merely following the teacher's guidelines (Fernández-Morante, 2021).

Moreover, in the professional context, for many graduates in classical music, the only career path they contemplate is entry into a professional orchestra. However, accessing these opportunities involves passing extremely rigorous auditions that require high levels of technical skill. These tests become highly stressful environments and represent decisive moments in many musicians' careers. During these auditions, musicians compete directly with their peers and must face the pressure of performing and being individually evaluated (Kegelaers et al., 2022; Ackermann et al., 2014).

The continuous presence of fear and high levels of anxiety, along with professional instability, can lead to a wide variety of mental disorders in musicians, increasing their psychological vulnerability. MPA encompasses cognitive, physiological, and behavioral symptoms (Kenny, 2005).

It is relevant to note that the prevalence of anxiety symptoms varies considerably among musicians according to socio-demographic factors. In relation to age and gender, musicians over 45 report a lower frequency of these symptoms compared to younger musicians, and women tend to experience these symptoms more than men (Fernholz et al., 2019). These symptoms are associated with anxiety that can arise at various stages of musical performance, from pre-performance preparation to post-performance evaluation, including the moment of performance itself (Barbar et al., 2014; Ryan & Andrews, 2009). Both amateur and professional musicians are affected by this type of anxiety (Cortés-Hernández et al., 2023; Spahn, 2015; Williamson, 2004).

It is noteworthy that no recent studies including participants under 18 years of age have been found, suggesting a concerning lack of early attention to this

issue, which tends to intensify over time (Gómez-López & Sánchez-Cabrero, 2023). Research focused on social anxiety and performance anxiety—of which MPA is a specific manifestation—reflects a lack of monitoring and diagnosis in this age group, thus preventing inferences from being made about earlier academic stages prior to intermediate or higher music studies. This omission is often justified by the widespread perception that this type of anxiety is a common phenomenon in the musician's trajectory (Burin & Osorio, 2016; Urruzola & Bernaras, 2020). Indeed, in environments where MPA is considered a natural or inevitable part of musical practice, the feeling of institutional abandonment and lack of support tends to be more acute (Burin & Osorio, 2016).

This neglect can have significant consequences, as high levels of MPA, if not addressed in time, could lead to the complete abandonment of a musical career by young talents who fail to develop effective coping mechanisms.

Certain personality traits linked to musicians should also be considered, as some of them may influence the onset of MPA. Characteristics such as dichotomous thinking, criticism and self-criticism, perfectionism, or catastrophic thinking are significant aspects in the emergence of this condition (Dalia, 2008). On the other hand, recent studies indicate that some personality traits in this population can also aid in managing MPA, such as optimism, self-efficacy, achievement motivation, sensitivity to reward and punishment, and self-control (Lledó Valor, 2022; Zarza et al., 2016). All of these will be taken into account when measuring the degree of MPA in the participants of this research through the items of the K-MPAI test, information that will be specified later.

Regarding different musical genres, it has commonly been assumed that MPA primarily affects classical musicians. However, recent research indicates that jazz musicians also experience significant levels of stage fright (Martin-Gagnon & Creech, 2019). Studies show that differences in per-

formance environments and perceptions of stressful situations do not significantly affect the levels of MPA experienced (Martin-Gagnon & Creech, 2019).

In the Western context, the educational model centered on classical music has experienced a prolonged consolidation over recent decades, while the incorporation of other musical styles into training programs is a relatively recent phenomenon. According to Young et al. (2003), this system is characterized as a highly demanding sociocultural environment, where talent is the central focus and the instrumental teacher assumes the role of primary evaluator. Within this framework, the student adopts a passive position, limited to reproducing the teacher's instructions without actively participating in interpretative decisions (Fernández-Morante et al., 2020; Gómez-López & Sánchez-Cabrero, 2023).

Styles such as pop usually include more flexible structures and spaces for improvisation, which fosters greater expressive freedom, whereas classical music is distinguished by its demand for interpretative accuracy— a precision carefully valued by both musicians and audiences alike (Rosset & Odam, 2017). This rigor increases social pressure during public performances (Altenmüller et al., 2010). Thus, due to these high demands and the inherent pressure in the professional environment, classical music presents the highest levels of MPA among its performers (Papageorgi, 2022).

In this context, it is relevant to discuss jazz, a genre in which a significant increase in the incidence of MPA among its performers has been observed (Martin-Gagnon & Creech, 2019). Although traditionally perceived as a style that enjoys greater structural, expressive, and interpretative freedom, with improvisation as a fundamental element, it is not exempt from pressures. The constant need to generate creative ideas in real-time, combined with the risk of deviating from accepted stylistic codes, can generate high levels of anxiety in performers (Martin-Gagnon &

Creech, 2019; Wehr-Flowers, 2006).

Furthermore, the rise in MPA experienced by jazz musicians coincides with the recent inclusion of this genre in regulated higher education music programs in Spain (still very limited), which could be interpreted as a symptom resulting from the highly stressful, demanding, and competitive environment of these institutions traditionally dedicated to classical music.

The study of MPA among musicians of non-classical genres is growing, but it faces challenges due to the lack of adequate measurement instruments and the generalization in categories such as pop or others. Moreover, there are few studies examining the experience of MPA in non-Caucasian, neurodivergent, or disabled musicians (Cornett, 2024). Cultural differences also play an important role in how MPA is addressed, highlighting the need to adapt research to diverse musical styles and cultural contexts (Cornett, 2023).

As to different instrumental specialties, various studies show that some instruments, in particular, are more susceptible to high levels of MPA (Guyon et al., 2020; MacAfee & Comeau, 2023; McPherson, 2022). A study conducted in 2023 found that musicians playing solo instruments such as the piano, violin, and guitar often experience higher levels of stage anxiety compared to those who play in ensembles. This is due to the greater visibility and pressure soloists face to deliver flawless performances. Pianists and violinists, in particular, report significant levels of anxiety due to the technical demands and memorization required in their repertoires (Guyon et al., 2020).

Recent studies indicate that string players, such as the violin and cello, as well as wind instruments musicians, are particularly susceptible to stage anxiety. Specifically, string musicians often experience a higher incidence of anxiety due to the high expectations of precision and the significant level of technical skill required. Additionally, wind instruments present particular challenges related to breath control, which can increase anxiety levels

during performances (MacAfee & Comeau, 2023; McPherson, 2022).

Various research reviews (Gómez-López & Sánchez-Cabrero, 2023a; Fernholz et al., 2019; Kenny, 2005; Nagel, 2010; Ortiz, 2011b) highlight the scarcity of treatments from a multidimensional perspective and the lack of sufficient evidence regarding their effectiveness (Fernández-Granados, 2021). Among the most effective procedures for MPA is cognitive-behavioral therapy, which has been shown to reduce MPA following interventions (Fernholz et al., 2019; Gómez-López & Sánchez-Cabrero, 2024). This methodology includes visualizations, breath concentration, meditation, relaxation techniques, and the promotion of healthy lifestyles, such as the inclusion of physical activity, good sleep habits, and nutrition, the Alexander Technique, or yoga (Fernández-Granados, 2021; Kenny, 2005; Nagel, 2010).

In any case, it is important to emphasize that stage anxiety can affect any musician, regardless of the instrument they play, and management and treatment strategies may vary depending on the individual and the specific context of their practice and performance (McPherson, 2022).

This condition is therefore a complex disorder that requires a multidimensional approach to study, considering both personal and contextual factors, starting by distinguishing the incidence and particularities of MPA in musicians from genres other than classical music, which has been the most widely studied to date.

Consequently, all these issues raised throughout this theoretical introduction outline the sense, practical implications, contribution to available knowledge, and purpose of this research; which aims to: (1) Understand the link between the different attributive characteristics of musicians and their current level of MPA. (2) Show the relationship between the current level of MPA and the different coping methods used to alleviate stage anxiety. And, finally, (3) Classify the relevance of the different attributive characteristics of musicians and their coping methods concerning their cur-

rent level of MPA.

METHOD

Population and Sample

The study population consists of musicians, either professionals or trainees, who have received formal musical training at some point in their lives. Given the specificity of this population, sampling was not done randomly but by convenience in specialized clusters. Data collection was directed towards highly specialized centers in official higher music studies that could offer both classical music and modern music, such as jazz, and other styles in the Community of Madrid (Spain). Thus, participation in the research was disseminated across the three higher education centers that offer modern music training in Madrid, all of which are private: (1) Centro Superior Creativa, (2) *Universidad Alfonso X El Sabio*, and (3) Forum Musikae, the latter two offering both classical music and jazz and modern music tracks. This was done by sharing an explanatory text on the bulletin boards of these centers, accompanied by a hyperlink to access the document on electronic devices where the form could be filled out online.

To broaden the sample's scope, the snowball technique was used (Bockorni & Gomes, 2021), sharing the form in various forums and specialized websites for musicians of all genres on the internet and social networks, as well as in musician groups on WhatsApp and Telegram.

Finally, the definitive sample of participants comprises 108 testimonies from musicians, either professionals or trainees, who have received formal musical training at some point in their lives. All participants in the research were between June 10 and 30, 2024.

The sample consisted of musicians aged between 18 and 68 years, with an average age of 40.85 years, of whom 44 identified as women (40.7%), 60 as men (55.6%), and four individuals (3.7%) preferred not to specify their gender. Figure 1, shown below, visually represents this gender

distribution using a population pyramid, excluding the four undefined participants, not to exclude or discriminate, but only to show a visual comparison between the two main genders.

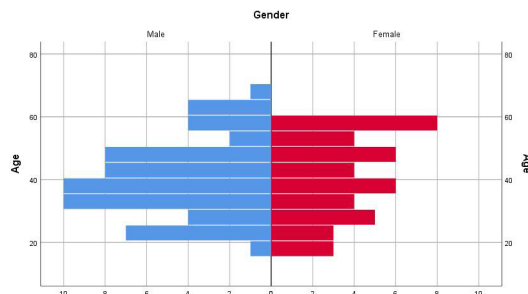


Figure 1. Population Pyramid of the Sample.

Of the 108 musicians who responded to the questionnaire, approximately two-thirds (65.7%) identify primarily as performers of modern/jazz/world music or other non-classical styles, while 34.3% identify primarily as performers of classical music. Figure 2 below illustrates this distribution, including the gender variable.

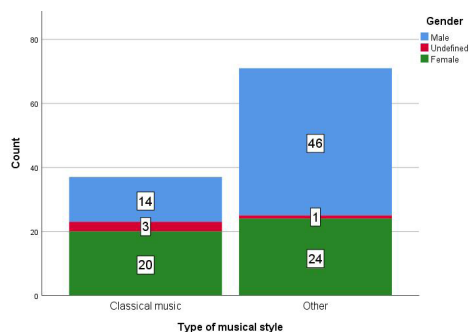


Figure 2. Distribution of the Sample by Musical Style and Gender.

The non-classical musical genres represented in the sample include pop, rock, funk, metal, educational music, folk, and multi-style music. These categories may be encompassed within the modern music performers, suggesting that the sample predominantly consists of musicians in this genre and its subgenres.

Among the total participants, a significant majority (78.7%) are professional musicians. Of the remaining participants,

9.3% are students, and the remaining 12% are not professionally engaged in music, as shown in Figure 3.

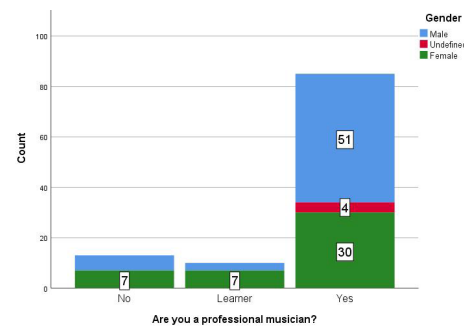


Figure 3. Distribution of the Sample by Professional Status and Gender.

With regards to the level of musical education, 107 responses were obtained, revealing that 58.3% of the participants have advanced musical qualifications, with 38.9% holding a Bachelor's Degree and 19.4% holding a Master's Degree. Meanwhile, 18.5% have completed a Diploma and 22.2% have undertaken Elementary or basic studies, as shown in Figure 4.

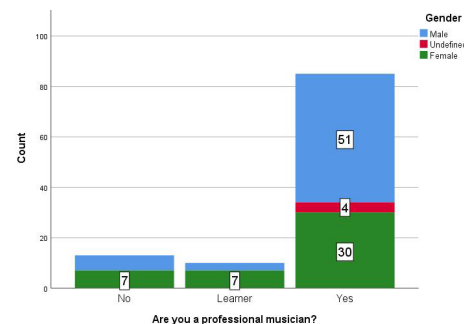


Figure 4. Distribution of the Sample by Level of Musical Education and Gender.

Finally, the instruments in which the participants specialize are as follows: bass (6 people), double bass (1 person), piano (24 people), conducting (2 people), recorder (1 person), drums (6 people), operatic singing (1 person), modern singing (28 people), clarinet (2 people), bassoon (2 people), classical guitar (2 people), electric guitar (6 people), oboe (2 people), percussion (2 people), saxophone (4 people), trombone (2 people), horn (2 people), trumpet (3 people), tuba (1 person), viola (2 people), violin (6 people), and transver-

se flute (2 people). One person did not specify their instrumental specialty but did indicate their musical genre. When grouped according to the basic typology of musical instruments, as shown comparatively in Figure 5, the distribution is as follows: 31 symphonic instruments (28.7%), 40 piano or guitar performers (37%), 29 vocalists (26.9%), and 8 percussion and/or drum performers (7.4%).

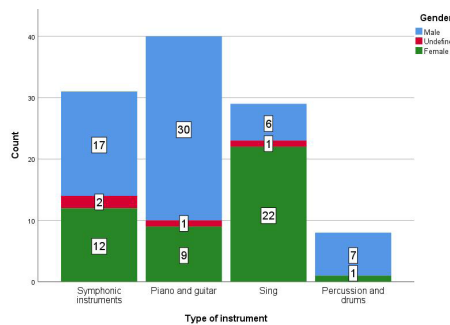


Figure 5. Distribution of the sample by type of musical instrument and gender.

Variables and Measurement Instruments

This study incorporated nine measurement variables. Adopting a flexible definition of variables, eight of them can be considered either criterion or independent variables, as they serve to compare effects on the dependent or outcome variable, which is identified as the measurement instrument. The variables are specified below, starting with the primary variable.

Level of Music Performance Anxiety (MPA): The primary or dependent variable of the study, through which results are observed and compared based on the other variables. MPA was measured using the Revised Kenny Music Performance Anxiety Inventory (K-MPAI-R). This instrument was initially developed by Kenny et al. (2004) with an initial configuration of 26 items (K-MPAI). It was later revised and expanded, validating a 40-item version (K-MPAI-R) (Kenny, 2011), which is utilized in this study to measure participants' levels of MPA. The K-MPAI-R provides a general score reflecting the current level of MPA and measures three dimensions: (1) Early Relationships Context (ERC), which assesses the intergenerational transmis-

sion of anxiety and parental empathy; (2) Psychological Vulnerabilities (PV), which evaluates feelings of depression/hopelessness, sense of control, self-confidence, and marked anxiety towards performance; (3) Concerns Associated with Upcoming Performances (CUAP), which measures physiological anxiety components due to upcoming performances, worry/fear, rumination or repetitive thoughts before and after a performance, self- or other- evaluation, opportunity costs, and confidence in memory (Kenny, 2011). This questionnaire has been widely used in recent studies due to its solid psychometric foundation and its basis in Barlow's triple vulnerability theory (Barlow, 2000; Sauer-Zavala & Barlow, 2021). Participants rate the 40 items on a Likert scale from 0 to 6, evaluating various physiological, cognitive, behavioral, and emotional symptoms related to MPA. Total scores range from 0 to 240, with higher levels of MPA reflected in higher scores. This instrument has demonstrated excellent internal reliability, as measured by Cronbach's alpha (0.94) (Chang-Arana et al., 2017), and strong convergent validity with established measures of trait and social anxiety (Kenny et al., 2014). Kenny (2016) specifies that the cutoff point on the K-MPAI may vary according to specific clinical needs. In this study, the commonly accepted clinical cutoff score of 105 was used (Ackermann et al., 2014; Juncos et al., 2017; Kenny and Halls, 2018; Clarke & Osborne, 2020).

Regarding the independent or criterion variables:

1. Age: Discrete quantitative variable.
2. Gender: Nominal variable with three levels (female; male; unspecified).
3. Previous MPA Experience: Presence of episodes of MPA recognized by the participant currently or in the past. Ordinal variable with two levels (Yes; No).
4. Musical Style Performed: Main musical style in professional practice. Nominal variable with two levels (classical music; other styles).

5. Instrumental Specialty: Main type of instrument used for musical performance. Nominal variable with four levels (symphonic instruments; piano and guitar; percussion and drums; voice).
6. Professional Musician: Primary professional engagement related to musical performance. Nominal variable with three levels (No, Student, Yes).
7. Stage Anxiety Control Method: Primary method used to prevent MPA symptoms from affecting musical performance. Nominal variable with nine levels (breathing exercises; meditation; pharmacological therapy; alcohol; concentration, visualization, practice sessions, self-motivation, distraction, other; mindfulness; relaxation techniques; psychological therapy).
8. Level of Musical Education: Formal musical training. Ordinal variable with four levels (elementary and basic studies; intermediate level, Bachelor's level, master's).

Design and Procedures

As a starting point, a four-page form was developed using Google Forms. The first page comprised the written informed consent for the study, which was mandatory for reading and acceptance in order to proceed with participation. The second page included questions addressing the attribute variables considered in the study, such as gender, age, level of musical education, the musical style performed, instrumental specialty, previous experience with performance anxiety (PA), and resources used to manage it. The third page contained the 40 items of the Revised Kenny Music Performance Anxiety Inventory (K-MPAI-R). Finally, the fourth and last page provided acknowledgments for the participants' voluntary and altruistic participation.

This research adheres to all ethical principles outlined by the World Medical Association and approved at the Helsinki conference (Parsa-Parsi & Kloiber, 2023) for research involving human subjects and

was previously approved by the Ethics Committee of the Universidad Autónoma de Madrid (CEI-129-2648), which has overseen the ethical commitment and scientific quality.

Once the data were collected, they were stored on a secure private server and analyzed using IBM SPSS statistical software, version 25. The results of this study first involved creating frequency tables and descriptive statistics regarding the sample's configuration based on the attribute variables considered. Secondly, the reliability of the instrument was calculated using Cronbach's alpha, yielding an excellent result ($\alpha = 0.944$). Subsequently, the Kolmogorov-Smirnov Test was conducted to determine whether the distribution of results met the principle of statistical normality or if non-parametric statistical tests were more appropriate. This test indicated that the use of non-parametric tests was advisable ($K-S = 0.089$; $p = 0.035$). Following this, Kruskal-Wallis and Mann-Whitney U tests were performed to assess the statistical significance of each attribute variable, and non-parametric correlations were used to establish the level of statistical significance of the age variable (Sánchez-Cabero et al., 2022). Next, non-parametric correlations (Spearman's rho) were calculated to relate the nine methods used to control performance anxiety with the levels of PA measured by the K-MPAI-R (Kenny, 2011), considering its three dimensions (ERC, PV, CUAP). Finally, to classify the relevance of each variable included in the study concerning PA, four Classification Trees (CHAID) were created: one for the overall result of the K-MPAI-R (Kenny, 2011) and three others for each of its dimensions.

It is important to note that a confidence level of 95% ($p = 0.05$) was used to determine statistical significance. However, Bonferroni correction was applied when making comparisons between more than two groups.

RESULT AND DISCUSSION

In response to the first research ob-

jective, which aimed to understand the relationship between different attribute characteristics of musicians and their current level of PA, the following table (Table 1) displays the mean PA scores, as measured by the K-MPAI-R (Kenny, 2011) and its three dimensions, across each of the six attribute variables considered, along with their statistical significance as determined

by the Kruskal-Wallis test or Mann-Whitney U test. It also shows the level of non-parametric correlation for the age variable and its significance through Spearman's rho.

Aside from the response to "Have you experienced or do you experience anxiety before, during, or after performing?", which logically shows a very high level of

Table 1. PA Levels and Statistical Significance According to the Attribute Variables Considered.

		KMPAI-R	ERC	PV	CUAP
Gender	Man	81.42	11.48	35.98	20.70
	Undefined	115.75	19.25	51.00	24.50
	Woman	95.61	11.09	39.14	28.70
	P (Kruskal-Wallis)	0.163	0.211	0.358	0.068
Type of musical instrument	Symphonic instruments	91.58	9.90	37.06	28.23
	Piano and guitar	86.93	11.58	38.55	22.55
	Voice	88.86	12.93	37.83	23.38
	Percussion and drums	82.75	13.63	37.13	18.50
	P (Kruskal-Wallis)	0.963	0.224	0.826	0.371
Type of musical style	Classical music	92.32	10.30	35.89	29.46
	Other styles	86.46	12.30	38.83	21.31
	P (U Mann-Whitney)	0.416	0.119	0.271	0.005
Have you ever suffered from anxiety before, during, or after playing?	No	56.65	8.00	26.15	12.42
	Yes	98.56	12.76	41.52	27.80
	P (U Mann-Whitney)	0.000	0.001	0.000	0.000
Are you a music professional?	No	84.31	11.00	34.00	23.38
	Student	119.80	15.10	50.70	36.30
	Yes	85.42	11.29	36.89	22.78
	P (Kruskal-Wallis)	0.127	0.083	0.080	0.132
Level of musical studies	Elementaty level	77.71	11.25	33.13	19.92
	Intermediate level	72.80	9.50	30.35	21.00
	Bachelor's degree	95.62	12.36	42.88	24.86
	Master's degree	102.05	12.38	40.67	30.57
	P (Kruskal-Wallis)	0.083	0.535	0.044	0.070
Age	Bilateral correlation	-0.147	-0.120	-0.186	-0.186
	P (Spearman's Rho)	0.135	0.222	0.057	0.057
TOTAL		88.47	11.61	37.82	24.10

statistical significance related to overall performance anxiety (PA) and each of the three dimensions, the results displayed in Table 1 indicate that the type of musical style is the only variable that generates statistically significant differences. Specifically, in the Concerns Associated with Upcoming Performances (CUAP) dimension, it is shown that the classical music style presents a higher level of PA in this dimension. On the other hand, although the statistical significance level of Psychological Vulnerabilities (PV) concerning the level of musical education is 0.044, the application of the Bonferroni correction determines that this result is not significant. Regarding age, while it does not generate significant differences, it is noteworthy that there is an inverse relationship with all PA measures.

In response to the second research objective, which aims to demonstrate the relationship between current PA levels and the various coping methods used to alleviate performance anxiety, Figure 6 illustrates the frequency distribution of the use of each technique employed by the participants.

It is notable from Figure 6 that both Mindfulness and Alcohol are very infrequent, which limits the ability to draw statistically compelling conclusions. On the other hand, it is also meaningful that Self-

Motivation, Distraction, and other techniques, as well as Breathing Exercises, are the most frequently used methods. Regarding the statistical significance of each method, Table 2 presents the non-parametric correlations for each of the nine methods identified by the participants in relation to the results of the K-MPAI-R (Kenny, 2011) and its three dimensions.

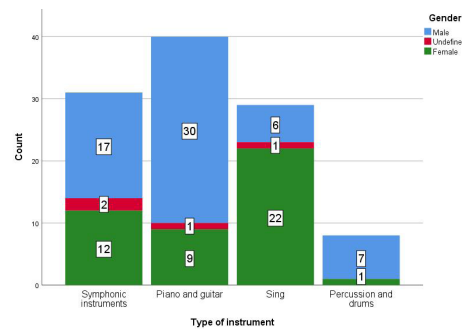


Figure 6. Frequency Distribution of Methods for Managing Performance Anxiety.

The results presented in Table 2 reveal that only Meditation has a significant direct correlation with the overall K-MPAI-R (Kenny, 2011), as well as with the dimensions of Psychological Vulnerabilities (PV) and Concerns Associated with Upcoming Performances (CUAP). In contrast, Self-Motivation, Distraction, and other techniques show significant correlation with the Early Relationships Context (ERC) dimen-

Table 2. Non-Parametric Correlations of Each Performance Anxiety Coping Method with K-MPAI-R Results and Its Dimensions.

	KMPAI-R	ERC	PV	CUAP
Anxiety control method: Breathing exercises	0.173	0.072	0.154	0.251**
Anxiety control method: Meditation	0.247**	0.111	0.198*	0.271**
Anxiety control method: Pharmacological therapy	0.189	-0.064	0.085	0.285**
Anxiety control method: Alcohol	-0.026	-0.008	0.017	-0.104
Anxiety control method: Concentration, visualization, study	0.08	0.165	0.039	0.069
Anxiety control method: Mindfulness	-0.087	0.048	-0.081	-0.113
Anxiety control method: Self-motivation, distraction, others	0.16	0.201*	0.137	0.125
Anxiety control method: Relaxation techniques	0.051	0.019	0.043	0.069
Anxiety control method: Psychological therapy	0.06	0.086	0.051	0.005

* = The correlation is significant at the 0.05 level (two-tailed). / ** = The correlation is significant at the 0.01 level (two-tailed).

sion, while Breathing Exercises and Pharmacological Therapy (in addition to Meditation) are correlated with CUAP.

Finally, to address the third research objective, which aims to classify the relevance of different musician attributes and coping methods on their current level of PA, Figures 7-10 are presented. These figures illustrate the final classification of variables in the form of Classification Trees (CHAID). Figure 7 shows the CHAID Tree for the total K-MPAI-R score (Kenny, 2011), followed by Figures 8-10 for each of its dimensions.

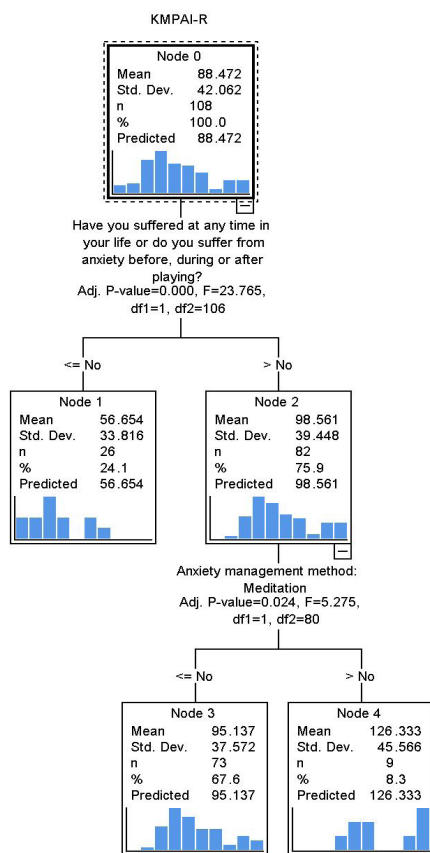


Figure 7. CHAID Tree for K-MPAI-R Results Considering All Variables in the Study.

It is anticipated that the data presented in Figure 7 conclude that previous experience with performance anxiety (PA) is associated with higher scores on the K-MPAI-R (Kenny, 2011), as observed in the correlation results, and this finding will be consistent across all CHAID Trees. More notably, Nodes 3 and 4 at the second level

highlight the strong association between the use of meditation and higher levels of K-MPAI-R (Kenny, 2011).

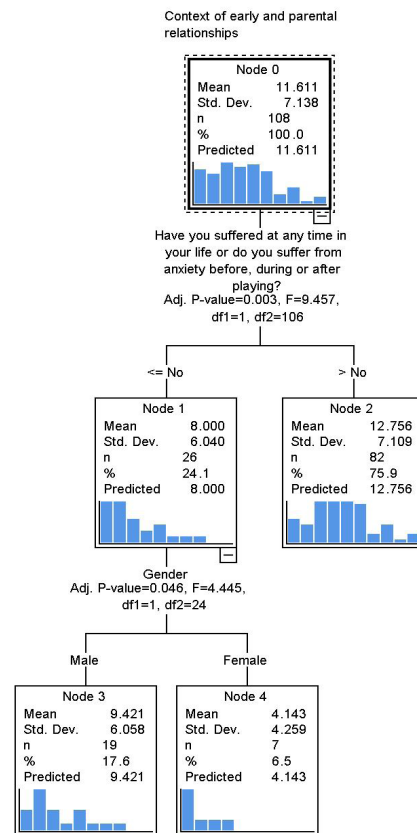


Figure 8. CHAID Tree for Early Relationships Context (ERC) Results Considering All Variables in the Study.

Figure 8 reveals that gender is a significant factor among those who have never experienced performance anxiety (PA). Specifically, among this group, the level of Early Relationships Context (ERC) is notably higher in men.

Figure 9 shows that, for the Psychological Vulnerabilities (PV) dimension, there are no marked differences aside from the expected correlation with previous experience of performance anxiety (PA).

Figure 10 highlights that musical style, specifically classical music, is associated with higher levels of concerns about upcoming performances among those with no prior experience of performance anxiety (PA). Conversely, participants who use pharmacological treatments experience higher levels of MPA compared to those

who do not use such treatments among individuals who have previously experienced MPA.

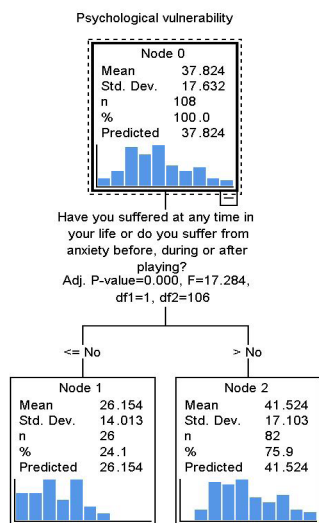


Figure 9. CHAID Tree for Psychological Vulnerabilities (PV) Results Considering All Variables in the Study.

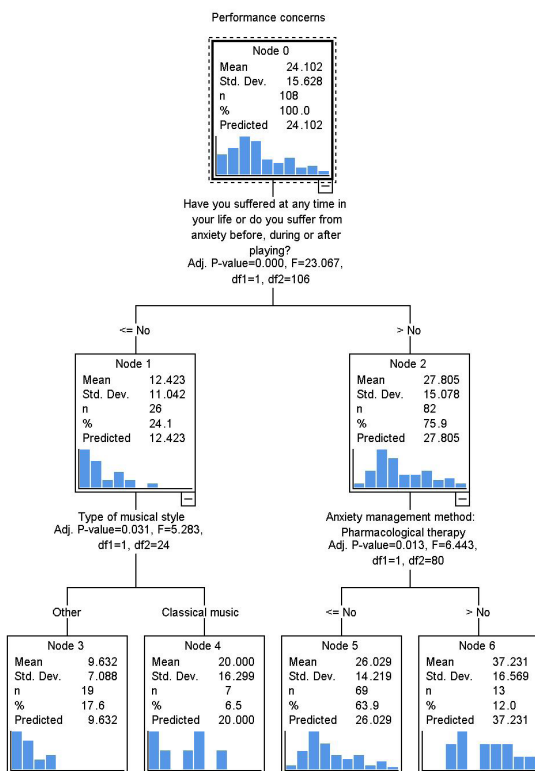


Figure 10. CHAID Tree for Concerns Associated with Upcoming Performances (CUAP) Results Considering All Variables in the Study.

The main finding of this study is that

the type of musical style practiced generates statistically significant differences in overall performance anxiety (PA). This implies that its relevance for associating with higher PA levels in musicians is greater than other variables commonly explored in other studies, such as age, gender, or type of instrument. However, the findings of this study indicate that these factors do not result in any significant variation (Fernández-Granados, 2021; Fernholz et al., 2019; Osborne et al., 2020; Osorio et al., 2017; Yoshie et al., 2009).

In relation to the dimensions of the K-MPAI-R (Kenny, 2011), Early Relationships Context (ERC) is the only dimension in which no significant differences are observed. This is understandable given that ERC measures the generational transmission of anxiety and parental empathy, which seems to be more defined by the practiced musical style (classical music) rather than familial influence. For the Concerns Associated with Upcoming Performances (CUAP) dimension, the relevance of musical style is evident even among those who have never experienced PA, as the mean CUAP in this group is more than double among those who practice classical music ($M = 20.0$ versus $M = 9.63$), as seen in the CHAID Tree in Figure 10.

One possible reason for this finding could indicate that a lack of exposure to anxiety-inducing situations in the past does not necessarily protect against future anxiety. It may also imply that factors such as personal technique and performance perception could be more determining in the experience of PA. Recent studies on this type of anxiety, such as the one by Martin-Gagnon & Creech (2019), suggest that jazz performers also experience high levels of PA, similar to their classical music counterparts. Martin-Gagnon & Creech (2019) address their findings generally, focusing on classical and jazz music styles – where the former has a long-standing elitist tradition, and the latter has become a more exclusive style in recent years. Classical music, also known as art music, has a long history in recognized academic

programs in Spain, and thus a high level of virtuosity is often expected (Gómez-López & Sánchez-Cabrero, 2024a). Jazz, on the other hand, has been present in Spanish conservatories for a relatively short time and is increasingly included in their programs. This may lead to a growing demand for interpretative excellence from both performers and the public, influenced by pressures from official musical academic environments (Belmonte, 2018; Fernández-Morante, 2021; Gómez-López & Sánchez-Cabrero, 2023b). Other musical genres are not commonly included in Spanish conservatory programs, except in specific cases where they intersect with jazz or are offered as parallel paths to other styles. This suggests what has been observed in other research, where the academic environment exerts a significant influence on perceptions of the working environment and creates high pressure on students and future professionals during public performances, which become almost real-time exams (Gómez-López & Sánchez-Cabrero, 2023b).

Aside from musical style, the other variable that generates statistically significant differences in overall PA, as measured by the K-MPAI-R (Kenny, 2011), is previous experience with PA. The results of this study indicate that musicians who report having experienced PA at some point in their lives currently experience higher levels of PA. This finding has been previously observed in other studies, such as those by Osborne et al. (2020) and Osorio et al. (2017). Given that PA is a matter associated with musical performance, it is highly logical that this concern would be higher in musicians who have previously encountered such issues.

Regarding age, the results do not show a significant link with PA, either globally or in any of its three dimensions, although an inverse relationship is evident for all measurements. This inverse relationship between PA and age aligns with findings from previous studies (Fernholz et al., 2019; Gómez-López & Sánchez-Cabrero, 2024) and suggests that experience

and maturity may play a mitigating role in PA, even though this relationship was not statistically significant in this study.

As for the experience of PA by gender, this study does not show statistically significant results. However, similar to studies by Osborne and Kenny (2008), Yoshie et al. (2009), and Fernández-Granaños (2021), the incidence of PA in women is higher than in men. These studies suggest that gender differences are related to more intense cognitive predispositions and greater affective-emotional relevance in women (Nepon et al., 2021). This could be due to a greater sensitivity to social criticism among women, given societal expectations associated with female roles in Western cultures, which is directly related to a higher initial propensity to PA symptoms (Gómez-López & Sánchez-Cabrero, 2024b).

Where gender does show significant differences is among those who have not experienced PA in the past, specifically in the ERC dimension. Women exhibit significantly lower levels of ERC if they have not had a previous episode of PA. This could be due to various studies (Kelly et al., 2008; Matud, 2004; Tamres et al., 2002) indicating that women are more likely to seek social support and use emotion-focused coping techniques, which may result in a more effective reduction of anxiety levels. Thus, women may be employing preventive coping strategies more effectively, even without prior experiences of anxiety.

The data reveal a nearly non-existent correlation between the type of instrument played and the level of PA experienced. These results are not consistent with conclusions from previous and recent studies indicating differences in the perception of pressure and PA based on instrumental specialty, due to factors such as public exposure and the technical demands of

the instrument (Guyon et al., 2020; MacAfee & Comeau, 2023; McPherson, 2022). This may be attributed to the high number of pianists and singers in the sample compared to other specialties. According to recent studies, these groups are

among those with the highest scores in experiencing this type of anxiety (Guyon et al., 2020; MacAfee & Comeau, 2023; McPherson, 2022).

Finally, it is important to note that there are no statistically significant differences between students, professionals, and non-professionals of music, nor in terms of the level of musical education. This suggests that the experience of Music Performance Anxiety (MPA) is related to a situational affliction on stage, with its exposure being experienced similarly regardless of whether it is a professional exercise or not.

Concerning coping strategies, the frequency and variety overwhelmingly match data provided by previous research (Bissonnette et al., 2015; Burin, 2020; Cortés Hernández et al., 2023; Fernández-Granados, 2021; Gómez-López & Sánchez-Cabrero, 2023; Rodríguez, 2017; Sadock & Ruiz, 2009; Spahn, 2015; Williamon, 2004). This implies that musicians continue to attempt to prevent or alleviate the effects of MPA through various strategies, without adhering to a specific guide or methodology, but with common points.

The most common strategies for treating MPA are breathing exercises (which significantly correlate with the PAPP dimension) and techniques of self-motivation, various forms of distraction, and others (which substantially correlate with the CRT dimension). Both techniques belong to Cognitive Behavioral Therapy (CBT), whose results have proven to be the most effective in treating MPA according to previous research (Fernández-Granados, 2021; Fernholz et al., 2019; Kenny, 2005; Nagel, 2010). In this regard, the data also aligns with findings from studies indicating that strategies focusing on emotions are the most frequently used by musicians. However, in contrast, problem-focused strategies, which involve the intervention of professionals and external services, are considered the most effective (Burin et al., 2020).

The fact that pharmacological therapy significantly correlates with the PAPP

dimension among those who, at times, have suffered from MPA suggests that musicians who resort to medication may experience a more severe form of this condition. This is consistent with previous research suggesting that medication is not recommended for treating MPA, as it may interfere with exposure therapies and the elimination of fear responses (Birk, 2004; Clarke et al., 2020). Moreover, medications only address physical symptoms, while most MPA symptoms are emotional and cognitive in nature (Clarke et al., 2020; Kenny, 2011). On the other hand, as indicated, non-pharmacological methods, such as breathing exercises and self-motivation and distraction tactics, are observed to be more effective in reducing MPA compared to medication.

Meditation is the only employed methodology that has a significant global correlation with the degree of MPA experienced (also in the VP and PAPP dimensions). The confirmation of a strong link between the use of this methodology and higher levels of the KMPAI-R (Kenny, 2011) is relevant. These results contradict findings from previous studies, such as those by Shorey (2020) or Zhukov (2019), which could be interpreted in various ways; perhaps musicians with higher levels of MPA are more likely to resort to meditation, or they may do so out of desperation, possibly as a strategy to manage more severe anxiety. Other alternative explanations that remain unanswered in this study could include whether meditation is effective precisely because it is used as a last resort in more severe cases, or the possibility that participants' expectations and beliefs about the effectiveness of certain practices influence their results.

The fact that the remaining methods used by participants do not show a significant correlation in reducing MPA symptoms may be due to several reasons, such as incorrect application of techniques, a lack of alignment of these strategies with the individual needs of participants, or simply that these methods are not inherently effective for this type of anxiety.

CONCLUSIONS

The results show that the primary practice of Classical Music Style is the most associated factor with a high level of MPA, surpassing traditional factors such as age or gender. It is evident, therefore, that the professional configuration of classical music fosters a high level of MPA. This result could be related to formative conditions, the demands of the style, the circumstances of its public exposure, or, most likely, a combination of all these factors at different levels. Unfortunately, the scope of this study cannot determine this, but it can be concluded from these results that incorporating MPA prevention or teaching coping and control strategies for this type of anxiety for this population is a beneficial measure for a group at high risk of experiencing it.

Curiously, meditation is predominantly used by musicians with higher levels of MPA, but this relationship may not imply causality. One possible explanation is that individuals with more severe or persistent symptoms of MPA are more likely to seek out alternative or complementary interventions—such as meditation—after other strategies have proven ineffective. In this context, meditation may function less as a preventive practice and more as a *last resort* when anxiety becomes unmanageable. This interpretation is consistent with prior literature suggesting that musicians often turn to self-regulation techniques like mindfulness only after experiencing chronic psychological distress or performance impairment (Diaz, 2018; Spahn et al., 2016). To explore this hypothesis further, qualitative research is needed to investigate musicians' personal experiences, motivations, and expectations regarding the adoption of meditation as a coping tool for MPA.

Additionally, the fact that classical musicians who have not experienced previous episodes of MPA tend to exhibit higher anxiety in the PAPP dimension could imply that the absence of previous experiences with anxiety-inducing

situations does not guarantee protection against future experiences. This information may imply the need for further investigation into the effectiveness of meditation in severe cases of MPA and whether it can be integrated into broader treatment programs, as well as developing exposure-based interventions to help musicians gradually acclimate to the stress related to public performances.

The results further indicate that, in addressing the symptoms of Music Performance Anxiety (MPA), the tactics employed by both music professionals and students tend to be strategies developed or sought out independently, with no official program within their academic training or standardized procedure for this purpose. This situation hinders the social recognition of MPA and fosters the perpetuation of taboos and social stigmas surrounding those who suffer from it. Consequently, not only does this foster the persistence of this condition, but it also reinforces the standards within more academically oriented music realms, governed by judgments and values that are numerically quantifiable in a domain that is ostensibly subjective, such as music and art in general.

In this sense, this research highlights the neglect of mental health among musicians and the high-stress environment in which, particularly in the case of classical music, performers are trained and operated. Therefore, based on the review of the data, there is a clear need to develop and implement a program that offers the opportunity to manage MPA effectively from elementary education.

In addition to enhancing the understanding of MPA, the data gathered here provide unique perspectives that can be applied in educational, therapeutic, and professional contexts related to music. Thus, the findings have the potential for significant practical implications, guiding specific interventions for the prevention and management of MPA, as well as mitigating such anxiety in musicians of various profiles. Examples include educational programs incorporating breathing exerci-

ses and coping techniques tailored to the individual characteristics of musicians. Furthermore, the implementation of guided meditation sessions could be a valuable tool for those experiencing higher levels of anxiety, provided it is used as part of a comprehensive approach that includes other anxiety management strategies. Finally, in the therapeutic domain, understanding the demographic and stylistic factors influencing MPA could enable mental health professionals to design more personalized and effective treatments for musicians, thereby improving their well-being and professional performance.

LIMITATIONS

Conversely, this study presents several limitations that should be considered. Firstly, the relatively small sample size of 108 participants may limit the study's ability to detect minor effects or less apparent variables. Moreover, the representativeness of the sample is crucial for generalizing the results to the broader population of musicians, and some instrumental specialties are underrepresented, which affects the robustness of the results; hence, data were aggregated into the four instrument families previously detailed. Additionally, uncontrolled variables could influence the results, such as individual differences in personality, previous experiences with the questionnaire used, or biases in participants' responses. This could compromise the internal validity of the results. While the statistical analyses reveal significant correlations, they do not establish causality and may not capture the complexities of the relationships between the studied variables.

The absence of a control group and the limited sample size once again require that the findings be interpreted with caution, as has been emphasized in prior research (Rolffs et al., 2018). This limitation is recurrent across the majority of studies examined in recent years (Shorey, 2020), which complicates the ability to draw definitive, large-scale conclusions regarding

the efficacy of the various intervention strategies proposed.

Similarly, the broad categorization of all non-classical genres under the umbrella term "other music" introduces ambiguity, making data interpretation less precise and necessitating a more cautious analytical approach. Additional methodological limitations include the frequent omission of control groups and the absence of blinding procedures. These aspects of study design elevate the risk of potential biases—particularly observer bias—thus potentially compromising the reliability of the outcomes.

An important limitation of the present study is its cross-sectional design, which prevents the establishment of causal relationships between the variables analyzed. As it captures data at a single point in time, it does not allow for the observation of potential changes in levels of music performance anxiety (MPA) or the evolution of coping strategies throughout musicians' educational or professional development. This limitation restricts our understanding of the factors that may influence the worsening or alleviation of MPA at different stages of training. Therefore, it is essential to conduct longitudinal studies that examine the progression of this condition and its interaction with personal, pedagogical, and institutional variables over time.

Another significant weakness lies in the lack of qualitative exploration of the pedagogical practices and institutional cultures within formal music education settings. While quantitative data provide a broad overview of the prevalence and correlates of MPA, they often overlook the nuanced emotional experiences and interpersonal dynamics that emerge within conservatories and music schools.

Finally, the generalizability of the findings to other musical or cultural contexts may be limited due to the specific characteristics of the sample and the study environment. Together, these considerations underscore the need to interpret the results with caution and recognize the inherent limitations of the study's design

and execution.

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