Identifying Emotional Patterns in Young Musicians and Their Impact on Music Performance

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Abstracts

This study explores the emotional patterns experienced by young musicians before performing and examines how their emotional beliefs influence these pre-performance emotions. A total of 320 students aged 10 to 18 years participated, recalling their most recent concert memory through a guided imagery induction. A selection of 10 emotional patterns was used to assess their feelings, and they selected Happy, Sad, Courageous, Angry, Elated, Inquisitive, Bored, Calm, Tired, and Afraid. They also responded to questions about their opinions regarding musical performance nervousness (MPN), including MPN utility, MPN regulation, and audience attitude. The cluster analysis revealed distinct emotional profiles categorized into Llow MPN, Moderate MPN, and high MPN. Findings showed that beliefs regarding the negative impact of MPN, perceived inefficacy in managing anxiety, and pressure from an unsupportive audience were associated with high and moderate MPN profiles. The study discusses the practical implications for music education based on these insights.

Keywords: Emotional pattern, Young musician, Emotion, musical performance nervousness (MPN).

Introduction

Identifying emotional patterns in young musicians and examining their impact on music performance involves analyzing how various emotional states such as anxiety, excitement, and confidence affect their musical execution and expression [1]. Research in this area typically uses a combination of self-reported surveys, physiological measurements (like heart rate variability and skin conductance), and performance evaluations to investigate these relationships [12]. For instance, heightened anxiety might lead to increased mistakes or a reduction in expressiveness, while positive emotions like excitement and confidence could enhance technical accuracy and musical engagement [4]. However; some limitations which are presented below have to be used in this research because of its significant implications. This is justifiable by the fact that emotions are temporary and relative, different people are likely to experience a given emotion in different ways, and as such, it is hard to come up with means that will produce similar results for fresh different independent variables [6]. Each musician's emotional responses are highly personal and it can vary widely due to individual coping mechanisms, resilience, and psychological states, complicating efforts to generalize findings across diverse populations [13]. Moreover, the various performance conditions tend to vary, including the setting and context of play, how well prepared the musician is, and several other factors, which makes the impact of emotions on performance difficult, if not impossible, to quantify the exclusion of other factors [3]. Most studies are cross-sectional, providing a snapshot of the emotional impact on performance at a particular moment rather than offering a longitudinal perspective that tracks changes over time [7]. This limitation negates the ability to determine how these emotional patterns may change and affect musical growth in the course of years. In addition, situational variables that are in fact related only to task performance may confound the relation between emotions and performance data [9]. The study's main objectives are listed below.

- Analyze the range and intensity of emotions that young musicians describe having before a performance.
- Examine the connections between the three emotional profiles (low, moderate, and high) and the beliefs surrounding music performance anxiety (MPN), such as audience attitude, MPN utility, and MPN regulation.
- Assess how these emotional patterns and beliefs affect young musicians' anxiety levels and their entire performance experience.
- Provide useful advice on how music educators can improve young musicians' mental health and performance results.

Literature Review

A machine learning (ML) approach that used physiological information to predict human emotion and the mood of music was suggested in [5]. That model was divided into three stages. First, it used audio signals to forecast song mood, second, it used physiological signals, to predict human emotion, and third, it mapped music mood and emotion in real-time. To create and implement the expert's content validation [15] and pretesting of the first questionnaire, which

was intended to assess musicians from various backgrounds' suffering connected to performance. The music-recommended system (MRS) was utilized in [14] instead of categorizing the user's current feeling, provided music based on the patterns of keystrokes and mouse actions. Since it doesn't need an extra device and can precisely map these patterns to the user's preferred music, that system was more accurate. Using alaap segments from the performances of several maestros, theresearch [2] explored the neurological basis of distinct timbres, moods, and audience categories in Indian Classical Music (ICM). MRS were introduced in [11] with an emphasize on their present use cases and distinctive features. Three categories were established for the proposed music activities: basic, lean-in exploration, and lean-back listening. The method [10] of determining the emotion from the music samples was known as emotion recognition in music. In that investigation, a novel strategy based on deep learning (DL) techniques was suggested to identify the emotion by classes of musical instruments. Music training was a great way to study training-induced brain plasticity because it incorporated the interaction and integration of many functional systems [8]. Dynamic modules and subgraphs were thought to facilitate effective information transmission in the network architecture that underpins human brain function. The study described how older adults' electro-dermal activity (EDA), measured with commercial equipment, could be used to determine their level of arousal. The objective of that study [16] was to identify alterations in arousal to develop future treatments that enhance patients' emotional state and lessen the likelihood of experiencing anxiety and despair.

Methodology

I. Participants

The purpose of this research is to investigate the level of MPN among 320 students ranging from 10-18 years studying in music schools. Therefore, through a study of dispositional and performance-specific MPN, the research seeks to examine the effect of age, gender, and type of instrument on anxiety experienced before and during performances. Knowledge of these aspects may contribute to the development of strategies aimed at enhancing the performance experiences and quality of life of young musicians. The participant demographics are displayed in Table I, showing that % play various instruments, 25% are violinists, and 45% are pianists. The distribution of these choices varies by age level, with a considerable number of younger students becoming pianists and varying interest in the violin and other instruments.

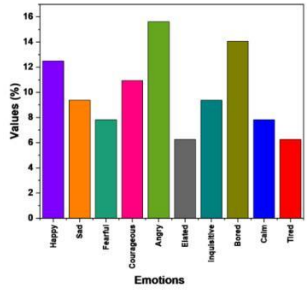
Table I The participant demographics

Age (years)	No. of. students	No. of. Boys	No. of. Girls	Percentage of total (%)	Instrument Breakdown		
					Pianists (%)	Violinists (%)	Others (%)
10	80	32	48	25	45	35	20
					25	30	45
11	70	28	42	21.9	30	40	30
12	75	38	37	23.4	20	50	30
					33	34	33
13	65	34	31	20.3	55	30	15
14	30	18	12	9.4	30	20	50
15	20	12	8	6.3	15	60	25

16	20	9	11	6.3	40	20	40
17	15	8	7	4.7			
18	15	11	4	4.7			
Total	320	192	128	100			

II. Analysis of Emotional Profiles in Young Musicians

The distribution of emotions indicated by young musicians (N = 320) and the accompanying utility beliefs for MPN are shown in Fig. 1. These images show how young musicians' emotional states and performance experiences are influenced by their perceptions of MPN. Fig. 1 presents a graphical depiction of the range of emotions that musicians portray. At 15.625%, the most commonly noted emotion is anger, followed by boredom at 14.0625%. Additionally, 12.5% and 10.9375% of artists, respectively, express happiness and courage. 7.8125% of responses are fearful and calm, while 9.375% are inquisitive and sad. The two least reported feelings, at 6.25% apiece, are elated and tired. This distribution sheds light on the variety of emotional experiences that young musicians go through, which might have an impact on their entire musical experience and performance. Through analysis of this data, specific solutions for reducing performance anxiety and improving overall musical experiences can be made possible by learning more about the connection between emotional reactions and MPN levels.



Emotions	Values (%)
Happy	12.5
Sad	9.375
Fearful	7.8125
Courageous	10.9375
Angry	15.625
Elated	6.25
Inquisitive	9.375
Bored	14.0625
Calm	7.8125
Tired	6.25

Fig 1 Distribution of emotions marked by young musicians (N = 320)

III. Hypothesis Development

Hypothesis 1: Young musicians who experience higher levels of anxiety and fear as part of their emotional patterns are more likely to report lower performance quality.

Hypothesis 2: Musicians who regularly experience positive emotions, such as excitement and anticipation before performances tend to achieve higher performance satisfaction and quality.

Hypothesis 3: Young musicians who are more adept at recognizing and managing their emotional patterns report fewer negative impacts of emotions on their performance.

IV Statistical Analysis

SPSS is an effective tool that is applied in management as well as statistical analysis of data. It can be used for data entry, data management, and data manipulation using functions such as descriptive, inferential statistics, and regression analysis. The application allows for data cleaning, visualization, and creation of reports making it appropriate for a wide range of research. Additionally, SPSS supports cluster analysis, which is useful for identifying distinct groups in the data based on similarity measures, aiding in segmentation and pattern recognition.

Cluster Analysis: The research carried out in this study using SPSS identifies different emotional profiles based on the participants' degrees of MPN. People who have similar anxiety tendencies are clustered. Three primary emotional reaction groups are shown by this approach in the individuals. Every category represents unique MPN patterns, encapsulating the spectrum of emotional states and responses to anxiety associated with performance in the group.

- Low MPN:This cluster's members exhibit very low levels of performance anxiety. Regarding their performance, they usually feel quite confident and not stressed out.
- Moderate MPN: Individuals within this group have a modest spectrum of anxiety. In comparison to the High MPN group, their anxiety varies but is usually controlled and less severe.
- High MPN: High degrees of performance anxiety are experienced by participants in this cluster at various points during their musical performance. This group exhibits severe anxiousness, which affects how well they function as a whole.

Result

I. MPN utility beliefs

MPN utility beliefs are a measure of the perceptions young musicians have concerning the effects of MPN. These beliefs affect emotions and ways of dealing with stress before and during performances. Knowledge of such perceptions assists in determining their correlation with various degrees of MPN low, moderate, or high. Investigating the relationships between these beliefs and emotional profiles establishes less and more severe levels of MPN as observed in musicians and helps to identify intervention and support needs. Table II shows how young musicians' emotional traits and their perceptions of MPN relate to one another. A noteworthy segment of this group holds the belief that MPN causes me distress, with 40% expressing low MPN, 30% showing moderate MPN, and an additional 30% indicating high MPN. The proportion of those who believe that MPN could be beneficial is almost equal, with 35.7% reporting low MPN, 28.6% moderate MPN, and 35.7% high MPN. Anxiety levels are correlated with one's sense of unfamiliarity with MPN; 37.5% of those who describe I'm unfamiliar with it have low MPN, 37.5% have moderate MPN, and 25% have high MPN. Moreover, the distribution of young artists who think that MPNIs something i have learned to control over time is mostly extreme: only 16.6% report moderate MPN, while 41.7% report low MPN, and another 41.7% report strong MPN. In summary, among those who say that stage fear makes me more

focused, 16.6% have a high MPN, 50% have a moderate MPN, and 33.3% have a low MPN. There are 320 young musicians in all in the sample.

Table II Proportion of young musicians with different MPN utility beliefs by emotional profiles

MPN utility beliefs	Emotional Profiles			
Performance nervousness	Low MPN	Moderate MPN	High MPN	n
Causes me distress	20 (40%)	15 (30%)	15 (30%)	50 (100%)
Could be beneficial	25 (35.7%)	20 (28.6%)	25 (35.7%)	70 (100%)
I'm unfamiliar with it	30 (37.5%)	30 (37.5%)	20 (25%)	80 (100%)
Is something i have learned to control over time	25 (41.7%)	10 (16.6%)	20 (41.7%)	60 (100%)
It makes me more focused	20 (33.3%)	30 (50%)	10 (16.6%)	60 (100%)

II. MPN regulation beliefs

Understanding how young musicians perceive and manage MPN before concerts is possible through knowledge of MPN regulation beliefs. Comprehending these convictions is essential as they influence artists' experiences with and responses to anxiety, and they disclose different MPN levels low, moderate, or high. Finding trends and adjusting support for varying MPN levels are made easier by analyzing these beliefs. Table III depicts the link between young musicians' emotional profiles and MPN regulatory views. A large proportion of the sample says MPNI feel powerless to calm down, with 44% reporting low MPN, 24% moderate MPN, and 32% high MPN. This suggests that a considerable number of people fail to regulate their worry. Similarly, I use relaxation techniques to manage my anxiety is 41.7% of musicians report low MPN, 33.3% moderate MPN, and 25% high MPN, demonstrating the usefulness of such approaches in reducing anxiety.In contrast, 26.9% of people I know some strategies to calm myself had low MPN, 38.5% moderate MPN, and 34.6% high MPN, indicating that awareness of tactics does not always correspond with reduced MPN. Furthermore, 50% of people who believe they do not need to do anything have low MPN, whereas 25% have both moderate and high MPN, demonstrating different personal methods to dealing with anxiety. Finally, individuals who feel that practice and preparation will help me stay calm had a low MPN of 55%, with 20% moderate MPN and 25% high MPN, indicating that preparation is an important component in minimizing performance anxiety. Overall, the sample includes 320 young musicians, whose varying views of MPN highlight the importance of tailored treatments and support measures for effectively managing performance-related anxiety.

Table III Proportion of young musicians' views on MPN regulation across different emotional profiles

MPN regulation beliefs	Emotional Profiles			
If I feel anxious before a performance	Low MPN	Moderate MPN	High MPN	n
I feel powerless to calm down	22 (44%)	12 (24%)	16 (32%)	50 (100%)
I use relaxation techniques to manage my anxiety	25 (41.7%)	20 (33.3%)	15 (25%)	60 (100%)
I know some strategies to calm myself	35 (26.9%)	50 (38.5%)	45 (34.6%)	130 (100%)

do not need to do anything	20 (50%)	10 (25%)	10 (25%)	40 (100%)
practice and preparation will help me stay calm	22 (55%)	8 (20%)	10 (25%)	40 (100%)

III. Audience Attitude Beliefs

Audience attitude refers to a group of people's general disposition or sentiments toward a specific subject or performance. In contrast, beliefs are an audience's convictions or acceptance of specific facts or ideas, which can have a substantial impact on their attitudes and behaviors. Table IV describes how musicians' emotional responses to MPN differ depending on their MPN beliefs. It categorizes how different attitudes towards MPN effect anxiety levels, which range from low to extreme. Musicians with low MPN commonly believe that some people seem to be supportive, but I notice a few indifferent (30.8%), while those with moderate and high MPN express similar views (35.4% and 33.8%, respectively). Similarly, the audience appears intimidating and hostile is 10% of musicians report low MPN, 15% moderate MPN, and 15% high MPN, demonstrating the usefulness of such approaches in reducing anxiety. When it comes to the audience is friendly and receptive, 58.7% of high MP Nartists rate it positively, compared to 17.3% of low MPN musicians. Regarding the statement I can win them over with my performance, 36.7% of artists with moderate MPN and 35% with high MPN feel they can do so. Finally, 62.5% of high MPN artists believe that they are evaluating my every move critically, which is much greater than 12.5% of those with low MPN and 25% of those with moderate MPN.

Table IV Proportion of young musicians' audience attitude assumptions based on emotional characteristics

Audience Attitude Beliefs	Emotional Profiles			
When I look at the audience from the stage, I feel that	Low MPN	Moderate MPN	High MPN	n
Some people seem to be supportive, but I notice a few indifferent.	20 (30.8%)	23 (35.4%)	22 (33.8%)	65 (100%)
The audience appears intimidating and hostile.	10 (25%)	15 (37.5%)	15 (37.5%)	40 (100%)
The audience is friendly and receptive.	13 (17.3%)	18 (24%)	44 (58.7%)	75 (100%)
I can win them over with my performance	17 (28.3%)	22 (36.7%)	21 (35%)	60 (100%)
They are evaluating my every move critically.	10(12.5%)	20 (25%)	50 (62.5%)	80 (100%)

Conclusion

This research investigated the emotional patterns that young musicians go through before a performance and looked at how these feelings were impacted by their emotional beliefs. 320 children between the ages of 10 and 18 took part in the exercise, which involved guided imagery introduction to help them recall their most recent concert experience. A selection of 10 alternatives was used to gauge their feelings, and they selected Happy, Sad, Courageous, Angry, Elated, Inquisitive, Bored, Calm, Tired, and Afraid. They also responded to questions about their opinions MPN, including audience attitude, MPN utility, andMPN regulation. The cluster analysis revealed many emotional profiles categorized as low MPN, moderate MPN, and high MPN. The results indicated that the high and moderate MPN profiles were linked to views about the detrimental effects of MPN, feelings of inadequacy in controlling anxiety, and pressure from an unsupportive audience. Based on these discoveries, the study examined the useful ramifications of music instruction. Thus, this study also has some limitations, including the

possibility of response bias due to respondents completing the study independently, and the use of only one concert memory, which might not capture the full range of experiences of young musicians. Further studies could compare different cultural and performance settings, use more longitudinal designs to capture longitudinal changes, and provide more specific prevention and coping strategies for young musicians having music performance anxiety.

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