

# Low Self-Esteem and Music Performance Anxiety Can Predict Depression in Musicians

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**BACKGROUND:** Music performance anxiety (MPA) is an issue concerning musicians from all levels but is still a rather neglected topic in the education and employment of musicians. This study investigated the link between self-esteem, MPA, and depression within a German-speaking sample of musicians of different professions. The underlying question of this study was generated during psychotherapy treatment of musicians with depression and MPA. Thus, we investigated whether musicians with low self-esteem had MPA or depression.

**METHODS:** An online questionnaire on self-esteem, performance anxiety, and depression was sent to a sample ( $n=295$ ) of German musicians of different professions and levels of education. The assessment tools in the online questionnaire included the Rosenberg-Self-Esteem-Scale, the Kenny Music-Performance-Anxiety-Inventory, and the Beck-Depression-Inventory. **RESULTS:**

Music students had a significantly lower self-esteem scores compared to employed professionals and amateurs and a higher MPA compared to employed musicians. Regression analyses showed a significant prediction of depression by self-esteem and MPA. Specifically, low self-esteem and the cognitive and behavioral aspects of MPA were significant predictors of depression. Partial mediation by MPA between self-esteem and depression was found. **CONCLUSION:** Low self-esteem and MPA could predict depression. The scores of the entire sample of musicians regarding their MPA and depression were higher than in the general German population. These results highlight the importance of education and removal of negativity regarding performance

anxiety in order to improve psychotherapy methods and ensure musicians' health in general. *Med Probl Perform Art* 2022;37(4):213–220.

**MUSIC PERFORMANCE ANXIETY (MPA)** is an issue concerning musicians of all ages, abilities, and professions.<sup>14</sup> Performing in public involves abilities exceeding those of solely playing an instrument with good technique. Amongst them, good communication skills with colleagues when playing in ensembles and, most importantly, inner freedom to realize a technically satisfying, however emotionally touching interpretation are prerequisites to musical performances on stage.<sup>8</sup> It is therefore not surprising that insufficient self-management, unresolved conflicts, ambivalence towards public appearances, and anxiety disorders comprising MPA lead to ongoing problems in performance situations. Accordingly, early prevention of mental problems, such as exaggerated anxiety, dysfunctional perfectionism, and constraint behaviors, is crucial and needs to take place in music education institutions, such as music schools and conservatories.<sup>30</sup>

MPA is one of the most frequently reported disorders among musicians. The prevalence rate is estimated between 25% in Australian,<sup>19</sup> 59% in Dutch,<sup>32</sup> and 95% in US-American<sup>3</sup> symphony orchestras. The impact of MPA on professional musicians compared to music students and amateurs has not been investigated thoroughly, especially in European countries.

According to the International Classification of Diseases (ICD-10),<sup>7</sup> the diagnosis of MPA is coded as a specific phobia. In the Diagnostic and Statistical Manual of Mental Disorders (DSM-5),<sup>1</sup> MPA is classified as a subtype of social anxiety disorder (for a review of performance-only subtype, see Fernholz et al., 2019<sup>9</sup>). While the correlation of MPA with anxiety disorders has been investigated broadly, the link to other mental disorders and mental health in general has not been examined thoroughly.<sup>19</sup>

Self-esteem is a very prominent construct in psychological research<sup>16</sup>; however, its link to MPA is still under debate. The literature provides some information about the relation between low self-esteem and social phobia or social anxiety.<sup>12,13</sup> In general, patients with social phobia show elevated self-criticism, especially those with the complex subtype, which is determined to be the more severe

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and chronic form of social phobia with the greater impairment of the everyday life.<sup>6</sup>

Even though a significant negative correlation between low self-esteem and MPA has been found in Hong Kong adolescents enrolled in music schools,<sup>5</sup> research in adult musicians is lacking. Self-esteem appears to be a strong predictor for the development of MPA and other psychological and especially anxiety disorders.

Overall, social anxiety and depression are among the most common comorbidities of psychiatric diagnoses,<sup>23</sup> as depression appears as a commonly accompanying diagnosis of anxiety disorders. Few studies have investigated the link between MPA and major depression. Kenny et al. (2014)<sup>19</sup> examined a group of professional musicians from several Australian symphony orchestras. The results indicated significant correlation ( $r = 0.574$ ) between depression and MPA with no differences between age groups for depression, but with females experiencing higher MPA levels. Barbar et al. (2014)<sup>2</sup> investigated professional musicians from Brazil, finding odds ratio of 3.87 for musicians with versus without MPA to develop depression. Within the sample, 24.3% of the professionals and 17% of the amateur musicians showed symptoms consistent with depression.

There is still not enough data concerning the relationship and co-occurrence of low self-esteem and MPA in adult musicians. The aim of this study was to examine how self-esteem, MPA, and depression were linked to one another.

## METHODS

### Participants

The webtool limesurvey.org was used to collect data. The link to the online questionnaire was spread using a snowball system including social media, the website of the Institut für Musikphysiologie und Musiker-Medizin Hannover, the student councils of all German schools of music, and the boards of members of numerous German symphony orchestras. A total of 295 participants completed the survey. Of those responding, 57.6% were female. 18.0% of the sample stated to be employed musicians, 31.9% were music students, 8.8% were freelance musicians, and 41.4% were amateur musicians. Requirements for participation included the following criteria: 1) older than age 18 years, 2) proficiency in the German language, and 3) experience of performing on stage. All participants provided written informed consent prior to beginning the study. The participants were informed their personal data would be anonymized by using pseudonyms before starting and after finishing the survey, with the additional option to get in contact with the researcher to clarify comprehension questions.

### Procedures

An explorative study was conducted to determine the effect sizes between self-esteem, MPA, and depression within a German speaking sample. The current study was

conducted during May and June 2021. At that time, Germany was in the state of a lockdown due to the Covid-19 pandemic. This study was approved by the Ethics Committee of the Hannover University of Music, Drama and Media, Hannover, Germany (no. 18102021).

### Measures

**Self-esteem.** The Rosenberg Self-Esteem Scale (RSES)<sup>27</sup> measures global self-esteem and was translated into German by Ferring and Philipp (1996).<sup>10</sup> The scale includes 10 items, of which one half describe positive and the other half negative self-image. All items are to be answered on a 4-point Likert scale, ranging from 0 = totally disagree to 3 = totally agree. Overall, the cumulative value of a maximum of 30 points can be scored, with high scores representing high self-esteem.<sup>25</sup>

**Music performance anxiety.** The Kenny Music Performance Anxiety Inventory in its revised version (K-MPAI-R) was used.<sup>15</sup> The scale consists of 40 items based upon a 7-point Likert scale, ranging from 0 = totally disagree to 6 = totally agree. A maximum of 240 points can be scored. However, a higher sum of scores represents higher levels of MPA as well as psychological distress. The cut-off score indicating pathological MPA is set by 104 points and above.<sup>17</sup>

**Depression.** The Beck Depression Inventory in the revised German version (BDI-V), an abbreviated questionnaire of 20 statements rated on a 6-point Likert scale (0 = never, 5 = almost always), was used with higher scores indicating more depression. The cut-off for a clinically relevant diagnosis of depression is determined at 35 of 100 points.<sup>28</sup>

### Statistical Analysis

We hypothesize that there is interplay of the three constructs self-esteem, MPA, and depression. Therefore, we conducted an exploratory data analysis including multiple correlations to find basic associations between the three constructs. Additionally, one-way ANOVAs were conducted to analyze the differences concerning groups of the different profession and average practice time between the constructs. Two multiple regression analyses deepened the insight into the influence of self-esteem and MPA on depression. Finally, a mediation analysis via an ordinary least squares path analysis was calculated to find an appropriate model describing the link between the three underlying constructs, with MPA depicting the mediator, self-esteem the independent, and depression the dependent variable.

## RESULTS

The analysis of the demographic data and the overall scores on the questionnaires are shown in Table 1. (A listing of instruments played by the sample is shown in Appendix 1.)

**TABLE 1.** Demographic Data and Score Distribution

		Employed Professionals <i>n</i> = 53	Music Students <i>n</i> = 94	Freelancers <i>n</i> = 26	Amateurs <i>n</i> = 122	Total <i>n</i> = 295
Age distribution	Min / max	25 / 64	18 / 29	20 / 73	19 / 71	18 / 73
	Median	49	23	36.50	26	26
	Mean	44.09	23.31	41.38	35.31	33.60
	SD	12.11	2.74	14.33	15.77	14.44
RSES-R	Min / max	11 / 30	3 / 30	13 / 30	8 / 30	3 / 30
	Mean	24.06	20.36	22.92	22.56	22.16
	SD	4.36	5.70	5.10	5.34	5.42
K-MPAI-R	Min / max	25 / 195	38 / 180	21 / 153	28 / 216	21 / 216
	Mean	89.53	110.01	91.77	98.52	99.97
	SD	40.34	35.03	34.58	40.91	39.05
BDI-V	Min / max	0 / 72	3 / 79	4 / 59	1 / 82	0 / 82
	Mean	26.91	33.83	27.81	28.39	29.80
	SD	16.24	15.43	16.20	15.41	15.81

The more detailed analysis of scores on the K-MPAI-R reveals that 136 (46.1%) of the sample's 295 participants reached the cut-off score of 104 points or higher classifying them as highly anxious musicians. In detail, 19 (13.9%) of the highly anxious musicians were employed professionals, 54 (39.7%) were music students, 11 (8.1%) were freelancers, and 52 (38.2%) were amateurs. In relation to the total sample, the percentages were 6.4%, 18.3%, 3.7%, and 17.6%, respectively. Thereby, the sum scores shown in Table 1 might not be sufficient to depict the distribution of highly anxious musicians. However, freelancers were the least and music students were the most represented subgroup of highly anxious musicians with amateurs also close.

Analyzing the BDI-V's cut-off score of 35 points or above for clinically relevant depression, 95 (32.2%) participants scored above 35 points. Within this latter group, 13 (13.7%) were employed professionals, 39 (41.1%) were music students, 8 (8.4%) were freelancers, and 35 (36.8%) amateurs. Applied to the total sample, this indicates ratios of 4.4%, 13.2%, 2.7%, and 11.9%, respectively. The distribution of professions changed when comparing clinically relevant depression signs above the cut-off. Freelancers were the least depressed, and music students closely followed by amateurs were the most represented subgroups.

The illustrated differences between the mean scores of all questionnaires were analyzed further using one-way ANOVAs. All results are displayed in Table 2.

The level of self-esteem measured by the RSES-R differed significantly for the different professions,  $F(3, 291) = 6.330$ ,  $p < 0.001$ ,  $\eta^2 = 0.061$ . Tukey post-hoc analysis revealed a significant difference ( $p < 0.001$ ) between employed musicians and music students (3.695, 95%CI [1.35, 6.04]) as well as between music students and amateurs ( $p = 0.014$ ) with music students obtaining less self-esteem ( $-2.196$ , 95%CI [ $-4.07, -0.32$ ]).

The level of MPA (as measured by the K-MPAI-R) differed significantly for the different professions ( $F[3, 291] = 3.883$ ,  $p = 0.010$ ,  $\eta^2 = 0.039$ ). A Tukey-test was calculated post-hoc to find evidence for which groups differed significantly. The results indicated significant differences ( $p = 0.011$ ) only between K-MPAI-R scores of employed musicians and music students ( $-20.842$ , 95%CI [ $-37.57, -3.40$ ]).

The differences between the groups concerning depression as measured by the BDI-V were investigated. The level of depression indicated by the BDI-V differed significantly between the groups ( $F[3, 291] = 3.160$ ,  $p = 0.025$ ,  $\eta^2 = 0.032$ ). None of the group comparisons using the Tukey-test post-hoc turned out to be statistically significant.

**TABLE 2.** One-Way ANOVA Comparing the Differences Between Profession Groups Concerning their Self-Esteem, MPA, and Depression

		Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
RSES-R	Between groups	529.035	3	176.345	6.330	<0.001
	Within groups	8,106.477	291	27.857		
	Total	8,635.512	294			
K-MPAI-R	Between groups	17,261.446	3	5753.815	3.883	0.010
	Within groups	431,167.280	291	1481.675		
	Total	448,428.725	294			
BDI-V	Between groups	2,317,860	3	772.620	3.160	0.025
	Within groups	71,150.737	291	244.504		
	Total	73,468.597	294			

**TABLE 3.** Coefficients for the Regression Analysis Model 1 and 2

Model		Not Standardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	SE	Beta			Lower bound	Upper bound
1	(Constant)	40.390	4.153		9.726	<0.001	32.217	48.563
	RSES-R	-1.299	0.127	-0.445	-10.208	<0.001	-1.550	-1.049
	K-MPAI-R	0.182	0.018	0.450	10.310	<0.001	0.147	0.217
2	(Constant)	45.890	3.395		13.516	<0.001	39.208	52.573
	RSES-R Factor 1	-2.475	0.214	-0.543	-11.567	<0.001	-2.896	-2.054
	K-MPAI-R Factor 1	0.138	0.066	0.124	2.086	0.038	0.008	0.269
	K-MPAI-R Factor 2	0.257	0.091	0.180	2.841	0.005	0.079	0.436

Dependent variable = BDI-V, RSES-R Factor 1 = self-deprecation, K-MPAI-R Factor 1 = proximal somatic anxiety and worry about performance, K-MPAI-R Factor 2 = worry/dread/negative cognitions/ruminations focused on self/other scrutiny.

Regression analyses were calculated to investigate the variance of depression scores explained by self-esteem and MPA. Self-esteem and music performance anxiety were able to significantly predict depression symptoms:  $F[2, 292] = 255.866, p < 0.001, R^2 = 0.798$  [adjusted  $R^2 = 0.637$ ].

To describe the relationship between the questionnaires and the psychological constructs, the links between the subscales and the factors of the questionnaires were investigated. An additional regression analysis was calculated, investigating how much variance of the BDI can be explained by “self-deprecation” of the RSES-R and the subscales “proximal somatic anxiety and worry about performance” (factor 1), “worry/dread/negative cognitions/ruminations focused on self/other scrutiny” (factor 2) and “anxious apprehension” (factor 3) of the K-MPAI-R. All factors were able to significantly predict depression as measured by the BDI-V:  $F[3, 291] = 108.755, p < 0.001, R^2 = 0.727$  [adjusted  $R^2 = 0.529$ ]. Table 3 shows all coefficients in detail.

To analyze, if self-esteem predicted depression and whether the direct path would be mediated by the level of music performance anxiety, a simple mediation was performed (Figure 1). An effect of self-esteem on depression was observed,  $c = -2.072, p < 0.001$ . After entering the mediator into the model, self-esteem predicted the mediator MPA significantly,  $a = -4.242, p < 0.001$ , which in turn significantly predicted depression,  $b = 0.182, p < 0.001$ . The

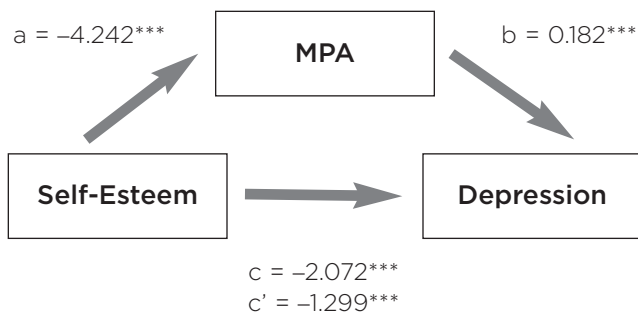
relationship between self-esteem and depression is partially mediated by MPA, since the direct effect from independent to dependent stays significant even with the mediator MPA,  $c' = -1.299, p < 0.001$ . The indirect effect of  $ab = -0.772, 95\%CI [-0.9938, -0.5751]$  was also documented.

## DISCUSSION

The present study provides insight into the psychological well-being of German musicians of different levels concerning their self-esteem, MPA, and depression. There were significant correlations between MPA, self-esteem, and depression. In addition, low self-esteem predicted depression. Thus, we confirm our hypothesis that there is interplay between the three constructs.

There were significant differences in self-esteem between employed musicians and music students as well as between music students and amateurs, with music students having significantly lower self-esteem than the other groups. While employed professionals are settled in their job as musicians and amateurs have another job and play their instruments for fun instead of making music for a living, music students are mostly in an unstable life situation. It is not ensured they will pass auditions and win jobs in orchestras or jazz-ensembles. The problem of insecurity for music students with main subject studies concerning their future has been changing for the worse over the years, as the competition has increased by the internationalization of orchestras and conservatories.<sup>31</sup> Not being invited to auditions based on the curriculum vitae, orchestra or competition experience, or the teacher of the main instrument can decrease self-esteem of music students by frequent experience of such events.<sup>18</sup> Experiencing several such occasions can contribute to a decrease of music students' self-esteem.<sup>23</sup>

Another explanation for the lower self-esteem of music students compared to employed professionals or amateurs might lie in the need for perfection. Kobori et al. (2011)<sup>20</sup> demonstrated that perfectionism in musicians is associated with higher levels of achievement and effort, but at the same time with more MPA. The influence of this trait might be elevated in music students. The need for perfect



**FIGURE 1.** Mediation model: Self-esteem as measured by the RSES-R, MPA measured by the K-MPAI-R, and depression measured by the BDI-V.

**TABLE 4.** Mediation and Path Estimates

	Effect	Estimate	SE	Z	Sig.
	Indirect	-0.772	0.0968	-7.98	<0.001
	Direct	-1.299	0.1266	-10.26	<0.001
	Total	-2.072	0.1195	-17.33	<0.001
Self-Esteem → MPA		-4.242	0.3392	-12.5	<0.001
MPA → Depression		0.182	0.0176	10.4	<0.001
Self-Esteem → Depression		-1.299	0.1266	-10.3	<0.001

playing in the moment of the audition as well as the preparation through the years of study create a lot of pressure, as selection by an orchestra cannot be reached without certain perfection. Since it is the main occupation for music students to practice their instrument and strive for perfection, they are constantly confronted with their musical and technical inadequacy, especially while trying to identify aspects which need improvement.<sup>22</sup> These conditions can lead to a degradation of self-worth and consequently a decrease of self-esteem.<sup>11</sup> Employed musicians indeed need to show perfection as part of their daily occupation in the orchestra as well. Contrary to music students, employed musicians experienced appreciation of their abilities by winning the orchestra position and during their experience on stage with professional orchestras. These experiences can boost self-esteem. Amateur musicians do not depend on music making to fund their lives. Their self-esteem might not be as dependent on music making as a profession to finance their lives. Rather, music making might even boost self-esteem outside the job and daily living.<sup>21</sup>

The overall high scores on the MPA indicated a higher baseline anxiety experienced by musicians of all levels compared to the population in general. This was possibly due to the environment of ongoing social evaluations, especially for music students.<sup>18</sup> It seems self-explanatory that the experience of MPA had a greater impact on those who make music for their livelihood rather than those who make music in their free time. MPA appears not to have the same evaluative component for amateurs as for music students. However, amateurs as well as other musicians experience the judgment of classmates, teachers, parents, or the ensemble when playing in a concert.<sup>16</sup> Even if making music is not as substantially important for making a living as for music students, amateurs do experience the obligation for perfection and thus might feel anxious when entering the stage in front of the public. Professional musicians, on the contrary, might be used to being on stage and play many more concerts every season than amateurs. Thus, professionals might be more accustomed to experiencing MPA prior to their almost daily performances but feel the mild forms of MPA actually supporting the performance.<sup>16</sup> On the other hand, the high scores of MPA experienced by amateurs in this sample perhaps highlight the benefit and necessity of habituation to the performance situation. Contrary to professionals, who are used to performing in front of an audience, concerts are a special and sometimes rare occasion for amateurs to show their

achievements, thereby linking to more MPA.<sup>24</sup> Thus, the link to the low self-esteem of amateurs in this sample becomes clear, as there are fewer opportunities to show musical abilities on stage. When an amateur does not play well in one concert, the experience becomes more severe and can diminish self-esteem more compared to professionals, who play regularly and gain their musical self-esteem through many concerts a week.<sup>13</sup>

The descriptive analysis revealed high mean scores on the BDI-V, indicating at least moderate depression symptoms in every group of the musical profession. The high number (32.2%) of musicians scoring above the cut-off score for clinically relevant depression is worrisome. Again, music students and amateurs scored highest across the total sample and are highly represented within the participants showing clinically relevant depression. These findings point out the relevance of psychological elucidation and the necessity of more research based on the relationship between psychological wellbeing and professional achievement and satisfaction.

Musicians, and especially music students, tend to strongly attribute their success to external sources. For example, winning an audition or playing well in a competition or a concert can be easily attributed to a good conductor, good acoustics in the hall, or the support of friends and family rather than the musician's own abilities to master the musical and technical aspects of the instrument.<sup>2</sup> For music students, it might be hard to accept repeated denials after an audition and still acknowledge the efforts and progress achieved by preparing for the event. The lack of self-esteem of music students plays an important role in developing symptoms of depression, as low self-esteem and depression can develop simultaneously with anxiety.<sup>26</sup>

The COVID-19 pandemic is important to be mentioned at this point as well. Concomitant to the lockdown, increasing depression rates in the German population were reported.<sup>4</sup> This development is visible in the overall high scores of the BDI-V across all four groups. While employed musicians and amateurs might not have been as affected in their musical career by the lockdown due to their continuing employment in an orchestra or another job, the life of music students and freelancers was strongly impaired. Auditions were cancelled for more than 1 year and freelancers lost their engagements. Thus, the existential crisis might have led to a distinctive illustration of individuals experiencing depression.<sup>29</sup>

Analyzing these results further, a regression analysis revealed that self-esteem and MPA significantly predicted depression. The initial research question of investigating the link between the three constructs was thereby supported. These convincing results illustrated the necessity of further investigation of MPA and its links to other psychological disorders. Supporting musicians to find coping strategies to work with their MPA could in turn help to lower depression symptoms.

### Low Self-Esteem and MPA Can Predict Depression

For further investigation on the influence of self-esteem and MPA on depression, three factors (low self-esteem, cognitive and behavioral aspects of MPA) were selected. The results revealed significant predictions of depression by all three factors. These findings emphasize that especially low self-esteem and the worries of an individual go along with depression. Similar findings were supported by Roberts et al. (1988),<sup>26</sup> who found low self-esteem to have a direct effect on depression. It appears that the cognitive aspect of MPA might play a more important role in developing depressive symptoms than the physiological aspect. This could be due to bodily reactions disappearing rather quickly once the musician leaves the threatening situation of being exposed on stage. However, the maladaptive thoughts might reoccur during practice situations or while thinking about an upcoming performance. This finding is relevant for the development of therapeutic interventions. It could also be the most promising. For example, psychological therapy could be organized in a stepwise fashion, beginning with cognitive analysis and restructuring,<sup>14</sup> followed by behavioral methods to decrease the physiological aspects of MPA.

The high number of musicians experiencing MPA and depression symptoms above the clinically relevant and pathologic cut-off scores is concerning. It emphasizes the need for further research on the topic of MPA. If the connections to other psychological constructs and disorders become clearer, psychotherapy could be improved by all-embracing therapy, approaching MPA and the correlates. The mental health regarding performing anxiety of musicians from all levels could thus be enhanced, and successful prevention should be implemented to the entire music education system and not only in German conservatories.

### Limitations

The outcomes of this research are limited by certain aspects. First, sample sizes of the four subgroups of musical professions were not equal. The group of freelancers was remarkably smaller than the other groups and thereby might not depict the actual population of this profession. Equal sample sizes should be respected in future studies.

The type of concert situation in which musicians could feel anxious has not been determined. It could therefore be

that some musicians who took part in this study only feel overly nervous when playing in orchestras and some might feel more threatened during solo performances. Future studies could investigate the influence of performance type on MPA in combination with high or low self-esteem depending on the performance situation and the accomplishments on stage. Additionally, future studies should provide a clear distinction between classically trained and jazz musicians, as they might experience MPA in a distinctive way due to the different concert situations and settings.

Finally, the present study reveals the link between self-esteem, MPA, and depression only for a German-speaking sample, while the ethnicity of the participants has not been evaluated. A transfer of the results to other non-German-speaking samples can only be done by comparing the results of the study on hand with previous studies by different authors, who investigated international samples.

### Conclusion

The present study found significant evidence supporting the interplay between self-esteem, MPA, and depression. Further, low self-esteem and MPA predicted depression. A temporal analysis of MPA and depression revealed a positive correlation between depression and musicians who had experienced longer periods of MPA. Thus, self-esteem, performance anxiety, and depression should be addressed to facilitate the best general health of musicians and music students.

**Authors' Contributions:** DSS proposed the initial research question. All four authors created the concept and study design. CS conducted the data acquisition, did the statistical evaluation, and wrote the first draft of the paper. All four authors read, edited, revised, and approved the manuscript.

**Data Availability:** The data from this study are available from the corresponding author upon request.

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### REFERENCES

1. American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. American Psychiatric Publishing.
2. Barbar, AEM, de Souza Crippa, JA, de Lima Osório, F. (2014). Performance anxiety in Brazilian musicians: Prevalence and association with psychopathology indicators. *J Affect Disord.*

- 152–154(1), 381–386. <https://doi.org/10.1016/j.jad.2013.09.041>
3. Beder, J. (2017). The 2015 Musicians' Health Survey Results. *Senza*. 55(2). <https://www.icsom.org/senzasordino/2017/06/the-2015-musicians-health-survey-results/>
  4. Bundespsychotherapeutenkammer. *BPtK-Auswertung: Monatslange Wartezeiten bei Psychotherapeut\*innen*. 2021 Mar 29. <https://www.bptk.de/bptk-auswertung-monatslange-wartezeiten-bei-psychotherapeutinnen/>
  5. Chan, MJ. (2011). The relationship between music performance anxiety, age, self-esteem, and performance outcomes in Hong Kong music students [thesis]. Durham Univ., UK. <http://etheses.dur.ac.uk/637/>
  6. Cox, BJ, Fleet, C, Stein, MB. (2004). Self-criticism and social phobia in the US national comorbidity survey. *J Affect Disord*. 82(2), 227–234. <https://doi.org/10.1016/j.jad.2003.12.012>
  7. Dilling, H, Freyberger, HJ. (2017). *ICD-10. Taschenführer zur ICD-10-Klassifikation psychischer Störungen*, vol. 9. Verlag Hans Huber, Hogrefe AG, Bern.
  8. Dobos, B, Piko, BF, Kenny, DT. (2019). Music performance anxiety and its relationship with social phobia and dimensions of perfectionism. *Res Stud Music Educ*. 41(3), 310–326. <https://doi.org/10.1177/1321103X18804295>
  9. Fernholz, I, Mumm, JLM, Plag, J, et al. (2019). Performance anxiety in professional musicians: a systematic review on prevalence, risk factors and clinical treatment effects. *Psychol Med*. 49(14), 2287–2306. <https://doi.org/10.1017/S0033291719001910>
  10. Ferring, D, Filipp, S-H. (1996). Messung des Selbstwertgefühls: Befunde zu Reliabilität, Validität und Stabilität der Rosenberg-Skala. *Diagnostica*. 42, 284–292.
  11. Flett, GL, Hewitt, PL, Blankstein, K, O'Brien, S. (1991). Perfectionism and learned resourcefulness in depression and self-esteem. *Personality Individ Diff*. 12(1), 61–68. [https://doi.org/10.1016/0191-8869\(91\)90132-U](https://doi.org/10.1016/0191-8869(91)90132-U)
  12. Hirsch, CR, Clark, DM, Mathews, A, Williams, R. (2003). Self-images play a causal role in social phobia. *Behav Res Ther*. 41(8), 909–921. [https://doi.org/10.1016/S0005-7967\(02\)00103-1](https://doi.org/10.1016/S0005-7967(02)00103-1)
  13. Hirsch, CR, Meynen, T, Clark, DM. (2004). Negative self-imagery in social anxiety contaminates social interactions. *Memory*. 12(4), 496–506. <https://doi.org/10.1080/09658210444000106>
  14. Hoffman, SL, Hanrahan, SJ. (2012). Mental skills for musicians: Managing music performance anxiety and enhancing performance. *Sport Exerc Perform Psychol*. 1(1), 17–28. <https://doi.org/10.1037/a0025409>
  15. Kenny, DT. (2009). The factor structure of the revised Kenny Music Performance Anxiety Inventory. <https://www.researchgate.net/publication/223995005>
  16. Kenny, DT. (2011). *The Psychology of Music Performance Anxiety*. Oxford Univ. Press.
  17. Kenny, DT. (2015). Identifying cut-off scores for clinical purposes for the Kenny Music Performance Anxiety Inventory (K-MPAI) in a population of professional orchestral musicians in Australia. *Polish Psychological Bulletin (Invited Paper for the Special Edition on Music Performance Anxiety)*.
  18. Kenny, DT, Davis, P, Oates, J. (2004). Music performance anxiety and occupational stress amongst opera chorus artists and their relationship with state and trait anxiety and perfectionism. *J Anx Disord*. 18(6), 757–777. <https://doi.org/10.1016/j.janxdis.2003.09.004>
  19. Kenny, DT, Driscoll, T, Ackermann, B. (2014). Psychological well-being in professional orchestral musicians in Australia: A descriptive population study. *Psychol Music*. 42(2), 210–232. <https://doi.org/10.1177/0305735612463950>
  20. Kobori, O, Yoshie, M, Kudo, K, Ohtsuki, T. (2011). Traits and cognitions of perfectionism and their relation with coping style, effort, achievement, and performance anxiety in Japanese musicians. *J Anx Disord*. 25(5), 674–679. <https://doi.org/10.1016/j.janxdis.2011.03.001>
  21. Lawendowski, R, Bieleninik, E. (2017). Identity and self-esteem in the context of music and music therapy: a review. *Health Psychol Rep*. 2, 85–99. <https://doi.org/10.5114/hpr.2017.64785>
  22. Lockwood, AH. (1989). Medical problems of musicians. *N Engl J Med*. 320(4), 221–227.
  23. McLaughlin, T, Geissler, EC, Wan, GJ. (2003). Comorbidities and associated treatment charges in patients with anxiety disorders. *Pharmacotherapy*. 23(10), 1251–1256. <https://doi.org/10.1592/phco.23.12.1251.32700>
  24. Merlin, B. (2013). When consciousness fragments: a personal encounter with stage fright in performance. In McCutcheon, JR, Sellers-Young, B, eds. *Embodied Consciousness*. Palgrave Macmillan UK; pp 57–72. <https://doi.org/10.1057/9781137320056>
  25. Moritz, S, Krieger, E, Bohn, F, Veckenstedt, R. (2017). MKT+, *Individualisiertes Metakognitives Therapieprogramm für Menschen mit Psychose*, 2nd ed. Springer-Verlag. <https://doi.org/10.1007/978-3-662-52998-0>
  26. Roberts, JE, Gotlib, IH, Kassel, JD. (1988). Adult attachment security and symptoms of depression: the mediating roles of dysfunctional attitudes and low self-esteem. *J Personality Soc Psychol*. 70(2), 310–320.
  27. Rosenberg, M. (1965). *Society and Adolescent Self-Image*. Princeton University Press.
  28. Schmitt, M, Altstötter-Gleich, C, Hinz, A, et al. (2006). Normwerte für das Vereinfachte Beck-Depressions-Inventar (BDI-V) in der Allgemeinbevölkerung. *Diagnostica*. 52(2), 51–59. <https://doi.org/10.1026/0012-1924.52.2.51>
  29. Schwinger, M, Trautner, M, Kärchner, H, Otterpohl, N. (2020). Psychological impact of corona lockdown in Germany: Changes in need satisfaction, well-being, anxiety, and depression. *Int J Environ Res Public Health*. 17(23), 1–11. <https://doi.org/10.3390/ijerph17239083>
  30. Spahn, C. (2015). Treatment and prevention of music performance anxiety. *Prog Brain Res*. 217(7), 129–140.
  31. Sternbach, DJ. (1995). Musicians: A neglected working population in crisis. In Sauter, SL, Murphy, LR, eds. *Organizational Risk Factors for Job Stress*. American Psychological Association; pp 283–302. <https://doi.org/10.1037/10173-018>
  32. Van Kemnade, JFLM, van Son, MJM, van Heesch, NCA. (1995). Performance anxiety among professional musicians in symphonic orchestras: a self-report study. *Psychol Rep*. 77, 555–562.

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## APPENDIX 1. Instruments Played by the Musicians of the Sample

	Employed Professionals (n = 53)	Music Student (n = 94)	Freelancers (n = 26)	Amateurs (n = 122)	Total (n = 295)
Piano	4 / 7.5%	8 / 8.5%	4 / 15.4%	18 / 14.8%	34 / 11.5%
Violin	11 / 20.8%	17 / 18.1%	2 / 7.7%	23 / 18.9%	53 / 18%
Viola	3 / 5.7%	3 / 3.2%	1 / 3.8%	6 / 4.9%	13 / 4.4%
Cello	4 / 7.5%	6 / 6.4%	0	6 / 4.9%	16 / 5.4%
Bass/e-bass	1 / 1.9%	0	0	1 / 0.8%	2 / 0.7%
Flute	3 / 5.7%	5 / 5.3%	2 / 7.7%	9 / 7.4%	19 / 6.4%
Oboe	1 / 1.9%	3 / 3.2%	0	3 / 2.5%	7 / 2.4%
Clarinet	1 / 1.9%	7 / 7.4%	0	5 / 4.1%	13 / 4.4%
Bassoon	2 / 3.8%	5 / 5.3%	0	0	7 / 2.4%
Trumpet	4 / 7.5%	6 / 6.4%	2 / 7.7%	8 / 6.6%	20 / 6.8%
French horn	10 / 18.9%	16 / 17%	2 / 7.7%	5 / 4.1%	33 / 11.2%
Trombone	4 / 7.5%	3 / 3.2%	1 / 3.8%	5 / 4.1%	13 / 4.4%
Tuba	0	1 / 1.1%	0	1 / 0.8%	2 / 0.7%
Timpani/percussion	0	1 / 1.1%	2 / 7.7%	2 / 1.6%	5 / 1.7%
Singing/choir	0	9 / 9.6%	5 / 19.2%	14 / 11.5%	28 / 9.5%
Guitar/e-guitar	1 / 1.9%	2 / 2.1%	1 / 3.8%	6 / 4.9%	10 / 3.4%
Percussion (jazz/pop)	1 / 1.9%	1 / 1.1%	2 / 7.7%	3 / 2.5%	7 / 2.4%
Saxophone	1 / 1.9%	0	1 / 3.8%	3 / 2.5%	5 / 1.7%
Organ	0	1 / 1.1%	0	2 / 1.6%	3 / 1.0%
Accordion	0	0	0	2 / 1.6%	2 / 0.7%
Conducting	1 / 1.9%	0	1 / 3.8%	0	2 / 0.7%
Sound engineering	1 / 1.9%	0	0	0	1 / 0.3%