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Editors

Blanka Bogunović, Sanela Nikolić, and Dejana Mutavdžin



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# The Relationship Between Music Performance Anxiety, Mindfulness, and Self-estimated Success in Music High-School Students

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## Abstract

The literature indicates a negative association between Music performance anxiety (MPA), and musical career and musicians' well-being (Phillipe et al., 2022) and, in contrast, a positive association of Mindfulness and various aspects of psychological well-being (Brown & Ryan, 2003). In this paper, we aimed to examine the relationship between Music performance anxiety, Mindfulness, and success in music in the Serbian sample. Since instruments assessing MPA and Mindfulness are used for the first time on the population of musically gifted adolescents in Serbia, we also aimed to explore their latent structure. As part of a larger online study, 207 students from 6 secondary music schools ( $M_{\text{age}} = 16.45$ ,  $SD_{\text{age}} = 1.42$ ) filled out the 40-item version of K-MPAI (the K-MPAI-R, assessing MPA; Kenny, 2016, 2017), the MAAS (15 items assessing Mindfulness; Brown & Ryan, 2003), and a 7-point single-item scale estimating one's own success in music (SESIM). Exploratory factor analysis (EFA) on K-MPAI-R 34 items ( $n = 195$ , Maximum likelihood, Oblimin,  $KMO = .92$ ,  $\chi^2[561] = 3822.95$ ,  $p < .001$ ), indicated a 3-factor solution (Performance-specific anxiety, Depressiveness, and General anxiety) explaining 47.02% of the variance. EFA of the MAAS ( $n = 201$ , Maximum likelihood,  $KMO = .89$ ,  $\chi^2[105] = 824.87$ ,  $p < .001$ ) indicated a 1-factor solution explaining 29.79% of the variance. Multiple regression analysis showed that the MAAS total score and SESIM explain 31.5% of the K-MPAI-R total score variance,  $F(2, 186) = 42.83$ ,  $p < .001$ , while only six MAAS items and SESIM explain 39.6% of the variance in K-MPAI-R total score,  $F(7, 181) = 16.98$ ,  $p < .001$ . When discussing the findings, we indicated possible directions

for further work on improving the MPA assessment instrument and possible directions for supporting psychologists in music schools in their counseling work with students.

## Introduction

More often than not, in the competitive world of classical music there are high-pressure performance situations, such as auditions and important solo concerts, which are particularly anxiety-provoking (Phillipe et al., 2022). Since music performance anxiety (MPA) is a frequent cause of distress among professional musicians and music students, it is important to clarify whether it is a subtype of social phobia, as it is most commonly defined, or a distinct condition that warrants a specific approach to treatment (Kenny, 2011; Osborne & Kirsner, 2022). Kenny (2011) argues that although MPA and social phobia have some common features, they cannot be equated. Accordingly, she gave a definition of MPA that emphasizes the distinct characteristics of this condition:

Music performance anxiety is the experience of marked and persistent anxious apprehension related to musical performance that has arisen through underlying biological and/or psychological vulnerabilities and/or specific anxiety-conditioning experiences. It is manifested through combinations of affective, cognitive, somatic, and behavioral symptoms. (Kenny, 2011, p. 61)

Whilst MPA can occur in a range of different performance situations, Kenny (2011) points out that it tends to be more severe in circumstances “involving high ego investment, evaluative threat (audience), and fear of failure” (p. 61).

MPA may or may not undermine musical performance, and is not necessarily associated with years of training, practice, and achievement level (Kenny, 2011). There are indices that female musicians, as well as young musicians (younger than 30 years of age), and especially young female musicians, are more likely to experience MPA (Kenny et al., 2012). When it comes to coping with MPA, besides the constructive ways, there are those less constructive ones. Kenny et al. (2012) found that 26.5% of their participants, members of professional orchestras, drank alcohol 5 to 6 days per week, and 31% used beta-blockers (with or without a prescription) in order to alleviate MPA symptoms; the frequency of alcohol use was significantly associated with the severity of MPA.

### **Musci Performance Anxiety and Mindfulness**

An exciting development in MPA research is the investigation of its link to Mindfulness. This concept emerged in Buddhism and similar traditions, and can be described as a mental state accomplished by focusing one’s full attention on the present moment and observing one’s feelings, thoughts, and sensations in an accepting, non-judgmental manner (Brown & Ryan, 2003). Brown and Ryan (2003) define Mindfulness in connection with consciousness as a mental state which involves both awareness and attention – while awareness monitors the stimuli in the inner and outer environment, attention focuses awareness on a limited part of the experience. They (Brown & Ryan, 2003) refer to Mindfulness as “enhanced attention to and awareness of current experience or present reality”, and emphasize that “open or receptive awareness” is its central trait (both from p. 822).

Studies involving mindfulness training (Czajkowski et al., 2022; Steyn et al., 2016) show that this kind of intervention may be beneficial

for treating MPA, as well as an adequate psychological preparation for performing.

As part of the long-term efforts to support psychologists in music schools in Serbia by providing them reliable psychological instruments that can be used in counseling work with students, we have conducted a large online study. The study explored the MPA motivational, consciousness (dispositional; Brown & Ryan, 2003), behavioral correlates, and Basic Psychological Needs (Ryan & Deci, 2017) of music students in Serbia. Two scales were translated into Serbian, while some were adapted for musically gifted adolescents. Here we turn to the data related to this paper’s constructs of interest – MPA, Mindfulness, and success in music, while other papers created in the scope of the larger study tackle other issues (see Đokić et al., 2022; Protulipac et al., 2022, 2023).

### **Aims**

Bearing in mind the above stated aspiration, this research has two major aims:

- 1) to explore the latent structure of the instruments assessing MPA and Mindfulness in the Serbian sample;
- 2) to examine the relationship between MPA, Mindfulness, and musical success, in a sample of musically gifted adolescents in Serbia.

### **Method**

In the aforementioned larger study, a comprehensive online inventory was administered to a convenience sample of 207 students from 6 music high-schools in Serbia ( $M_{age} = 16.45$ ,  $SD_{age} = 1.42$ ; I grade: 53, II grade: 56, III grade: 54, IV grade: 44). More than half of our participants are females (58.5%); while, when it comes to gender, 5.3% of participants indicated the option ‘Other’. Table 1 presents the data on the music modules and departments participants were enrolled in at the time of data collection.

The administered comprehensive inventory consisted of 8 separate parts (6 scales assessing distinct psychological constructs, with an introductory part collecting socio-demographic data

on participants, and with a single-item scale on Self-estimated musical success [SESIM]). In this paper, we only refer to the data collected by the following scales: Kenny Music Performance Anxiety Inventory-Revised (K-MPAI-R; Kenny, 2016, 2017), and The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), and on a 7-point single-item scale assessing participants' Self-estimated success in music.

**Table 1. Sample structure according to the study module and music study department the participants attended ( $N = 207$ ).**

Study module	Study department	$n$
Performing	Accordion	10
	Jazz	11
	Piano	35
	Poly-instrumental	14
	Solo singing/vocal studies	6
	String instruments	37
	Wind instruments	33
Theory	Theoretical	61

We used a 40-item version of K-MPAI – the K-MPAI-R, devised for assessing MPA and extensively used in research with musicians (Kenny, 2016, 2017, 2023;  $\alpha = .94$ ; Đokić et al., 2022). The items comprising it range from 0 = *strongly disagree* to 6 = *strongly agree* (Kenny, 2016, 2017), “with higher scores indicating more severe MPA and psychological distress generally” (Kenny, 2023, p. 2). This scale consists of 8 subscales: Proximal Somatic Anxiety and Worry about Performance, Worry/Dread (Negative Cognitions) Focused on Self/Other Scrutiny, Depression/Hopelessness (Psychological Vulnerability), Parental Empathy, Memory, Generational Transmission of Anxiety, Anxious Apprehension, and Biological Vulnerability (Kenny, 2016). To our knowledge, this, longer version of Kenny’s scale has not been previously used in Serbia; while translating it, we relied on the original scale (Kenny, 2016) and its Croa-

tian official translation (Kenny, 2017). Taking into account the exploratory nature of this research, as well as the fact that some of the K-MPAI-R subscales consist of a small number of items (e.g., Memory – 2 items, Biological Vulnerability – 1 item), in the analysis we used the total score.

The MAAS ( $\alpha = .84$ ), intended for assessing trait Mindfulness (Diaz, 2018), consists of 15 items answered on a 6-point Likert scale ranging from 1 = *almost always* to 6 = *almost never*; high scores reflecting more Mindfulness (e.g., “I drive places on ‘automatic pilot’ and then wonder why I went there”; Brown & Ryan, 2003, pp. 825–826). Psychometric development studies showed that the instrument has good internal consistency, and is positively correlated to various aspects of psychological well-being (Brown & Ryan, 2003). Previously translated into Serbian, it was administered only to the population of university music students.

## Procedure

Data collecting took place in February and March 2022. Filling in the inventory was anonymous, and the participants gave their informed consent for these data to be used for academic purposes. All collected data were analyzed quantitatively, with SPSS IBM Statistics 21.0 software. The main methods for data analysis are exploratory factor analysis (EFA), and multiple regression analysis (MPA).

## Results

Table 2 contains information on our participants' average scores on this research's variables of interest, and the data on their correlations. Descriptive statistics for our participants' scores on the K-MPAI-R have already been presented in detail elsewhere (see Đokić et al., 2022). It is worth mentioning that the data presented in Đokić et al. (2022) are obtained on the full database, while in Table 2 we turn to the data obtained on the refined one.

**Table 2. Descriptive statistics and correlations for K-MPAI-R, MAAS scores, and Self-estimated success in music (n = 189).**

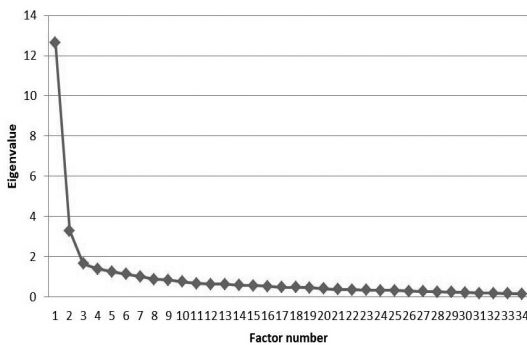
Variable	M	SD	Min	Max	1	2	3
1. K-MPAI-R	108.40	37.69	42	195	–		
2. MAAS	56.60	13.86	17	83	-.48**	–	
3. SESIM	5.35	1.22	1	7	-.36**	.17*	–

Note. Variables are total scores on the same name scales: K-MPAI-R assessing MPA; MAAS assessing Mindfulness; SESIM assessing Self-estimated success in music.

\*  $p < .05$ . \*\*  $p < .01$ .

**The Latent Structure of the Scales Used**

An EFA was conducted on the data obtained from 195 participants on K-MPA-R 34 items (Maximum likelihood, Oblimin).<sup>1</sup> The sample was adequate for conducting EFA, according to Kaiser-Meyer-Olkin measure, KMO = .92, and Bartlett’s test of sphericity indicated that the correlations between items were sufficiently large for conducting it,  $\chi^2(561) = 3822.95$ ,  $p < .001$ . Considering that as many as 7 factors had eigenvalues over Kaiser’s criterion of 1, we retained a 3-factor solution shown by the screeplot (Figure 1). These 3 factors explain 47.02% of the variance.



**Figure 1. The K-MPAI-R factors’ eigenvalues presentation.**

<sup>1</sup> K-MPAI-R items excluded from EFA due to low communality: K\_2, K\_9, K\_24, K\_35, K\_37, K\_40 (see Kenny, 2016, 2017).

The items clustering on the first factor represent Performance-specific anxiety. These 15 items ( $\alpha = .93$ ) indicate an acute state of anxiety and agitation experienced before and/or during a public performance, sometimes explicitly describing MPA’s somatic, behavioral, and cognitive manifestations (Butković et al., 2021; e.g., “Prior to, or during a performance, I get feelings akin to panic” [K\_10]; “I never know before a concert whether I will perform well” [K\_11]).<sup>2</sup>

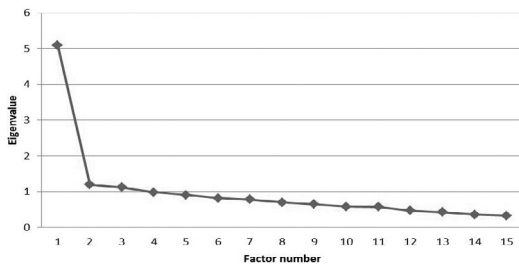
Twelve items with high loadings on the second factor, Depressiveness ( $\alpha = .84$ ), indicate that the musician, or his/her family members have experienced depression. Sometimes the term ‘depression’ is explicitly stated in the item, while sometimes a state of concern, low self-esteem, or lack of energy is described (e.g., “Sometimes I feel depressed without knowing why” [K\_3]; “One or both of my parents were overly anxious” [K\_29]).

Seven items indicating that a person experienced more pervasive manifestations of anxiety: anxiety in general, or anxiety after the public performance, ruminations, as well as worries about the future, comprise the third factor in the retained solution. The following are examples of items clustering on this factor, suggesting that it represents General Anxiety ( $\alpha = .87$ ): “Sometimes I feel anxious for no particular reason” (K\_19); “I worry that one bad performance may ruin my career” (K\_21); “After the performance, I replay it in my mind over and over” (K\_32).<sup>3</sup>

<sup>2</sup> Each listed example item is followed by its code in the original scale (see Kenny, 2017).

<sup>3</sup> Due to the number of items analyzed and the space limitation, a more detail summary of EFA results for K-MPAI-R 34 items is available at the following link: [https://docs.google.com/document/d/116\\_WDyVkeZNYuEcs88F75s\\_ZioU9TRUPzCUUdc-5WEW4/edit?usp=sharing](https://docs.google.com/document/d/116_WDyVkeZNYuEcs88F75s_ZioU9TRUPzCUUdc-5WEW4/edit?usp=sharing)

As for the MAAS, we conducted EFA on the data obtained from 201 participants on all 15 items (Maximum likelihood). According to the Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity, the sample was adequate for this analysis,  $KMO = .89$ , and the correlations between the items were large enough for it,  $\chi^2(105) = 824.87, p < .001$ . The EFA yielded a 1-factor solution (see Figure 2),  $\alpha = .84$ , explaining 29.79% of the variance.<sup>4</sup>



**Figure 2.** The MAAS factors' eigenvalues presentation.

### Predicting the MPA

In order to address our second aim, we conducted three Multiple Regression Analyses (MRA). The first MRA showed that the MAAS total score and Self-estimated success in music (SESIM) explain 31.5% of the K-MPAI-R total score variance,  $F(2, 186) = 42.83, p < .001$ ; regression coefficients are presented in Table 3.

**Table 3.** Regression coefficients of Mindfulness and Self-estimated success in music on MPA.

	<i>B</i>	<i>SE B</i>	$\beta$
<b>Constant</b>	223.38	12.90	
<b>MAAS total score</b>	-1.18	0.17	-.43***
<b>Self-estimated success in music</b>	-9.03	1.91	-.29***

Note.  $n = 189$ .

\*\*\*  $p < .001$ .

<sup>4</sup> A summary of the EFA for the MAAS 15 items with factor loadings is available at the following link: [https://docs.google.com/document/d/1z-GjruAS-aOpoNb\\_yUMdSlnHMD7NUqQnxM8LizsEkfhk/edit?usp=sharing](https://docs.google.com/document/d/1z-GjruAS-aOpoNb_yUMdSlnHMD7NUqQnxM8LizsEkfhk/edit?usp=sharing)

**Table 4.** Regression coefficients of Self-estimated success in music and individual MAAS items on K-MPAI-R total score, and partial correlations.

	<i>B</i>	<i>SE B</i>	$\beta$	$r_{\text{partial}}$	
<b>Constant</b>	196.45	11.77			
<b>MAAS items content</b>	Awareness of the experienced emotion only after some time (1.)	-3.21	1.50	-.13*	-.16
	The tendency to walk quickly without paying attention to what one is experiencing along the way (4.)	-4.46	1.31	-.22**	-.25
	The tendency of not instantly noticing feelings of physical tension or discomfort (5.)	2.94	1.42	.13*	.15
	"Running on automatic," without much awareness of what one is doing (7.)	-6.15	1.67	-.25***	-.26
	Half-listening to someone while doing something else (11.)	3.78	1.69	.15*	.16
	Preoccupation with the future or the past (13.)		-7.20	1.45***	-.35
	<b>SESIM</b>	Evaluating one's own musical success on a 1-7 scale	-7.72	1.86	-.25***

Note.  $n = 189$ .

For the MAAS items, the ordinal numbers of the items in the scale are given in parentheses.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Based on the results of the second MRA, when we entered only individual MAAS items as K-MPAI-R predictors,<sup>5</sup> we conducted a third MRA with predictors being those MAAS items that proved significant in the second MRA, and

<sup>5</sup> The second MRA results are available here: <https://docs.google.com/document/d/1aP8ayJUj9HF57zyQTABr1V-zJb6cZQwZRPD97Z8Qz6o/edit?usp=sharing>



SESIM. This time, only 6 of the MAAS items and SESIM explained 39.6% of the K-MPAI-R total score variance,  $F(7, 181) = 16.98, p < .001$ . The data on regression coefficients and partial correlations of significant predictors are provided in Table 4.

## Discussion

Since we have only international data for comparing our participants' scores on the scales used for assessing the MPA and Mindfulness, and having in mind the explorational nature of this study, participants' age and specificities of the music education in Serbia, we could say that data about the relation between MPA and Mindfulness are still to be confirmed in the future research.

Considering the data on the low variability of musical success objective measures (e.g., Bogunović, 2017; Bogunović et al., 2023) obtained on the university-student population, in this research priority was given to the subjective measure. Although our participants rated their success in music as relatively high, as can be seen in Table 2, additional justification for using this measure comes from the data obtained through MRAs where, when used, Self-estimated success in music was a significant predictor of MPA.

Regarding the latent structure of the K-MPAI-R, we find the obtained 3-factor solution highly interpretable, and some obtained factors are in line with 2 of the themes recurring in the studies also using K-MPAI 40-item version (Kenny, 2023). The value of the retained 3-factor solution we see in its potential to distinguish the performers' experiences immediately before and during the performance from those more pervasive ones, as well as from experiences that may indicate more general conditions (Đokić et al., 2022 had a similar direction when performing face-validity check on these items). We find the resulting structure informative because it can provide relatively straightforward guidelines for psychologists in music schools' counseling work. If further work on this scale is to be pursued, it would entail the creation of

subscales with an approximately equal number of items.

Our attention is also drawn to the content of the items that were excluded from the EFA on K-MPAI-R. The content of item K\_40 (Kenny, 2016) may indicate one's resistance to external stresses. Therefore, our opinion is that it deserves further attention. One of the lines we consider worth following is developing the resilience subscale, which would refer to resistance to the stresses gifted musicians face on their developmental path. We find an argument supporting this idea in other authors' assertion (Matei & Ginsborg, 2017) that resilience is one of the qualities musicians should possess. Another argument in favor of further work on this can be found in the insight of the author of K-MPAI-R herself, that resilience is a concept that requires further attention in this field (Kenny, 2023). If following the proposed line, useful guidelines for developing new items can be found in some of the well-known talent development models (e.g., Gagné, 2015).

Regarding the MAAS factor structure, our findings on single-factor solution align with those reported elsewhere (Brown & Ryan, 2003; Carlson & Brown, 2005, as cited in Diaz, 2018).

Finally, the presented data speak in favor of a predominately negative connection between MPA and Mindfulness. They are following expectations based on the content of these constructs, as well as the findings of other research in the musical context (Czajkowski et al., 2022; Diaz, 2018; Fransworth-Grodd, 2012, as cited in Diaz, 2018).

Along these lines, the findings on the negative correlation between the K-MPAI-R score and the SESIM are consistent with insights about the negative relationship between MPA and performance achievement (Osborne & Kirsner, 2022). In further research, it would be interesting to examine their relationship in more detail, because there is a possibility that not only does the direction of influence goes from MPA to SESIM (decreasing it) but also that Self-estimation has a reciprocal effect on the increase/decrease of MPA. Based on this, it

is clear that we agree with the insight that the relationship between performance quality and MPA is a complex one, mediated by cognitive factors (Matei & Ginsborg, 2017). This is also in accordance with Kenny's (2023) notion on the relationship with MPA and self-efficacy.

Only 6 MAAS items and the Self-estimated success in music explain a higher percentage of the K-MPAI-R variance than the total MAAS score and the mentioned SESIM. We see this as an argument in favor of reducing the number of items of this scale [MAAS] to develop a future battery of tests that would be available to psychologists in music schools in order to collect data on students with whom counseling work would be needed due to MPA (this is in line with Kenny's [2023] notions of using the K-MPAI in guiding therapeutic interventions). We see this research as only the first step on that path; some of the guidelines for future research are already presented, while some stem from the following limitations of the present study.

### Limitations as/and Guide Marks

Among the limitations of this study is the fact that it is explorational, and our results should only be interpreted as indications and starting points for further research in this context.

In addition, the data were collected on a convenience sample comprising only music high-school students. Further examination of the K-MPAI-R metric characteristics on a university-student sample is ongoing. Also, our sample comprises students from the performing and theory modules (see Table 1). Although no statistically significant differences were found in the K-MPAI-R scores between the groups of students from the performance and theory modules (Đokić et al., 2022), as we assume that students from theory module can relate to the content of some of the K-MPAI-R items to a lesser extent than their colleagues in performing module, in future research, and especially in those including the university-student population, it would be interesting taking into account participants' informal music performance experiences as well.

As already pointed out, to our knowledge, this is the first time that the K-MPAI-R has been translated into Serbian. The scale proved to be highly reliable for this population. However, a subsequent inspection of individual items indicated that some will need further fine-tuning to make them easier to understand and connect.

Another limitation of our study stems from the used music success' self-estimation measure. Namely, we used a single-item measure, and participants were expected to give a general assessment of their musical success. As discussed elsewhere (see Bogunović et al., 2023), further research should use more refined self-assessment measures comprising more items, the content of which may refer to specific abilities and skills that a musician (should) possess (e.g., Bogunović, 2017; Ritchie & Williamon, 2013), or comparing one's own behavior with that of a music expert (Papageorgi et al., 2010). The specific requirements that playing different instruments puts before the performers must be considered when developing such measure.

### Conclusion

There are numerous ways in which a person experiencing MPA can (be supported to) constructively overcome the condition (for a short overview, see Matei & Ginsborg, 2017). When it comes to counseling individual music students experiencing MPA, the question arises of how to select the right type of support needed, the right way to provide it, and how to gauge it?

Continuing the work on examining the constituents, correlates, mediators, and moderators of the MPA and, based on the obtained data, developing the theoretical explanation model (Diaz, 2018) we see as optimal. On that line, we see this model as the first step towards developing a battery of tests that psychologists could use in the screening process, and the data collected during it could guide further counseling work with a specific student. More precisely, the scores on individual tests within the battery can provide significant guidelines when choosing the direction in which it may be necessary to

lead the counseling process and the topics that should be addressed in it.

Our findings argue that Mindfulness and the image one has of one's own musical success should be included in such a model and test-battery. Moreover, the finding that only 6 MAAS items and Self-estimated musical success can explain almost 40% of the variance of the MPA we interpret as an indicator of the possibility of creating a comprehensive yet concise and time-efficient battery. Therefore, we see the Discussion as an invitation to contribute to these efforts. Also, using the data obtained by the test-battery-to-be we perceive as a starting point in tailoring the intervention to fit the individual music student; this can contribute transforming "the road less traveled" of individualized support (Kenny, 2023, p. 10) into the main road.

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