

## BRIEF COMMUNICATION

# Parameters for screening music performance anxiety

Ana E. Barbar,<sup>1</sup> José A. Crippa,<sup>2</sup> Flávia L. Osório<sup>2</sup>

<sup>1</sup>Department of Psychology, School of Philosophy, Sciences, and Languages, Universidade de São Paulo (USP), Ribeirão Preto, SP, Brazil.

<sup>2</sup>Department of Neurosciences and Behavioral Sciences, Ribeirão Preto Medical School, USP, Ribeirão Preto, SP, Brazil.

**Objective:** To assess the discriminative capacity of the Kenny Music Performance Anxiety Inventory (K-MPAI), in its version adapted for Brazil, in a sample of 230 Brazilian adult musicians.

**Method:** The Social Phobia Inventory (SPIN) was used to assess the presence of social anxiety indicators, adopting it as the gold standard. The Mann-Whitney *U* test and the receiver operating characteristic (ROC) curve were used for statistical analysis, with  $p \leq 0.05$  set as the significance level.

**Results:** Subjects with social anxiety indicators exhibited higher mean total K-MPAI scores, as well as higher individual scores on 62% of its items. The area under the ROC curve was 0.734 ( $p = 0.001$ ), and considered appropriate. Within the possible cutoff scores presented, the score -15 had the best balance of sensitivity and specificity values. However, the score -7 had greater specificity and accuracy.

**Conclusion:** The K-MPAI showed appropriate discriminant validity, with a marked association between music performance anxiety and social anxiety. The cutoff scores presented in the study have both clinical and research value, allowing screening for music performance anxiety and identification of possible cases.

**Keywords:** Anxiety; performance; music; scale; screening

## Introduction

Music performance anxiety (MPA) can be defined as a persistent and stressful apprehensive experience related to performance of music in public. It may happen in both solo and group performances, with any instrument as well as when singing.<sup>1-5</sup> MPA is understood as a specific subtype of social anxiety disorder (SAD) and its severity varies continuously, from the normal anxiety inherent to the music profession to symptoms such as feelings of terror and near-panic,<sup>6,7</sup> which may cause substantial impacts on performers.

The prevalence of MPA is still unclear, and considerable variation is found among studies.<sup>3,5,8</sup> In a literature review, Brugués<sup>9</sup> found rates ranging from 16 to 70% in survey-type studies carried out with orchestra musicians in the 1980s and 1990s in the United States and European countries. Other studies, such as those of Steptoe,<sup>10</sup> Ryan & Andrews,<sup>5</sup> and Studer et al.,<sup>11</sup> confirm this panorama, with variable but mostly high rates of MPA.

Nevertheless, MPA is still under-recognized and under-diagnosed, mainly because professionals are unlikely to consider it and find it difficult to assess, but also because of the lack of specific instruments for its screening validated for clinical use, particularly with respect to discriminative capacity. An extended review of the literature conducted by Brugués<sup>9</sup> mentions roughly 20

instruments for MPA screening, but most are either restricted to a specific performance situation (e.g., those specific to a particular musical instrument) or are adapted from general anxiety assessment instruments. Furthermore, most of these lacked systematic evidence of their psychometric properties, and their use is thus restricted. Among the tools available, the Kenny Music Performance Anxiety Inventory (K-MPAI)<sup>2</sup> stands out. The K-MPAI is a self-assessment tool made up of 26 items graded on a seven-point Likert-type scale, with total scores ranging from -78 to +78. It was designed to evaluate symptoms that could indicate anxiety, tension, memory alterations, and negative cognitions due to MPA. The instrument also assesses elements related to personal history, particularly with the respondent's relationship with his or her parents, but also to attention received during childhood, in accordance with the anxiety theory proposed by Barlow.<sup>2</sup> The original study reported excellent internal consistency ( $\alpha = 0.94$ ) and concurrent validity with trait anxiety and state scales, as well as with another tool for assessment of MPA ( $r > 0.80$ ).

Considering the potential use of the K-MPAI as a screening instrument for MPA, this study sought to assess the discriminative capacity of this scale in its version translated and validated for Brazil.<sup>12</sup>

## Method

The convenience sample was made up of 230 musicians (140 amateur, 61%; 90 professional, 39%) of both sexes (134 female, 58.3%), with a mean (SD) age of 39 (16.48)

Correspondence: Flávia de Lima Osório, Av. dos Bandeirantes, 3900, CEP 14048-900, Ribeirão Preto, SP, Brazil.  
E-mail: flaliosorio@ig.com.br

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years (range, 18-77 years). The inclusion criteria were age  $\geq 18$  years and frequent participation in musical performances. The participants completed the K-MPAI<sup>2,12</sup> and the self-report Social Phobia Inventory (SPIN)<sup>13,14</sup> individually.

Data were analyzed by means of statistical software, using descriptive statistics for sociodemographic variables and item analyses, the Mann-Whitney *U* test for comparison between the SAD and non-SAD groups, and ROC curve analysis for calculation of sensitivity (Sn), specificity (Sp), and accuracy. For the latter analysis, the presence of SAD as determined by a total SPIN score  $\geq 19$ , was taken as the gold-standard parameter as proposed by Osório et al.<sup>14</sup> The significance level was set at  $p \leq 0.05$ .

## Results

Assessing each of the items of the K-MPAI individually showed that subjects with indicators of SAD (the SAD group,  $n=44$ ) exhibited the highest mean scores. For 16 of the 26 K-MPAI items (namely, 1, 4, 6, 7, 8, 10, 12, 13, 14, 15, 16, 18, 20, 22, 23, and 25), the difference was statistically significant ( $p > 0.001$ ). Some items worth highlighting are 20 ("I give up worthwhile performance opportunities due to anxiety"), 13 ("Thinking about the

evaluation I may get interferes with my performance"), and 15 ("I am often concerned about a negative reaction from the audience"), since they point to a greater magnitude of difference between the groups.

The area under the ROC curve was 0.734 ( $p = 0.001$ ), with a standard error of 0.04 and 95% confidence interval (95%CI) of 0.65-0.82, and considered adequate. Table 1 presents Sn, Sp, and accuracy values for different cutoff scores on the K-MPAI.

Analysis of the Sn, Sp, and accuracy values of the possible cutoff scores listed above shows that the range of scores between -48 and -40 maximizes Sn, while Sp is somewhat reduced. Conversely, the interval between -1 and +6 favors Sp, with lower levels of Sn. The cutoff scores between -24 and -7 are in an intermediate range, with the best balance between Sn and Sp. In this range of cutoff scores, -15 stands out as more appropriate, since it provides the optimal balance of Sn and Sp while maintaining accuracy at around 72.2%. The cutoff score -7 is also adequate, as it favors Sp without jeopardizing Sn considerably and increases accuracy to 78%.

## Discussion

The K-MPAI exhibited good discriminative capacity among groups of cases and non-cases of SAD, both in relation to its items individually and for the scale as a whole. These findings corroborate the hypothesis advanced elsewhere in the literature<sup>4,6</sup> that MPA is a subtype of SAD, and points towards an association between the two disorders.

The indicators of the discriminate component presented in the K-MPAI are within acceptable parameters from a psychometric standpoint,<sup>15</sup> with particularly strong accuracy, which approached 80%.

The ranking of different cutoff scores provided by the present study is of importance to both clinical and research settings, allowing both the screening for MPA and the identification of possible cases.

We conclude that the K-MPAI is a useful instrument for the assessment of MPA in the Brazilian context, and is available for clinical and research use. The data presented herein should be considered carefully, as this was the first study to evaluate the discriminative validity of the instrument. Future studies with samples of musicians from other cultures and, perhaps, including a clinical interview as a parameter for comparison are necessary and advisable.

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**Table 1** Values relating to sensitivity, specificity and accuracy for different cutoff points on the K-MPAI

Cutoff score	Sn	Sp	Accuracy
-48	0.931	0.145	29.6%
-47	0.931	0.161	30.9%
-46	0.931	0.188	33.1%
-45	0.931	0.188	33.1%
-44	0.909	0.188	32.7%
-43	0.909	0.209	34.4%
-42	0.909	0.231	36.1%
-41	0.909	0.258	38.3%
-40	0.909	0.279	40.0%
-24	0.750	0.569	60.5%
-23	0.727	0.591	61.8%
-22	0.727	0.607	63.1%
-21	0.704	0.645	65.7%
-20	0.704	0.650	66.1%
-19	0.704	0.666	67.4%
-18	0.681	0.688	67.4%
-17	0.681	0.693	69.2%
-16	0.681	0.709	70.5%
-15	0.681	0.731	72.2%
-14	0.613	0.736	71.4%
-13	0.613	0.752	72.7%
-12	0.613	0.763	73.5%
-11	0.613	0.774	74.4%
-10	0.590	0.795	75.7%
-9	0.590	0.822	77.9%
-8	0.545	0.827	77.4%
-7	0.522	0.838	77.9%
-1	0.318	0.908	79.6%
0	0.295	0.913	79.6%
+1	0.295	0.919	80.0%
+2	0.250	0.919	79.2%
+3	0.227	0.919	78.7%
+4	0.227	0.919	78.7%
+5	0.227	0.924	79.2%
+6	0.227	0.930	79.6%

K-MPAI = Kenny Music Performance Anxiety Inventory; Sn = sensitivity; Sp = specificity.

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## Disclosure

The authors report no conflicts of interest.

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