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# 한국형 연주 불안 척도의 타당도와 신뢰도

# Korean Music Performance Anxiety Scale: Validation and Reliability

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**초록** 본 연구의 목적은 한국에서 음악을 전공하는 대학생의 연주 불안을 측정하기 위해 한국형 연주 불안 척도(K-MPAS)를 개발하는 것이다. 이 척도는 Osborne & Kenny(2005)의 Music Performance Anxiety Inventory for Adolescents(MPAI-A)와 Paul(1966)의 Personal Report of Confidence as a Speaker(PRCS)를 바탕으로 개발되었다. 예비 개발된 K-MPAS는 총 26문항으로 구성되었으며, 230명의 음악 전공 대학생에게 실시하여 다음과 같은 결과를 얻었다. 문항분석 결과, 총 26개 문항 중 2개의 문항이 부적절한 것으로 판단되어 이를 제거하고, 나머지 24개 문항들을 최종적으로 선택하여 K-MPAS를 재구성하였다. 이 척도는 내적 합치도, 반분신뢰도, 검사-재검사 신뢰도가 매우 높았으며, 공존타당도 또한 높았다.

**주제어**: 연주불안, 연주불안척도, 불안척도, 음악연주, 무대공포

**Abstract** The purpose of the present study was to develop a Korean Music Performance Anxiety Scale (K-MPAS) to measure music performance anxiety of college music major students in Korea. Items were developed based on previous scales: the Music Performance Anxiety Inventory for Adolescents (MPAI-A) by Osborne & Kenny (2005) and the Personal Report of Confidence as a Speaker (PRCS) by Paul (1966). The preliminary K-MPAS comprising 26 items was conducted to 230 college music major students to verify the reliability and validity. As a result of the item analysis, it was determined that two of the 26 items were inappropriate, so the remaining 24 items were finally selected to reconstruct the K-MPAS. The scale was very high in internal consistency, split-half reliability, and test-retest reliability, and concurrent validity was also high.

***Key words***: music performance anxiety, music performance anxiety inventory, anxiety scales, music performance, stage fright

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# Ⅰ. Introduction

Music Performance Anxiety (MPA) is “a particular state of arousal, which regularly occurs when musicians present themselves before an audience in performance situations.” (Spahn, 2015, p. 129). Among professional performers, MPA is widespread and problematic (Steptoe & Fidler, 1987). 24% of musicians often suffer from MPA and 13% of players are extremely anxious and 17% of them experienced depression (Lockwood, 1989). Another study reported that 59% of musicians in orchestra members reported serious anxiety to the extent that they compromised their professional or personal lives (Van Kemenade, Van Son, & Van Heesch, 1995). These performance anxieties are not only for orchestra members, but also for opera choir members with high levels of performance anxiety (Kenny, Davis, & Oates, 2004). Recently, it has been receiving attention from many researchers and clinicians and actively researched in the fields of psychology and psychiatry.

Anxiety is an emotion that is essential for survival and allows one to take actions such as escaping or avoiding when facing physical threats. Anxiety can be caused by feelings of fear, and physically it causes increased blood pressure and dizziness by the excitement of the autonomic nervous system. Sometimes it appears as physical symptoms such as headaches, insomnia, and indigestion, and needs to be distinguished from other diseases. It can distort the senses, making it difficult to focus, or disrupting the recall of memory. Anxiety can also be outwardly visible through abnormal behavior such as muscle tension, compulsive behavior, or the repetition of the same behavior (Kenny, Davis, & Oates, 2004). Sometimes a moderate amount of anxiety can be perceived as a facilitator of performance (Dyce & O‘Connor, 1994). However, at a higher level it usually has a debilitating effect (Steptoe & Fidler, 1987; Wesner, Noyes, & Davis, 1990).

Currently, about 20 validated MPA measures are available in English. However, most of them did not satisfy the criteria required for a well-designed scale such as “description of the standardization population, sample sizes of 100 or more per subgroup, systematic item analysis (including factor analysis), presentation of raw score means and standard deviations for each subgroup, evidence of concurrent and predictive validity, estimates of test–retest reliabilities, test administration details, and qualifications of the administrator or scorer” (Osborne & Kenny, 2005, p. 728). Among

those, only the Kenny Music Performance Anxiety Inventory (K-MPAI) by Kenny et al. (2004), the Personal Report of Confidence as a Performer (PRCP) by Appel (1976), the Performance Anxiety Inventory (PAI) by Nagel et al. (1989), and the Music Performance Anxiety Inventory for Adolescents (MPAI-A) by Osborne & Kenny (2005) assess MPA by covering all three components of anxiety (somatic, cognitive, behavioral). The Performance Anxiety Inventory for Musicians (PerfAIM) by Barbeau (2011) is the only measure covering all four components (somatic, cognitive, behavioral, affectional).

In Korean, there is a MPA measure comprised of 17 items developed by Choi (2006). However, little psychometric properties were provided. Also, items in the MPAI-A by Osborne and Kenny (2005) were translated and used in several studies (Baek & Lee, 2018; Dam, 2013), but no adaptation information was provided. Beck's Anxiety Inventory (BAI) is translated and verified in Korean (Cho & Kim, 2004), and used as a measure of MPA (Park & Lee, 2016). However, as the BAI was created to diagnose general anxiety disorders, some statements are too general and unfit to assess MPA in musicians. Accurate measurement of MPA is essential for the study and treatment of MPA. As mentioned above, evaluation tools that can systematically and comprehensively assess MPA have not yet been developed in Korea. Therefore, there is a need to develop a reliable and valid measure of MPA for the population of college music major students in Korea. The Korean Music Performance Anxiety Scale (K-MPAS) aims to measure MPA in four components - cognitive, behavioral, physiological, and affective - that are commonly believed to comprise MPA (Abril, 2007; Barbeau, 2011; Brotons, 1994; Ely, 1991; Emmons & Thomas, 2008; Kenny, 2009b; Leary & Kowalski, 1995; Osborne & Kenny, 2008).

# Ⅱ. Literature Review

## 1. Causes of MPA

Research suggests that situational and personal factors are related to MPA (Choi, et. al., 2013; Esplen & Hodnett, 1999). According to Robson, Davidson, and Snell (1995), anxiety may be caused by external and internal stimuli. Situational factors refer to any

circumstances which surround a performance that may have an impact on MPA experienced by musicians. Stage fright is a term that describes the feeling of increased anxiety felt by performers mostly when they are on stage. Nagel (2010), however described that “stage fright is a misnomer” as performers are not really afraid of the stage itself but rather of the mistakes they could potentially make on stage and the detrimental consequences that follow. Situational factors such as the size and composition of the audience and exposure to such a crowd is suggested by literature to affect the level of MPA. Experienced pianists reported to have felt greater anxiety in competitions where they are under stress compared to conditions where they are not under pressure (Yoshie, Kazutoshi, Murakoshi, & Ohtsuki, 2009). Cox and Kenardy (1993) stated that MPA increases in performances settings where they have a greater sense of exposure like solo concerts over group performances.

According to Papageorgi, Hallam, and Welch (2007), MPA is associated with the performer’s sensitivity to experiencing performance anxiety, the performance environment, and the performer’s task efficacy. In this framework, three sub-elements can be related to the effect of the performance settings on musicians: sensitivity to other people’s assessments, awareness of audience presence, and high self-exposure. Situational factors also include people the performer depends on. For example, conductors are known to induce MPA in instrumental ensembles (Emmons & Thomas, 2008) and in choral ensembles (Ryan & Andrews, 2009).

Personality traits like having low self-esteem, neuroticism, and perfectionism have a strong relationship with MPA (Arneson, 2010; Meharg, 1988; Papageorgi et al., 2007). According to Ryan (1998), it is suggested that there is a significant negative correlation between self-esteem and MPA, and similar conclusions were drawn from several other studies (Chan, 2011; Sinden, 1999). According to Flett, Hewitt, Oliver, and Macdonald (2002), perfectionism, which is a trait that makes an individual susceptible to various mental health conditions (Oddo-Sommerfeld, Hain, Louwen, & Schermelleh-Engel, 2015), may be developed within a performer due to negative childhood experiences in familial and cultural environments. Maladaptive perfectionism is predicted to be increased by psychological control exerted by parents and renders the individual susceptible to depressive symptoms (Soenens et al., 2008).

General trait anxiety has also been found to be positively correlated with MPA (Cox & Kenardy, 1993). Craske and Craig (1984) demonstrated greater response

synchrony between the cognitive and somatic dimensions of anxiety among high trait anxious performers, compared to low trait anxious performers, particularly when performing in a stressful situation involving evaluation of their performances by expert judges.

Apart from individual differences, there are certain situations that induce more anxiety than others. <Table 1> outlines twenty-two ranked causes of MPA that Kenny (2011) identified in 357 professional orchestral musicians (as referred in Barbeau, 2011).

**<Table 1>** Twenty-two ranked causes of MPA in orchestral musicians (Barbeau, 2011, p. 32)

| | |
|---|---|
| 1. | Pressure from self |
| 2. | Not knowing how to manage physical arousal |
| 3. | Inadequate preparation for performance |
| 4. | Tendency to be anxious in general, not just in performance |
| 5. | Health issues |
| 6. | Negative thoughts/worry about performing |
| 7. | Inadequate support from people close to you |
| 8. | Excessive physical arousal prior to, or during performance |
| 9. | Lack of confidence in yourself as a musician |
| 10. | Attempting repertoire that is too difficult |
| 11. | Concern about reliability of memory |
| 12. | Bad performance experience |
| 13. | Concern about audience reaction/Fear of negative evaluation |
| 14. | Pressure from conductor or section leader |
| 15. | Pressure from/or competing with peers, other musicians |
| 16. | Generally low self-esteem |
| 17. | Not knowing how to manage negative thoughts/worry about performing |
| 18. | Technical flaws that cause uncertainty |
| 19. | General lack of self-confidence |
| 20. | Generally high level of self-consciousness |
| 21. | Negative performance feedback |
| 22. | Pressure from parents |

## 2. Temporal occurrence of MPA

Temporal factors are important parameters of stressful situations. These factors include the components of impending and duration, which means that the amount of anxiety can be influenced by “the interval of time during which a musician anticipates a performance, and by the duration of the performance” (Barbeau, 2011, p. 34). Salmon (1990) suggests that the anticipation of a performance can be more stressful than the actual performance. The stress performers have may increase while waiting for the performance to start or while anticipating problems to occur during the performance (Salmon, 1990). Pre-performance stress can occur from a week before a performance to a few seconds before walking on stage and may also occur at the beginning of the performance (Emmons & Thomas, 2008).

Salmon and Meyer (1998) propose that experienced musicians seem to control anxiety more easily than inexperienced musicians, because of the way they interpret their stress. But, this does not mean that they do not have MPA. According to Salmon, Schrodt, and Wright (1989), while experienced musicians were more likely to reach the peak of anxiety prior to the performance, less experienced musicians seemed to reach the anxiety peak during the performance.

Imagining a threatening situation can arouse the same anxious reaction as being confronted with real danger (Esplen & Hodnet, 1999). This means that musicians may have the same physical response to an actual performance by merely thinking about a stressful performance. As it has been revealed that the anticipation of performing can be more stressful than the actual performance (Salmon, 1990), pre-performance anxiety can be used as an opportunity to practice managing anxiety.

## 3. Manifestations of MPA

The somatic, cognitive, behavioral, and affective factors are what comprises MPA (Abril, 2007; Brotons, 1994; Ely, 1991; Emmons & Thomas, 2008; Kenny, 2009; Leary & Kowalski, 1995; Osborne & Kenny, 2008). However, the affective domain is frequently neglected in states of anxiety (Barbeau, 2011; Barlow, 2002; Osborne & Kenny, 2008), since the three-factor model of MPA (somatic, cognitive, and behavioral factors) is strongly supported in literature (Abel & Larkin, 1990; Craske & Craig,

1984; Kenny, 2006; Kenny & Osborne, 2006; Lederman, 1999; Lehrer, 1987; Reitman, 2001; Ryan, 2004; Salmon, 1990; Salmon & Meyer, 1998; Wolfe, 1990). These provide an adequate theoretical basis in assessing the varying dimensions of MPA. However, it is to be noted that this model fails to distinguish between the affective from the cognitive domain. In music, levels of self-confidence, which may be attributed to the affective domain, is often evaluated. Thus not distinguishing the affective from the cognitive domain results in a less precise classification (Barbeau, 2011).

Somatic symptoms of MPA may include tension in the muscle, modified heart rate, light respiration and tremors (Kenny, 2006; Lehrer, 1987; Osborne & Kenny, 2005). In a cognitive perspective, a musician could show difficulty in concentrating, increased efforts to be perfect, and think negatively of their performance (Kenny, 2006; Osborne & Kenny, 2005). In a behavioral sense, MPA could induce increased frequency in complaining, avoidance or externally noticeable actions such as tics, fidgety behavior and pacing (Osborne & Kenny, 2005). Affectively, one may show emotions of shame, guilt, rage, or irritation (Emmons & Thomas, 2008).

In a state of increased anxiety, manifestations of MPA may show in all four components, forming a synchronized activation of somatic, cognitive, behavioral, and affective factors. In less severe situations, the factors are desynchronized. This describes the various symptoms shown by performing musicians (Salmon, 1990). As a result, a performer may go through a certain amount of anxiety about a performance without showing symptoms from all four components (Abril, 2007).

# Ⅲ. Method

## 1. Participants

The sample comprised 230 music major students from 2 different Korean universities, aged between 17 to 29, of which 22.5% were male and 77.5% were female. The sample's mean age was 21.8 (SD = 2.75). Their majors included strings (n = 57), brass (n = 46), piano (n = 79), percussion (n = 14), and voice (n = 34).

## 2. Instrumentation

Items of the Korean Music Performance Anxiety Scale (K-MPAS) were either newly developed or adopted from the Music Performance Anxiety Inventory for Adolescents (MPAI-A) by Osborne and Kenny (2005) and the Personal Report of Confidence as a Speaker (PRCS) by Paul (1966). The MPAI-A is a self-reporting, 7-point Likert scale with 15 items, developed as a standardized scale to assess MPA for adolescents with 381 adolescents aged 12 to 19 (Osborne and Kenny, 2005). It's reliability and validity were verified. This scale consists of three sub-factors, which are physical and cognitive symptoms; instability in solo and ensemble; and performance evaluation.

The PRCS is a self-reporting scale with 30 items, assessing both affective and behavioral responses to public speaking situations. The questions are answered in a true-false format, and half of the 30 questions answered "Yes" and half answered "No" were graded as having anxiety. The score, ranging from 0 to a maximum of 30, corresponds to the level of anxiety. The internal consistency was .91, and the test-retest reliability at 6-month intervals was .61 ($p < .001$). In addition, it was found that it was sensitive to the experimental treatment designed to lower the level of anxiety as well as the concurrent validity that was determined by the correlation with other anxiety scales.

The K-MPAS was developed in three steps: First, the MPAI-A and the PRCS were translated into Korean. A Ph. D. in psychology and the researcher independently translated and mutually reviewed and discussed any discrepancies in the translations. Furthermore, a final review process was taken with a Ph. D. in musicology who had resided in the United States for more than a decade. Thus, the translation that reached a final agreement between the three parties was adopted. In some cases, the translation was interpreted to convey the meaning as accurately as possible while being natural to read at the same time. Preliminary Items were then either selected from the MPAI-A and the PRCS or newly developed (total of 26 items) to represent the four domains of MPA (somatic, cognitive, behavioral, and affective). The method of answering was transformed from the authenticity type to the 5-point Likert scale (0 points: not at all, 4 points: extremely so), and eight of the 26 items were reversed scored (i.e., items 1, 2, 3, 4, 5, 6, 7, 8). In the final step, through the item-to-total score correlation coefficient and item discrimination power for each question, the final items of the K-MPAS were selected.

In addition, Korean Beck's Anxiety Inventory (K-BAI) which was translated and verified by Cho and Kim (2004) was used to check the validity. The K-BAI consists of a total of 21 items, and each item was measured from 0 to 3 points for the discomfort felt during the last week. The sum of each item's scores assessed the degree of anxiety the student felt, with a score of 0 to 7 for minimum anxiety, a score of 8 to 15 for minor anxiety, a score of 16 to 25 for moderate anxiety, and scores of 26 or higher for serious anxiety (Cho & Kim, 2004).

### 3. Statistical procedure

For item analysis of the K-MPAS, the item-to-total score correlation coefficient and item discrimination power for each question were investigated. In order to confirm the item discrimination power for each question regarding MPA, the study subjects were first divided into two groups: One being a group with a score higher than 1 standard deviation above the mean and the other being a group with a score lower than 1 standard deviation below the mean. The t-test was used to determine whether the two groups showed significant differences in the individual items of the K-MPAS.

In order to confirm the reliability of the K-MPAS, the internal consistency (Cronbach's alpha), split-half reliability, and test-retest reliability were obtained. To verify the concurrent validity of this scale, the Pearson correlation coefficient with the K-BAI was obtained. Finally, a factor analysis was conducted to investigate the factor structure of the K-MPAS. All data were statistically processed with SPSS version 18 and the significance level was less than .01.

## Ⅳ. Results

### 1. Item analysis

For item analysis of the K-MPAS, the item-to-total score correlation coefficient was obtained first. The results are shown in <Table 2>. In <Table 2>, item 6 ($r = .276$) and item 21 ($r = .193$) did not have a significant correlation coefficient with the total score. On the other hand, the other items had a high correlation coefficient with the total score of .496 to .795 ($p < .001$).

**<Table 2>** Item-to-total score correlation coefficient

| Items | r |
|---|---|
| 1. I look forward to opportunities where I perform in front of an audience | .518 |
| 2. When I finish performing, I usually feel happy with my performance | .515 |
| 3. Although I get nervous just before performing, I soon forget my fears and enjoy the experience | .710 |
| 4. At the end of a public performance, I feel that I have had a pleasant experience | .541 |
| 5. I face the prospect of performing with complete confidence | .590 |
| 6. Although I do not enjoy performing in public, I do not particularly dread it | .276 |
| 7. I perform to my usual abilities when I perform in front of an audience | .641 |
| 8. My mind is clear when I face an audience | .584 |
| 9. Before I perform, I feel nervous | .623 |
| 10. Before I perform, I get butterflies in my stomach | .712 |
| 11. Before I perform, I tremble or shake | .720 |
| 12. Before I perform, my heart is pounding | .679 |
| 13. I am nervous all the while I am performing in front of an audience | .787 |
| 14. When I perform in front of an audience, I am afraid of making mistakes | .568 |
| 15. When I perform in front of an audience, I tremble or shake | .723 |
| 16. When I perform in front of an audience, my heart beats very fast | .689 |
| 17. When I perform in front of an audience, I find it hard to concentrate on my music | .649 |
| 18. My thoughts become mixed up and jumbled when I perform before an audience | .751 |
| 19. My muscles feel tense when I perform in front of an audience | .728 |
| 20. Irrelevant thoughts intrude while I am performing in public | .656 |
| 21. I dislike to use my body and voice expressively while I am performing in public | .193 |
| 22. When I make a mistake during a performance, I usually panic | .695 |
| 23. I would rather play on my own than in front of other people | .496 |
| 24. I always avoid performing in public if possible | .572 |
| 25. I am terrified at the thought of performing before a group of people | .795 |
| 26. I often worry about my ability to perform | .788 |

Next, the discriminating power of each K-MPAS question was checked. From the overall score distribution obtained through the questionnaire, the group higher than 1 standard deviation above the mean (high anxiety group, n = 32) and the group lower than 1 standard deviation below the mean (low anxiety group, n = 32) were divided and t-tests were conducted to determine whether these two groups showed significant differences for each item in the K-MPAS. <Table 3> shows each item's mean, standard deviation and t-test results for the two groups. As shown in <Table 3>, neither item 6 nor item 21 showed a significant difference between the two groups ($p$ > .01), but all other items except these two items showed a significant difference.

Considering the results of these two analyzes, item 6 and item 21 among the K-MPAS were judged to be inadequate items to measure MPA. Therefore, in subsequent analysis, data on 24 items of the K-MPAS excluding those two items were presented.

**<Table 3>** Mean, SD, and t-test results of each item

| Items | High MPA Group | | Low MPA Group | | t |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| Item 1 | 3.11 | 1.02 | 1.00 | 0.91 | 5.13* |
| Item 2 | 3.50 | 0.71 | 1.44 | 0.92 | 6.08* |
| Item 3 | 3.67 | 0.59 | 0.89 | 1.13 | 9.01* |
| Item 4 | 2.50 | 1.20 | 0.50 | 0.62 | 5.53* |
| Item 5 | 3.76 | 0.56 | 1.18 | 0.88 | 9.52* |
| Item 6 | 3.33 | 1.14 | 2.06 | 1.47 | 2.76 |
| Item 7 | 3.67 | 0.49 | 1.17 | 0.92 | 9.22* |
| Item 8 | 3.78 | 0.55 | 1.11 | 0.90 | 12.47* |
| Item 9 | 4.00 | 0.00 | 0.89 | 1.08 | 12.24* |
| Item 10 | 3.94 | 0.24 | 0.89 | 0.83 | 16.16* |
| Item 11 | 3.89 | 0.32 | 0.56 | 0.78 | 14.58* |
| Item 12 | 3.89 | 0.32 | 0.67 | 0.77 | 15.57* |
| Item 13 | 3.83 | 0.38 | 0.67 | 0.59 | 21.73* |
| Item 14 | 3.61 | 0.70 | 0.83 | 0.86 | 11.75* |
| Item 15 | 3.83 | 0.38 | 0.72 | 0.89 | 14.66* |
| Item 16 | 3.78 | 0.43 | 0.61 | 0.78 | 17.10* |
| Item 17 | 3.33 | 0.91 | 0.22 | 0.43 | 13.70* |

| Items | High MPA Group | | Low MPA Group | | t |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| Item 18 | 3.56 | 0.51 | 0.22 | 0.43 | 23.81* |
| Item 19 | 3.61 | 0.70 | 0.44 | 0.51 | 14.55* |
| Item 20 | 3.11 | 0.83 | 0.50 | 0.51 | 11.32* |
| Item 21 | 0.83 | 1.20 | 0.06 | 0.24 | 2.61 |
| Item 22 | 3.44 | 0.70 | 0.33 | 0.59 | 14.66* |
| Item 23 | 3.06 | 1.30 | 0.61 | 0.85 | 5.50* |
| Item 24 | 2.39 | 1.58 | 0.33 | 0.69 | 4.85* |
| Item 25 | 3.33 | 0.84 | 0.22 | 0.43 | 15.86* |
| Item 26 | 3.89 | 0.32 | 0.61 | 0.70 | 15.54* |

* $p < .001$

## 2. Reliability

As a result of finding out the reliability of the K-MPAS of 24 items after excluding items 6 and 21, the internal consistency (Cronbach's alpha) was .95, the split-half reliability was .89 and the test-retest reliability at 2-week intervals was .84.

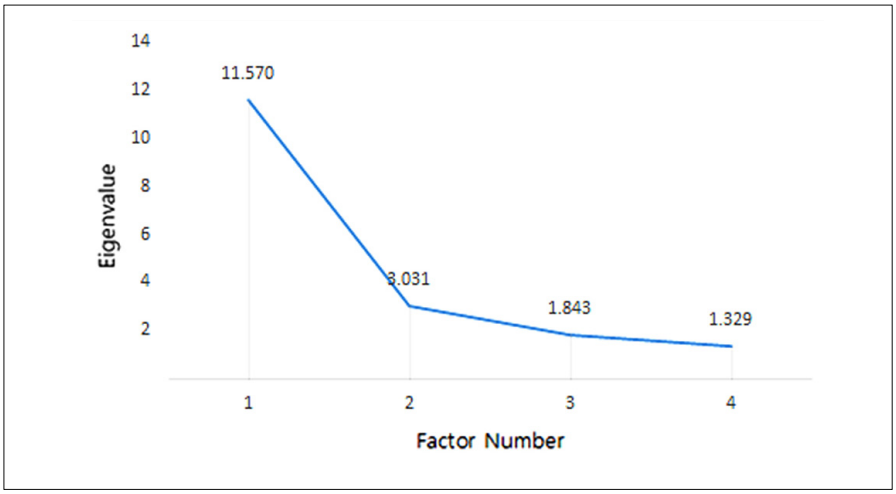
## 3. Concurrent validity

In order to verify concurrent validity of the K-MPAS, the Pearson correlation coefficients were made with the K-BAI. The average total score of all students in the K-MPAS with 24 questions was 48.35 and the standard deviation was 21.21. The Pearson Correlation coefficients between the K-MPAS and the K-BAI was r = .62, which indicates the K-MPAS has a high correlation with the K-BAI ($p < .001$).

## 4. Factor Analysis

In order to grasp the internal structure of the K-MPAS, principal axis factor analysis was conducted on the 24 items of the K-MPAS with Varimax rotation. Prior to conducting factor analysis, the factorability of the data was assessed. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy yielded a value of .907, which was far

greater than the acceptable value of .6, and Bartlett's Test of Sphericity was large and significant ($p$ = .000). These two results proved that the data was sufficient to proceed for the factor analysis. The communalities of all the items were above .50 (ranged from .567 to .917). Four factors with eigenvalues greater than 1.0 was extracted (see [Figure 1]), explaining 74.8% of the total variance of the data.




[Figure 1] Eigenvalue of 4 factors of the K-MPAS

**<Table 4>** K-MPAS factor analysis pattern matrix

| Item Number | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|---|
| Item 12 | .880 | | | |
| Item 11 | .858 | | | |
| Item 13 | .819 | | | |
| Item 9 | .789 | | | |
| Item 10 | .788 | | | |
| Item 16 | .786 | | | |
| Item 15 | .779 | | | |
| Item 26 | .662 | | | |
| Item 14 | .570 | | | |
| Item 19 | .532 | | | |
| Item 5 | | .830 | | |

| Item Number | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|---|
| Item 7 | | .794 | | |
| Item 2 | | .782 | | |
| Item 8 | | .735 | | |
| Item 3 | | .735 | | |
| Item 1 | | .721 | | |
| Item 4 | | .653 | | |
| Item 25 | .432 | .513 | | |
| Item 18 | | | .864 | |
| Item 17 | | | .861 | |
| Item 20 | | | .839 | |
| Item 22 | | | .797 | |
| Item 23 | | | | .846 |
| Item 24 | | | | .657 |

<Table 4> shows the factor loading after rotation. A factor loading cut-off point of 0.40 for inclusion in the interpretation of a factor was used. Factor 1, accounting for 27.7% of variance, consists of 10 questions such as ‘Before I perform, I tremble or shake’ and ‘My muscles feel tense when I perform in front of an audience’, and reflects the somatic and affective domains of anxiety. Factor 2, accounting for 21.6% of variance, is composed of 8 questions including ‘I look forward to opportunities where I perform in front of an audience’ and ‘I face the prospect of performing with complete confidence’, and concerns the level of an individual’s self-confidence and anticipation of performing. Factor 3, accounting for 17.1% of variance, is composed of 4 questions such as ‘When I perform in front of an audience, I find it hard to concentrate on my music’ and ‘Irrelevant thoughts intrude while I am performing in public’, that describes the cognitive domain of anxiety. Factor 4, accounting for 8.5% of variance, is composed of 2 questions being ‘I would rather play on my own than in front of other people’ and ‘I always avoid performing in public if possible’, and reflects an individual’s tendency to avoid performance in public.

# V. Conclusion

This study was conducted to develop a Korean Music Performance Anxiety Scale (K-MPAS) to measure the level of music performance anxiety within Korean college students majoring in music. Items of the K-MPAS were developed based on the Music Performance Anxiety Inventory for Adolescents (MPAI-A) by Osborne and Kenny (2005) and the Personal Report of Confidence as a Speaker (PRCS) by Paul (1966).

Upon conducting item analysis, two items out of the 26 items (item 6 and item 21) of the preliminary K-MPAS did not have a significant correlation coefficient with the total score and also did not show a significant difference between the high MPA group and low MPA group. As these two items were judged to be inadequate to measure MPA, they were excluded.

The reliability of the K-MPAS of 24 items was verified to have an internal consistency of .95, split-half reliability of .89 and test-retest reliability at 2-week intervals of .84. In order to verify the concurrent validity of the K-MPAS, the Pearson correlation coefficient was examined with the K-BAI. The correlation coefficient between the K-MPAS and the K-BAI was r = .62, and the K-MPAS was seen to have a high correlation with the K-BAI ($p < .001$).

In order to grasp the internal structure of the K-MPAS, principal axis factor analysis was conducted on the 24 items of the K-MPAS with Varimax rotation. The results showed communalities of all the items to be above .50 and four factors with eigenvalues greater than 1.0 was extracted, explaining 74.8% of the total variance of the data.

Considering the results of this study, it can be concluded that the K-MPAS has satisfactory psychometric properties to measure MPA for Korean college students majoring in music. However, this study has certain limitations that are suggested to be supplemented through further research. First, the data collected from college students was used in both the process of analyzing the questions on the preliminary 26 items of the K-MPAS and the process of confirming the validity of the final version of the K-MPAS. In order to compensate for this limitation, it is necessary to check whether the results of this study are cross-validated by surveying other college music students. Second, attention is required to generalize the results of this study to other age groups

such as middle to high school students and adults, because the subjects of this study were limited to college students. Lastly, in order to use the K-MPAS for diagnosing phobia or selecting subjects suitable for the study, further research should be conducted with a larger number of systematically sampled students. In doing so, it is necessary to determine the mean and standard deviation of this scale, and then set an appropriate division point for the sample.

# References

Abel, J. L. & Larkin, K. T. (1990). Anticipation of performance among musicians: Physiological arousal, confidence, and state-anxiety. *Psychology of Music, 18,* 171-182.

Abril, C. R. (2007). I have a voice but I just can't sing: A narrative investigation of singing and social anxiety. *Music Education Research, 9*(1), 1-15.

Appel, S. S. (1976). Modifying solo performance anxiety in adult pianists. *Journal of Music Therapy, 13*(1), 2−16.

Arneson, C. (2010). Performance anxiety: A twenty-first century perspective. *Journal of Singing, 66*(5), 537-546.

Bae, S. Y. (2018). Strategies used by college applied piano majors during the practice and learning of piano music. *Korean Journal of Research in Music Education*, *47*(3), 73-96.

Baek, G. E. & Lee, S. Y. (2018). Perfectionism and music performance anxiety: Understanding the function of social support in lessoning the impact of performance pressure. *The Journal of the Korean Society for the Gifted and Talented, 17*(3), 29-52.

Barbeau, A. K. (2011). *Performance anxiety inventory for musicians (PerfAIM): A new questionnaire to assess music performance anxiety in popular musicians.* A Master's Thesis, McGill University.

Barlow, D. H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic* (2nd ed.). New York, NY: The Guilford Press.

Brotons, M. (1994). Effects of performing conditions on music performance anxiety and performance quality. *Journal of Music Therapy, 31*(1), 63-81.

Chan, M. Y. (2011). *The relationship between music performance anxiety, age, self-Esteem, and performance outcomes in Hong Kong music students.* A Doctoral Dissertation, Durham University.

Cho, Y. R. & Kim, E. J. (2004). Psychometric properties of the Korean version of the anxiety control questionnaire. *Korean Journal of Clinical Psychology, 23*(2), 503-520.

Choi, H., Shin, J., Kwon, S., Choi, Y. E., & Yeon, E. M. (2013). Effects of personal characteristics and experiences on performers' stress: A focus on performance anxiety and learned helpless. *Korean Journal of Research in Music Education, 42*(4), 235-262.

Choi, M. Y. (2006). A study of undergraduate music majors' perception on musical performance anxiety. *The Korean Journal of Arts Education, 4*(2), 31-40.

Cox, W. J. & Kenardy, J. (1993). Performance anxiety, social phobia and setting effects in instrumental music students. *Journal of Anxiety Disorders, 7*(1), 49-60.

Craske, M. G. & Craig, K. (1984). Musical performance anxiety: The three-systems model and self-efficacy theory. *Behaviour Research and Therapy, 22,* 267-280.

Dam, S. (2013). *A study of demographic parameters, perfectionism, and self-efficacy on the performance anxiety of Korean traditional music performers.* A Doctoral Dissertation, Chosun Univerisy.

Dyce, J. A. & O'Connor, B. P. (1994). The personalities of popular musicians. *Psychology of Music, 22,* 168-173.

Ely, M. C. (1991). Stop performance anxiety! *Music Educators Journal, 78*(2), 35-39.

Emmons, S. & Thomas, A. (2008). Understanding performance anxiety. *Journal of Singing, 64*(4), 461-465.

Esplen, M. J. & Hodnett, J. (1999). A pilot study investigating student musicians' experiences of guided imagery as a technique to manage performance anxiety. *Medical Problems of Performing Artists, 14*, 127-132.

Flett, G. L., Hewitt, P. L., Oliver, J. M., & Macdonald, S. (2002). Perfectionism in children and their parents: A developmental analysis. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research, and treatment* (pp. 89

−132). Washington, DC: American Psychological Association.

Kenny, D. T. (2006). Music performance anxiety: Origins, phenomenology, assessment and treatment. *Context, 31,* 51-63.

_____. (2009). The factor structure of the revised Kenny Music Performance Anxiety Inventory. In A. Williamon, S. Pretty, & R. Buck (Eds.), *Proceedings of the International Symposium on Performance Science 2009* (pp. 37-41). Utrecht, The Netherlands: European Association of Conservatoires (AEC).

_____. (2011). *The psychology of music performance anxiety*. Oxford, UK: Oxford University Press.

Kenny, D. T., 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. *Journal of Anxiety Disorders, 18*, 757-777.

Kenny, D. T. & Osborne, M. S. (2006). Music performance anxiety: New insights from young musicians. *Advances in Cognitive Psychology, 2*(2-3), 103-112.

Leary, M. R. & Kowalski, R. M. (1995). *Social anxiety*. New York, NY: Guilford Press.

Lederman, R. J. (1999). Medical treatment of performance anxiety. *Medical Problems of Performing Artists, 14*, 117−121.

Lehrer, P. (1987). A review of the approaches to the management of tension and stage fright in music performance. *Journal of Research in Music Education, 35*(3), 143-153.

Lockwood, A. H. (1989). Medical problems of musicians. *New England Journal of Medicine, 320,* 221-227.

Meharg, S. S. (1988). Help for the anxious performer. *Music Educators Journal, 72*(2), 34-37.

Nagel, J. J. (2010). Treatment of music performance anxiety via psychological approaches: A review of selected CBT and psychodynamic literature. *Medical Problems of Performing Arts, 25*(4), 141−148.

Nagel, J. J., Himle, D. P., & Papsdorf, J. D. (1989). Cognitive-behavioral treatment of musical performance anxiety. *Psychology of Music, 17,* 12-21.

Oddo-Sommerfeld, S., Hain, S., Louwen, F., & Schermelleh-Engel, K. (2015).

Longitudinal effects of dysfunctional perfectionism and avoidant personality style on postpartum mental disorders: Pathways through antepartum depression and anxiety. *Journal of Affective Disorders, 191*, 280–288.

Osborne, M. S. & Kenny, D. (2005). Development and validation of music performance anxiety inventory for gifted adolescent musicians. *Anxiety Disorders, 19*, 725-751.

_____. (2008). The role of sensitizing experiences in music performance anxiety in adolescent musicians. *Psychology of Music, 36*(4), 447-462.

Papageorgi, L., Hallam, S., & Welch, G. F. (2007). A conceptual framework for understanding musical performance anxiety. *Research Studies in Music Education, 28*, 83-107.

Park, J. Y. & Lee, M. J. (2016). Correlation between musical performance and anxiety level among music college students major in string instruments. *Korean Journal of Research in Music Education, 45*(4), 73-91.

Paul, G. L. (1966). *Insight vs desensitization in psychotherapy*. Stanford, CA: Stanford University Press.

Reitman, A. D. (2001). The effects of music-assisted coping systematic desensitization on music performance anxiety. *Medical Problems of Performing Artists, 16*, 115–125.

Robson, B., Davidson, J., & Snell, E. (1995). But I'm not ready, yet: Overcoming audition anxiety in the young musician. *Medical Problems of Performing Artists, 10,* 32–37.

Ryan, C. (1998). Exploring musical performance anxiety in children. *Medical Problems of Performing Artists, 13,* 83-88.

_____. (2004). Gender differences in children's experience of musical performance anxiety. *Psychology of Music, 32*(1), 89-103.

Ryan, C. & Andrews, N. (2009). An investigation into the choral singer's experience of music performance anxiety. *Journal of Research in Music Education, 57*, 108-126.

Salmon, P. G. (1990). A psychological perspective on musical performance anxiety: A review of the literature. *Medical Problems of Performing Artists, 5*, 2-11.

Salmon, P. G. & Meyer, R. G. (1998). *Notes from the green room: Coping with*

*stress and anxiety in musical performance*. San Francisco, CA: Jossey-Bass.

Salmon, P., Schrodt, R., & Wright, J. (1989). A temporal gradient of anxiety in a stressful performance context. *Medical Problems of Performing Artists, 4*(2), 77-80.

Sinden, L. M. (1999). Music performance anxiety: Contributions of perfectionism, coping style, self-efficacy, and self-esteem. *Dissertation Abstracts International Section A: Humanities and Social Sciences, 60*(3-A), 0590.

Soenens, B., Luyckx, K., Vansteenkiste, M., Luyten, P., Duriez, B., & Goossens, L. (2008). Maladaptive perfectionism as an intervening variable between psychological control and adolescent depressive symptoms: A three-wave longitudinal study. *Journal of Family Psychology, 22*(3), 465–474.

Spahn, C. (2015) Treatment and prevention of music performance anxiety. In E. Altenmuller, S. Finger, & F. Boller (Eds.), *Music, neurology, and neuroscience: Evolution, the musical brain, medical conditions, and therapies* (pp. 89–132). Amsterdam, Netherlands: Elsevier Science.

Steptoe, A. & Fidler, H. (1987). Stage fright in orchestral musicians: A study of cognitive and behavioral strategies in performance anxiety. *British Journal of Psychology, 78*, 241-249.

Van Kemenade, J. F. L. M., Van Son, M. J. M., & Van Heesch, N. C. A. (1995). Performance anxiety among professional musicians in symphonic orchestras: A self-report study. *Psychological Reports, 77*, 555-562.

Wesner, R. B., Noyes, R., & Davis, T. L. (1990). The occurrence of performance anxiety among musicians. *Journal of Affective Disorders, 18*, 177-185.

Wolfe, M. L. (1990). Coping with musical performance anxiety: Problem-focused and emotion-focused strategies. *Medical Problems of Performing Artists, 5,* 33–36.

Yoshie, M., Kazutoshi, K., Murakoshi, T., & Ohtsuki, T. (2009). Music performance anxiety in skilled pianists: Effects of social-evaluative performance situation on subjective, autonomic, and electromyographic reactions. *Experimental Brain Research 199*, 117-126.

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