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Music Performance Anxiety in Higher Music Education: A Narrative Review of Mechanisms, Assessment, and Pedagogical Intervention

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Abstract: ***Music performance anxiety (MPA) is a persistent and often disabling form of anxiety that emerges in situations where musical performance is observed, judged, recorded, or formally assessed. Although mild arousal can support concentration and expressive energy, maladaptive MPA may disrupt attention, memory retrieval, fine motor control, musical communication, and long-term professional identity. This narrative review synthesizes major theoretical, assessment, and intervention literature on MPA, with a particular focus on higher music education and implications for Chinese music students. Targeted searches of PubMed, publisher websites, and reference lists were conducted to identify peer-reviewed systematic reviews, conceptual papers, psychometric studies, and intervention studies published up to May 2026. The review argues that MPA should not be reduced to ordinary stage fright or temporary nervousness. It is better understood as an interaction among biological vulnerability, trait anxiety, cognitive appraisal, perfectionism, self-focused attention, previous performance experiences, and social-evaluative educational environments. The Kenny Music Performance Anxiety Inventory and related performance-specific measures provide useful assessment tools, but intervention planning should combine self-report scales with performance observation, contextual interviews, and, where appropriate, physiological indicators. Evidence supports the promise of cognitive-behavioral strategies, graded exposure, acceptance and commitment approaches, mental skills training, relaxation, mindfulness, biofeedback, and music therapy-informed methods, but current intervention research remains limited by small samples, heterogeneous protocols, and insufficient follow-up. For international music education, the most defensible direction is not a single universal treatment but a mechanism-informed, curriculum-embedded support model that links assessment, psychological skills, performance practice, and pedagogical feedback.***

Keywords: Music performance anxiety, Higher music education, K-MPAI, Cognitive-behavioral intervention, Self-efficacy, Performance pedagogy**.**

1. Introduction

Public musical performance is simultaneously artistic, embodied, technical, and social. A performer must coordinate memory, motor precision, auditory monitoring, emotional communication, and audience awareness under conditions in which errors are visible and often irreversible. For music students, these demands are intensified by juries, auditions, competitions, recitals, studio lessons, peer comparison, and teacher evaluation. Anxiety is therefore not an accidental addition to musical training; it is built into the structure of performance learning.

A moderate level of arousal may be useful. It can sharpen attention, increase energy, and signal the importance of the task. The clinical and educational problem begins when arousal becomes interpreted as danger, loss of control, or evidence of impending failure. Under these conditions, the performer's attention may shift from musical intention to self-monitoring: trembling hands, a dry mouth, unstable breathing, memory gaps, perceived facial expression, and imagined judgments from teachers or audiences. The more the performer tries to suppress these signs, the more salient they often become. This process can turn a performance into a threat-detection task rather than an act of musical communication.

Music performance anxiety has been studied for several decades in psychology, music medicine, and music education. Systematic reviews indicate that prevalence estimates vary widely because studies use different samples, cut-off criteria, and measurement tools. In professional musicians, Fernholz et al. (2019) reported prevalence estimates ranging from 16.5% to 60%, while also noting that sex, age, occupational demands, and study quality affect interpretation. More recent reviews of interventions show a growing range of approaches, including cognitive-behavioral therapy, beta-blockers, acceptance and commitment therapy, mindfulness, yoga, hypnosis, biofeedback, music therapy, and performance skills programs (Kinney et al., 2025; Nicholl et al., 2025). Yet the field remains methodologically uneven: many studies are small, short-term, and difficult to compare.

For higher music education, the central issue is not only whether MPA exists, but how institutions should respond to it. If MPA is treated merely as personal weakness, students may hide their distress and teachers may intensify correction without addressing the psychological mechanisms that maintain anxiety. If MPA is medicalized too quickly, ordinary performance challenge may be pathologized and separated from musical learning. A publishable review therefore needs a balanced position: MPA is a serious psychological and educational issue, but it should be understood through mechanisms rather than labels alone.

The aim of this article is to synthesize current knowledge on MPA in a way that can inform research and practice in higher music education. The review addresses four questions: (1) how should MPA be conceptually distinguished from ordinary nervousness, stage fright, and social anxiety; (2) what mechanisms maintain MPA across biological, cognitive, emotional, behavioral, and educational levels; (3) how can MPA be assessed responsibly; and (4) what intervention

principles are most defensible for music students, including those in high-pressure educational contexts such as China?

2. Review Approach

This article is a narrative review rather than a systematic review or meta-analysis. The purpose is to integrate conceptual, psychometric, and intervention findings into a mechanism-informed framework for music education. The review was prepared with reference to quality principles for narrative reviews, including a clearly stated aim, transparent literature selection, critical appraisal of evidence strength, and balanced interpretation of findings (Baethge et al., 2019). Because the aim was conceptual synthesis, no pooled effect size was calculated and no formal risk-of-bias scoring was applied.

Targeted searches were conducted in PubMed, publisher websites, and reference lists of key reviews and empirical articles. Search terms included combinations of music performance anxiety, musical performance anxiety, performance anxiety, stage fright, K-MPAI, Kenny Music Performance Anxiety Inventory, adolescent musicians, music students, intervention, cognitive behavioral therapy, exposure, acceptance and commitment therapy, mindfulness, biofeedback, beta-blockers, self-efficacy, flow, psychological capital, and Chinese music students. Priority was given to peer-reviewed systematic reviews, scoping reviews, psychometric studies, conceptual frameworks, intervention studies, and empirical studies directly involving music students or musicians. General anxiety theory and social anxiety models were included only where they helped explain mechanisms relevant to MPA.

The review is limited by its narrative design. It does not claim to identify every eligible study, and its conclusions should not be read as comparative treatment rankings. Its contribution is to clarify conceptual boundaries, connect mechanisms to assessment and intervention, and propose a publishable pedagogical framework for higher music education.

Table 1: Literature selection logic for the narrative review

Review component	Included literature	Rationale
Conceptual foundation	Definitions, theoretical models, and review articles on MPA, social anxiety, trait-state anxiety, self-efficacy, and vulnerability models.	To distinguish MPA from ordinary nervousness and locate it within broader anxiety theory.
Assessment	Studies and reviews on the K-MPAI, MPAI-A, STAI, performance-specific questionnaires, and multi-method assessment.	To identify tools appropriate for research, screening, and intervention evaluation.
Intervention	Systematic reviews and empirical studies on CBT, exposure, ACT, mental skills training, mindfulness, relaxation, biofeedback, music therapy, and pharmacological approaches.	To connect treatment approaches with mechanisms and evidence strength.
Educational context	Studies involving music students, adolescent musicians, university musicians, and Chinese music students where available.	To translate clinical evidence into pedagogical and institutional practice.

3. Conceptual Boundaries: What is Music Performance Anxiety?

MPA is often described in everyday language as stage fright. This expression is useful because it captures the performer's subjective fear of being seen and judged. It is also imprecise. Stage fright can refer to temporary pre-performance tension, a single embarrassing experience, generalized fear of public exposure, or a clinically significant pattern of avoidance and impairment. A publishable definition must therefore identify the object of anxiety, the evaluative context, the symptom pattern, and the degree of persistence or impairment.

Kenny's work is central to this distinction. In her model, MPA involves marked apprehension about musical performance, often in contexts of formal evaluation, and may occur before, during, or after performance (Kenny, 2011, 2023). The anxiety is not limited to observable physical symptoms. It includes anticipatory worry, fear of negative evaluation, perceived loss of control, memory and attention disruption, post-performance rumination, and avoidance. This broader view explains why students who appear technically prepared may still experience severe distress.

MPA overlaps with social anxiety, test anxiety, and trait anxiety, but it is not identical to any of them. Social anxiety emphasizes fear of negative evaluation in interpersonal situations; test anxiety emphasizes evaluative performance under examination conditions; trait anxiety refers to a stable tendency to perceive situations as threatening (Spielberger et al., 1983). MPA has features of all three, but its musical specificity matters. Musical performance requires embodied skill under time pressure, aesthetic judgment, sound production, memory, expressivity, and audience communication. A singer's breathing anxiety or a pianist's fear of a memory lapse cannot be fully explained by social evaluation alone.

The state-trait distinction is especially important. State anxiety refers to temporary emotional arousal in a specific situation. Trait anxiety refers to a relatively stable disposition. Students may experience state anxiety before a recital without meeting criteria for severe MPA. Conversely, a student with high trait anxiety may enter almost every lesson, class performance, or audition with anticipatory threat. Repeated negative experiences can also strengthen trait-like expectations: the performer learns to expect danger before evidence appears. This learning process helps explain why MPA often becomes chronic if it is managed only by avoidance or last-minute reassurance.

4. Mechanisms of Music Performance Anxiety

4.1 Biological Vulnerability and Physiological Arousal

The body is not a passive background in MPA. Public

performance can activate sympathetic arousal, producing increased heart rate, trembling, sweating, dry mouth, gastrointestinal discomfort, shallow breathing, and muscle tension. For instrumentalists and singers, such symptoms are not merely uncomfortable; they can interfere directly with sound production and technical control. A violinist may interpret tremor as the beginning of collapse; a singer may interpret breath instability as proof that the performance is already failing.

Anxiety research suggests that vulnerability is shaped by biological, psychological, and experiential factors. Barlow's triple vulnerability model proposes that anxiety disorders develop through the interaction of generalized biological vulnerability, generalized psychological vulnerability, and specific learned vulnerability (Barlow, 2000). Although MPA is not always a disorder, this model is useful because it prevents simplistic explanations. Some students may be more physiologically reactive; others may have learned that mistakes lead to humiliation; still others may have developed low perceived control after repeated harsh evaluations. These pathways can converge in the performance setting.

Physiological arousal alone does not determine outcome. The decisive issue is how arousal is interpreted and regulated. For some performers, a racing heart means readiness. For others, it means danger. This difference is one reason why interventions should not focus only on eliminating bodily sensations. In many cases, students need to learn that arousal can be tolerated, used, and redirected toward performance goals.

4.2 Cognitive Appraisal, Self-focused Attention, and Perfectionism

Cognitive appraisal is a central mechanism in MPA. Musicians do not respond only to the objective difficulty of a piece; they respond to what the performance means. A mistake may be interpreted as a normal risk in live performance, or it may be interpreted as evidence of incompetence. The latter interpretation increases threat and often triggers self-focused monitoring. Clark and Wells's cognitive model of social anxiety is relevant here because it explains how fear of evaluation can lead individuals to focus inward, use internal sensations as evidence of external failure, and engage in safety behaviors that maintain anxiety (Clark & Wells, 1995).

In music education, perfectionism often intensifies this process. High standards are not necessarily harmful; they are part of artistic excellence. The problem is maladaptive perfectionism, in which the student treats any imperfection as unacceptable and links performance outcome to self-worth. A technically small error may then become psychologically catastrophic. The performance is no longer judged as a musical event but as a verdict on identity.

Self-efficacy provides a more constructive explanatory construct. Bandura (1977) defined self-efficacy as belief in one's capacity to organize and execute actions required to manage prospective situations. In MPA, self-efficacy affects whether the student expects to cope with memory slips, audience reactions, and physical symptoms. Recent studies with Chinese music students also point in this direction. Jiang and Tong (2024) found that psychological capital was linked to MPA through self-esteem and flow experience, while Zhang and Jenatabadi (2024) reported that self-efficacy and emotional intelligence mediated the relationship between social support and MPA among Chinese university music students. These findings are cross-sectional, so they cannot prove causation, but they support the educational relevance of confidence, emotion regulation, and supportive environments.

4.3 Developmental and Educational Context

MPA develops in environments. Studio lessons, juries, masterclasses, auditions, competitions, and public recitals are not neutral containers; they shape how students interpret performance. A teacher's feedback can frame error as information for improvement or as evidence of personal inadequacy. Peer comparison can motivate practice or produce shame. Family investment can provide support or create pressure. Institutional ranking can clarify standards or narrow students' sense of worth.

Papageorgi, Hallam, and Welch (2007) proposed a conceptual framework in which performance anxiety has a time dimension before, during, and after performance. This is useful for education because students do not begin to experience MPA only on stage. Anxiety may start when the performance is announced, intensify during practice, peak during the event, and persist as rumination afterward. A pedagogy that addresses only the final moment misses much of the process.

The Chinese higher music education context deserves particular attention because students often experience dense evaluation cycles, high family investment, competitive entrance and progression systems, and strong teacher authority. It would be inappropriate to treat these features as universal or culturally homogeneous. Nevertheless, current studies involving Chinese music students suggest that social support, self-efficacy, emotional intelligence, psychological capital, self-esteem, and flow are meaningful constructs for future research. International journals are likely to be more receptive when the Chinese context is not presented as a vague background but as a theoretically relevant setting in which evaluation pressure and support systems can be studied.

5. Assessment of Music Performance Anxiety

Reliable assessment is essential because MPA is often invisible. Some students appear calm but experience intense internal distress. Others look visibly anxious yet perform effectively. Teachers may misjudge anxiety as laziness, lack of preparation, or weak character. Students may also minimize symptoms because they fear stigma or believe that serious musicians should cope without help.

The Kenny Music Performance Anxiety Inventory (K-MPAI) is one of the most widely used performance-specific instruments. Kenny (2023) reported that the K-MPAI has been translated into multiple languages and used extensively across cultures and musician populations. Its value lies in its theoretical grounding and its coverage of cognitive, emotional, somatic, and developmental aspects of MPA. For adolescent musicians, Osborne and Kenny (2005) developed the Music

Performance Anxiety Inventory for Adolescents, addressing the need for age-appropriate assessment.

General anxiety scales such as the State-Trait Anxiety Inventory can be useful when researchers need to distinguish situational anxiety from broader dispositional anxiety (Spielberger et al., 1983). They should not replace MPA-specific tools when the research question concerns musical performance. A general scale may tell us that a student is anxious, but it may not reveal whether the anxiety is tied to memory, audience judgment, bodily symptoms, teacher evaluation, or previous performance failure.

A multi-method approach is preferable in educational settings. Self-report scales can identify severity and track change. Performance observations can document behavioral signs and musical effects. Interviews can reveal triggers, meanings, and coping strategies. Physiological indicators such as heart rate variability, skin conductance, or breathing patterns may add information about arousal, but they should not be treated as direct measures of anxiety experience. The same heart rate may mean excitement for one performer and panic for another.

Table 2: Mechanism-informed assessment and intervention matrix

Maintaining mechanism	Possible indicators	Assessment options	Intervention implication
Physiological arousal	Tremor, sweating, dry mouth, unstable breathing, muscle tension, racing heart.	Self-report symptom items, physiological monitoring, teacher observation.	Relaxation, breathing, biofeedback, graded performance exposure.
Catastrophic appraisal	Interpreting minor mistakes as failure; overestimating audience criticism.	K-MPAI items, cognitive interview, performance diary.	Cognitive restructuring, behavioral experiments, post-performance review.
Self-focused attention	Monitoring symptoms instead of musical intention; loss of external focus.	Interview, observation, attention-focused self-report.	Attentional training, mindfulness, performance cues, task-focused rehearsal.
Avoidance and safety behaviors	Avoiding recitals, overchecking, rigid practice rituals, hiding symptoms.	Behavioral history, teacher report, exposure hierarchy.	Graded exposure, ACT-based willingness practice, values-based performance goals.
Low self-efficacy and weak support	Low confidence, dependence on external approval, fear of teacher or peer judgment.	Self-efficacy scales, social support measures, semi-structured interview.	Mastery experiences, supportive feedback, peer performance groups, mentoring.

6. Intervention Evidence and Pedagogical Translation

6.1 Cognitive-behavioral Strategies and Graded Exposure

Cognitive-behavioral approaches have the strongest historical presence in MPA intervention research. Early work by Kendrick, Craig, Lawson, and Davidson (1982) demonstrated that cognitive and behavioral therapy could reduce musical performance anxiety. Later studies with adolescent and student musicians also used cognitive restructuring, exposure, and performance psychology techniques (Braden et al., 2015; Osborne et al., 2007). The educational logic is clear: students need to identify unhelpful beliefs, test predictions, reduce avoidance, and learn through repeated performance experiences that anxiety does not necessarily lead to disaster.

Exposure is often misunderstood as simply forcing students to perform more. Effective exposure is structured, gradual, reflective, and connected to learning goals. A student who is terrified of public performance may begin with recording alone, then playing for one trusted peer, then a small studio class, then a mock jury, and finally a formal performance. Each step should include preparation, observation of anxiety, performance completion, and post-performance evaluation. The goal is not to feel no anxiety; the goal is to perform while anxiety is present and to update catastrophic expectations.

For music teachers, cognitive-behavioral principles can be translated into classroom routines without turning teachers into therapists. Examples include pre-performance thought logs, error-normalization discussions, graded studio performances, video feedback focused on evidence rather than shame, and post-performance reflection that separates technical problems from self-worth. Students with severe symptoms, panic, depression, or functional impairment should be referred to qualified mental health professionals.

6.2 Acceptance, Mindfulness, and Mental Skills Training

Acceptance and commitment therapy (ACT) has gained attention because it does not require the performer to eliminate anxiety before acting. Instead, it emphasizes psychological flexibility, acceptance of internal experiences, cognitive defusion, values, and committed action. Juncos and colleagues reported promising results in small ACT studies with music performers, including reductions in K-MPAI scores and improvements in willingness to perform despite anxiety (Juncos & Markman, 2016; Juncos et al., 2017). These findings are encouraging, but they come from small samples and should be interpreted cautiously.

Mindfulness and relaxation approaches are useful when students are trapped in physiological escalation and self-critical rumination. Breathing exercises, progressive muscle relaxation, body scans, and present-moment attention can reduce the struggle against bodily symptoms. Biofeedback may also help students observe physiological arousal and learn regulation skills (Thurber et al., 2010). These strategies are most defensible when integrated with performance tasks. Relaxation that occurs only in a quiet room may not transfer automatically to a recital stage.

Mental skills training draws from sport and performance psychology. It may include goal setting, imagery, attentional control, self-talk, arousal regulation, and pre-performance routines. Hoffman and Hanrahan (2012) found that a short mental skills program reduced MPA and enhanced performance-related outcomes in musicians. Osborne et al. (2014) similarly reported improvements in performance preparation and mental skills among conservatoire students. For music schools, such approaches are attractive because they can be embedded in curriculum and framed as

performance development rather than remedial treatment.

6.3 Music Therapy-informed Approaches and Pharmacological Caution

Music therapy-informed approaches are relevant because they engage the performer's relationship with sound, expression, and embodied musical identity. Group music therapy, improvisation-assisted desensitization, imagery, and music-assisted relaxation have been explored in MPA-related research (Kim, 2008; Montello et al., 1990). These approaches may be especially useful when anxiety is connected to shame, blocked expression, or loss of musical enjoyment. Their evidence base is still less stable than that of broader cognitive-behavioral approaches, so claims should be modest.

Pharmacological management, especially beta-blockers, appears frequently in the literature on professional musicians. Fernholz et al. (2019) noted that beta-blockers and CBT were among the most commonly researched treatments, but the evidence base remains limited by study design issues. From an educational perspective, pharmacological intervention should never be presented as a routine solution for students. Medication may reduce peripheral symptoms such as tremor or heart palpitations, but it does not teach coping, change catastrophic beliefs, improve self-efficacy, or address educational pressure. Medical decisions should be made only under professional clinical supervision.

The intervention literature therefore supports a cautious conclusion. There is no single best treatment for all musicians. The best-supported direction is mechanism-informed matching: physiological arousal calls for regulation and exposure; catastrophic appraisal calls for cognitive work; avoidance calls for graded performance practice; shame and self-worth fusion call for acceptance and values work; weak support calls for pedagogical and social intervention.

7. A Curriculum-embedded Support Model for Higher Music Education

International journals are unlikely to accept a manuscript that only lists causes and treatments. A stronger contribution is to propose a model that can be tested. Based on the literature reviewed above, higher music education should move from crisis response to curriculum-embedded prevention and support. The model proposed here has four components: early screening, psychological skills training, graded performance ecology, and supportive feedback culture.

Early screening should use validated instruments such as the K-MPAI or age-appropriate alternatives, combined with confidential interviews where necessary. Screening should not be used to label students publicly. Its purpose is to identify needs, allocate support, and evaluate whether training environments are intensifying anxiety. Schools should also distinguish ordinary pre-performance arousal from severe and impairing MPA.

Psychological skills training should be taught as part of musicianship. Students learn scales, etudes, repertoire, analysis, and ensemble skills; they should also learn how to manage arousal, attention, self-talk, imagery, recovery after mistakes, and post-performance reflection. This framing reduces stigma. The message is not that anxious students are deficient, but that performance psychology is part of professional preparation.

A graded performance ecology means that institutions provide many levels of performance exposure. Students should not move directly from private practice to high-stakes juries. Low-pressure studio sharing, peer concerts, mock auditions, recorded submissions, masterclass simulations, and public recitals can form a developmental sequence. This structure is especially important in competitive contexts because it allows students to build mastery experiences before major evaluation points.

Supportive feedback culture does not mean lowering standards. It means separating evaluation of the musical task from global judgment of the person. Teachers can identify technical issues precisely while avoiding humiliating language. Feedback should include evidence, priorities, and next actions. For example, instead of saying that a student collapsed under pressure, a teacher might identify where breathing changed, where attention shifted, and what practice strategy should be used before the next performance. This style supports self-efficacy and reduces shame without sacrificing rigor.

For Chinese music students, this model can be adapted to settings characterized by high parental investment, frequent assessment, strong teacher authority, and intense competition. The key is not to import Western clinical language mechanically, but to translate mechanisms into educational practice: build confidence through mastery, reduce catastrophic interpretation through reflection, provide repeated performance exposure, and create support systems among teachers, peers, and families. Recent Chinese student studies suggest that psychological capital, self-esteem, flow, self-efficacy, emotional intelligence, and social support are promising variables for empirical testing (Jiang & Tong, 2024; Zhang & Jenatabadi, 2024).

8. Research Limitations and Future Directions

The MPA literature has advanced substantially, but several weaknesses remain. First, terminology is inconsistent. Some studies use MPA, performance anxiety, stage fright, or social anxiety interchangeably. This makes prevalence and intervention findings difficult to compare. Future research should specify whether the sample involves professional musicians, university students, adolescents, singers, instrumentalists, or mixed performers, and should justify the measurement tool accordingly.

Second, many studies are cross-sectional. They can show associations among self-efficacy, support, perfectionism, flow, or anxiety, but they cannot establish developmental pathways. Longitudinal studies are needed to examine whether supportive feedback reduces later MPA, whether repeated performance exposure builds resilience, and whether severe student MPA predicts later professional avoidance or attrition.

Third, intervention studies often have small samples, heterogeneous protocols, and limited follow-up. Kinney et al.

(2025) identified a wide range of therapeutic approaches, but the field still needs larger controlled trials, clearer treatment manuals, active comparison conditions, and outcome measures that include both anxiety and performance functioning. It is not enough to show that students feel less anxious immediately after training; research should also examine whether they perform more consistently, avoid fewer opportunities, recover faster after mistakes, and maintain improvement over time.

Fourth, cultural and institutional context remains underdeveloped. Studies with Chinese music students are increasing, but many still rely on self-report questionnaires and mediation models. Future research should combine quantitative scales with interviews, classroom observation, and intervention trials. It should also examine the role of teacher feedback, parental expectations, assessment systems, and peer performance culture. Such work would make a stronger international contribution than general description alone.

9. Conclusion

Music performance anxiety is not simply nervousness before going on stage. It is a multi-level phenomenon in which bodily arousal, cognitive appraisal, self-focused attention, perfectionism, prior experience, and social evaluation interact across time. For music students, MPA is also educational: it is shaped by how institutions teach, assess, compare, and respond to performance.

The most responsible assessment strategy combines performance-specific scales, contextual interviews, observation, and, where appropriate, physiological information. The most defensible intervention strategy is mechanism-informed rather than method-driven. Cognitive-behavioral strategies, exposure, ACT, mindfulness, mental skills training, biofeedback, music therapy-informed methods, and carefully supervised medical options all have possible roles, but none should be treated as a universal solution.

For higher music education, the practical implication is clear. Performance psychology should be integrated into ordinary training rather than reserved for crisis cases. Students need repeated graded performance experiences, psychologically informed feedback, skills for regulating arousal and attention, and support systems that protect artistic standards without turning every mistake into a judgment of personal worth. This approach is especially relevant for high-pressure educational contexts and provides a strong direction for future empirical research.

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