

# *Programming Our Brains: Synergizing Mental Practice and Metacognition to Enhance Music Learning and Performance*

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**Abstract:** The purpose of this study is to discuss the synergistic relationship between mental practice and metacognition in music learning and performance. Mental practice enables musicians to rehearse cognitively without physical execution, while metacognition provides the self-regulatory framework that guides, monitors, and evaluates the effectiveness of such practice. Together, these two cognitive tools form a powerful foundation for self-directed artistic growth. A three-phase process is proposed: (1) identifying learning preferences, (2) applying tailored mental practice strategies, and (3) engaging in reflective self-assessment. Practical questionnaires are included as tools to support musicians in reflecting before, during, and after mental practice sessions. The study offers insights for musicians seeking to foster conscious engagement with their own learning processes and to achieve more effective and autonomous development. The cognitive synergy between mental practice and metacognition not only supports technical and expressive growth but also promotes deeper personal accountability—essential attributes for success as an independent learner and a self-aware performer.

## 1. Introduction

“Think first, then play it.” This simple phrase has echoed in my ears and been repeated by every piano teacher I have had so far; they remind me that learning and performing classical music is not only about mechanically reproducing notes or executing physical movements; it is also about infusing the music with intention, emotion, and personal expression. In other words, the process of learning and performing music involves the interplay between the decisions made by our minds and the movements of our bodies. Just as choreographers carefully design dance movements and their overall trajectory, musicians also need to skillfully navigate and refine their cognitive processes to harmonize what they think with what they do. Two essential components that help pave the way for our cognitive processes, mental practice and metacognition, can assist us in aligning our intentions with our actions and reinforce this alignment to enhance overall music learning and performance.

Mental practice is a powerful tool that facilitates the cognitive rehearsal of tasks or performances without engaging in actual physical activity, allowing musicians to refine their skills, consolidate learning, and manage performance anxiety [1][2][3]. Metacognition, or the awareness and control of

one's cognitive processes [4], on the other hand, is the overarching framework that guides and informs the implementation of mental practice because metacognition provides the planning and evaluation needed to optimize the effectiveness of mental practice. Conversely, mental practice is a specific technique employed within the metacognitive framework. Integrating these cognitive processes not only enhances musicians' self-awareness but also empowers them to take ownership of their own learning journey, ultimately culminating in tremendous success both on and off the stage [5]. The study will briefly discuss the application of mental practice and metacognition in music learning and performance and then focus on exploring the connections and interplay between these two cognitive concepts to uncover the potential for enhancing music performance and learning.

## 2. Overview of Applying Mental Practice in Music Learning and Performance

Mental practice, often likened to painting vivid images in one's mind, has been recognized as a powerful tool in enhancing music performance and learning [6]. Musicians can tap into their cognitive resources to improve their technical proficiency and musical expression through creating rich mental representations of playing an instrument or singing [7]. In other words, musicians can harness their imagination to improve their anticipation ability and create a mental tapestry of sound and movement. Mental practice has long been a subject of interest for researchers and musicians alike, with numerous studies highlighting its effectiveness in various disciplines, including sports and medicine [8][9][10]. In music, the technique has been shown to improve technical skills, memorization, and performance preparation [11].

Imagine a pianist sitting at the pianos, fingers poised above the keys, ready to dive into a complex piece of music. As the pianist mentally rehearses the piece, the pianist visualizes each note, each nuance, and each expression, akin to a painter envisioning the image on a blank canvas. Musicians can start the journey of imagination from two different directions: external imagery, in which the musician watches themselves playing as an audience would [12], and internal imagery, which shifts the perspective to “imagining performing as if inside their own body” [13]. Through mental practice from either or both perspectives, a musician develops a heightened sense of anticipation, allowing them to navigate the intricate landscape of the composition with greater ease and confidence [14]. However, mental practice should not replace physical practice but rather as a complementary tool to enhance the learning process [15]. Combining both practices as an elegant dance between the physical and the mental makes musicians create a harmonious development of technical skills and performance preparation.

One of the benefits of mental practice is its potential to reduce performance anxiety and build confidence [16]. Like a compass, mental practice serves as a guiding tool for musicians to plan out their performance journey, keeping them from the impact of self-doubt and uncertainty with clarity and confidence. However, the effectiveness of mental practice has its limitations and it is crucial to acknowledge that the benefits of this technique depend on an individual's ability to create vivid and accurate mental images and the controllability of their imagining process, as well as their level of expertise in their chosen instrument [17][18]. Thus, mental practice, while powerful, should be approached with a balanced perspective that acknowledges both its potential and its limitations. In other words, like physical practice, mental practice also requires consistent practice to maximize its effectiveness.

Mental practice allows individuals to mentally simulate performances and skills, providing a space for self-reflection and analysis of their thought processes—an important aspect of metacognition. In other words, mental practice is another type of stream of consciousness. When mentally rehearsing a task, individuals may not only visualize themselves completing the task but also become aware of their own doubts and distractions. However, the more they are aware of these mental obstacles, the

more they can work to overcome them and develop a stronger sense of self-awareness. In this sense, mental practice can provide a platform for metacognition to operate because mental practice allows individuals to separate the physical execution of a skill or performance from the cognitive processes that underlie it. Additionally, mental practice can be done anywhere and anytime based on an individual's needs, providing ample opportunities for individuals to engage in metacognition and reflect on their thought processes throughout the day, even outside of designated practice sessions.

Incorporating mental practice into their daily practice routine can help musicians to connect the power of their imagination to strengthen their ability to anticipate and adapt, ultimately creating more profound and engaging musical experiences and ensuring they can always connect what they have learned and prepared to what they are going to perform on the stage; and eventually, elevate their art to new heights.

### 3. Overview of Applying Metacognition in Music Learning and Performance

As the process of thinking about one's own thinking processes [19], metacognition has become an essential component of music education and performance because it provides individuals with opportunities to foster self-awareness, self-reflection, and self-regulation in order to enhance their efficacy, productivity, and creativity [20][21]. More specifically, applying metacognition in music learning and performance allows musicians to realize what goals they need to work toward and what kind of strategies they may employ to achieve their goals [22]. According to Benton (2013) and Schraw (1998), metacognition requires three essential types of knowledge: declarative, procedural, and conditional [23]. Declarative knowledge refers to understanding "what" learners need to work on, procedural knowledge involves knowing "how" to do it, and conditional knowledge involves knowing "when" and "under what circumstances" to apply acquired knowledge and strategies. Comparing to simple declarative knowledge that emphasizes information and acquired skills in a particular subject area, metacognitive declarative knowledge goes beyond this and encompasses a learner's self-awareness about one's strengths and weaknesses. Procedural knowledge involves the strategic planning and organization required for the successful completion of learning tasks. By developing metacognitive self-awareness, learners can select and apply appropriate strategies that lead to successful outcomes. Conditional knowledge empowers learners to understand the specific situations and contexts in which their known procedures should be applied effectively. Therefore, understanding "what," knowing "how," and deciding "when" and "under what circumstances" are the three key points of developing metacognitive thinking in one's learning and performance.

Not only does metacognition encourage self-regulation and self-evaluation, but it also enhances motivation and resilience in the face of challenges [24][25]. Music educators can leverage the power of metacognition by incorporating it into teaching methods, creating a supportive learning environment, engaging students in reflective activities, and implementing formative assessments [26][27][28]. Among various assessment approaches that help for promoting metacognitive thinking, self-assessment is one of the effective activities. Sadler (2016) examined the effects of self-assessment and peer-assessment on student learning outcomes and found that self-assessment activities dramatically enhanced students' learning outcomes [29]. Bergee and Cecconi-Roberts (2002) explored the impact of small-group peer interaction on self-regulated practice behaviors in collegiate instrumental and vocal students [30]. Results showed that peer interaction positively affected students' self-regulated practice behaviors, including metacognitive planning and self-evaluation. When self-assessing, musicians may encounter the issues of cognitive biases [31], the struggle to balance self-criticism and self-compassion [32], and the challenge of managing performance anxiety and stress. Recognizing and addressing these challenges are parts of one's metacognitive thinking process and are essential steps in the journey toward a smooth and harmonious performance.

#### 4. Linking Mental Practice and Metacognition

The bridge between mental practice and metacognition lies in the realm of self-awareness, a cornerstone of emotional intelligence [33] and an ability to recognize one's own emotions, thoughts, and behaviors, as well as their impact on others and the environment. Referring to the consciousness of one's strengths and weaknesses, values, beliefs, and biases [34]; the psychological construct enables individuals to understand themselves, to be in tune with their own thoughts, feelings, and actions, and having the ability to reflect on them objectively, and to regulate their thoughts to make decisions that align with their goals [35].

Self-awareness is closely related to metacognition, as metacognition means to be aware of one's thinking process. Research has shown that individuals with higher levels of self-awareness also tend to have stronger metacognitive skills, as they are more adept at reflecting on their own cognitive processes and adjusting as needed [36]. Similarly, mental practice, which entails mentally rehearsing or imagining tasks, also connects to self-awareness, as it allows individuals to be conscious of their mental trajectory. Research has shown that mental practice can improve self-awareness by allowing individuals to visualize and reflect on their own performance and identify areas for improvement [37].

Self-awareness is generally triggered by the individual themselves through a process of introspection. One internal trigger of self-awareness is a discrepancy between one's self-concept and one's behavior. When individuals behave in ways that are inconsistent with their self-concept, they may experience a sense of discomfort or cognitive dissonance, which can lead them to reflect on their behavior and motivations [38]. External factors that can promote self-awareness include feedback from others, social comparison, and exposure to novel or challenging situations. Feedback from others can provide individuals with insights into their behavior or performance that they may not have been aware of otherwise [39]. Social comparison, or comparing oneself to others, can also promote self-awareness by highlighting differences between oneself and others [40]. Exposure to novel or challenging situations can also promote self-awareness by requiring individuals to adapt their behavior to new circumstances and consider their own strengths and weaknesses in relation to the situation [41]. Although self-awareness is a valuable tool for personal growth and development, there are some limitations to its effectiveness. One limitation is that individuals may have a limited ability to accurately perceive and interpret their own thoughts and emotions; such phenomenon is known as the “Dunning-Kruger effect,” where individuals with low levels of competence tend to overestimate their abilities and those with high levels of competence tend to underestimate their abilities behaviors [42].

Another limitation of self-awareness is that it can be influenced by biases and social norms. For example, individuals may be reluctant to admit to themselves or others that they have made a mistake or hold a biased belief, which can prevent them from accurately assessing their own thoughts and behaviors [43]. Additionally, self-awareness can be emotionally challenging, as it may require individuals to confront uncomfortable truths about themselves. The discomfort can lead individuals to avoid self-reflection altogether or to engage in defensive mechanisms such as denial or projection [44]. Therefore, receiving feedback from others can help people to see the parts of themselves that they may not be able to see on their own. As the saying goes, “lookers-on see more than players,” by embracing the perspectives of others, individuals can cultivate a more vibrant and flourishing garden of self-awareness.

A study by Tannenbaum and colleagues (2013) found that feedback interventions were effective in increasing self-awareness and improving performance in a variety of domains [45]. Similarly, a meta-analysis by Kluger and DeNisi (1996) found that feedback interventions led to significant improvements in job performance [46]. Social interactions can also influence self-awareness. For example, a study by Kouchaki and Gino (2016) found that individuals were more likely to engage in

self-reflection and moral self-improvement when they perceived themselves to be socially accountable [47]. Furthermore, research suggests that mindfulness practices can increase self-awareness. A study by Hafenbrack and colleagues (2014) found that mindfulness meditation led to increased self-awareness and improved decision-making [48].

Although external factors such as feedback and social interactions can provide valuable opportunities for self-awareness, ultimately, it is up to the individual to take responsibility for their own self-awareness journey. In other words, it is the individual who must actively engage in the process of self-reflection and personal development. Being open to feedback, actively seeking out new experiences and opportunities for growth, and cultivating a mindset of self-reflection and personal accountability can contribute to developing a deeper understanding of one's self and improve an individual's ability to navigate their personal and professional lives [49][50].

In the context of music learning and performance, self-awareness serves as the linchpin that connects metacognition and mental practice, forming a powerful trio of cognitive tools for musicians. Being self-aware allows musicians to engage in metacognitive processes that allow them to efficiently plan, monitor, and evaluate their own learning, leading to optimized practice and enhanced performance outcomes. Simultaneously, self-awareness enables musicians to be consciously aware of the vividness and accuracy of their mental images, which facilitates cognitive rehearsal of tasks or performances without engaging in actual physical activity. The harmonious interplay of cognitive tools enables musicians to take charge of their own learning journey, paving the way for greater success both on and off the stage. As musicians develop their self-awareness, they become more adept at using metacognitive strategies and mental practice techniques, creating a self-reinforcing cycle that fosters continued growth and development in their artistry.

Self-awareness is the vital connection between metacognition and mental practice in music learning and performance, through which musicians can effectively engage in metacognitive processes and mental practice, resulting in a powerful combination of cognitive and affective resources that accelerate learning and elevate performance outcomes. Embracing self-awareness and integrating it with metacognition and mental practice holds great potential for musicians seeking to unlock their full potential, enabling them to not only achieve mastery of their craft but also to experience profound personal growth as artists.

## 5. Synergizing Mental Practice and Metacognition

Building upon the earlier discussion on metacognition and the three types of knowledge involved (declarative, procedural, and conditional), the process of integrating mental practice and metacognition in a systematic manner can be further elucidated. Declarative knowledge becomes the initial step, involving understanding "what" type of learner one is. The self-awareness establishes the foundation for implementing mental practice techniques. Procedural knowledge then comes into play, guiding individuals in knowing "how" to approach and implement mental practice based on their unique learning style(s). As individuals engage in mental practice, they develop a strategic plan and organization to optimize the process. Finally, conditional knowledge empowers learners to discern "when" and "under what circumstances" to apply specific mental practice techniques effectively, tailoring their practice to their individual needs and goals. In other words, the process involves several steps: (1) engage in metacognitive questions to identify the most suitable mental practice strategies based on an individual's learning style; (2) apply these mental practice techniques; and (3) utilize metacognitive reflections to evaluate and contemplate the effectiveness of the chosen mental practice process in order to refine and improve the mental practice process and future performance.



## 5.1. Before Mental Practice

Defined as the way “a person concentrates on, processes, internalizes, and remembers new and difficult academic information or skills” [51], learning styles can play a role in how musicians approach mental practice because mental practice involves an individual’s imagination or rehearsal of a task or behavior in one’s mind, and the effectiveness of this technique may be influenced by an individual’s learning style. Research has shown that individuals with different learning styles may have varying preferences for mental practice techniques [52]. For example, individuals with a visual learning style may prefer to use mental imagery to visualize themselves doing a task, while those with an auditory learning style may try to “hear” the sounds related to the task. Similarly, individuals with a kinesthetic learning style may prefer to use mental simulation to physically experience the task in their minds, whereas analytical learners may try to analyze the content task and mentally recall their analysis. Therefore, before starting to practice mentally, individuals can ask the following questions to themselves:

- 1) When starting to learn a new piece of music, do I prefer to:
  - a) Study the score?
  - b) Listen to recordings?
  - c) Play along with the music or try other hands-on practices?
  - d) Analyze the theoretical aspects of the music?
- 2) When recalling a piece of music, do I choose to:
  - a) Visualize the information contained in the score?
  - b) Remember the melody, harmonies, or rhythms?
  - c) Associate memories with physical actions, such as fingerings or body movements?
  - d) Recall the theoretical analysis of the piece?
- 3) When attempting to understand a complex musical concept, do I usually:
  - a) Create visual representations, such as chord diagrams or notation?
  - b) Discuss or explain the concept to another musician?
  - c) Use physical demonstrations, like playing a scale or rhythm pattern?
  - d) Break down the concept into smaller, logical parts for analysis?
- 4) When solving a musical problem, such as a difficult passage or technique, do I:
  - a) Draw or sketch out the problem, such as fingering positions or bowing patterns?
  - b) Talk through the problem out loud or brainstorm with other musicians?
  - c) Manipulate my instrument or physically engage with the problem?
  - d) Apply logical reasoning, patterns, or systematic methods to find a solution?
- 5) When reviewing or practicing a piece of music, do I:
  - a) Use color-coding, diagrams, or annotations on the score to organize information?
  - b) Listen to recordings or live performances, analyze different interpretations, or discuss with other musicians?
  - c) Engage in kinesthetic practice, such as playing and replaying on the instrument?
  - d) Analyze the music within both historical and theoretical context?

Adapted from the Dunn and Dunn Learning Styles Model (developed by Drs. Rita and Kenneth Dunn), the above questionnaire is based on the VAKT model, which identifies four primary learning styles: Visual, Auditory, Kinesthetic, and Analytical (also referred to as “logical” or “analytical-sequential”) [53][54]. The questionnaire helps individuals identify their preferred learning style(s) and tailor their learning strategies accordingly. However, it is important to clarify that the VAKT model may oversimplify the complexity of an individual’s learning preferences. Learning styles are not mutually exclusive, and learners can possess strengths in multiple modalities. A person’s learning style may also vary depending on the context, subject matter, and other factors. Some researchers

have questioned the scientific validity of learning styles, arguing that there is limited empirical evidence supporting their existence or their impact on learning outcomes [55]. Therefore, the questionnaire should be used as a tool for self-exploration rather than a rigid prescription for learning. Additionally, the categories are used in the questionnaire can lead learners to labeling and stereotyping, which may limit an individual's potential for growth and development in other learning modalities. It is essential to recognize that learning preferences are flexible and adaptable. The questionnaire is designed to highlight an individual's preferred ways of learning rather than to measure actual abilities or cognitive strengths. Preferences should not be mistaken for competencies; learners are encouraged to strengthen less familiar approaches, which can ultimately broaden and deepen their overall learning experience.

Again, the questionnaire provided above should be viewed as an auxiliary tool to help musicians in initiating their metacognitive thinking process so that they can approach mental practice in a more comfortable and accessible manner. The primary purpose of the questionnaire is to facilitate self-reflection and exploration, rather than to definitively determine an individual's learning style. It is essential for musicians to understand that their learning preferences may evolve over time, and they can always revisit the questionnaire to re-evaluate their answers periodically to reflect on their responses; individuals can make necessary adjustments to their mental practice approaches in order to achieve more desired outcomes. Continuous adaptation and self-awareness are key to maximizing the benefits of mental practice for musicians.

## 5.2. Start Mental Practicing

The following steps of mental practice provide a basic framework for musicians to implement mental practice independently. Although the example given focuses on piano practice, these steps can be adapted and adjusted to suit various instruments and learning styles according to individual needs. Musicians also have the flexibility to allocate more or less time to specific steps based on their judgment or the results of a self-reflection questionnaire, which will be provided later. The steps are presented in a first-person perspective to encourage individuals to embark on a journey of self-exploration, allowing them to immerse themselves in the mental practice process. In addition to serving as a guide for individual musicians, these steps can also be utilized by music teachers to introduce their students to the concept of mental practice and the students can gradually build a strong foundation for mental practice, which will contribute to their overall musical development and performance skills.

- 1) Close my eyes and take a few deep breaths to clear up my mind and body,
- 2) Imagine the piano in front of me, its shape, color, and texture,
- 3) "Look at" the white and black keys, find the lowest A and the highest C, find different registers, find the middle C,
- 4) Through my "eyes," imagine I am now sitting at the piano, imagine the shape of my hand, my fingers, imagine moving my hands to the keys and then my fingers resting on the keys, ready to play.
- 5) I am now playing the first note in my mind, the next, and so on; imagine the sound of each note and try to hear the pitch, timbre, and volume of each note in my mind.
- 6) I need to pay attention to the movement of my fingers, the weight of my arms, and the posture of my body as my play. Imagine the sensation of pressing the keys, the release of the key, and the movement of my hand and arm
- 7) If I make a mistake, I should start again from the beginning of a phrase or a section, until I can play it smoothly and accurately. Focus on the correct fingerings, hand positions, and movements.
- 8) As I practice mentally, try to feel the emotions and the musical expression of the piece. Imagine the mood, style, and character of the music, and try to convey that feeling through my mental playing.

Pay attention to the dynamics, phrasing, and articulation of the music.

9) Continue to mentally practice the piece, gradually increasing the speed and difficulty level, until I can play it fluently and confidently in my mind. Increase the tempo by small increments and also try to practice more complex passages.

10) If I feel comfortable and confident about mentally running through the piece in my mind, I can try to play it on an actual piano and compare the experience to my mental practice. Notice the differences in sound, touch, and timing, and adjust my mental practice accordingly.

11) Repeat the mental practice regularly, as a supplement to my physical practice, to reinforce my playing skills and build confidence in my performance. Set aside a few minutes each day for mental practice, and use it to prepare for performances, auditions, or recordings.

Mental practice approaches and processes can vary depending on an individual's playing level, experience, and familiarity with the concept of mental practice. Mental practice itself requires consistent practice to achieve better effectiveness and proficiency. The imagination component can be broken down into smaller segments to accommodate different skill levels. For instance, beginners—whether new to the instrument or to mental practice—may start by simply imagining the movement of their hands moving toward the piano and visualizing the act of playing just one note, and if possible, hearing that note in their minds playing a single note.

### 5.3. After Mental Practice

Upon completing a mental practice session, whether it lasts for one minute or ten minutes, it is time to the follow-up a question: "How was it?" Just as musicians receive reviews for their recordings and comments on their performances, it is important to evaluate one's mental practice process too. Evaluating the vividness and effectiveness of one's imagination during mental practice is crucial for self-improvement. The subsequent questionnaire is designed to facilitate this reflective process by focusing on the mental practice steps completed earlier. Answering these follow-up questions provides musicians with opportunities to assess their progress, pinpoint areas for improvement, and enhance the overall effectiveness of their mental practice sessions.

1) How focused was I during the mental practice session?

- a) Very focused
- b) Moderately focused
- c) Somewhat focused
- d) Not focused at all

2) How vividly did I visualize the piano during the mental practice session?

- a) Very vividly
- b) Moderately vividly
- c) Somewhat vividly
- d) Not vividly at all

3) How well did I imagine the shape of my hand and fingers while mentally practicing?

- a) Very well
- b) Moderately well
- c) Somewhat well
- d) Not well at all

4) How well did I imagine the sound of each note while mentally practicing?

- a) Very well
- b) Moderately well
- c) Somewhat well
- d) Not well at all



5) How well did I imagine the movement of my fingers, the weight of my arms, and the posture of my body during mental practice?

- a) Very well
- b) Moderately well
- c) Somewhat well
- d) Not well at all

6) How accurately did I play the piece mentally?

- a) Very accurately
- b) Moderately accurately
- c) Somewhat accurately
- d) Not accurately at all

7) How well did I regulate my own cognitive processes during mental practice?

- a) Very well
- b) Moderately well
- c) Somewhat well
- d) Not well at all

8) How well did I convey the emotions and musical expression of the piece through my mental playing?

- a) Very well
- b) Moderately well
- c) Somewhat well
- d) Not well at all

9) How confident do I feel about my ability to play the piece on an actual piano after mental practice?

- a) Very confident
- b) Moderately confident
- c) Somewhat confident
- d) Not confident at all

10) How frequently do I engage in mental practice, and how effective do I feel it is in improving my overall performance?

- a) Very frequently and very effective
- b) Moderately frequently and moderately effective
- c) Somewhat frequently and somewhat effective
- d) Not frequently and not effective at all

The process of evaluating one's mental practice session is essential for musicians seeking to improve their performance and overall musicianship. The questionnaire provided above serves as a valuable tool for facilitating self-reflection and introspection, enabling musicians to assess their focus, visualization, imagination, accuracy, and confidence during mental practice. It is important for musicians to regularly engage in mental practice and honestly evaluate their progress so that they can identify areas for improvement, tailor their mental practice strategies to suit their individual needs, and ultimately enhance the effectiveness of their mental practice sessions. The ongoing process of self-assessment and adaptation is crucial in helping musicians unlock their full potential, both in their mental practice and their physical performance.

In conclusion, integrating metacognition and mental practice is an essential process for musicians to refine their skills and improve overall performance. The questionnaires provided serve as tools to facilitate self-reflection and exploration, aiding musicians in assessing their progress and identifying areas for improvement. It is crucial to recognize that learning preferences can change over time and that continuous adaptation and self-awareness are key to maximizing the benefits of mental practice.

By engaging in mental practice consistently and reflecting on its effectiveness, musicians can enhance their performance skills, build confidence, and achieve greater success in their musical endeavors.

## 6. Conclusions

Programming our brains through the integration of metacognition and mental practice provides a powerful tool for enhancing music performance and learning. Metacognition facilitates the planning, monitoring, and evaluation of our learning processes, while mental practice allows us to mentally rehearse our skills and refine our performances. Linking these two cognitive processes allows musicians to take charge of their own learning journey, leading to greater success both on and off the stage. The connection between metacognition and mental practice lies in self-awareness, a cornerstone of emotional intelligence that enables individuals to engage in self-reflection, self-monitoring, and self-regulation. Through the process of answering metacognitive questions, applying mental practice techniques, and utilizing metacognitive reflections, musicians can improve their mental practice process, leading to optimized practice and enhanced performance outcomes. The potential for amplified music performance and learning through the programming of our brains is immense, and it is a powerful tool that should be embraced by all musicians seeking to take their craft to the next level.

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