



An Research Review of the Causes of Metacognitive Discrepancy in Young Musicians in Instrumental Practice

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Abstract. In my experience as a flute teacher, the other things that students do besides their weekly instrumental lessons are practice and reflection after the class. Many students do not improve before and after practice but spent much time on it. What is the reason for this inefficiency? In order to explore the reasons, I have read a lot of literature. In the research from McCormick and McPherson [1], the results of instrumental practice are related to self-regulation. Both beginners and professionals perform better when they utilise metacognitive techniques during practice. Hallam defined metacognition as learners' self-regulation by planning, monitoring, and evaluating throughout the practice process [2]. These studies and my experience began to engage me in thinking about what causes differences in metacognition in young players' practice. There has been much research on improving metacognitive strategies in music practice. However, little research has been conducted on approaches targeting the causes of metacognitive discrepancies, and little research has been conducted to analyze the factors contributing to metacognitive disparities in young musicians. Studying the contributing causes of these differences could maximize the effectiveness of young musicians' practice. Therefore, the focus of this paper is to study and analyze the causes of metacognitive differences among young musicians.

Keywords: Metacognitive · Instrumental Practice · Self-regulation

1 Introduction

Before we study this topic in depth, we must first understand what metacognition is. The term metacognition first appeared in the book *Cognitive Development* published by American child psychologist j.h.flavell in 1976. The so-called metacognition is the cognition of cognition. Specifically, it is about the knowledge of personal cognitive processes and the ability to regulate these processes: the knowledge and control of thinking and learning activities. Metacognition includes metacognitive knowledge and metacognitive control. The essence of metacognition is self-awareness and self-regulation of cognitive activities. During instrumental practice, young musicians use metacognitive strategies for self-regulation. Everyone's metacognition is different, which is the main reason why practice efficiency is various. This study will investigate the leading causes of individual

metacognitive differences in the practice of undergraduate and graduate students studying music in the conservatory or comprehensive university. Therefore, what factors lead to discrepancies in the metacognitive strategies of young musicians (undergraduate and graduate students studying music in conservatory or comprehensive universities) during practice? McPherson and McCormick highlighted the importance of self-regulatory and motivated learning components in developing performing musicians [3]. Additionally, In the study conducted by Evans and McPherson [4], the data suggested that motivation benefits long-term study in music. Therefore, I conjecture that inter-individual differences in motivation contribute to the metacognitive differences in practice. In addition, children demonstrated higher self-regulation and increased expertise over the three years of practice. It is rational to speculate that differences in adolescent metacognition are also related to expertise.

2 Literature Review

In exploring variances in self-regulatory capacity, data from Cleary and Zimmerman's study suggested that the relationship between self-regulatory and individuals focused on sports players and athletes [5]. Cleary and Zimmerman (2001) investigated forty-three adolescent boys, ranging from beginners to specialists in basketball, to see if there were any changes in their self-regulatory planning and self-reflection processes when it came to practice free-throw shooting in a gymnasium. Research data show that professional basketball players have stronger self-regulation ability than beginners, which may be related to their professional training. There is no doubt that professional basketball players are more professional than beginners and spend more time in this sport. This may prove that the differences in adolescents' Metacognition are related to professional knowledge. This experiment involved boys from beginner to expert, but was conducted for only one age level. And There are only 34 students in the sample, which is obviously not convincing enough. However, data on the monitoring stage were absent for the three stages of learner metacognition proposed by Hallam (2001), planning, monitoring, and evaluating.

In the same vein, a study (Osborne et al., 2020) had been published in recent years exploring the formation of differences leading to metacognition through the microanalysis invention and had led to the development of strategies for assisting students in monitoring and controlling aspects of their behaviour and cognition. Nevertheless [6], Osborne et al. (2020) only focused on the practice of seven conservatory pianists. This experiment also faces the problem of insufficient data samples, so the data is also not convincing.

2.1 Motivation and Metacognition

The empirical studies provide an extension of a positive relationship between motivation and metacognition in different areas. There is evidence that proactive students frequently try to construct their enriched learning settings [7]. In these self-regulation intervention studies, most students improved their academic success and strategic behaviours and motivation [8].

Similarly, Zimmerman and Kitsantas (1997) found that explicit goal motivation and self-regulatory ability are in positive correlation [9]. In the experiment, a total of 90 inexperienced girls took part in the dart-throwing exercise. Zimmerman and Kitsantas (1997) divided the girls into a “shifting goal group” and an “outcome goal group”. The girls who shifted the goal showed more self-motivation and supported their self-regulation during the exercise. Even though all these studies were able to show that self-motivation can stimulate metacognitive regulation strategies to some extent, it might be argued that none of these involved the domain of music practice.

Evans and McPherson’s (2014) work on a ten-year longitudinal study on children also found the advantages of motivation. This scale and duration allowed the survey to provide sufficient data and interpretation for research in this area, but the target population is children and the data collected after ten years is separated too long from the first three years, so there may be other confounding factors.

2.2 Expertise and Self-regulation

According to McPherson and Renwick (2001), the longitudinal study recorded videotapes of seven children practicing instrumental music over three years. The analysis of these children’s differences was based on six aspects of self-regulation. Results showed that by the third year of practice, the children’s self-regulation had increased. This longitudinal experiment was recorded on videotape realistically and validly. However, the small sample focused only on children’s practice. Therefore, the research project about metacognitive differences will focus on students who formally study music at a comprehensive university or conservatory and expand the sample size.

Of interest, in research from Hallam et al. (2012), they used a questionnaire for self-reporting by the subjects, with professional skill level as the independent variable and practice time and outcome as the dependent variables, to collect contact data from 3325 students whose levels ranged from beginner to professional conservatory students. The study results indicated no systematic increase in the self-analytic strategies used in practice and the ability to plan the organization of practice by these music learners as their professional skills increased. Although this investigation has a large population and ranges from beginners to experienced students, it does not directly compare individuals of the same type, and the result of this experiment is opposite to that of McPherson and Renwick’s (2001). Therefore, the experimental results are also contrary to my guess.

3 Conclusions

Individual music practice is an essential part of a student’s musical progress [10]. Most instructors indicated they constantly or nearly always talk to their pupils about the significance of practice and particular practice strategies [11]. Hart (2014) demonstrated that students who employed metacognitive practice techniques learnt more and faster while those who did not [12].

Nevertheless, how to improve metacognition in practice is a fundamental issue. Students must be gently “nudged” just beyond their present boundaries [13]. They should enhance the effectiveness of these strategies to facilitate students’ use of the same

metacognitive skills in practice (Colombo & Antonietti, 2016) to improve self-regulation and strengthen their practice capability [14]. By investigating metacognitive differences between individuals, I think we can identify the causes of various self-regulation levels in instrumental music practice and consequently help teachers and young musicians adjust their variables, such as practice environment and practice time, according to the factors that cause these differences. Teachers can help students improve their metacognition in practice through motivation and other methods to achieve maximum practice and teaching effectiveness.

Recently, McIntyre et al. (2017) proposed that musicians' motivation is a complex, multidimensional, interconnected system of multiple processes that provide underlying energy and direction to their conduct. Ryan and Deci (2000) characterize intrinsic motivation as the optimum type of self-determined motivation since it is self-regulated and self-derived, for example, a desire to master something, satisfy one's interests, or explore. The impact of these components on learners' motivation to practice and learn the instrument can be discussed in terms of external motivation, internal motivation, and self-determination theory in motivation, respectively. Refining these components and conducting a deeper study based on the framework of this study will help teachers and learners practice and learn in musical research. The teacher and the students are equally crucial in instrumental teaching and learning. Instructors need to teach students strategies to practice in the class, and students are supposed to apply these methods on their own. A complete set of guidelines can be designed based on the strategies available to the teacher to help them know how to cultivate students' metacognitive strategies in music teaching.

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