The First International Conference

Psychology and Music – Interdisciplinary Encounters
Pre-conference Program October 21–23, 2019
Conference Program October 24–26, 2019

Main Organizer
Faculty of Music, University of Arts in Belgrade

Co-organizers
Institute of Psychology, Faculty of Philosophy, University of Belgrade
Psychology of Music Section, Serbian Psychological Society

How to cite this volume
Bogunović, B. & Nikolić, S. (Eds.) (2020). *Proceedings of PAM-IE Belgrade 2019*. Belgrade: Faculty of Music, University of Arts in Belgrade.

Proceedings of the First International Conference
Psychology and Music – Interdisciplinary Encounters

Editors
Blanka Bogunović and Sanela Nikolić

Publisher
Faculty of Music, University of Arts in Belgrade, Kralja Milana 50, Belgrade

For Publisher
Dean of the Faculty of Music
Ljiljana Nestorovska

Editor-in-Chief of the Faculty of Music Publications
Gordana Karan

Executive Editor
Marija Tomić

Cover Design
Stefan Ignjatović

Technical Editor and Pre-press
Dušan Ćasić

ISBN 978-86-81340-20-2

PAM-IE Belgrade 2019 Conference and this publication were supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

THE FIRST INTERNATIONAL CONFERENCE

Psychology and Music – Interdisciplinary Encounters

PROCEEDINGS

Editors
Blanka Bogunović and Sanela Nikolić
Faculty of Music, University of Arts in Belgrade

UNIVERSITY OF ARTS IN BELGRADE
FACULTY OF MUSIC

Belgrade, 2020

Sight-Reading Strategies in Singing and Playing

Blanka Bogunović,[1] Ida Vujović,[2] and Ana Protulipac[3]

[1] *Faculty of Music, University of Arts in Belgrade, Serbia*

[2] *Music Theory Department, Royal Conservatoire, The Hague, The Netherlands*

[3] *Faculty of Philosophy, University of Belgrade, Serbia*

[1]bbogunovic@rcub.bg.ac.rs, [3]ana.protulipac.97@gmail.com

Abstract

Sight-reading is an 'online' activity that asks for a quick insight into the whole and/or parts, with the task to maintain fluency, accuracy and expressiveness of a musical piece performance without stopping, as if it were practiced. In this study, the concept of self-regulated learning was used as a framework for investigating performing in six subsequent phases of sight-singing: preparation, setting goals, performing, monitoring, solving problems and evaluation. We were interested in investigating the meta-cognitive strategies during sight-singing and comparing them with the already confirmed strategies in sight-playing, as well as in finding out about the strategies typical for those with higher self-efficacy and identifying the differences between the vocal-instrumental and music theory students. The sample consisted of 93 music students. The Sight-singing questionnaire was applied (10 questions, 1–5 Likert scale, 78 strategies during six phases), a parallel form of the Sight-playing questionnaire used in the previous study (Bogunović, 2017, 2018). Factor analysis (PCA, Varimax rotation method with Kaiser normalization) was applied for each of the six sight-singing phases. The extracted factors in the Preparation-phase included the following: General Overview, Structural Pattern Perception, Inner Hearing and Basic Overview; in Setting-goals: Fluency Control and Expressiveness, and in the Performance phase: Intuitive Performing, Expressive Performing, Inner Hearing, and Basic Parameters Control. In each phase of sight-singing and sight-playing, significant and high correlations between factors were confirmed. Music students who have higher self-efficacy in sight-singing use meta-cognitive strategies in the Preparation phase set their goals towards Fluency Control and Expressiveness and Inner Hearing and are also able to deal with the harmonic and structural complexity. The analysis did not reveal significant differences between the students of music theory and vocal-instrumentalists in any of the phases of sight-singing. Differences were identified concerning several phases of sight-playing. The findings point out that almost the same cognitive strategies underlie the basis of sight-singing and sight-playing. Self-efficacy in sight-singing is related to efficient meta-strategies. Hence, research findings could contribute to increasing the correlation between two musical disciplines (ear training and vocal-instrumental teaching) and therefore improve the level of educational outcomes.

Introduction

The study, presented in the paper, relies on the assumption about the similarity of the sight-reading processes during the performance of two musical skills: sight-playing an instrumental piece and sight-singing a melodic task (in the framework of the solfège or ear training tuition). It is well known that sight-reading is an 'online' activity that asks for a quick insight into the whole and/or parts of a music piece, with the task of maintaining the fluency and accuracy of performing without interrupting the music stream (Lehmann & Kopiez, 2016). The piece is supposed to be played/sung from the beginning to the end, as if it were practiced, without stopping or slowing down, with the task to maintain fluency, accuracy and expressiveness of the performance. The existing findings confirm the role of cognitive, perceptive and motor abilities in acquiring the sight-reading skills, as well as the role of practice and education-related factors (Fournier, Moreno Sala, Dubé, & O'Neill, 2017; Kopiez & Lee, 2006, 2008). In this study, we focus our interest on metacognitive strategies, not taking into account the co-cognitive factors as in the previous one (Bogunović, 2018). We assume that both performance activities demand perceptual and cognitive abilities and/or skills, but engage different motor skills.

As a theoretical background, we used the self-regulated learning theory (McPherson & Zimmerman, 2002). The paradigm of the self-regulated learning cycle encompasses the following phases: forethought (referring to cognitive processes and personal beliefs), performance (involving the processes that occur during learning and affect concentration and performance) and self-reflection (involving the musician's subsequent response to the experience). These three processes are cyclical because the musician's self-reflection feeds back into forethought to influence future learning and performance (McPherson & Renwick, 2011; Zimmerman, 2000). Zimmerman and Campillo (2013) formulated the model which can be used to explain the self-regulated problem-solving in the performance of musical skills. Hence, we adapted the concept of self-regulated learning (SRL) to a certain extent for the investigation of sight-reading music as a self-regulated performance (SRP) (Bogunović, 2017). It refers to 1) Forethought (Preparation and Setting goals); 2) Performance (Performance, Monitoring [Difficulties and Easy for performing]), Problem-solving [Facilitating strategies] and 3) Self-reflection (Evaluation [Self-efficacy and Self-satisfaction]). This process is present in any activity of sight-reading in musical performing through the intertwining of metacognition, psychomotor behavior, evaluation and adaptation, which enables the almost simultaneous performance of all cycle phases of the self-regulated activity.

The main focus of the present study is on sight-reading when singing. It is the continuation of the pilot study that explored metacognitive strategies in sight-singing using the mixed-method (qualitative and quantitative). The pilot study gave clear directions for the further investigation of the cognitive organization of the musical materials and strategies that refer to the existing knowledge and learning experience. The findings of this study also had educational implications because it was confirmed that the sight-singers with a higher level of self-assessment skills had better insight into the structure of a melodic task and relied on inner hearing, as well as on the organization of musical and problem-solving strategies (Bogunović & Vujović, 2012). Further on, in another pilot study, we collected the strategies used when sight-reading from different psychological and music education literature (methodic of performing and solfège), as well as from the practice and experience of music students themselves (Bogunović, Zdravković, Popović, & Milutinović, 2016). In the next step, the final formulation of the Sight-reading questionnaire was performed, and it was clearly put into the framework of the self-regulated learning concept (Bogunović, 2017). The idea that the sight-reading skill, when playing, is not related only to cognitive and perceptive factors, but also to co-cognitive/personality dimensions as factors of efficient music skills performance, was confirmed by the findings that followed and showed the correlation of the sight-reading factors and some of the Big five model dimensions and facets (Bogunović, 2018). Hence, in this study, we aim at applying the same methodology, used in investigating metacognitive strategies while sight-playing, and finding out about sight-singing metacognitive strategies. We assume that, basically, the same processes underlie sight-reading in both music skills, and that music education and professional experience can make a difference in some phases of the process.

Research Methodology

First of all, we intended to identify metacognitive strategies during sight-singing and compare them with the already-confirmed strategies in sight-playing (Bogunović, 2018). Further, the aim was to obtain insight into the strategies typical for those with higher self-efficacy and to identify the differences between the vocal-instrumental and music theory students in sight-singing and sight-playing.

The sample consisted of 93 music students of the Faculty of Music in Belgrade (26 males), aged 18 to 39 (M = 22.38), who studied either at the performance departments and played different instruments (48%) or at theoretical departments (52%). Students had twelve to fifteen years of specialized music education experience. The three-level specialist music education (elementary music school, music high school and higher music education (Faculty of Music) starts at the age of 5 to 7 and offers systematic tuition in instrumental playing, music theory and general subjects for the musically gifted children and youth (Nogaj & Bogunović, 2015). The course of sight-reading and playing, as well as sight-singing (in the framework of solfège lessons), is introduced at the secondary level of education and it is constantly present in the curricula onwards.

The Sight-singing questionnaire was applied (10 questions, 1–5 Likert scale, 78 strategies during six phases of the self-regulated performance cycle). The questionnaire represents the parallel form of the Sight-playing Questionnaire used in the previous study (Bogunović, 2018). Participants were asked to estimate to what extent they applied the listed strategies in the subsequent phases of sight-singing. The reliability of the questionnaire was satisfactory (Cronbach $\alpha = .886$). Factor analysis (PCA, Varimax rotation method with Kaiser normalization) was applied for each of the six sight-singing and sight-playing phases. Based on the previous and new results, the comparison between sight-singing and sight-playing factors was performed.

Table 1. The Rotated component matrix of the Preparation phase – Varimax rotation method.

Preparation phase – Sight-singing strategies	Components			
	General Overview	Structure Patterns Perception	Inner Hearing	Basic Overview
Paying attention to the music style/composer/ period of composition	.844			
Paying attention to the instructions in the music text first	.818			
Identifying the tempo first	.773			
Trying to identify the character of a piece	.710			
Perceiving the model of harmony		.808		
Paying attention to the rhythmical figures	.408	.629		
Perceiving the sequential movements		.599	.357	
Analyzing the form/structure/parts of a composition		.539		.488
Singing 'silently' the most difficult parts			.782	
Analyzing tonality changes		.354	.655	
Determining metrical organization and tonality			.494	.472
While browsing, hearing music with inner hearing		.401	.437	-.369
Starting to sing immediately, trusting intuition				-.799
Running through the text from the beginning to the end		.333	.386	.535
Total variance extracted 62.37%	31.42%	13.78%	9.83%	7.34%

Results

Sight-singing as Self-regulated Performance

Preparation. Before applying Principal component analysis, for the preparation phase, items 1, 2, 8, 9 were excluded from the analysis, leaving 14 items, all showing communality values higher than 0.3, as appropriate. Suitability of the PCA for the given data was adequate (KMO = .739 and Bartlett's Test of Sphericity $\chi^2(91) = 434.259$, $p < .001$). PCA revealed the presence of four components, explaining 62.37% of the variance respectively. An inspection of the scree plot revealed a break after the third component, but the four-factor solution was kept as a more explainable one. The extracted factors were General Overview, Structure Patterns Perception, Inner Hearing and Basic Overview (Table 1).

The General Overview of the melodic example before singing is the most saturated factor. It contains strategies that give a wider or 'a big picture' of the task. Mostly, this is the way students have been taught to perform this task. Further, competent sight-reading depends on the ability to identify familiar patterns and spend time evaluating the musical material before beginning to perform (Radoš, 2010). The other three factors are relatively equally present. The Structure Patterns Perception factor comprises strategies that tend to find out about the medium level units of melody organization. The Inner Hearing strategies build up auditory mental representation and harmony patterns of the melodic task, while Basic Overview includes strategies oriented towards basic information about the melodic task.

Setting-goals phase. When it comes to the strategies used in the second phase of the self-

Table 2. The Rotated component matrix of the Performance phase – Varimax rotation method.

Performance phase – Sight-singing strategies	Components			
	Intuitive Performance	Expressive Performance	Inner Hearing	Basic Parameters Control
Relying on musical intuition	.717			
Singing automatically, not thinking too much	.698			
Singing only the important notes	.642			
Focusing on what I see, not paying attention to what is next	.639		.328	
Watching the music text forth all the time	-.559		.325	.363
Paying attention to the expressiveness of singing		.938		
Paying attention to dynamic		.921		
Paying attention to singing in an appropriate tempo		.671		.434
Hearing notes before singing		.314	.712	
Mostly relying on hearing, less on analysis	.315		.660	
Focusing on the musical flow			.621	
Paying attention to keeping the pulse while singing	-.389		.555	.488
Focusing on the most important notes				.782
Paying attention to rhythmical figures				.715
Total variance extracted 61.61%	25.42%	17.71%	10.38%	8.10%

regulated performing cycle, PCA extracted two factors with a total of 65.97% variance (KMO = .679; Bartlett's Test $\chi^2(15) = 147.581$, $p < .001$). Both factors are represented by the strategies that are the core of the sight-singing skill. The Continuity/Fluency Control (43.28%) is one of the important characteristics of sight-singing such as singing from the beginning to the end without stopping, paying no attention to mistakes, keeping the appropriate tempo. The second factor, Expressiveness (22.69%), reflects an intention to interpret the sight-singing task and not perform technically only.

Performance. PCA of the performance phase strategies (KMO = .693; Bartlett's Test χ^2 (91) = 433.340, $p < .001$) extracted four factors (61.614% total variance). Interestingly enough, each of them presents a typical strategic orientation in performing (Table 2). The Intuitive Performing strategies factor supports the idea of such a highly developed skill that an individual perceives it as automatic, i.e. as if the execution of the task were done without previous consideration, namely, thinking or analysis. The second and the third factor, Expressive Performing and Inner Hearing, are the most valuable strategies for successful sight-singing. This implies a quick reading of the signs for expressiveness and completing the task in accordance with them, as well as following the auditive representation while singing. The fourth factor, Basic Parameters Control, includes the strategies that keep control of the basic performance elements.

Monitoring – difficult and easy elements. During the preparation, but also during the performance phase, students, naturally, observe the 'spots' that are difficult or easy for them to sing. Factor analysis (KMO = .790; Bartlett's Test χ^2 (91) = 551.034, $p < .000$) of the problems that students reported they had while sight-singing, extracted two as the fixed number of factors (Table 3). This enabled a better interpretation of results. They focus on two major groups of problems, which have also appeared in our previous research (Bogunović & Vujović, 2012). One factor is Complex Rhythm, Meter and Tempo, which probably aggravates easy comprehension of the melodic flow. The second, Harmonic and Structural Complexity, refers to the difficul-

Table 3. The Rotated component matrix of the Monitoring phase – Varimax rotation method.

Monitoring phase – difficulties in singing	Components	
	Complex Rhythm, Meter and Tempo	Harmonic and Structural Complexity
Meter is not familiar	.834	
Meter is long	.834	
Meter is changing	.795	
The compound meter (6/8, 9/8, 12/8)	.722	
When parts for other instruments are written too	.617	
Rhythm and meter are complex	.480	.307
Tempo is slow (problems with counting)	.382	
Many alterations		.878
Many modulations		.843
Lots of leaps		.683
Many ornaments		.627
Harmony changes are not logical	.468	.555
Structure is not clear	.323	.498
Someone is singing the other melody at the same time		.425
Total variance extracted 50.662%	35.96%	14.70%

ties stemming from the less transparent musical material (many alterations, modulations, leaps, ornaments), but also from a less logical harmonic structure, implying the structure that does not meet expectations based on the already learned harmony rules. At this point, it is worthy to emphasize the role of the expected melodic flow (Huron, 2006; Meyer, 1986) that facilitates sight-singing. It is based on the cultural experience and/or music education that facilitates perception, inner hearing and performing during sight-reading, here sight-singing.

Factor analysis of the musical structure elements that make sight-singing easy (KMO = .767; Bartlett's Test $\chi^2(28) = 205.015$, $p < .001$) extracted 56.95% of the total variance and two factors: Transparent Musical Structure (42.53% variance extracted) and Easy Chunking and Inner Hearing (14.42%). These two factors are, to a certain extent, opposite to those that cause difficulties. Again, they emphasize the role of perceptual and cognitive determinants of successful and fluent sight-reading and sight-singing.

Problem-solving and facilitating strategies. An interesting issue, which is also very important for the practice of music performance, is what students do when they are faced with the problems in sight-singing. They rated their strategies on the list of the most frequent ones. Factor analysis (KMO = .832; Barttlet's Test $\chi^2(15) = 230.746$, $p < .001$) extracted a total of 70.95% variance and two fixed factors: highly saturated Stop-Correct-Continue factor (54.84%), which would be the opposite from a strategy plausible for sight-singing "Ignoring mistakes and continuing with singing till the end", and the Dysfunctional strategies factor (16.11%), as "Stopping completely" or "Starting from the beginning", which is more typical for novices. This result is not so credible for the practice of higher music education, because music students mainly apply strategies that are not in accordance with the skill requirements, and that is 'ignoring mistakes and continuing with singing till the end'.

When asked about facilitating strategies, music students chose the strategies which were grouped by PCA in two factors (total of 70.954% variance): Focus on Important Tonal Functions and Auxiliary Strategies (Table 4) (KMO = .832; Bartlett's Test $\chi^2(15) = 230.746$, $p < .001$). The first factor is significantly highly saturated and contains strategies that are very much expected during sight-singing, presenting a cognitive

Table 4. The Rotated component matrix of the Facilitating strategies – Varimax rotation method.

Problem-solving – Facilitating strategies	Components	
	Focus on Important Tonal Functions	Auxiliary Strategies
Focusing on the important notes in the melody	.852	
Focusing on stable notes	.830	
Frequently reminding of the tonal center	.667	
Focusing on the harmony flow	.636	
Trying to identify chords, intervals, or familiar music motives		.838
Imagining to play the same melody on the instrument (imagining the position of the fingers)		.711
In case of a difficult leap, imagining auxiliary notes	.473	.649
Total variance extracted 61.33%	44.58%	16.75%

orientation towards harmonic and functional thinking and having tonality and harmony in mind as an "inner hearing back-up". These strategies certainly have a good impact on intonation and correct task performance. Hence, a melodic example is not played note-by-note, but with a "bigger picture" of the tonal and harmonic patterns. In this way, students use the previous knowledge, namely, the "how to do" memory (Ginsborg, 2006), and perceive the task as a whole in which every note has its place and function. Such a way of performing ensures correct intonation and continuity in performing a task. The second factor includes Auxiliary Strategies that are essentially based on inner hearing.

Self-reflection and evaluation. Evaluation parameters in this study were in the scope of self-estimation. Hence, music students assessed their self-efficacy and enjoyment in sight-singing, as well as the rate at which the benefits of sight-singing and sight-playing transferred to one another. The results show that self-efficacy in the sight-singing skill was rated as slightly more than average, on a 1–5 Likert scale (M = 3.72, SD = .77). Furthermore, only 15.2% of students estimated their skill with the highest rating, while 45.7% assessed it as very good and 34.8% as good. Enjoyment was reported as average in total (M = 3.22, SD = 1.19), where only 16.3% of students enjoyed sight-singing at the highest level, and as many as 12% did not like it at all. The correlation between self-efficacy and enjoyment is rather high anyway (r = .66, p < .001). The assumption that the skills involved in sight-singing and sight-playing have a significant transferable value was confirmed, since a high mutual correlation of these two skills was shown $\chi^2(4) = 64.37$, $p < .001$). This finding leads towards the conclusion that two skills are significantly and highly related and that the educational output of sight-singing on sight-playing and *vice versa* is valuable.

We also searched for the metacognitive strategies in sight-singing used by those who estimated that they had higher self-efficacy of the skill, assuming that this finding could have strong educational implications. We found that the strategies used by the students with higher self-efficacy in every phase of sight-singing were the following:

- *Preparation*: General Overview (r = .206, p < .05), Structure Patterns Perception (r = .33, p < .01), Basic Overview (r = -.413, p < .01);
- *Setting goals*: Continuity/Fluency Control (r = .246, p < .05), Expressiveness (r = .364, p < .01);
- *Performance*: Expressive Performance (r = .380, p < .01), Inner Hearing (r = .335, p < .01);
- *Monitoring – Difficulties*: Harmony and Structure Complexity (r = -.367, p < .01);
- *Monitoring – Easy*: Transparent Musical Structure (r = .332, p < .01), Easy Chunking and Inner Hearing (r = .389, p < .01);
- *Problem solving*: Dysfunctional strategies (r = -.266, p < .05).

These results confirm the assumption of the importance of metacognitive strategies while sight-singing and lead to an inference that those students who have confidence in their skill, who feel competent and who have mastered the skill, use the strategies that involve the "top-down" organization of thinking. This implies perceptive chunking, an analytical approach and efficient strategies in solving problems, as well as fluent and expressive performance. They do not apply the "bottom-up" cognitive strategies, have no problem with harmony and structural complexity and do not use dysfunctional strategies.

Are Metacognitive Strategies in Sight-singing and Sight-playing the Same?

In order to answer this question, we compared the factors in all phases of self-regulative performing of sight-singing and sight-playing. At this point, we have to mention that the factors of sight-playing were reported in the previous research (Bogunović, 2017) in which music students were asked about their metacognitive strategies while playing the piano, which assumed two lines of music, more complex notation, harmony and form, and a longer piece of music. Statistical comparison gave many significant and high correlations between the factors in each phase of sight-singing and sight-playing, which confirmed the assumption that similar metacognitive strategies were used in both activities. We do not present them here because of the limited space. Qualitative analysis of the factors showed that almost the same cognitive strategies underlie the basis of sight-singing and sight-playing, implying high similarity of the processes. Differences can be attributed to the motor aspect of instrumental performance, as well as to the length and complexness of the musical piece, while the vocal performance of a melodic task implies one melodic line and a shorter length. Namely, in the Preparation phase of sight-singing, the factor of the Structure Patterns Perception is present, and, in sight-playing, the Analytical factor (asking for different levels of the perceptual-cognitive engagement). In the Setting goals phase, sight-playing demands Technical Accuracy, and, in the Performance phase, sight-playing implies Expertness (taking into account the wider aspects of performance).

Differences Between the Vocal-instrumental and Music Theory Students

We have set this aim for the research wondering whether music students at the performing, vocal-instrumental departments and those at the music theory departments have different metacognitive strategies in sight-singing and -playing, based on the distinctions in their study curricula. The analysis did not show significant differences between the students of music theory and vocal-instrumentalists in any of the phases of sight-singing.

Differences were identified concerning several phases of sight-playing (ANOVA). Non-significant differences between vocal-instrumental and music theory students were detected at the following strategies: General Overview of the Structure ($F(1,301) = 1.075$, $p = .301$), Inner Hearing while preparing ($F(1,301) = .036$, $p = .849$), Analytical Micro Strategy ($F(1, 301) = 1.890$, $p = .170$), in Setting goals phase Fluency Control ($F(1,336) = 1.245$, $p = .265$), Fluency in performance ($F(1,276) = 2.099$, $p = .149$), Inner Hearing while performing ($F(1,276) = 3.346$, $p = .068$), Transparency in Musical Structure as easy factor ($F(1,322) = .027$, $p = .869$) and Readability as factor of difficulties in performing ($F(1,287) = 3.258$, $p = .072$).

Students at the vocal-instrumental departments used the following strategies to a significantly greater extent: General Overview of the Character in Preparation ($F(1,301) = 39.945$, $p < .001$), Setting Expressiveness as a goal ($F(1,301) = 6.776$, $p = .010$) and Aiming for Expertness in Performance ($F(1,336) = 22.142$, $p < .001$). They also had difficulties with Harmony and Structure ($F(1,287) = 9.942$, $p = .002$). Music theory students used Analytical Macro Strategies in the Preparation phase ($F(1,301) = 17.121$, $p < .000$) significantly more often; they had more Technical difficulties in playing ($F(1,287) = 6.572$, $p = .011$) and more frequently used the Dysfunctional Strategies ($F(1,320) = 7.404$, $p = .007$). They also had a tendency towards Perfectionism ($F(1,276) = 6.265$, $p = .013$).

These differences in approaching and executing sight-playing are mostly the result of the music education practice and the performance experience of students. Performers are focused more on a “bigger picture” and striving for expertness and expressiveness, while music theorists are more focused on the “micro” level and precise analysis of music and do not have high instrumental performance skills. This means that different aspects of the same profession bring about the development of diverse skills.

Conclusion

The findings of the study indicate that almost the same metacognitive strategies are involved in the processes of sight-singing and sight-playing, as well as that differences in approach and execution, are mostly the result of the music education practice and performance experience of music students. Some factors are present only in sight-singing (e.g., Structural Patterns Perception, Expressiveness) and some only in sight-playing (e.g., Analytical Approach, Technical Accuracy, Expertness). Mutual transferability of the core strategies justifies the inclusion of sight-singing as a skill in the frame of solfège and in the curricula of higher music education. We can conclude that higher self-efficacy in sight-singing is related to efficient meta-strategies. The students who feel competent in mastering their skills use the strategies that involve the “top-down” organization of thinking, which refers to perceptive chunking, analytical approach and efficient strategies in solving problems, as well as to fluent and expressive performance. They do not apply the “bottom-up” cognitive strategies, deal better with the harmonic and structural complexity and do not use the dysfunctional strategies. The research findings could contribute to an increasing correlation between two musical disciplines (ear training and vocal-instrumental teaching) and therefore improve the level of educational outcomes.

Acknowledgments. This research was carried out as a part of the scientific projects (No. 177019 and No. 179018, supported by the Ministry of Education, Science, and Technological Development of the Republic of Serbia (2011–2020).

References

Bogunović, B. (2017). Metacognitive strategies and sight-reading in music performance. U *Knjiga rezimea. 23. Empirijska istraživanja u psihologiji* (str. 50–51). Belgrade, Serbia: Institut za psihologiju i Laboratorija za eksperimentalnu psihologiju, Filozofski fakultet, Univerzitet u Beogradu.

Bogunović, B. (2018). Sight-reading strategies and personality dimensions. In R. Parncutt & S. Sattmann (Eds.), *Proceedings of ICMPC15/ESCOM10* (pp. 85–90). Graz, Austria: Centre for Systematic Musicology, University of Graz.

Bogunović, B., & Vujović, I. (2012). Metacognitive strategies in learning sight-singing. *Psihološka istraživanja*, *15*(2), 115–133.

Bogunović, B., Zdravković, N., Popović, N., & Milutinović, I. (2016). Samoregulativne strategije čitanja s lista klavirskog komada [Self-regulated strategies of piano piece sight-reading]. In M. Petrović (Ed.), *Zbornik radova sa Pedagoškog foruma scenskih umetnosti – Artikulacija kao sredstvo komunikacije, interpretacije i značenja* (pp. 191–204). Belgrade, Serbia: Fakultet muzičke umetnosti.

Fournier, G., Moreno Sala, M. T., Dubé, F., & O'Neill, S. (2017). Cognitive strategies in sight-singing: The development of an inventory for aural skills pedagogy. *Psychology of Music*, *47*(1), 1–14.

Ginsborg, J. (2006). Strategies for memorizing music. In A. Williamon (Ed.), *Musical excellence. Strategies and techniques to enhance performance* (pp. 123–143). New York, NY: Oxford University Press.

Huron, D. (2006). *Sweet anticipation: Music and the psychology of expectation*. Cambridge, MA: The MIT Press.

Kopiez, R., & Lee, J. I. (2006). Towards a dynamic model of skills involved in sight-reading music. *Music Education Research*, *8*(1), 97–120.

Kopiez, R., & Lee, J. I. (2008). Towards a general model of skills involved in sight-reading in music. *Music Education Research*, *10*(1), 41–62.

Lehmann, A. C., & Kopiez, R. (2016). Sight-reading. In S. Hallam, I. Cross, & M. Thaut (Eds.), *Oxford handbook of music psychology* (pp. 547–558). Oxford, United Kingdom: Oxford University Press.

McPherson, G. E., & Renwick, J. M. (2011). Self-regulation and mastery of musical skills. In B. J. Zimmerman & D. H. Schunk (Eds.), *Handbook of self-regulation of learning and performing* (pp. 234–248). New York, NY: Routledge.

McPherson, G. E., & Zimmerman, B. J. (2002). Self-regulation of musical learning: A social cognitive perspective. In R. Colwell & C. Richardson (Eds.), *The new handbook of research in music teaching and learning* (pp. 327–347). Oxford, United Kingdom: Oxford University Press.

Mejer, B. L. (1986). *Emocija i značenje u muzici* [Emotion and meaning in music]. Belgrade, Serbia: Nolit.

Nogaj, A., & Bogunović, B. (2015). The development of giftedness within the three-level system of music education in Poland and Serbia: Outcomes of different stages. *Zbornik Instituta za pedagoška istraživanja*, *47*(1), 153–173.

Radoš, K. (2010). *Psihologija muzike* [*Psychology of music*] (2nd ed.). Belgrade, Serbia: Zavod za udžbenike.

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13–39). San Diego, CA: Academic Press.

Zimmerman, B. J., & Campillo, M. (2013). Motivating self-regulated problem solvers. In J. E. Davidson & R. J. Sternberg (Eds.), *The psychology of problem solving* (pp. 233–262). New York, NY: Cambridge University Press.