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INTEGRAL ASPECTS OF HARMONIC HEARING IN THE PROCESS OF SIGHT-SINGING

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Abstract. *Harmonic hearing is a significant characteristic for professional musicians, hence its development is one of the most important tasks in musical training, precisely in teaching solfeggio. The paper debates the basic hypothesis that at an academic age, the level of development of harmonic hearing with the students of music is significantly correlated with the success in sight-singing. The research was realised on the sample of the students at the Faculty of Arts in Niš (N = 42). The data were collected by questionnaires and examination, whereby the grades in the level of harmonic hearing and sight-singing were awarded. The results show significant positive correlation between the grades (r = .37, p < .05), which confirms the basic hypothesis. The paper additionally considers the elements which can formally and informally influence the development of harmonic hearing and examines the importance of various aspects of an analysis of sigh-singing melodic exercises. To sum up, we pointed to the necessity for applying integral aspects of harmonic hearing in sight-singing and developing skills and competences for participation in various music activities.*

Key words: *solfeggio, musical ear, harmonic hearing, sight-singing, sight-reading*

1. INTRODUCTION

1.1. Harmonic hearing

One of the basic preconditions for successful musical education and professional music practice is certainly the development of a *musical ear*. A *musical ear* does not imply only a mere ability to experience tonal properties by hearing, it also involves the "aptitude to sense the inner connections that associate tones as an indivisible whole" thus

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being "the base for creation of music aesthetic impressions" (Kršić Sekulić 1990, 20). In the professional literature, various categories of the *musical ear* are discussed as following:

- Absolute pitch and relative pitch, as various approaches to identification of tonal pitch;
- Inner ear as the capacity to conceive sounds in relation to the previously acquired sound presentations;
- Harmonic and polyphonic hearing that can be related to the experience of vertical and horizontal dimensions of music texture and others.

Harmonic hearing as a category of *musical ear* is a "special giftedness and aptitude to perceive and differentiate chord sets and their interrelations" (Kršić Sekulić 1990, 23), where the aspect of experiencing keys and harmonic functions within a key appears to be extremely significant for practicing music. Highly developed harmonic thinking is an important characteristic of academic musicians in most domains – performance, pedagogy, composing, conducting, etc. A similar attitude is found with other authors: "A well-developed harmonic hearing is by right considered a high stage of professional musical hearing and is of great importance for a prospective music teacher. It contributes to improving skills of sight-reading [...] and improves students' self-control while performing the compositions" (Zavadska & Davidova 2015, 73).

Harmonic hearing as a specific form of disposition and giftedness is closely connected with relevant musical experience. Since the "awareness of harmony is learnt" (Radoš 2010, 81), work on the development of harmonic hearing is a significant task in formal music education. In teaching solfeggio it includes various forms of work: unconscious acquisition of harmonic elements through the piano accompaniment in training the beginners, development of harmonic bases and interpretation of tonal pitches in the context of harmonic functions in keys that are taught, singing cadences (with main and side degrees, one-part and multi-part), conscious performance, listening to and writing multi-part dictation, work on chord progressions etc. The aspect that should be encouraged in musical teaching is "harmonic memory" (Olujić 1990, 35), which involves the capacity of memorising chord progression and its reproduction on the instrument. At an academic level of education, the development of harmonic hearing should be based on the strongest possible connection with music in its natural context. It implies the necessity for "perception of functions in a key through listening to musical pieces in complete sound" and accordingly in "combination of various timbres and in different textures" (Nikolić 2014, 12). One of the strongest demands in teaching solfeggio, which includes active participation of harmonic hearing is the improvisation throughout the complete texture, i.e. "improvising and singing of melodic-rhythmic context by solmization, along with creating and performing of harmonic accompaniment on instrument" (Nikolić & Kodela 2016, 90). This model necessarily involves good preparation in the form of appropriate literacy, permanent work on musical creativity, singing and playing chord progressions with the possibility of conscious creation of proper harmony related to the desired music style.

Zavadska (2012) created a model of development of harmonic hearing which included three basic criteria: perception, analysis and reproduction. In the domain of aural perception, various types of simultaneous tones are used such as intervals, triads, chords of non-triad structure – whereby it is important to develop the mechanism of associations. The second criterion implies aural analysis of different sound structures (chord functions in mode, deviations, modulation) and matching them with the respective theoretical concepts. Of great importance is the reproduction of different kinds of harmonic polyphony when

making music (harmonic two-, three- and four-part singing, composing of the accompaniment for a melody, polyphonic music making). In this case students have to adequately implement the developed knowledge and skills. Although these activities are given in the form of separate criteria, the author emphasizes that in practical realization of teaching solfeggio, listening analysis and singing are closely connected, thus these "activities complement each other" (Zavadska 2012, 63).

Although simple songs for children are used in the initial work of developing harmonic hearing, later on, the musical contents should necessarily be adjusted to the increased demands. The research of music preferences with musicians and non-musicians reveals that "musicians prefer more complex music and serious music and that this difference exists both for male and female musicians" (Jovančević et al. 2019, 37). Therefore it is reasonable to use classical music pieces with more complex harmonic contents in training students at various ages (secondary school and higher education) aimed at developing harmonic hearing, where the principle of graded demands should be applied. Thus the realisation of teaching goals related to the development of musical abilities and skills significantly influences the development of musical taste at the same time.

1.2. Sight-singing

The skill of sight singing involves the aptitude to experience, understand and successfully perform (by solmization) the visually perceived score. Sight-singing is an 'online' activity that requires quick insight and problem solving in order to maintain fluency and accuracy (Vujović & Bogunović 2012, 1106). This skill can be considered one of the expected outcomes of teaching solfeggio successfully. Since the development of sight-singing is based on triggering associations with the acquired sound presentations and developing automatisms, it goes without saying that the success in mastering this skill depends on the quality of the basis established at the beginning of musical education.

In relation to reading a literary text, sight-singing implies characteristic demands that should be taken into account – intonation and rhythmical precision, dynamic shading, agogic, articulation demands, phrasing, diction etc., while the success in singing is also considerably influenced by the quality of automatic reactions in creating tone. Considering the functions that participate in sight-singing, it can be concluded that this process is very complex and "involves a receptive activity (interconnection of sound stimuli, melodic and harmonic progressions with their symbolical presentation in the score) and performance, whereby the interpreter should simultaneously perceive and follow the structure of the performed piece" (Radoš 2010, 178). Kiselčić Todorović thinks that in sight-singing we can differentiate a few complementary factors. The vertical dimension is a "tonal-pitch factor" and the horizontal dimension implies the "work on the whole piece, which is provided by the previous training in hearing the score", while their interaction is enriched by the dimension of musical thinking "that transforms the score into a live, touchable, hence real, three-dimensional tissue" (Kiselčić Todorović 2001, 71).

One of the important aspects in sight-singing that is developed through teaching practice is the skill of looking at the score in advance, i.e. focusing on the part of the score that is going to be performed. In that way *regression* is avoided (compare to Vasiljević 2000, 195) which may have negative effects on sight-singing in teaching solfeggio, rhythmical reading, as well as in instrumental performance.

In relation to the statements above, it is obvious that sight-singing cannot be considered a simple process of transforming graphic symbols (score) to a sound, since it greatly depends not only on musical literacy, knowledge and skills, music experience that integrates adequate expectations, but also on the `musicality` of an individual. Fast and precise performance during sight-reading can be related to `intuitivism`, which is a "mental approach to the acquired knowledge of a style, performing practice and theory of music" (Leman et al. 2012, 40).

The importance of development of sight-singing skills is not limited to the success in teaching solfeggio only, but may have influence on the development of wider musical competences. The research of Sheldon (1998) showed that a group of students, who, besides regular training in instrumental methods and conducting, also had sight-singing and ear training practice, were significantly better when they came to the perception of rhythmical and melodic errors in musical performance. It shows that practice in sight-singing, together with different forms of perception that are included in teaching solfeggio, can improve competences in musical performance.

1.3. The relationship between harmonic hearing and sight-singing

Considering the previously stated factors and processes, our hypothesis in this paper is that a developed harmonic-hearing of music students at academic level is significantly correlated with the success in sight-singing melodic exercises. The fact is that relevant integral aspects of harmonic hearing can be differentiated in the process of sight-singing, which may influence the outcomes of sight-singing to a smaller or higher level and depend on the type of melody and its tonality. Some of them are as follows:

- Sense of a key in terms of intonation base;
- Sense of harmonic functions within a key;
- Sense of pitches in terms of tonal functions;
- Grouping of tones according to chords and their functions within a key;
- Recognition and sense of latent harmony of a melodic line;
- Listening to complete texture and conscious follow-up of sound in multi-part performance with adjustment of tuning to other parts, etc.

One of the most significant aspects of harmonic hearing that influences sight-singing is the awareness of a key and capability for consciously experiencing tonal and harmonic functions, their hearing and application in performance. It is important to point out the psychological concept of *grouping* which "lies in the base of memory mechanism which connects our perception with the previously acquired knowledge" (Leman et al. 2012, 134). By using the concept of grouping while sight-singing, certain tones can be grouped in logical harmonic wholes that are the precondition for work on intonation and aural perception of various chord progressions. They may belong to the key and can be treated as the chords of scale degrees in various constructions (turns) with different mutual harmonic combinations, but they can also be treated as independent chord structures. The link between harmonic hearing and sight-singing is shown in the fact that "each (tonal) melodic line involves latent harmonic movement" (Nikolić 2014, 12). Moreover, even in the melodies with atonal characteristics, it is possible to create groups of several tones while sight-singing, thus triggering an association to a key. Therefore in teaching solfeggio, it is important that attention is focused on recognition of harmonic progressions, which should be developed as the capacity for precise identification of latent harmonic base.

The connection between the level of harmonic hearing and the process of sight-singing can be discovered through some of the previous investigations. In his research Fine et al. (2006) shows that changes in harmonic progressions may have an effect on precision in sight-singing. Namely, twenty two experienced choir singers had a task to perform their parts with original (tonal) or changed (atonal) harmony. The results revealed that "pattern recognition and harmonic prediction are integral to their sight-singing ability" (Fine et al. 2006, 431), and that the changes in harmony had stronger effect on less skilled singers.

While examining the skill of sight-singing with students of music (N = 30), Boyle & Lucas (1990) found statistically significant differences between singing a melody with or without tonal harmonic accompaniment. The authors related these results to the findings that "melodic expectations are a reflection of previous experiences with music based on a tonal harmonic framework" (Boyle & Lucas 1990, 1), and stated that singing with harmonic accompaniment was similar to the context of choir-singing that the students were used to.

A potential effect of harmonic hearing on the process of sight-singing was examined by Furby (2005) in an experiment that included a sample of first grade secondary school students (N = 29). All students attended sight-singing lessons. The experimental group had additional tonal harmonic theory training twice per week for ten weeks. The results showed the progress in sight-singing with all the examinees, yet no significant difference could be proved in the post-test between the experimental and the control groups. In conclusion, the author thinks that a ten-week-training is not a long enough period for students without any previous knowledge of tonal harmonic theory in order for them to acquire the basis that could be practically applied in sight-singing. This result speaks in favour of the necessity for working on developing harmonic hearing from the first steps in formal musical education.

2. METHODOLOGY

The primary aim of the research was to examine the relationship between the level of harmonic hearing and success in sight-singing. Besides, more factors that could formally and informally influence the development of harmonic hearing were identified, and the significance of melodic exercise analysis in the process of sight-singing was investigated.

The research was carried out at the Faculty of Arts in Niš in 2016. The sample included students of the first, second and third year (N = 42), 20 (47.6%) males and 22 (52.4%) females enrolled in the study program General Music Pedagogy, i.e. Music Theory and Pedagogy.

The data were collected by means of a questionnaire and examination by which each participant was evaluated at the level of harmonic hearing and success in sight-singing (Table 1). The following tasks were included:

- Writing down harmonic progressions in the form of chords and their functions in a key (Appendix A);
- Identification and writing down functions of chords that were played on the piano (Appendix B);
- Sight-singing of melodies with latent harmony that could be successfully sensed (Appendix C).

Table 1 Descriptive statistics of grades on the level of harmonic hearing and sight-singing

	N	Min.	Max.	M	SD
Grades in harmonic hearing	42	5.8	10.0	8.23	1.15
Grades in sight-singing	42	5.0	10.0	7.36	1.22

3. Results and Discussion

The starting point of the paper is the basic hypothesis that developing harmonic hearing is significantly correlated with the success in sight-singing melodic exercises for teaching solfeggio. The hypothesis was checked by an analysis of the grades of the students:

Table 2 The correlation between grades in level of harmonic hearing and grades in sight-singing

		Grades in sight-singing
Grades in level of harmonic hearing	Pearson Correlation	.374
	Sig. (2-tailed)	.015
	N	42

Based on the performed measurements (Table 2) we can confirm the basic hypothesis and conclude that the grades at the level of harmonic hearing in sample students are in significant positive correlation with their success in singing melodic exercises ($r = .37$, $p < .05$). Bearing in mind the fact that the developed harmonic hearing is only one of the factors that influence successful performance of the exercises in teaching solfeggio, we certainly could not expect a higher level of correlation. Thus we have to take into consideration the fact that grades at the level of harmonic hearing are formed by a perceptive approach (by perception of harmonic progressions and functions in a key), and that physiological factor (development and ability to control vocal apparatus) has also a great influence on grades in sight-singing.

By further analysis of data we tried to determine the effect of various factors on the development of harmonic hearing. In this context we examined the connection with the instrument that students played while still at primary school. The greatest number of students learned to play harmonic instruments – the piano (57.1%) and guitar (11.9%), two students (4.8%) learnt violin, four learnt wind instruments – flute, wooden fife, clarinet and trumpet, while seven students in the sample (16.7%) did not complete primary music school. Although the grades in harmonic hearing were on average lower in the group of students without primary music school, significant differences were not statistically found ($F = 0.987$, $p = .43$).

By means of the following four items in the questionnaire we obtained the data on factors that may have (i.e. previously had) an effect on developing harmonic hearing.

The items related to:

- Whether the examinees had worked on singing cadences and perception of harmonic progressions on solfeggio lessons in primary music school;
- Whether they used to learn music by ear in primary and secondary music schools;
- Whether they currently play any other instrument besides the piano;
- Whether they perform instrumental music in their free time (by playing in a band, etc.).

The results show that 40.5% of the sampled students did not practice sing cadences, listen and record harmonic progressions on solfeggio lessons in primary music school, 28.6% did sometimes, 19.0% very rarely, and only 11.9% said that the stated procedures were often practiced. Most examinees sometimes learnt music by ear (35.7%), while the number of remaining answers was the same: no (21.4%), very rarely (21.4%) and often (21.4%); Eleven students (26.2%) play other instruments besides the piano, firstly accordion, then guitar, trombone, drums and percussions, while other students play the instruments they learnt in primary music school (flute, clarinet, violin). We assumed that performing music in their spare time in terms of playing popular music with peers (compare to Green 2002) could have a positive effect on developing their musical skills. Therefore we included this variable in our research. Nine students (21.4%) play various music genres – pop, rock, jazz, blues, folk music etc.

Considering the correlation of each of the stated factor independently with the level of development of harmonic hearing we can conclude that singing cadences and work on harmonic progressions at primary music school level ($r = .20$, $p = .20$), as well as the habit of learning by ear ($r = .29$, $p = .06$) are not in a statistically significant correlation with the grades in harmonic hearing. On the other hand, the grades at the level of harmonic hearing for the sample students who additionally play some other musical instrument ($N = 11$, $M = 8.82$, $SD = 0.90$) are significantly higher in comparison with other sample students ($N = 31$, $M = 8.02$, $SD = 1.17$), which we checked by t-test ($t = -2.04$, $df = 40$, $p < .05$). Free musical performance i.e. playing in a band also has significant effect on the level of harmonic hearing. The examinees who practice this form of music activities have on average higher grades ($N = 9$, $M = 9.03$, $SD = 1.04$) in comparison to other examinees ($N = 33$, $M = 8.01$, $SD = 1.10$), where the results of t-test are $t = -2.50$, $df = 40$, $p < .05$.

In addition to taking into account the individual level, we also examined the overall correlation between the above factors (i.e. their overall values) and the grades in harmonic hearing.

Table 3 Correlation between total influence on the development of harmonic hearing and grades in level of harmonic hearing

		Grades in level of harmonic hearing
Overall effect on development of harmonic hearing	Spearman's rho	.507
	Sig. (2-tailed)	.001
	N	42

According to the results of the test we can conclude that overall influence of cadence singing and work on harmonic progressions at primary music school level, learning music by ear, playing an additional musical instrument and performance of music in a band are significantly correlated with the grades at the level of harmonic hearing with the sample students ($r = .51$, $p < .01$).

Further data processing was directed towards the process of sight-singing, where the significance of analysis of melodic exercises before their interpretation in teaching solfeggio was first considered. Most students always (54.8%) or mainly (35.7%) analyse the exercise before singing, four students (9.5%) rarely do it, while none of the students sing without analysis. In this process, 64.3% of the examinees always analyse keys that appear in the exercise, while 35.7% mainly do it. The question whether the analysis was

focused on functionality of tones and groups of tones in the melodic exercise provided the following answers: most students said that it was (54.8%), while smaller number said that they always (23.8%) or rarely (21.4%) used that type of analysis.

By considering the results, a significant correlation was found between the analysis of practice and success in its interpretation ($r = .38$, $p < .05$), while key analysis ($r = .28$, $p = .07$) and analysis of tone functionality ($r = .26$, $p = .09$) were not in significant correlation with the grades in sight-singing. The overall influence in the analysis of the above procedures was additionally considered as follows:

Table 4 Correlation between overall influence of exercise analysis and grades in sight-singing

		Grades in sight-singing
Overall influence of exercise analysis	Spearman's rho	.451
	Sig. (2-tailed)	.003
	N	42

According to our data we can conclude that overall influence of exercise analysis prior to its performance, analysis of keys that appear in the exercise and the analysis of functionality of tones and tone groups is in significant positive correlation with the grades in sight-singing ($r = .45$, $p < .01$).

Since most of the examined students actively sing in the choir (85.7%), the connection between the choral part that students sing and the success in sight-singing was analysed. The sample included the greatest number of students who sing bass and alto (31% each), somewhat lower number of sopranos (23.8%), while the smallest number were tenors (14.3%). However, the ANOVA procedure did not show any statistically significant differences between the grades in sight-singing according to the choral part that students sing ($F = 1.842$, $p = .16$).

In the questionnaire, the examinees showed their attitude towards the selection of a specific part during the performance of three-part and four-part exercises in teaching solfeggio, i.e. whether they chose upper, lower or some inner parts, or were without such preferences. Their answers were compared to the parts they sang in the choir:

Table 5 The relationship between parts in the choir and selection of parts in singing multi-part exercises

		Selection of a part while singing multi-part exercise				Total
		Upper part	Lower part	Some of inner parts	No preferences	
Choir parts	Soprano	6	0	0	4	10
	Alto	2	9	2	0	13
	Tenor	0	1	1	4	6
	Bass	0	8	0	5	13
Total		8	18	3	13	42
χ^2				31.569		
df				9		
p				0.000		

The results of the test show significant correlation between the part that students sing in a choir and the freely selected part while singing multi-part exercises. Thus the upper part in multi-part texture is mainly selected and performed by students who sing soprano in a choir, while the lower part is primarily chosen by students who sing alto and bass parts, which reveals specific "habits" in the process of analysis and performance of multi-part exercises.

The research also included the examination of grade differences in sight-singing in relation to the selection of part in a multi-part example. The examinees who did not make a difference in selecting their part while singing multi-part exercises in teaching solfeggio had on average somewhat higher grade in sight-singing, although these differences were not statistically significant ($F = 1.229$, $p = .31$).

4. Conclusion

Considering that the development of harmonic hearing is one of the significant tasks in teaching solfeggio and music training in general, and that the developed harmonic thinking is a significant characteristic of educated musicians, the paper discusses the basic hypothesis that the level of harmonic hearing with academic students of music is significantly correlated with their success in sight-singing. Some of the previous investigations confirm this hypothesis (Fine et al. 2006; Boyle & Lucas 1990). The research of Furby (2005) did not show significant difference in post-test, but the conclusion was that ten-week-training was not sufficiently long period for the development of harmonic hearing in the students without relevant previous experience.

The results of our research show a significant correlation between the level of harmonic hearing and success in sight-singing ($r = .37$, $p < .05$). This supports the need for the development of harmonic hearing from the very beginning of music training. Further analysis of the data investigated the effect of various factors on the development of harmonic hearing. Results show that the overall influence of the activities such as work on cadences and harmonic progressions, learning music by ear, playing musical instruments and free music activities in bands can contribute to the development of harmonic hearing, which should be borne in mind in the selection of methodological procedures and development of appropriate habits with students at various ages. By examining the elements that influenced accomplishments in sight-singing, we found out that the exercise analysis (including the analysis of a key and functionality of tones and tone groups) had positive effect on success in performance of sight-singing exercises in teaching solfeggio.

The results of the research reveal that the development of harmonic hearing should be properly and permanently motivated through solfeggio teaching by combining various methodological procedures. Therefore it is favourable to encourage students of music at all ages to apply relevant integral aspects of harmonic hearing while sight-singing (the sense of key, harmonic and tonal functions, grouping of tones, recognition of latent harmony, conscious follow-up of multi-part performance etc.), so that the acquired skills and competences become the base for performing various musical activities.

REFERENCES

Boyle, D., & K. Lucas, (1990), "The effect of context on sightsinging", *Bulletin of the Council for Research in Music Education*, pp. 1-9. Available: https://www.jstor.org/stable/40318858?seq=1

Fine, P., A. Berry, & B. Rosner, (2006), The effect of pattern recognition and tonal predictability on sight-singing ability, *Psychology of Music*, 34(4), pp. 431-447. Available: https://journals.sagepub.com/doi/abs/10.1177/0305735606067152

Furby, V., (2005), *The effects of learning tonal harmonic function on the sight singing skill of high school students*, Doctoral dissertation, The Ohio State University. Available: https://etd.ohiolink.edu/!etd.send_file?accession=osu1377257565&disposition=inline

Green, L., (2002), *How popular musicians learn: a way ahead for music education*, Ashgate: Aldershot.

Jovančević, A., N. Milićević, & D. Zdravić Mihailović, (2019), Differences in music preferences between musicians and non-musicians, *Facta Universitatis, Series Visual Arts and Music*, 5(1), pp. 31-39. Available: http://casopisi.junis.ni.ac.rs/index.php/FUVisArtMus/article/view/5195

Kiselčić Todorović, D., (2001), Percepcija i recepcija muzičkog sadržaja pri pevanju sa lista [Perception and reception of musical content in sight-singing], *Zbornik radova četvrtog pedagoškog foruma*, Fakultet muzičke umetnosti u Beogradu, Beograd, Katedra za Solfeđo, pp. 71-73.

Kršić Sekulić, V., (1990), *Korelacija nastave solfeđa sa instrumentalnom nastavom* [*Correlation between solfeggio teaching and teaching musical instruments*], Nota, Knjaževac.

Leman, A., Dž. Sloboda i R. Vudi, (2012), *Psihologija za muzičare: razumevanje i sticanje veština* [*Psychology for musicians: understanding and acquiring the skills*], Psihopolis institut Novi Sad, Univerzitet umetnosti u Beogradu, Fakultet muzičke umetnosti, Beograd.

Nikolić, I., (2014), *Solfeđo: jednoglasni diktati* [*Solfeggio: one-part dictations*], Nota, Knjaževac.

Nikolić, I. & Kodela, S., (2016), Musical creativity – constitutive element or product of musical talent development, *Facta Universitatis, Series Visual Arts and Music*, 2(2), pp. 85-92. Available: http://casopisi.junis.ni.ac.rs/index.php/FUVisArtMus/article/view/2383

Olujić, A., (1990), *Razvoj harmonskog sluha* [*Harmonic hearing development*], Univerzitet umetnosti u Beogradu, Beograd.

Radoš, K., (2010), *Psihologija muzike* [*Psychology of music*], Zavod za udžbenike, Beograd.

Sheldon, D., (1998), Effects of contextual sight-singing and aural skills training on error-detection abilities, *Journal of Research in Music Education*, 46(3), pp. 384-395. Available: https://journals.sagepub.com/doi/abs/10.2307/3345550

Vasiljević, Z., (2000), *Metodika muzičke pismenosti* [*Methods of musical literacy*], Zavod za udžbenike, Beograd.

Vujović, I., & Bogunović, B., (2012), Cognitive strategies in sight-singing, *Proceedings Book of 13th ICMPC/ESCOM Conference*, pp. 1106-1111. Available: http://icmpc-escom2012.web.auth.gr/files/papers/1106_Proc.pdf

Zavadska, G., (2012), Model for developing student teacher's harmonious hearing introduction, *Problems in Music Pedagogy*, 10, pp. 59-71. Available: http://du.lv/wp-content/uploads/2015/12/Volume_10-11__2012.pdf

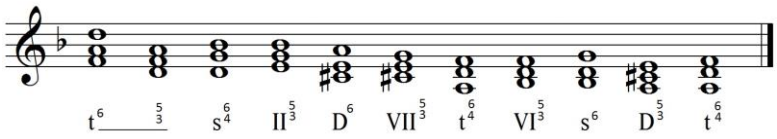
Zavadska, G., & J. Davidova, (2015), The Development of Prospective Music Teachers' Harmonic Hearing at Higher Education Establishments, *Pedagogika*, 117(1), pp. 72-85. Available: www.pedagogika.leu.lt/index.php/Pedagogika/article/download/177/167

INTEGRALNI ASPEKTI HARMONSKOG SLUHA U PROCESU PEVANJA SA LISTA

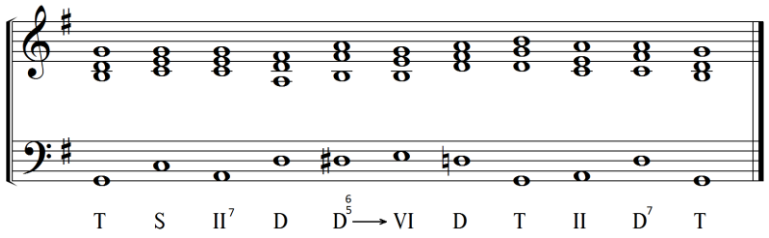
Harmonski sluh predstavlja značajnu karakteristiku profesionalnih muzičara, te je njegov razvoj jedan od važnih zadataka muzičke nastave i konkretno nastave solfeđa. U radu se polazi od osnovne hipoteze da je stepen razvoja harmonskog sluha na uzrastu studenata muzike značajno povezan sa uspehom u pevanju sa lista. Istraživanje je realizovano na uzorku studenata Fakulteta umetnosti u Nišu (N=42). Podaci su prikupljeni anketnim upitnikom i ispitivanjem u kome su formirane ocene stepena razvijenosti harmonskog sluha i ocene pevanja sa lista. Rezultati pokazuju značajnu pozitivnu korelaciju ovih ocena (r=0,37, p<0,05) čime je potvrđena osnovna hipoteza. U radu su dodatno sagledani elementi koji u formalnom i neformalnom smislu mogu da utiču na razvoj harmonskog sluha, a ispitan je i značaj različitih apekata analize primera pri pevanju sa lista. U okviru zaključnih razmatranja ukazano je na potrebu korišćenja integralnih aspekata harmonskog sluha pri pevanju sa lista, u cilju razvoja veština i kompetencija za učešće u različitim muzičkim aktivnostima.

Ključne reči: *solfeđo, muzički sluh, harmonski sluh, pevanje sa lista, čitanje sa lista*

Appendix A: An example of harmonic progression



Appendix B: An example of tasks in perception and recording chord functions



Appendix C: An example of sight-singing melody